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SCHOOL *of* MEDICINE

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INTRODUCTION AND GENERAL SUMMARY

A minimum of 2 and 3/4 elective quarters (24.5 weeks/955 hours) are required for the M.D. degree. This provides a valuable opportunity for advanced study in the fields of medicine and the biological sciences through a process that is, as far as possible, open to the students' election. The chief constraint sets in when too many students ask for the same course at the same time. The sequence of electives can often be arranged to meet a student's desires and needs.

In addition to the 24.5 weeks of elective credit, students must also complete two required selectives. Those courses include; Advanced Clerkship in Critical Care and an approved Subinternship experience. Both of these courses are 4.5 weeks in length.

Students should consult freely with members of the faculty, the Associate Dean for Medical Student Affairs and Colleges Advisors in developing their programs. The ultimate responsibility for arranging the elective course of study rests with the student.

The electives chosen may be any of those formally listed in the elective book and in the catalog, or they may be developed on an individual basis with members of the faculty at Hopkins or elsewhere (approval of the Associate Dean for Medical Student Affairs is required for elective work carried out at other institutions). Only those electives which are considered to be a sound educational experience whether taken at Hopkins or at another institution will be approved.

The Associate Dean and Assistant Deans for Medical Student Affairs will be glad to help with arrangements for electives in other institutions. Remember that at least one and three quarter elective quarters must be taken with Johns Hopkins faculty.

Electives are an integral part of the required curriculum and students must register at the Registrar's Office for programs of study. Evaluation of the student's performance must be provided by the faculty preceptor.

BASIC DEFINITIONS AND RULES

The following information is made as complete as possible to assist in planning an elective program.

Definitions of Terms Used in Guidelines:

Home Department: any officially designated department of the Johns Hopkins University, including the Bloomberg School of Public Health and the Homewood Schools.

Faculty Preceptor: a faculty member who supervises an elective offering. In general, a faculty preceptor will have the rank of assistant professor or higher. The faculty preceptor will also be responsible for providing an evaluation of the student's work at the end of the elective period.

Internship Advisor: a faculty member assigned by a department to provide information about internships in the department and elsewhere. Although not directly responsible for electives, internship advisors are a valuable additional resource in planning a student's course of action. Internship advisors are listed at the end of these guidelines.

Activities Recommended as Electives: Elective credit will be given for a program of study that is considered by a faculty member to be a valuable intellectual experience and is approved by the department chairperson. Such activities may include advanced clerkships, individually arranged laboratory or clinical research, or advanced elective courses. Students may also undertake projects of their own within the framework of the laboratory or clinical activities of a home department so long as a faculty member approves it. However, unstructured and unsupervised attendance at seminars and conferences is not acceptable for elective credit.

Research Electives: Research electives are arranged between the student and a faculty preceptor. No specific period of time need be spent on a project, but many faculty preceptors feel that a profitable research experience requires at the least one full quarter (nine weeks). Students who undertake research during an elective quarter may

also do some clinical work and attend conferences or seminars in any department if approved by their Faculty Preceptor.

Other Activities in the Home Department: During an elective period students are considered junior members of the home department. As such, they are expected to participate in department conferences and other activities. Their role should be that of an active contributor rather than a passive observer.

Elective Quarters at Other Academic Institutions: Elective study at other institutions must be approved by the Associate Dean for Medical Student Affairs. A letter of acceptance must be obtained from the sponsor at the outside institution and submitted along with the student's elective registration form and a list of goals and objectives. Assistance in arranging for electives elsewhere is also available in the Office of Medical Student Affairs. In general, externships or clinical clerkships at hospitals not directly affiliated with a medical school will not be approved.

Evaluation of Performance During an Elective: Faculty Preceptors will submit an evaluation and characterization of each student's performance at the end of each elective experience. Satisfactory completion of an elective is required in order to receive credit toward the M.D. degree.

Stipends for Elective Activities: Students may apply toward meeting the required two and three quarter elective quarters (24.5 weeks) no more than one and a half quarters of credit for which they also receive remuneration. Excluded from this limitation are prizes and merit awards (e.g., the Denison Scholarships). However, it is recognized that some sources of funding may prohibit award of academic credit.

Vacation Quarters: The curriculum provides flexibility in scheduling vacation periods. Students planning a vacation period are requested to file a "Vacation Form" with the Office of the Registrar listing an address where they can be reached during the vacation period.

FORMS AND ASSOCIATED DEADLINES AND RULES

Students must complete a registration form for each elective experience in order to receive academic credit. The forms are available from the Registrar's Office. After completing an elective registration form, the student must have it signed by the course director. If the elective is an experience outside of the Hopkins system, the student will also need to get the signature of the Associate Dean for Medical Student Affairs. Students are expected to consult with their advisors about their academic program at regular intervals. It is the responsibility of the student to see that the "Elective Registration Form" is completed and submitted to the Registrar's Office in a timely manner.

Elective Registration Form: A triplicate form with copies for the course director, the student, and the Registrar's Office, is used to register for all elective activities. The deadline for submission of elective registration forms is one month before the start of each quarter.

Drop Form – within the deadline: The normal deadline for dropping electives is one month prior to the course, with the exception of a two-month deadline for dropping subinternships and certain advanced clerkships. If a student wants to drop a course within the deadline, he or she should take a drop form to the course director and return the signed copy to the Office of the Registrar prior to submitting a new registration form for that period.

Late Drop Form: Changes will not ordinarily be permitted after the deadlines, though students may petition for such changes by submitting a drop form to the Course Director, and the Associate Dean for Medical Student Affairs. The completed form with appropriate signatures should be submitted to the Registrar's Office. Credit will not be given for course work other than that indicated on the most current registration form. If a student fails to attend a course for which they have registered, an incomplete grade will be recorded on the transcript for that course, and the student will not be given credit for any other course during that time period.

RULES CONCERNING REQUIRED SUBINTERNSHIPS AND CERTAIN ADVANCED CLINICAL ELECTIVES

Certain advanced clinical electives (listed below) are very much in demand. One of the important advantages of these clerkships is the independent responsibility delegated to students so that they play a very active role in patient care. The trade-off is that students registering for these electives must accept the special responsibilities and obligations which they carry to patients, staff, their colleagues, and other members of the health care unit. Last minute dropouts from these clerkships impose burdens on the clinical unit and often mean lost opportunity for

other students who want to participate in the elective. In view of the problems which have resulted from last minute dropouts, the Committee on Educational Policy and Curriculum adopted the following rules: Students registering for advanced electives with significant patient care responsibilities are obliged to participate in such electives. Changes must be made two months prior to the start of such electives. If a drop is necessary past the deadline, the students may petition for a change by submitting a "Request to Drop Course After Deadline" to the Course Director, and the Associate Dean for Student Affairs, and filing the completed form with the Registrar's Office. Credit will not be given for course work other than that indicated on the most current registration form. If students fail to attend a course for which they have registered, an incomplete grade will be recorded on their transcript for that course, and the students will not be given credit for any other course during that time period.

The following clinical experiences are governed by these rules:

REQUIRED SELECTIVES

Approved Subinternship Experience

Prerequisite(s): Respective Core Clerkship

Availability/Duration: Year round, 4.5 weeks; follows SOM Academic Calendar quarter dates

Drop Period: All scheduling must occur through the Registrar's Office

Subinternships that fulfill graduation requirement (JHH or Bayview only):

Gynecology (JHH-Dr. Silka Patel)

Gynecology Oncology (Dr. Amanda Fader)

Emergency Medicine (JHH – Dr. Julianna Jung)

Medicine (JHH-Dr. Amit Pahwa)

Medicine (Bayview – Dr. Janet Record)

Medicine-Hospitalist (JHH – Dr. Padmini Ranasinghe)

Medicine-Hospitalist (Bayview- Dr. Ileana Ponor)

Obstetrics/GYN (JHH Dr. Silka Patel)

Obstetrics (JHH-Dr. Silka Patel)

Obstetrics/Maternal Fetal Medicine (JHH Dr. Silka Patel)

Pediatrics-Inpatient (JHH-Dr. Amit Pahwa)

Pediatrics-Harriet Lane (JHH – Dr. Megan Tschudy)

Pediatrics – Emergency Medicine (JHH – Dr. Mitchell Goldstein)

Surgery (JHH – Dr. Bethany Sacks)

Surgery (Bayview – Dr. Bethany Sacks)

Thoracic Surgery (JHH- Dr. Bethany Sacks and Richard Battafarano)

Adult Orthopaedic Surgery (JHH-Dr. Brian Neuman)

Pediatric Orthopaedic Surgery (JHH – Dr. Paul Sponseller)

Neurosurgery (JHH – Dr. Tim Witham)

Plastic Surgery (JHH – Dr. Justin Sacks)

Otolaryngology (JHH – Dr. Bryan Ward)

Urology (JHH – Dr. Trinity Bivalacqua)

Advanced Clerkship in Critical Care

Prerequisite(s): Medicine or Surgery Core Clerkship, except PICU which has a Prerequisite of Pediatrics

Availability/Duration: Year round, 4.5 weeks; follows SOM Academic Calendar quarter dates

Drop Period: All scheduling must occur through the Registrar's Office

Site Assignments:

Surgical Intensive Care (SICU) (JHH – Dr. Pamela Lipsett)

Weinberg Intensive Care (WICU) (JHH – Dr. Pamela Lipsett)

Medical Intensive Care (MICU) (JHH-Dr. Roy Brower)

Medical Intensive Care (MICU) (Bayview – Dr. Ed Chen)

Coronary Intensive Care (CICU) (Bayview – Dr. Marlene Williams)

Clinical Clerkship in Coronary Intensive Care (CICU) (JHH – Dr. Steve Schulman)

Pediatric Intensive Care (PICU) (JHH-Dr. Erik Su)

Neurocritical Care (NCCU) (JHH and Bayview – Dr. Romergrzyko Geocadin)
Cardiac Surgery Intensive Care (CSICU) (JHH – Dr. Glenn Whitman)

ADVANCED ELECTIVES

Women’s Health

Subinternship in Gynecology
Subinternship in Gynecology and Obstetrics
Subinternship in Reproductive Endocrinology
Subinternship in Obstetrics

Medicine

Advanced Clinical Clerkship in Internal Medicine
Advanced Clinical Clerkship in Medical ICU/CCU
Advanced Clinical Clerkship in Medicine/Rheumatology
Advanced Clinical Clerkship in Medicine-Bayview
Advanced Clinical Clerkship: CICU, Bayview
Endocrinology Clinical Clerkship
Subinternship in Infectious Disease-AIDS Service
Clinical Clerkship in Cardiology- Consult Service
Clinical Clerkship in Nephrology
Clinical Clerkship in Infectious Disease

Neurology

Advanced Neurology Clerkship

Oncology

Subinternship in Oncology

Pathology

Subinternship in Autopsy Pathology - JHH
Subinternship in Surgical Pathology - JHH
Subinternship in Autopsy and Surgical Pathology at Bayview and Sinai

Pediatrics

Pediatric Hematology Consultation Service
Subinternship in Neonatal Intensive Care Unit
Pediatric Pulmonary Subinternship
Clinical Clerkship in Adolescent Medicine
Neonatal Pediatrics Subinternship-Bayview

Psychiatry

Subinternship in Psychiatry

Radiology

Interventional Radiology Subinternship

Surgery

Subinternship in Surgery
General Surgery Subinternship-Bayview
Subinternship and Preceptor Program-Sinai
Advanced Clerkship in Burns (Subinternship)-Bayview
Subinternship in the Surgical Intensive Care Unit
Subinternship in Cardiac Surgery
Subinternship in Neurosurgical Surgery
Subinternship in Pediatric Surgery

Plastic Surgery Subinternship-Shock Trauma
Subinternship in Plastic Surgery
Subinternship in Transplantation Surgery

If you have any questions about these rules and procedures, please do not hesitate to contact Dr. Thomas Koenig, Associate Dean for Medical Student Affairs, (410-955-3416), or William Bryant Faust IV, EdD Associate Dean and Registrar, (410-955-3080).

GLOSSARY OF TERMS TO DESCRIBE ELECTIVES

SUBINTERNSHIP:

A rotation in which the student assumes the role of an intern, including primary care of patients and sharing night call

CLINICAL CLERKSHIP:

A rotation similar to a Core clerkship but with more responsibility for patient care and teaching

CONSULT SERVICE:

A rotation in which the student participates in the daily consultative activities of a particular division; may include the selected care of inpatients and outpatients of that division

TUTORIAL:

A rotation in which the student works with one or a very few faculty members in tutorial and didactic settings. May be in a clinical or basic science department

BASIC RESEARCH:

A rotation in which the student is engaged in laboratory research in a basic science department or in a clinical department

CLINICAL RESEARCH:

A rotation in which the student is engaged in research in clinical medicine. May sometimes include laboratory work

RESIDENCY ADVISORS

Anesthesiology & Critical Care Medicine	Dr. Tina Tran Bloomberg 6220 Ttran32@jhmi.edu	410-955-7615
Dermatology	Dr. Ginette Hinds ghinds1@jhmi.edu	
Family Practice	Dr. Karen Perkins Franklin Square Hospital Karen.e.perkins@medstar.net	
Medicine	Dr. Sanjay V. Desai sanjayvdesai@jhu.edu	410-955-7910
Neurology	Dr. Justin McArthur Meyer 6-109 jmcarth@jhmi.edu	410-955-3730
	Dr. Argye Hillis argye@jhmi.edu	410-955-6406
	Dr. Raf Llinas rllinas@jhmi.edu	

Gynecology & Obstetrics	Dr. Betty Chou Phipps 227, JHH bchou1@jhmi.edu	410-614-0088
Ophthalmology	Dr. Henry Jampel Woods 177 hjampel@jhmi.edu	410-614-2339
Orthopaedic Surgery	Dr. Lee H. Riley III JHOC - Rm. 5243	410-955-6930
Otolaryngology	Dr. Michael Ain JHOC 5253 main@jhmi.edu	410-955-9300
Pathology	Dr. Charles Steenbergen Csteenb1@jhmi.edu	410-502-5982
Pediatrics	Dr. Nicole Shilkofski Bloomberg 8464 nshilko1@jhmi.edu	410-955-2727
Psychiatry	Dr. Susan Lehmann Meyer 4-181, JHH	410-955-5514
Radiology	Dr. Donna Magid Central Radiology dmagid@jhmi.edu	410-955-6500
Surgery	Dr. Pamela Lipsett Osler 603 plipsett@jhmi.edu	410-955-3739

Internship advisors are available to assist students seeking post-graduate appointments. Students applying in these areas should make appointments to see at least one of the departmental advisors. Students are encouraged to seek additional advice from a variety of faculty, house staff, college advisors and peers. A broad base of information is helpful.

It may also be helpful to talk to some of our recent graduates who are at other institutions. The Office of Student Medical Affairs can provide names and addresses to assist you.

There are some students who will be going into residencies in disciplines other than those listed. While Dr. Koenig can advise students concerning that process, it is also important that students speak with the department or division director in the discipline in which they have interest.

DEPARTMENTAL RECOMMENDATIONS

The following statements, provided by the clinical departments, suggest curricular choices for students wishing to enter post graduate training in a particular specialty.

ANESTHESIOLOGY

The basic recommendations for entrance into a residency in Anesthesiology and Critical Care Medicine are:

1. An interest and demonstrated proficiency in basic physiological and pharmacological principles.
2. A solid background in internal medicine, surgery, and/or pediatrics. Anesthesiology requires a clinical base year (medicine, surgery, pediatrics, or transitional) which is either a separate preliminary year or twelve months of basic experience incorporated into the residency itself, depending upon the program. The preliminary year focus should be chosen based on your preferences and skills, although internal medicine is often considered most useful. Elective suggestions for medical students include cardiology, pulmonary medicine, emergency medicine, surgical intensive care, and a medicine or surgery sub-internship.
3. A four-week elective in anesthesiology will allow you to develop an informed specialty decision and permit us to support your application as best we can. Further advanced electives in anesthesiology or anesthesia sub-specialties can be helpful to assist in career decisions and can be tailored to your interests but are not necessary. It is typically not helpful to do away or “audition” rotations in anesthesia.
4. Research in any area (basic science, clinical, biomedical engineering, information management, health policy, etc.) can be relevant to anesthesiology and can greatly enhance an application, although it is not expected or required unless you anticipate an academic career.
5. Personal characteristics suggesting promise in anesthesiology, which include an inquisitive nature, dynamic decision-making skills utilizing multiple variables and hypothesis testing, the ability to maintain a high level of vigilance and detail-oriented approach to patient care, good procedural skills, the desire to work as part of a team, a willingness to be flexible and adapt to different work environments and new technology, and the ability to organize resources and maintain a demeanor of effective leadership in crisis situations.

*Dr. Colleen Koch
Chair
Department of Anesthesiology and Critical Care Medicine*

DERMATOLOGY

We welcome students to take a dermatology clerkship regardless of the medical discipline they intend to pursue. However, this should take place towards the end of their third year after completing several core clerkships including Medicine, Surgery and Pediatrics. We believe students should receive as broad exposure to medicine as possible before taking our introductory clerkship (Clinical Clerkship in Dermatology) and making career decisions. If further experience/learning is desired, we also suggest taking our Advanced Clinical Clerkship in Dermatology. For those students with a career interest in Dermatology, taking electives in related sub-specialties such as Rheumatology, Immunology, and Plastic Surgery are encouraged.

*Dr. Inbal Sander
Director of Medical Student Rotations/Clerkships
Assistant Professor of Dermatology and Pathology
Department of Dermatology*

*Medical Student Rotation Coordinator:
Marsha Mackey
Mcunnin5@jhmi.edu*

EMERGENCY MEDICINE

The student interested in a career in Emergency Medicine is well-advised to take advantage of the career counseling services available in the Department of Emergency Medicine to aid them in their decision-making process. Students can be advised in the following areas:

1. Personal life/goal planning
2. Careers in Emergency Medicine

3. Medical school rotations
4. Application preparation
5. Interview skills
6. Research exposure

The Department of Emergency Medicine at Johns Hopkins is particularly interested in those students who wish to pursue academic careers, but department members will be happy to advise students contemplating community hospital or private practice careers.

Medical student rotations should emphasize a well-balanced program including: emergency medicine, pediatric emergencies, general surgery and trauma, internal medicine, cardiology, anesthesia, general pediatrics, obstetrics & gynecology and intensive care rotations. Other recommended rotations include: psychiatry, ophthalmology, orthopaedics, plastic surgery, otolaryngology, neurology and pulmonary/critical care medicine. Research experience is highly recommended, and opportunities are offered through the Johns Hopkins Department of Emergency Medicine.

Those interested in applying for the Emergency Medicine training program at Johns Hopkins are advised to arrange elective time in late third year or early fourth year. Since specialty training in Emergency Medicine is among the most competitive in the country, it may be wise to arrange an elective at another institution also. Faculty members in the Department of Emergency Medicine can advise in this regard.

*Dr. G. D. Kelen
Director
Department of Emergency Medicine*

GYNECOLOGY & OBSTETRICS

For those students who are considering a career in Obstetrics and Gynecology or who desire additional experience in Women's Health, a Subinternship in Obstetrics and/or Gynecology is available. Successful completion of a core clerkship in Obstetrics and Gynecology is a prerequisite for all subinternships.

If the student wishes to take subspecialty electives within the department, there is a choice of gynecology, gynecologic pathology, gynecologic oncology, reproductive endocrinology and infertility, maternal-fetal medicine, family planning, and pelvic medicine and reconstructive surgery, as well as many opportunities for research. Clinical electives are primarily offered when a core clerkship is not in session. Core clerkship dates may be found on the department's medical student website:

www.hopkinsmedicine.org/gynecology_obstetrics/education/medstudents/

Since Obstetrics and Gynecology is a primary care field, the most appropriate use of elective time for students who are committed to specialty training in Obstetrics and Gynecology involves completion of the various subspecialty medical or surgical electives. Although the student is welcome, it is not necessary to take elective courses within the Department of Gynecology and Obstetrics.

All requests for subinternships and electives from the Registrar's Office are initially screened through the department's Office of Medical Student Education (contact Rebecca Slattery at 410-614-0088). All requests for research electives may be directed toward individual faculty, or the student may contact Dr. Silka Patel or Ms. Rebecca Slattery for assistance in finding the appropriate research mentor.

*Dr. Andrew J. Satin
Chair
Department of Gynecology & Obstetrics*

*Dr. Betty Chou
Director of Resident Education
Department of Gynecology & Obstetrics*

*Dr. Silka Patel
Women's Health Clerkship Director
Department of Gynecology & Obstetrics*

INTERNAL MEDICINE

We are looking for people who will become healers and leaders in Internal Medicine. Most successful applicants to the Osler Medical Housestaff Training program will have performed in an outstanding fashion on multiple internal medicine rotations and will have explored beyond the boundaries of the traditional curriculum, e.g. becoming involved in research or community service. We offer a commitment to outstanding patient care, a collegial environment, and an intellectually stimulating experience.

Dr. Sanjay V. Desai
Director
Osler Residency Training Program

NEUROLOGY CORE CLINICAL CLERKSHIP

Neurology is part of the core curriculum at the Johns Hopkins University School of Medicine. It is preferred, but not required that students complete their Medicine clerkship before taking Neurology. The clerkship includes both inpatient and consultation services as well as an outpatient experience. For those with an interest in the area of Pediatric Neurology, a request may be made to be placed on that service.

Several Neurology electives are available which students who are interested in a residency in Neurology have found to be a rewarding experience.

For students with further interest, an elective and sub-I rotations in both Adult and Pediatric Neurology are now available.

Dr. Rachel Salas, Director
Dr. Chris Oakley, Co-director
Neurology Core Clerkship

NEUROLOGY RESIDENCY

www.hopkinsmedicine.org/neurology_neurosurgery/education/residencies/neurology_residency/index.html

The residency is a three year program that follows a required Medicine Internship year. The major goal of the program is to prepare neurologists for a career in academic medicine, beginning with the acquisition of excellent clinical skills. A rich and diversified clinical experience is assured by exposure to several distinct inpatient services, consultative services, and outpatient settings at the three teaching hospitals.

We have agreements with both the Osler Medical Residency and the Bayview Medical Residency to place neurology applicants in their programs. Students who plan to go on to adult neurology directly after internship must have made this career decision by early in the fourth year of medical school. There is a matching system (ERAS) which accompanies the internship application process.

Dr. Argye E. Hillis
Director, Neurology Residency Program

Dr. Rafael Llinas
Co-Director, Neurology Residency Program

Dr. Rachel Salas
Director, Neurology Core Clerkship

Dr. Christopher Oakley
Assistant Director, Neurology Core Clerkship

Program Contact
Sandy Vieyra
Medical Training Program Administrator
410 502 0817
svieyra@jhmi.edu

Pediatric Neurology Residency

www.hopkinsmedicine.org/neurology_neurosurgery/education/residencies/pediatric_neurology/index.html

The Pediatric Neurology residency at Johns Hopkins is a three year program that follows a one year required Medicine Internship and one year of Pediatrics. It is designed to train a physician in academic and clinical pediatric neurology. The program stresses the development of competence in several areas including clinical neurology (with

inpatient, outpatient, and consultative experiences), neurosurgical problems, and the scientific basis of neurology. Furthermore, the program allows pediatricians with diverse backgrounds and interests the opportunity to develop areas of special competence in specific clinical or research areas. All residents are required to participate in at least one research project under the mentorship of a full-time member of the faculty, to be completed and presented in June of their graduating year.

Dr. Eric Kossoff
Director, Pediatric Neurology
Residency Program

Dr. Adam Hartman
Associate Director, Pediatric Neurology
Residency Program

OPHTHALMOLOGY

Students who plan to apply for a residency in Ophthalmology should:

1. Meet with the Director of Medical Student Education in Ophthalmology, Dr. David Friedman, to discuss scheduling of clerkships and electives: David.Friedman@jhu.edu; 410-955-3954
2. Consider the following scheduling guidelines:
Clerkships in Medicine and Surgery, the General Clinical Elective in Ophthalmology, and any other clerkship or elective in a field that is a possible career choice should be scheduled as early as possible in the third year.
3. Students applying for residency in Ophthalmology should plan to do two or three electives in the field.

Other electives that students going into Ophthalmology have found helpful (but not required) are the Advanced Clerkship in Internal Medicine; Subinternship in Medicine at Good Samaritan (Rheumatology or Pulmonary); Dermatology; Radiology and Infectious Disease.

PATHOLOGY

Electives in Pathology provide students an excellent way of broadening their knowledge of medicine and determining their level of interest in the specialty. Most pathology electives give students firsthand knowledge of the central role pathology plays in the diagnosis of disease, and as such, are valuable for students going into almost any clinical specialty. Both general and subspecialty electives in Pathology are available. Electives in anatomic pathology focus on morphologic and histologic diagnosis; those in the clinical laboratory illustrate the effective use and interpretation of laboratory testing, while others provide insight into basic pathogenesis of disease. Students who have already made a firm decision to enter postgraduate training in Pathology should contact an advisor in the department to gain assistance in planning a balanced elective program.

Dr. Marc Halushka
Deputy Director for Education

Dr. Ralph Hruban
Director
Department of Pathology

PEDIATRICS

Elective experiences offered in the Department of Pediatrics include subspecialty consultation services, research opportunities and subinternships on a variety of services. Subspecialty electives help the student develop specific skills and knowledge and emphasize the development of an approach to patients who have been referred because of their particular problems. Subinternships, whether in the neonatal intensive care unit, on the general pediatric inpatient units, or in the Harriet Lane Clinic, offer the student an opportunity to manage a variety of patients with a higher level of independence than they experienced during the Core clerkship. A wide range of clinical and laboratory research experiences provide students with a close working relationship with faculty mentors and a chance to help define new knowledge, whether the student is an experienced researcher or a beginner. Members of the pediatric faculty are available to provide guidance and advice for students who seek further experience in pediat-

rics, whether he/she is certain of the career path, or is in the exploration stage. Either Dr. Christopher Golden (Pediatrics Clerkship director) cgolden@jhmi.edu or Dr. Nicole Shilkofski, (Vice-Chair for Pediatric Education) 410-955-2727 would be happy to discuss elective choices.

*Dr. Tina Cheng
Director
Department of Pediatrics*

PSYCHIATRY

Although there are numerous clinical and research electives available in the department, they should not be considered as prerequisites for residency training in psychiatry.

For those students who are considering doing a psychiatry residency, we strongly recommend that they do a subinternship in Psychiatry. However, elective time in psychiatry for these students is also encouraged as it will allow them to clarify their choice and to develop new areas of interest in the field.

We find that the subinternship experience is especially good for those students who wish to find out if they will like psychiatry as a career before making decisions about entering the field. It is also quite helpful for those students who are sure that they are not going into psychiatry, but realize that a broadened clinical experience in this field would be useful for them in their chosen specialty. Students who think they might be interested in training in psychiatry should talk with Dr. Susan Lehmann (410-955-5514) as early as possible to get answers for questions and to get advice concerning their educational plans.

*Dr. Susan Lehmann
Director, Psychiatry Clerkship and Clinical Electives*

RADIOLOGY

Opportunities are available for research projects in magnetic resonance spectroscopy, magnetic resonance imaging, neuroradiology, cardiovascular interventional radiology, computed tomography, positron emission tomography, and diagnostic ultrasound. The successful completion of a research project often enhances a student's likelihood of being selected by a Radiology residency program.

*Dr. Karen Horton
Director
Department of Radiology*

SURGERY

Recommended electives: Gastroenterology, Infectious Disease, Nephrology, Cardiology, Pulmonary, and Anesthesiology.

Recommended - Research Experience. This need not be done in a surgical laboratory, but may have application to the care of surgical patients. Research in either the laboratory or clinical research setting is acceptable.

Surgery electives that are helpful in making career decisions for other students include: Surgical Subinternship, Surgical Intensive Care, or Elective Clerkships in the Surgical Specialties

Students planning to apply for non-surgical training programs may also find the above surgical electives at Johns Hopkins of benefit to their medical education. Applicants to the Hopkins surgical program are evaluated on an individual basis, and those wishing to be considered for a Hopkins appointment should discuss their decision with either Dr. Bethany Sacks (bsacks@jhmi.edu), or the Director of the appropriate Surgical Specialty Department.

OTOLARYNGOLOGY – HEAD AND NECK SURGERY

Medical students interested in a postgraduate career in Otolaryngology-Head and Neck Surgery should be well grounded in the basic principles of surgery, medicine and pediatrics. During the third year of medical school, interested students can participate in a two week elective in Otolaryngology-Head and Neck Surgery during their basic surgical clerkship. The experience gained in this rotation provides front line exposure to all aspects of clinical and surgical care provided within our discipline. For those who are not able to match to that elective, as well as those who wish more of an exposure, there is a senior year elective option which should be taken early in the year. Other useful related electives include Neurosurgery, Ophthalmology, Plastic Surgery and Anesthesiology.

Throughout the United States today, resident candidates are being advised to pursue a meaningful research experience as a medical student. Exposure to well-designed research rotations provides an opportunity to apply prospective, controlled experimental methodologies, and immeasurably strengthens an application for a residency position in Otolaryngology-Head and Neck Surgery.

*Dr. David Eisele
Director
Department of Otolaryngology-Head and Neck Surgery*

ORTHOPAEDIC SURGERY

We highly encourage all medical students considering application to an Orthopaedic resident training program to work with our surgeons. All faculty are involved in selecting candidates for post graduate training in Orthopaedics. A student will do best as an Orthopaedic subintern if they are well grounded in surgery and medicine prior to their subinternship. They should take their core clerkships in these fields and exploit the opportunities to learn the fundamentals of Orthopaedics prior to taking an advanced Orthopaedic clerkship. I recommend taking an advanced Orthopaedic clerkship in the institution or with members of the faculty with whom they would like to train. I advise that may take more than an Orthopaedic rotation, Adult Clinical Orthopaedics and Pediatric Orthopaedics. In general, it is best to have electives in two-three training institutions.

Basic medical and surgical clerkships and an advanced Orthopaedic elective should be completed by the end of September of the fourth year, prior to the selection process.

The formal application procedure for the residency, which requires integrated internship, begins towards the end of the junior year. In addition to obtaining all the relevant application materials, spending time discussing the various programs with myself as well as another Orthopaedic faculty member at Hopkins can be very useful in paring down the application list.

Appropriate curriculum vitae should be given to all those who have been asked to write letters of recommendation, as well as a list of the people and addresses to which these letters should be sent. The appropriate form of this list should be worked out with each individual person who is writing recommendations for you. Inquire about the preferred format individually.

Although some additional Orthopaedic electives can be taken during the Fall of the fourth year, the fourth year is an ideal time to focus education in the medical fields for a unique experience during an Orthopaedic residency

*James R. Ficke, M.D.
Director
Department of Orthopaedic Surgery*

UROLOGY

Urology is a field which integrates both medical and surgical managements of urinary tract system and the male reproductive organs. Urology has been on the cutting-edge of surgical technology including surgical robotics and laparoscopy. Urology is one of the most competitive and highly sought-after specialties to enter for physicians.

The best preparation for students who are considering a career in Urology is to obtain a strong background in surgery and internal medicine. This includes elective rotations in general surgery, a sub-internship on the Urology service, ICU rotation, and advanced clerkships in internal medicine, nephrology, and radiology. We also strongly recommend students to do a research project with our faculty. This exposure allows the student an opportunity to

complete a project, get exposure to the urology faculty who can then write a strong letter of recommendation and allow the student to assess their own enthusiasm for the field. A strong research project is an invaluable asset when interviewing for residency positions.

*Misop Han, M.D., M.S.
Residency Program Director
Department of Urology*

ME:570.699

MANAGEMENT OF PAIN AND SUFFERING

Course Type: Tutorial

Department/Division: Anesthesiology and Critical Care Medicine

Course Director: Dr. Tina Tran

Telephone Number: 410-955-7609

Faculty: Dr. Christopher Wu, Dr. Marie Hanna and staff

Availability/Duration: 2, 3, or 4 weeks; one student by arrangement

Prerequisite(s): Clinical preceptorship in anesthesiology preferred but not required

Drop Period: 1 month

Description: This course is intended for students who have an interest in the assessment and treatment of pain and its attendant emotional manifestations. The focus will be on the use of analgesics, nerve blocks, and behavioral modification. The problems associated with cancer pain will also be part of this experience. It is hoped that this course will provide the student with some tools and insight into the management of pain and suffering in patients presenting either to routine medical practices or to specialty pain clinics.

ANESTHESIOLOGY RESEARCH

Course Type: Basic Research

Department/Division: Anesthesiology and Critical Care Medicine

Course Director: Dr. Tina Tran

Telephone Number: 410-955-7609

Faculty: Anesthesiology faculty

Availability/Duration: All year; minimum ½ quarter or by special arrangement

Prerequisite(s): Clinical preceptorship in anesthesiology recommended but not required

Drop Period: 1 month

Description: Many opportunities exist within the department for research in areas of basic science (molecular, genetic, cell biology, basic pathophysiology, biochemistry), clinical trials, biomedical engineering, information management, outcomes research and data mining, and health policy & safety initiatives. Specific research opportunities should be reviewed on the departmental website. The interested student should contact the faculty member supervising the research prior to registering for the elective.

ADVANCED CLINICAL CLERKSHIP IN PEDIATRIC ANESTHESIOLOGY

Course Type: Advanced Clinical Clerkship

Department/Division: Anesthesiology and Critical Care Medicine

Course Director: Dr. Tina Tran

Telephone Number: 410-955-7609

Faculty: Drs. Hal Shaffner, Deborah Schwengel, and staff

Availability/Duration: 2 or 4 weeks by arrangement

Prerequisite(s): Pediatrics Core Clerkship and clinical preceptorship in anesthesiology

Drop Period: 1 month

Description: Students will be responsible for the preoperative evaluation, intraoperative management, and post-operative evaluation of children. This course is designed for students planning careers in pediatrics, anesthesiology or pediatric surgery.

BASIC CLERKSHIP IN ANESTHESIOLOGY

Course Type: Clinical Clerkship

Department/Division: Anesthesiology and Critical Care Medicine

Course Director: Dr. Tina Tran

Telephone Number: 410-955-7615; Andrea Collins acollins@jhm.edu

Faculty: Department of Anesthesiology faculty

Availability/Duration: Available to Third and Fourth Year students (last quarter 2nd year); 4.5 weeks

Prerequisite(s): None

Drop Period: 2 months

Description: Students will spend the basic elective working in the general operating rooms directly along-side Anesthesiology providers (attending and residents) applying physiological and pharmacological principles to intra-operative patient care. Cardiovascular and respiratory physiology will be central to this learning process. Students will learn basic airway skills including mask ventilation and intubation, placing intravenous and arterial access and additional appropriate monitoring as dictated by the type of surgery and the patients' co-morbidities. They will also learn the principles of anesthetic management and the interactions between surgical trauma, anesthesia and the patient's baseline medical issues including appropriate pre-operative evaluation, intra-op management and post-op transition. Hemodynamic management including intravenous fluid therapy, vasopressor use and transfusion practice will be emphasized. Students will learn how anesthetic management varies based on patient age, co-morbidities and the specific surgical procedure such as abdominal surgery and intracranial surgery.

ADVANCED CLINICAL CLERKSHIP IN ANESTHESIOLOGY

Course Type: Advanced Clinical Clerkship

Department/Division: Anesthesiology and Critical Care Medicine

Course Director: Dr. Tina Tran

Telephone Number: 410-955-7615; Andrea Collins acollins@jhmi.edu

Faculty: Department of Anesthesiology faculty and staff

Availability/Duration: 4 weeks

Prerequisite(s): Basic Anesthesiology Clerkship

Drop Period: 2 months

Description: This clerkship will allow students who have completed a Basic Anesthesiology Clerkship to expand their experiences in anesthesia practice. Students may create their own experience by either choosing to spend the clerkship doing general operating room cases or by seeking to gain experience in sub-specialty areas of anesthesiology including cardiac anesthesia, obstetrics anesthesia, neuroanesthesia, pediatric anesthesia and pain management. The amount of time a student chooses to spend in any one or more of these sub-specialty areas is customizable to meet the student's interests. This elective is recommended for students who are interested in applying to an Anesthesiology residency program. Note: ICU is now a separate elective and no longer available through this course previously neurocritical care and cardiac-surgical critical care were available as an advanced elective through the Anesthesiology and Critical Care Medicine Dept. You must register for an ICU clerkship separately through Dr. Scott Stephens' office.

RESEARCH OPPORTUNITIES IN THE DEPARTMENT OF BIOLOGICAL CHEMISTRY

DR. MICHAEL CATERINA

Molecular and physiological mechanisms responsible for pain sensation; biological roles of transient receptor potential ion channels.

DR. ROBERT COLE

Understanding diseases of the blood, gut and brain through innovative Proteomics and Adductomics.

DR. RYUYA FUKUNAGA

Biology and mechanism of post-transcriptional gene regulation by small silencing RNAs and RNA-binding proteins.

DR. ERIN GOLEY

Bacterial cell biology: cytoskeletal function during bacterial growth and cytokinesis.

DR. STEVE GOULD

HIV/AIDS; retrovirology; exosome biogenesis; alloimmunity.

DR. GERALD HART

Dynamic glycosylation of nuclear and cytoskeletal proteins in transcription; signal transduction; cancer; diabetes; Alzheimer's disease.

DR. SETH MARGOLIS

The regulation of protein homeostasis in nervous system development and disease.

DR. MOLLIE MEFFERT

The regulation of neuronal gene expression in health and disease.

DR. TAMARA O'CONNOR

Molecular mechanisms of bacterial pathogenesis.

DR. AKHILESH PANDEY

Global analysis of signal transduction pathways using mass spectrometry; bioinformatics; protein-protein interactions; databases; cancer biomarkers.

DR. JOEL POMERANTZ

Functional specificity and design of signal transduction pathways.

DR. DANIEL RABEN

Biochemistry and chemistry of lipids and lipid metabolizing enzymes involved in signaling cascades.

DR. KAREN REDDY

Understanding how the nuclear periphery and other subcompartments contribute to general nuclear architecture and to specific gene regulation.

DR. GEORGE SACK

Structure of human amyloid A proteins and their role in inflammation.

DR. DAVID SHORTLE

Computational approaches to refining protein models and de novo structure prediction.

DR. MICHAEL WOLFGANG

CNS control of metabolism; neuronal metabolism; neurochemistry.

DR. NATASHA ZACHARA

The role of intracellular glycosylation, O-GlcNAc, in survival signaling models of oxidative stress.

BIOMEDICAL ENGINEERING

ME:210.699

Research: Our faculty are world leaders in their respective fields of research which range from theoretical modeling of the machinery of the cell to the fabrication and implantation of new tissues in human joints. A comprehensive list of faculty research is located on the department website www.bme.jhu.edu. Students interested in a research project should contact the faculty member.

ENROLLMENT LIMITED TO JHUSOM STUDENTS

Courses: Courses offered by the Department of Biomedical Engineering are taught on the Homewood Campus. A full list of courses for each semester can be found on the Registrar's Office website: <http://web.jhu.edu/registrar>.

BIOPHYSICS AND BIOPHYSICAL CHEMISTRY

ME:100.699

RESEARCH TOPICS IN BIOPHYSICS

Course Type: Basic Research

Department: Biophysics & Biophysical Chemistry

Course Director: Dr. L. Mario Amzel

Telephone Number: 410-955-3955

Faculty: Drs. L.M. Amzel, J. M. Berger, D. Frueh, T. J. Ha, A. Lau, J. Sohn, H. Wade, C. Wolberger, and J. Xiao

Availability: This course is also available as an elective to medical students, to postdoctoral students, and to other qualified persons. Visiting medical students must follow JHUSOM quarter dates

Description: The department has a particular focus in the molecular structures of proteins and nucleic acids, and their functional interrelationships. Research projects may be arranged with any departmental faculty member. Projects can be laboratory or library based, and of varying lengths.

RESEARCH OPPORTUNITIES

Dr. Amzel: Structure enzymology of redox and phosphoryl transfer enzymes: MICAL, peptidyl amidating monooxygenase, PI3K, FPPS and Nudix hydrolases; channels and transporters; selected areas of structural thermodynamics.

Dr. Berger: Structural and mechanistic biochemistry of protein/nucleic acid machines and assemblies.

Dr. Frueh: Structural and dynamic studies of active enzymatic systems by Nuclear Magnetic Resonance (NMR). Mechanisms of domain communication in non-ribosomal Peptide Synthetases. Development of NMR methods to study large and dynamic proteins.

Dr. Ha: Single-molecule detection and super-resolution imaging methods to study complex biological systems, including DNA/RNA/protein interactions, chromatin and cellular mechanics.

Dr. Lau: Structural thermodynamics of biomolecular association and conformational transitions, computational and experimental approaches.

Dr. Sohn: Mechanistic studies of foreign-DNA sensing pathways in innate immunity.

Dr. Wade: Multi-drug recognition and signaling.

Dr. Wolberger: Mechanisms of transcription regulation and ubiquitin signaling.

Dr. Wu: Single-molecule microscopy/spectroscopy methods to study the molecular dynamics in live cells.

Dr. Xiao: Dynamics of gene regulation and cell division using single-molecule fluorescence microscopy and live-cell analysis.

COMPUTER MODELING OF BIOLOGICAL MACROMOLECULES-LECTURE

Course Type: Other

Department: Biophysics and Biophysical Chemistry

Course Director: Dr. L. Mario Amzel

Telephone Number: 410-955-3955

Faculty: Drs. L. M. Amzel, B. Garcia-Moreno, A. Lau, D. Shortle, and T. Woolf

Availability/Duration: Two hours per week; second semester.

Prerequisite(s): None

Drop Period: 1 month

Description: Lectures will offer an introduction to the mathematical aspects of computer representation and manipulation of macromolecules, as well as discussions of important topics in computational chemistry of macromolecules including forces and potential fields, molecular mechanics, electrostatics, Monte Carlo methods, homology modeling, docking, and other modeling topics.

COMPUTER MODELING OF BIOLOGICAL MACROMOLECULES (LAB)

Course Type: Other

Department: Biophysics & Biophysical Chemistry

Course Director: Dr. Mario Bianchet

Telephone Number: 410-614-8221

Faculty: Dr. Mario A. Bianchet

Availability/Duration: Two hours per week; second semester; limited enrollment

Prerequisite(s): None

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The laboratory course will familiarize students with practical aspects of molecular modeling. It teaches tools to create and manipulate computer generated models of biological-interest molecules. Techniques such as comparative modeling will be introduced.

RESEARCH PROJECTS IN BIOCHEMISTRY, BIOPHYSICS AND MOLECULAR BIOLOGY

Course Type: Basic Research

Department: See below

Course Director: All members of the BCMB Graduate Program

Faculty: All members of the BCMB Graduate Program

Drop Period: 1 month

Description: (Jointly with all the Basic Sciences: Biological Chemistry, Biophysics and Biophysical Chemistry, Cell Biology, Molecular Biology, Neuroscience, Pharmacology, and Physiology). See Biological Chemistry for course description.

TOPICS IN MACROMOLECULAR STRUCTURE AND FUNCTION

Course Type: Other

Department: Biophysics & Biophysical Chemistry

Course Director: Dr. Bin Wu

Telephone Number: 410-502-4201

Faculty: Departmental faculty

Availability/Duration: One hour per week, second semester.

Prerequisite(s): None

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Seminar course covering a variety of topics involving the structure and function of proteins and nucleic acids.

FUNDAMENTALS OF PROTEIN CRYSTALLOGRAPHY

Course Type: Other

Department: Biophysics & Biophysical Chemistry

Course Director: Dr. L. Mario Amzel

Telephone Number: 410-955-3955

Faculty: Drs. L. Mario Amzel, S. Bailey, M. Bianchet, S. Gabelli, J. Kavran, H. Wade, and C. Wolberger

Availability/Duration: Fourth quarter, two 75 minute lectures per week, alternates with "Advanced Topics in Protein Crystallography"; next offered in 2020.

Prerequisite(s): Calculus and elementary physics, or consent of instructor

Drop Period: 1 month

Description: An introductory course designed to present the core knowledge and theoretical underpinnings of protein crystallography necessary to function in the laboratory. Assigned readings and problem sets will be given.

PROTEINS AND NUCLEIC ACIDS

Course Type: Other

Department: Biophysics & Biophysical Chemistry

Course Director: Dr. Sarah Woodson

Telephone Number: 410-516-2015

Faculty: Drs. G. Bowman and S. Woodson

Availability/Duration: Three hours per week; first semester

Prerequisite(s): See course director

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The structure of proteins, DNA and RNA and their functions in living systems. Students are required to participate in class discussions based on readings from the primary scientific literature. Weekly problem sets include the analysis of molecular structures with Python and PyMOL scripts. Basic knowledge of Unix and Python scripting required.

PROTEINS AND NUCLEIC ACIDS II

Course Type: Other

Department: Biophysics & Biophysical Chemistry

Course Director: Dr. James E. Berger

Telephone Number: 410-955-7163

Faculty: Departmental Faculty

Availability/Duration: Three hours per week; second semester

Prerequisite(s): Nucleic Acids I

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Critical reading and analysis of primary source literature is vital to scientific discourse and discovery. Students will be responsible for analyzing and critiquing papers in diverse topics and systems ranging from replication, transcription, translation to enzyme mechanism, drug resistance, innate immunity and signaling, Methods covered will include structural, biochemical, single molecule, single cell, and genomic approaches. Students will deliver analytic presentations on a least two groundbreaking papers relevant to these areas and will be expected to actively participate in class discussion of experimental methodology and logic of other papers assigned in the course.

ADVANCED TOPICS IN PROTEIN CRYSTALLOGRAPHY

Course Type: Other

Department: Biophysics & Biophysical Chemistry

Course Director: Departmental Faculty

Telephone Number: 410-955-3955

Faculty: Departmental faculty

Availability/Duration: Fourth quarter; alternates with "Fundamentals of Protein Crystallography" (interdivisional course); next offered in 2021.

Prerequisite(s): Elementary crystallography

Drop Period: 1 month

Description: In a journal club format this course examines standard advanced topics in crystallography as well as aspects of the current literature. Topics may include: refinement, approaches to the phase problem, Fourier transform methods, etc.

MACROMOLECULAR STRUCTURE AND ANALYSIS

Course Type: Basic Research

Department: Biophysics & Biophysical Chemistry

Course Director: Dr. Dominique Frueh

Telephone Number: 410-955-0728

Faculty: Drs. S. Bailey, J.M. Berger, R. Cole, D. Frueh, H. Wade, C. Wolberger, J. Xiao and N. Zachara

Availability/Duration: First quarter; three hours per week

Prerequisite(s): None

Drop Period: 1 month

Description: This course will cover the structure and properties of biological macromolecules, as well as methods used to study macromolecule. The experimental approaches covered include X-ray crystallography, electron microscopy, nuclear magnetic resonance, spectroscopy, mass spectrometry and computational biology.

BIOCHEMICAL AND BIOPHYSICAL PRINCIPLES

Course Type: Basic Research

Department: Biophysics & Biophysical Chemistry

Course Director: Dr. L. Mario Amzel

Telephone Number: 410-955-3955

Faculty: Drs. L.M. Amzel, J. Sohn, D. Shortle and H. Wade

Availability/Duration: First quarter; 4 ½ hours per week

Prerequisite(s): Calculus and physical chemistry

Drop Period: 1 month

Description: The physical and chemical principles underlying biological processes are presented and discussed. Topics include thermodynamics, chemical equilibrium, chemical and enzymatic kinetics, electrochemistry, physical chemistry of solutions, and structure and properties of water. Elementary concepts of statistical thermodynamics will be introduced as a way of correlating macroscopic and microscopic properties.

SINGLE-MOLECULE SINGLE-CELL BIOPHYSICS

Course Type: Other

Department: Biophysics & Biophysical Chemistry

Course Director: Dr. Taekjip Ha

Contact Information: Tammy Hubbe, 410 614 3279, tammyhubbe@jhmi.edu

Faculty: Drs. Taekjip Ha, Hue Xial, and Bin Wu

Availability/Duration: Students must follow JHUSOM quarter dates/ Limited to 15 students

Prerequisite(s): None

Drop Period: 1 month

Description: This elective course offers an introduction to the field of single molecule and single cell biophysics to graduate students in Johns Hopkins University and will be delivered in the School of Medicine. We will examine technologies such as single molecule fluorescence and force measurements, super resolution imaging and single fluorescent detections that enable high precision molecular visualizations in vitro and in cells.

CELL BIOLOGY

ME:110.699

THE CYTOSKELETON

Course Type: Basic Research

Department: Cell Biology

Course Director: Dr. Douglas Robinson

Telephone Number: 410-502-2850

Faculty: Dr. Douglas Robinson and staff

Availability/Duration: Fourth quarter; four weeks. Contact course instructor.

Prerequisite(s): 4th year college; 1st year grad level in cell biology, biochemistry, molecular biology

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: In this course, we will explore the fundamental mechanisms of the cytoskeleton that the cell uses to drive cell motility and dynamic shape changes. We will emphasize the breadth of research on the cytoskeleton ranging from classic studies of muscle, cytoskeletal structure, enzymological, and single molecule studies of motor proteins, rheology, polymer dynamics, cytoskeletal signaling, the cytoskeleton in disease, and chemical approaches to the cytoskeleton. The course format will be a combination of lecture and student-led discussions of hallmark papers.

DEVELOPMENTAL BIOLOGY

Course Type: Elective

Department: Cell Biology (Physiology, Molecular Biology and Genetics, Neuroscience, and Institute for Genetic Medicine)

Course Director: Dr. Deborah Andrew

Telephone Number: 443-287-4866

Faculty: Departmental Faculty

Availability/Duration: April 16-May 16; 11 lectures MWF; take home exam

Prerequisite(s): Molecular biology, cell biology, and genetics

Drop Period: 1 week

Description: A graduate-level course covering the molecular and cellular basis of embryonic development in multi-cellular organisms.

NUCLEAR STRUCTURE AND HUMAN DISEASE

Course Type: Basic Research

Department: Cell Biology

Course Director: Dr. Katherine Wilson

Telephone Number: 410-955-1801

Faculty: Dr. Wilson and invited experts

Availability/Duration: Fourth quarter; four weeks

Prerequisite(s): 4th yr college; 1st yr grad level in cell biology, biochemistry and molecular biology

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Structure and functions of the nuclear envelope (NE) including LINC complexes, the nucleoskeleton (lamins, actin/myosins, spectrin/4.1, tintin, NUMA), nuclear pore complexes and nucleocytoplasmic transport, sub-nuclear organelles, higher-order chromatin organization, signaling in the nucleus, evolution of the nucleus, and human "laminopathy" diseases including muscular dystrophy, lipodystrophy, and accelerated aging.

RESEARCH OPPORTUNITIES

DR. DEBORAH ANDREW

Developmental genetics of organ formation; *Drosophila*

DR. PETER DEVREOTES

Chemoattractant directed cell migration; signal transduction

DR. PETER ESPENSHADE

Cellular regulation of cholesterol homeostasis and adaptation to hypoxia

DR. ANDREW EWALD

Cellular mechanisms and molecular regulation of epithelial morphogenesis in development and cancer

DR. LUIS ANDRES GARZA

The study of skin stem cells and prostaglandins in regeneration and wound healing.

DR. DAVID HACKAM

Immune regulation of injury and repair at epithelial surfaces

DR. PABLO IGLESIAS

Computational biology; use of control and information theory to study signal transduction pathways

DR. MIHO IJIMA

Lipid signaling in chemotaxis

DR. TAKANARI INOUE

Directed cell migration; tumor metastasis; primary cilia; synthetic chemical biology; technology development

DR. PHIL JORDAN

Gametogenesis (spermatogenesis and oogenesis) - Pluripotent stem cell genome maintenance - Neuro-development

DR. SCOT KUO

Mechanical functions of cells; actin-based protrusion and cell motility; nanoscale biophysics; laser-based imaging and bioinstrumentation

Dr. JIUN LI

Theoretical modeling, mechanobiology, Cell Migration, Membrane trafficking, Cell Division

DR. RONG LI

Cellular dynamics in space, time and adaptation

DR. CAROLYN MACHAMER

Intracellular protein trafficking; enveloped virus assembly

DR. ERIKA MATUNIS

Molecular genetics of germ line stem cell function

DR. MICHAEL MATUNIS

Molecular mechanisms of SUMOylation and functions of mitosis; DNA repair, stress response pathways and *P. falciparum* development

DR. SUSAN MICHAELIS

Yeast and mammalian cell biology; progeria and lamin A processing; ER quality control and cystic fibrosis; ABC transporters

DR. DOUGLAS ROBINSON

Probing the molecular, biochemical and mechanical basis for cytokinesis and cellular morphogenesis

DR. LEWIS H. ROMER

Cardiovascular, pulmonary diseases

DR. ANTHONY ROSEN

Autoimmune rheumatic diseases including Lupus, RA, Scleroderma, Myositis and Sjogren;s Snyderome

DR. HIROMI SESAKI

Mitochondrial dynamics; membrane fusion and fission

DR. SHIGEKI WATANBE

High-resolution, ultrafast kinetics of synaptic membrane trafficking events

DR. KATHERINE WILSON

The cell nucleus, nuclear membranes, lamins and nucleoskeleton; membranes of Emery-Dreifuss muscular dystrophy and other "laminopathies"

DERMATOLOGY

ME:220.699

CLINICAL CLERKSHIP IN DERMATOLOGY

Course Type: Clinical Clerkship

Department/Division: Dermatology

Course Director: Dr. Inbal Sander

Telephone Number: 410-955-8662 (Marsha Mackey; mcunnin5@jhmi.edu; Administrative Manager)

Faculty: Full-time faculty

Availability/Duration: All year except summer quarter period 2; one month; four student maximum; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Internal Medicine, Surgery, and Pediatrics (at least two out of three)

Drop Period: 2 months

Description: Students may apply towards the end of their 3rd year or in their 4th year of medical school for a clinical elective in dermatology where the focus is placed on intensive exposure to a large number of patients in different clinical settings. Students will spend time exclusively at the Johns Hopkins facilities (Outpatient Center, Green-spring Station, Bayview Medical Center and Harriet Lane Pediatrics Center). Our clinical services at these locations provide an excellent opportunity for students to interact with different types of patients and to be exposed to a wide range of skin problems. Parallel to the clinical activities, there are didactic sessions most Wednesday mornings and Friday afternoons. Formal lectures on basic dermatology topics are given by dermatology residents and sessions at a more advanced level are taught by faculty members. No formal exam is given and grading is based on the evaluations submitted by residents and faculty members and a short oral presentation.

ADVANCED CLINICAL CLERKSHIP IN DERMATOLOGY

Course Type: Clinical Clerkship

Department/Division: Dermatology

Course Director: Individual Dermatology Faculty

Faculty: Drs. Chien, Cohen, Kang, Okoye, Patel and Puttgen

Availability/Duration: All year; 1-3 months; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Basic dermatology elective (Clinical Clerkship in Dermatology); complete at least two of the following clerkships: Internal Medicine, Surgery and Pediatrics

Drop Period: 2 months

Description: Students who have already taken the Clinical Clerkship in Dermatology at Johns Hopkins and who are interested in a specific area of dermatology or in dermatology research may benefit from this elective. This elective gives the student the opportunity for more "in depth" participation in specific areas of interest within the department of dermatology under guidance of a faculty mentor. Arrangements have to be made between the interested student and the faculty member who will be mentoring him/her. The main objective is active participation in a small clinical research project, or clinical and scholarly work with a faculty member with a certain specialty focus. The faculty mentor will provide the specific schedule. Students are encouraged to participate in all didactic activities including Grand Rounds and faculty lectures during the time spent in the department.

Examples of Prior Mentors:

Dr. Anna Chien "Translational research in general dermatology; mechanisms of skin aging; photobiology"

Dr. Kate Puttgen: "Pediatric dermatology, infantile hemangiomas; vascular anomalies; atopic dermatitis; mlaser surgery"

Dr. Ginette Okoye: "Ethnic skin and health disparities in dermatology; Hidradenitis suppurativa"

Dr. Sewon Kang "Clinical and translational research projects in dermatology"

Dr. Bernard Cohen: "Pediatric dermatology"

BASIC DERMATOPATHOLOGY

Course Type: Clinical Clerkship

Department/Division: Dermatology

Course Director: Dr. Inbal Sander

Course Coordinator: Marsha Mackey, Mcunnin5@jhmi.edu

Faculty: Dr. Janis Taube, Dr. Inbal Sander and Dr. Jonathan Cuda

Availability/Duration: All year; except Summer Quarter Period 2; 1 month; one student; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Internal Medicine, Surgery, Pediatrics, Pathology, and Clinical Clerkship in Dermatology at Johns Hopkins

Drop Period: 2 months

Description: Students may apply for an elective in dermatopathology if they have completed the prerequisites. Students will attend daily sign out where they will be exposed to a large volume of cases. Additional exposure will come through the use of study sets which are available to the students. The students will attend the Dermatology weekly Grand Rounds where they may see patients and participate in the discussion and presentation of the pathology for those patients. Additionally, the students will attend a formal dermatopathology teaching session once per week.

RESEARCH OPPORTUNITIES

DR. CRYSTAL AGUH

Research on complex hair and scalp disease

DR. ANNA CHIEN

Translational research in general dermatology; mechanism of skin aging; photobiology

DR. SEWON KANG

Translational research in dermatology

DR. SHAWN KWATRA

Clinical, epidemiological and translational research on chronic itch

DR. LLOYD MILLER

Skin infection; innate immunity

DR. ELISE NG

Dermatologic surgery, skin cancer

DR. GINETTE OKOYE

Ethnic skin and health disparities in dermatology; Hidradenitis suppurativa

DR. KATHERINE PUTTGEN

Pediatric dermatology; infantile hemangiomas; vascular anomalies, atopic dermatitis; laser surgery

DR. JANIS TAUBE

Melanoma; dermatopathology

DR. INBAL SANDER

Rheumatologic dermatology diseases, dermatopathology

DR. NIKKI TANG

Dermatologic surgery, skin cancer

EMERGENCY MEDICINE

ME:520.699

ADVANCED CLERKSHIP IN EMERGENCY MEDICINE

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Emergency Medicine

Course Director: Dr. Julianna Jung

Telephone Number: 410-955-5107; Ms. Pam McCann

Course Co-Director: Dr. Sharon Bord; 410-550-7852

Faculty: Dr. Jung and Emergency Medicine faculty

Availability/Duration: Total of six students per half quarter may be accommodated. Students will divide their time between JHH and Bayview; **visiting medical students must follow JHUSOM quarter dates.**

Prerequisite(s): Core Clerkships in Surgery, Medicine & Emergency Medicine; Women's Medicine strongly recommended

Drop Period: 1 month

Description: Students in the third and fourth years who wish an in-depth experience in emergency medicine may serve as subinterns in the Adult Emergency Department. Further development of clinical reasoning/problem solving skills and selected procedural skills will be emphasized. Upon completion of this elective, students will demonstrate competency in the recognition and initial stabilization of life threats in trauma and non-trauma patients. Exposure to pre-hospital care can be made available. Sub-interns are required to attend departmental conferences. A formal case write-up, in the form of a Blog may be required.

Applicants limited to LCME-accredited schools only. Due to high demand we are not accepting international medical students for the Advanced Clerkship.

EMERGENCY MEDICINE RESEARCH

Course Type: Clinical Research

Department/Division: Emergency Medicine

Course Director: Dr. Richard Rothman and Dr. Jeremiah Hinson

Faculty: Drs. Richard Rothman; rrothman@jhmi.edu and Jeremiah Hinson; jeremiah.s.hinson@jhmi.edu

Availability/Duration: All during the year; for a minimum 4 weeks (for Johns Hopkins students, 8 weeks for visiting students); must be approved by the course director; **visiting medical students must follow JHUSOM quarter dates.**

Prerequisite(s): Prefer students with basic understanding and some experience in research. Must be highly motivated.

Drop Period: 2 months

Description: General research elective tailored to individual student interest and background. The student should expect some level of continuous participation beyond basic requirements to gain the maximum learning experience, including interest in writing and being part of a research team/program.

EMERGENCY MEDICINE SUMMER RESEARCH

Course Type: Clinical Research

Department/Division: Emergency Medicine

Course Director: Dr. Gabor D. Kelen and Dr. Richard Rothman

Contact: Mary Rode; mrode4@jhmi.edu Richard Rothman; rrothman@jhmi.edu

Faculty: Drs. Gabor D. Kelen, Richard Rothman and Jeremiah Hinson

Availability/Duration: 9 weeks in the summer; visiting medical students must follow JHUSOM quarter dates.

Prerequisite(s): Prefer students with some research experience. Only highly motivated and engaged students should apply.

Drop Period: 2 months

Description: Special summer research program teaches the fundamentals of clinical research from idea to study to analysis to medical writing. Program is only offered in certain years based on research priorities of the department and level of engagement of a student research group.

RESEARCH OPPORTUNITIES

CHRISTINA CATLETT, M.D.

Health system emergency preparedness and response; disaster education and training; expedition medicine

ARJUN CHANMUGAM, M.D., M.B.A.

Psychiatric emergencies

BHAKTI HANSOTI, M.D.

International emergency medicine research.

YU-HSIANG HSIEH, M.Sc., Ph.D.

Infectious diseases epidemiology in ED settings

EDBERT HSU, M.D., M.P.H.

Disaster preparedness and disaster training; pharmaceutical preparedness

JULIANNA JUNG, M.D., M.Ed.

Simulation in medical education

GABOR KELEN, M.D.

Research methodology and design; HIV and infectious disease prevalence; health services; acute care outcomes; disaster medicine

SCOTT LEVIN, Ph.D.

Systems engineering in healthcare; research design and methods; patient safety; health services

MATTHEW LEVY, D.O. M.Sc.

Emergency medical services research.

MICHAEL MILLIN, M.D., M.P.H.

EMS systems development; out-of-hospital cardiovascular resuscitation; wilderness medicine; emergency preparedness

JUNAID RAZZAK, M.D.

International emergency medicine research.

RICHARD ROTHMAN, M.D., Ph.D.

Complications of drug abuse; health services research; infectious diseases and rapid diagnostics

NELSON TANG, M.D.

Emergency Medical Services; operational emergency medicine; tactical medicine; law enforcement medical support; special event medical preparedness

FAMILY MEDICINE

CLINICAL CLERKSHIP IN FAMILY MEDICINE -FRANKLIN SQUARE HOSPITAL

Course Type: Clinical Clerkship

Department/Division: Department of Family Medicine at Franklin Square Hospital

Course Director: Dr. Nancy Barr

Telephone Number: Contact Kathy Whelan at 443-777-6544 or kathy.whelan@medstar.net

Faculty: Dr. Barr and associates

Availability/Duration: All year (based upon availability); 4 weeks

Prerequisite(s): Any student interested in a career in family medicine/primary care. Fourth year students applying to family medicine with interest in the residency program are also welcome.

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This four week rotation introduces students to the wide scope of practice inherent to family medicine. Students are given an opportunity to see patients in the Family Health Center clinic. Additional clinical opportunities include home visits. Students participate in daily morning reports and weekly didactic sessions. Student also have the opportunity to work with an electronic health record while improving their clinical note writing skills.

ELECTIVE IN PRIMARY CARE

See Internal Medicine

FAMILY PRACTICE AMBULATORY CLERKSHIP

Course Type: Clinical Clerkship

Department/Division: Family Practice

Course Director: Dr. Terry Ruhl

Contact: Cindy Fickes, fickescj@upmc.edu or 814-889-2020

Faculty: Board certified members of the Altoona Family Physicians Residency Program

Availability/Duration: All year; 4-6 weeks

Prerequisite(s): Completion of the second year coursework, affiliation agreement, clearances, PPD, transportation

Drop Period: At least 1 month preferably more since housing arrangements are provided

Description: This elective offers the student experience in a busy family practice setting in either the Altoona Family Physicians Residency Program in Altoona, PA or in a rural setting in Williamsburg, PA. Students will manage outpatients under the supervision of the family medicine faculty and residents. Both sites provide an insight into the different roles of the family practice physician in the community. www.altoonafp.org

Under the guidance of a faculty preceptor, each student will be given the opportunity to experience the many educational aspects of the practice, including office practice management and utilization of computer technology. Individual conferences are arranged with members of the practice. Housing and meals are provided. See additional information in the Office of Student Affairs.

SENIOR OUTPATIENT ELECTIVE IN FAMILY MEDICINE - YORK HOSPITAL FAMILY MEDICINE RESIDENCY PROGRAM

Course Type: Subinternship

Department/Division: Family Medicine

Course Director: Dr. Stacey Robert

Telephone Number: Alexander Zeigler; 717-851-2753;

Faculty: Dr. Mark Goedecker

Availability/Duration: All year; one student per rotation; contact Alexandra Zeigler (see above)

Prerequisite(s): Completion of all required third year clerkships

Drop Period: 2 months

Description: This fourth year elective in outpatient family medicine is a great educational experience which highlights many aspects of family medicine. Students have the choice of participating in various experiences including having their own patients at the Thomas Hart Family Practice Center (the outpatient offices of the residency), providing care in the Health Connect Van (a mobile unit that provides outreach care), nursing home care, private office family medicine, and other experiences. York Hospital is located in York County, Pennsylvania. York County has a diverse population of approximately 380,000 people. The Family Medicine Residency Program in York was one of the original family medicine programs in the country. Teaching opportunities include Morning Report, Grand Rounds, and Thursday morning conferences. Family medicine inpatient electives are also available. The Thomas Hart Family Practice Center has been using an electronic health record since 2006.

The hospital provides free parking in a restricted lot and free shared room and bath. Housing is adjacent to the hospital and includes a washer, dryer, refrigerator, computer access, linens, stove/oven, microwave, VCR, TV, telephone, and exercise equipment.

Goals: 1) To function as a teaching model for medical students in the outpatient care of family medicine; 2) to demonstrate the full breadth of outpatient family medicine to students including care of infants, children, adults, women who are pregnant, and the elderly as well as various outpatient procedures; 3) to augment students' skills, knowledge, and attitudes in caring for ambulatory patients while preparing the students for a future career in family medicine.

Responsibilities: The main student responsibilities will be to participate in the outpatient care of patients. The majority of students' time will be spent at the Thomas Hart Family Practice Center where the student will have a daily schedule of patients. The student will be responsible for obtaining appropriate focused histories, performing a focused physical exam, presenting patients to a family medicine attending physician, performing any necessary procedures with attending physician supervision, and completing all appropriate paperwork including SOAP notes in the electronic health record, prescriptions, referrals, lab slips, and billing sheets.

Hours: 7 a.m. to 5 p.m. weekdays; no call on outpatient-only rotations

GYNECOLOGY AND OBSTETRICS

GYNECOLOGIC ONCOLOGY RESEARCH

Course Type: Basic or Clinical Research

Department/Division: Gynecology and Obstetrics/ Gynecologic Oncology

Course Director: Dr. Amanda Fader

Telephone Number: 410-955-8240

Faculty: Dr. Fader and attending faculty

Availability/Duration: All year; offered as a 3 or 4 week elective

Prerequisite(s): Agreement with faculty mentor regarding research plan

Drop Period: 1 month

Description: Research projects on malignancies of the reproductive tract

PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY (UROGYN) RESEARCH

Course Type: Basic or Clinical Research

Department/Division: Gynecology and Obstetrics/ Urogynecology

Course Director: Dr. Grace Chen

Telephone Number: 410-550-2787

Faculty: Dr. Grace Chen and attending faculty

Availability/Duration: All year; offered as a 4 or 8 week elective

Prerequisite(s): Agreement with faculty mentor regarding research plan

Drop Period: 1 month

Description: Research projects including, but not limited to pelvic pain, bladder pain, pelvic reconstruction, urinary and fecal incontinence, pelvic trauma, obstetric fistula and surgical skills assessment/surgical education.

MATERNAL FETAL MEDICINE RESEARCH

Course Type: Basic or Clinical Research

Department/Division: Gynecology and Obstetrics/ Maternal Fetal Medicine

Course Director: Dr. Karin Blakemore

Telephone Number: 410-955-8496

Faculty: Dr. Karin Blakemore and attending faculty

Availability/Duration: All year; 3 or 4 week elective

Prerequisite(s): Agreement with faculty mentor regarding research plan

Drop Period: 1 month

Description: Research projects on perinatal genetics, high risk obstetrics, and prenatal diagnosis.

REPRODUCTIVE ENDOCRINOLOGY RESEARCH

Course Type: Basic Research

Department/Division: Gynecology and Obstetrics/ Reproductive Sciences

Course Director: Dr. James Segars

Telephone Number: 410-583-2761

Faculty: Attending

Availability/Duration: All year; 3 or 4 week elective

Prerequisite(s): Agreement with faculty mentor regarding research plan

Drop Period: 1 month

Description: Research on topics related to reproduction, infertility and embryology, includes but not limited to ovulation, IVF, pre-implantation genetics and embryology.

GYNECOLOGIC PATHOLOGY

Course Type: Clinical Research

Department/Division: Gynecology and Obstetrics

Course Director: Dr. Russel Vang

Telephone Number: 410-955-0471

Faculty: Staff of the Division of Gynecologic Pathology

Availability/Duration: All year; offered as a 3 or 4 week elective

Prerequisite(s): Consent of instructor

Drop Period: 1 month

Description: Consideration is given to the gross and histologic pathology of lesions of the reproductive tract, with opportunity for special investigative work in areas such as papilloma virus, tumors of the female genital tract, and gestational trophoblastic disease.

ELECTIVE IN FAMILY PLANNING AND REPRODUCTIVE CHOICE

Course Type: Elective

Department/Division: Gynecology and Obstetrics

Course Director: Dr. Jennifer Robinson

Telephone Number: 410-550-8498

Faculty: Staff of the Division of Family Planning

Availability/Duration: Preference for Summer Session III; possibly could be offered during other times of the year as basic Women's Health Clerkship schedules will allow; offered as a 3 or 4 week elective

Prerequisite(s): Core Clerkship in Ob/Gyn

Drop Period: 1 month

Description: In this clinical experience the student will function as a house officer at the first level on the family planning service. Students will participate in contraceptive and pregnancy options counseling. Students will be exposed to a breadth of family planning procedures including IUD insertion, contraceptive implant placement/removal, sterilization, and both medical and surgical abortion. A research component is encouraged.

SUBINTERNSHIP IN GYNECOLOGY

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Gynecology and Obstetrics

Course Director: Dr. Jean Anderson

Contact: Rebecca Slattery: 410-614-0088, rslatte1@jhmi.edu,

Faculty: Staff of the Division of Gynecology

Availability/Duration: Preference for Summer Session III; possibly could be offered during other times of the year as basic Women's Health Clerkship schedules will allow; may be arranged for 3 or 4 weeks.

Prerequisite(s): Core Clerkship in Women's Health and an interview

Drop Period: 1 month

Description: This clinical experience consists of a subinternship in gynecology. The student will function as a house officer at the first year level. In this capacity, the student will be responsible for the provision of inpatient and outpatient care to the patients who present to the respective services for care.

ELECTIVE IN HIV INFECTION IN WOMEN

Course Type: Elective

Department/Division: Gynecology and Obstetrics

Course Director: Dr. Jean Anderson

Contact: Rebecca Slattery: 410-614-0088, rslatte1@jhmi.edu,

Faculty: Dr. Anderson and attending faculty

Availability/Duration: May be taken for 3 or 4 weeks.

Prerequisite(s): Core Clerkship in Ob/Gyn and an interview

Drop Period: 1 month

Description: Students will participate in the obstetric and gynecological care of HIV-positive women. A research component is encouraged.

SUBINTERNSHIP IN OBSTETRICS AND GYNECOLOGY AT BAYVIEW MEDICAL CENTER

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Gynecology and Obstetrics

Course Director: Dr. Silka Patel

Contact: Rebecca Slattery: 410-614-0088, rslatte1@jhmi.edu,

Faculty: Departmental Staff

Availability/Duration: Preference for Summer Session III; possibly could be offered during other times of the year as basic Women's Health Clerkship schedules will allow; 3 or 4 weeks

Prerequisite(s): Passing grade in basic core rotation in Ob/GYN.

Drop Period: 2 months

Description: This clinical experience consists of a subinternship in General Obstetrics and Gynecology. The student will function as an intern with responsibility for both inpatient and outpatient care. The emphasis will be on management of common OB/GYN problems.

ELECTIVE IN REPRODUCTIVE ENDOCRINOLOGY

Course Type: Subinternship

Department/Division: Gynecology and Obstetrics

Course Director: Dr. Howard Zacur

Contact: Rebecca Slattery, rslatte1@jhmi.edu

Telephone Number: 410-614-0088

Faculty: Staff of the Division of Reproductive Endocrinology

Availability/Duration: Preference for Summer Session III; possibly could be offered during other times of the year as basic Women's Health Clerkship schedules will allow; may be taken for 3 or 4 weeks

Prerequisite(s): Core Clerkship in Ob/Gyn

Drop Period: 2 months

Description: In this clinical experience the student will function as a house officer at the first year level on the reproductive endocrinology service. The student will be responsible for providing inpatient and outpatient care to the patients who present to the respective services for care. A research component is encouraged.

SUBINTERNSHIP IN GYNECOLOGIC ONCOLOGY

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Gynecology and Obstetrics

Course Director: Dr. Amanda Fader

Contact: Rebecca Slattery: 410-614-0088, rslatte1@jhmi.edu,

Faculty: Staff of the Division of Gynecologic Oncology

Availability/Duration: JHU SOM students accepted year round, Visiting Medical students may apply all year. JHU SOM students have preference in Summer period 3.

Prerequisite(s): Core Clerkship in Ob/Gyn

Drop Period: 2 months

Description: In this clinical experience the student will function as a house officer at the first year level on the gynecologic oncology service. The student will be responsible for providing inpatient and outpatient care to the patients who present to the service for care.

SUBINTERNSHIP IN OBSTETRICS/MATERNAL FETAL MEDICINE

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Gynecology and Obstetrics

Course Director: Dr. Silka Patel

Contact: Rebecca Slattery: 410-614-0088, rslatte1@jhmi.edu,

Faculty: Staff of the Division of Obstetrics

Availability/Duration: Preference for Summer Session III; possibly could be offered during other times of the year as basic Women's Health Clerkship schedules will allow; 3 or 4 weeks

Prerequisite(s): Core Clerkship in Ob/Gyn

Drop Period: 2 months

Description: This clinical experience consists of a subinternship in obstetrics. The student will function as a house officer at the first year level and will be responsible for the provision of both inpatient and outpatient care to the patients who present to the respective services for care. A portion of each week can be spent in prenatal genetics, obstetrical sonography and fetal assessment.

RESEARCH OPPORTUNITIES

DR. ABIMBOLA AINA

Maternal and fetal medicine

DR. JEAN ANDERSON

Obstetrics/Gynecology Infectious Diseases; HIV

DR. CYNTHIA ARGANI

Maternal and fetal medicine

DR. JESSICA BIENSTOCK

Maternal-fetal medicine; research in educational techniques

DR. KARIN BLAKEMORE

Maternal and fetal medicine; prenatal genetics

DR. IRINA BURD

Maternal and fetal medicine

DR. ANNE BURKE

Contraception; family planning

DR. GRACE CHEN

Obstetric fistula; surgical education; surgical skills assessment

DR. BETTY CHOU

Cervical dysplasia; HPV vaccine; medical education

DR. JENELLE COLEMAN

Gynecology

DR. AMANDA FADER

Gyn Oncology

DR. JAIRO GARCIA

Reproductive endocrinology; in vitro fertilization

DR. ERNEST GRAHAM
Maternal and fetal medicine

DR. VICTORIA HANDA
Urogynecology

DR. JANICE HENDERSON
Maternal and fetal medicine

DR. NANCY HUEPPCHEN
Maternal and fetal medicine; medical education

DR. SHARI LAWSON
Ambulatory practice; medical student/resident education

DR. LORRAINE MILIO
Maternal and fetal health

DR. DONNA NEALE
Maternal and fetal medicine

DR. SILKA PATEL
General obstetrics and gynecology, medical education

DR. ANDREW SATIN
Medical simulation

DR. WEN SHEN
General gynecology; menopause; cervical dysplasia; abnormal uterine bleeding

DR. CORNELIA TRIMBLE
Gynecologic pathology; special clinical-pathologic projects; therapeutic HPV vaccines; cervical dysplasia

DR. FRANK WITTER
Maternal and fetal medicine

DR. HOWARD ZACUR
Reproductive endocrinology

DR. MOSTAFA BORAHAY
Uterine Fibroid; Minimally Invasive Gynecologic Surgery

HEALTH SCIENCES INFORMATICS

ME:600.699

HEALTH SCIENCES INFORMATICS ELECTIVE

Course Type: Other

Department/Division: Health Sciences Informatics

Course Director: Dr. Harold Lehmann

Telephone Number: 410-502-3768; kwinny@jhmi.edu; Ms. Kersti Winny

Faculty: Dr. Harold Lehmann

Availability/Duration: Year round, 1 to 2 months

Prerequisite(s): Course director's permission

Drop Period: 1 month

Description: Attached to the Health Sciences Informatics Research Training Program, this elective provides students with basic informatics research skills and knowledge, focused on health sciences applications, data, information, and knowledge, decision support, evaluation, security. Students participate in program meetings and seminars, conduct self-study, spend time at information technology settings (permission pending), and are responsible for a project report at the end of the elective. The report may range from a literature review, to a system specification, to working code, depending on the interests and skills of the student.

HISTORY OF MEDICINE

ME:150.702

OUTLINE OF THE HISTORY OF 20TH CENTURIES

Course Type: Lecture and seminar

Department/Division: History of Medicine/SOM

Course Directors: Dr. Nathaniel Comfort

Telephone Number: 443-287-6146

Faculty: Dr. Comfort

Availability/Duration: Q 3 & 4; MWF, 10:00 -10:50 a.m. (meets with AS:140.106),(TBA: Homewood Campus); Thursday 10:00AM-12:00AM; Welch Medical Library, Welch 303 (East Baltimore Campus); **visiting medical students must follow JHUSOM quarter dates.**

Prerequisite(s): Permission of instructor

Drop Period: 1 month

Description: This course reviews the social, intellectual and cultural history of Western medicine from the eighteenth century to the present. The emphasis is on Western medicine as the result of Western political-economic and institutional structures, cultural values, and the rise and complexities of scientific medicine.

DIRECTED READINGS

Course Type: Other

Department/Division: History of Medicine

Course Director: Faculty

Telephone Number: 410-955-3178

Faculty: Faculty

Description: On any subject in the history of medicine by arrangement with faculty.

Availability/Duration: TBA; visiting medical students must follow JHUSOM quarter dates.

Prerequisite(s): None

Drop Period: TBA

ME:150.801

RESEARCH IN THE HISTORY OF MEDICINE: DISSERTATION

Course Type: Other

Department/Division: History of Medicine

Course Director: Faculty

Telephone Number: 410-955-3178

Faculty: Faculty

Description: On any subject in the history of medicine by arrangement with faculty.

Availability/Duration: TBA; visiting medical students must follow JHUSOM quarter dates.

Prerequisite(s): None

Drop Period: TBA

CONTROLLING EPIDEMICS: HISTORICAL PERSPECTIVE

Course Type: Other

Department/Division: History of Medicine

Course Director: Dr. Randall Packard

Telephone Number: 410-955-7079, rpackar2@jhmi.edu

Availability/Duration: 1/29/2018-5/4/2018, Spring 2018

Prerequisite(s): None

Drop Period: One month

Description: This course explores efforts to contain disease epidemics across time and space, from the fourteenth-century black plague to recent epidemics of Ebola and Zola viruses. The course draws on historical materials from

Europe, Asia, Africa, and Latin America and emphasizes the ways in which political, social and economic institutions and practices influence how individuals and societies respond to the threat of disease epidemics. The course will also explore the various approaches that historians have taken to describe the history of epidemics.

MEDICAL HUMANITIES AND SOCIAL MEDICINE

Course Type: Research Elective

Department/Division: History of Medicine

Course Director: Drs. Joseph Carrese, Gail Geller, Jeremy Greene, Graham Mooney and Carolyn Sufrin

Contact: Carolyn Sufrin; csufrin1@jhmi.edu

Faculty: Drs. Joseph Carrese, Gail Geller, Jeremy Greene, Graham Mooney and Carolyn Sufrin

Availability/Duration:

Prerequisite(s): None

Drop Period:

Description: This elective course is designed for medical students in their clinical years seeking deeper engagement with the relationship between and its social contexts, and who want to develop or advance their own research projects on a topic of their interest in social medicine or medical humanities. "Social Medicine," for this course will be broadly defined and may include any number of themes-such as the production of health inequalities, racial justice in medicine, structural competency and the application of social determinants of health-drawn from social science fields including anthropology, social, and history. "Medical Humanities" is similarly interdisciplinary and may include intersections with history, philosophy, literature, visual and musical arts or religion. Participants in the course will pursue mentored research coupled with a series of core meetings with peers and faculty to discuss key concepts and current research in the medical humanities and social sciences, reflect on their applications to their developing clinical practice, and to workshop their own scholarly projects. By the end of the course, students can expect to have been introduced to various methods for examining the relationship between medicine and society, and to have made significant progress toward developing their own project as a publishable and/or actionable work.

RESEARCH OPPORTUNITIES

DR. GERT BRIEGER

History of 19th and 20th century medicine; history of surgery; history of medical education

DR. NATHANIEL COMFORT

History of 20th century biomedicine, especially genetics; oral history; America; intellectual and social history

DR. MARY FISSELL

European health care and popular medicine: 17th and 18th centuries; early modern gender, sexuality, and the body

DR. JEREMY A. GREENE

Therapeutics; disease; 19th and 20th center American Medicine.

DR. MARTA HANSON

History of Chinese medicine; social history of disease in China and gender in Chinese medicine

DR. ROBERT KARGON

History of physics; science and social change; science in America

DR. SHARON KINGSLAND

History of biology: especially ecology, genetics and behavioral biology; science in America

DR. STUART LESLIE

History of technology; history of science-based industry

DR. GRAHAM MOONEY

History of public health 19th and 20th centuries; epidemiological history; historical demography

DR. RANDALL PACKARD

Social history of disease; colonial medicine; history of international health

DR. GIANNA POMATA

Early modern medicine; women and medicine; history of the body; history of the case-history; medical epidemiology

DR. DANIEL TODES

History of Russian medicine and science; social relations of scientific thought; history of biomedical sciences

INSTITUTE OF GENETIC MEDICINE

For other genetics related courses see Maternal Fetal Medicine Subinternship (Gyn/Ob), research and course opportunities in the Departments of Molecular Biology & Genetics, Pharmacology and others.

CLINICAL CLERKSHIP IN GENETICS

Course Type: Clinical Clerkship

Department/Division: Institute of Genetic Medicine

Course Director: Dr. Joann Bodurtha

Contact: 410-955-1699; jbodurt1@jhmi.edu

Faculty: Drs. H. Bjornsson, J. Bodurtha, J. Chinsky, G. Cutting, H. Dietz, J. Fahrner, M. Gunay-Aygun, A. Hamosh, J. Hoover-Fong, H. Levy, , D. Valle, H. Vernon, and T. Wang

Availability/Duration: All year; 4.5 weeks (Q1-Q4)

Prerequisite(s): It is helpful to have at least one core clerkship prior to this elective

Drop Period: 1 month

Description: The Institute of Genetic Medicine provides genetic services to patients and families across the lifespan and can tailor your learning experience to your interests and learning needs. A team approach including geneticists – both MD and PhD laboratory and quantitative experts, genetic counselors, nurse practitioners, nutritionists, coordinators, and other specialists provides both inpatient and outpatient exposure to a broad range of clinical concerns. A weekly case conference and multiple other conferences provide didactic learning and discussion and are integrated with multiple other learning resources, including on-line resources for lifelong learning. Students will learn the application of the fundamentals of medical genetics and human variation in the individual and family clinical, biochemical, cytogenetic, and molecular levels. Practical experience in clinical genetics, genetic counseling and the application of laboratory methods to clinical problems are emphasized, with the possibility of tailoring and developing projects in line with individual interests. Patients are seen from preconception to palliative care to autopsy with an emphasis on prenatal diagnosis, newborn screening, congenital anomalies, neurodevelopmental disabilities, connective tissue conditions, neurosensory conditions, skeletal dysplasias, epigenetic conditions, and the integration of genetic understanding across all medicine. The opportunity to participate in case reports and clinical/educational research can be available with multiple publications being developed with students over the years. Clinical responsibilities, all under the direct supervision of a fellow, genetic counselor, and an attending physician, include: an active inpatient consultation service, daily clinical outpatient clinical activities, and an inpatient genetics service that focuses on inborn errors of metabolism.

ADULT GENETICS IN AMBULATORY INTERNAL MEDICINE

Course Type: Clinical Clerkship

Department/Division: Medicine/General Internal Medicine

Course Director: Dr. Howard Levy

Contact: 410-583-2774; hlevy3@jhmi.edu

Faculty: Dr. Levy. Optional additional interactions with faculty in the Institute of Genetic Medicine

Availability/Duration: Contact course director

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 2 months

Description: This elective is based primarily at Green Spring Station, in an outpatient internal medicine primary care practice. There is extensive experience with routine adult primary care. Additional clinical experiences include: acquiring, recording and interpreting a family history; genetic risk assessment for multifactorial conditions; genetic factors in prevention, treatment and differential diagnosis of common medical conditions; ordering and interpreting genetic tests; consultative diagnostic evaluation and longitudinal primary care management of adults with traditional single-gene disorders (especially Ehlers Danlos syndrome). There is also the opportunity to interact with other geneticists in the McKusick-Nathans Institute of Genetic Medicine, depending upon the student's particular interests.

ADVANCED TOPICS IN HUMAN GENETICS

Course Type: Tutorial

Department/Division: Medicine/Medical Genetics

Course Director: Drs. Roger Reeves, Kirby Smith, and Michael Parsons

Contact: 410-955-6624; rreeves@jhmi.edu

Faculty: Drs. Reeves, Smith, and Parsons

Availability/Duration: Q3; (M, W, F; times vary)

Prerequisite(s): Fundamentals of Genetics; Molecules and Cells and permission of instructor

Drop Period: 1 month

Description: This lecture/discussion course is a research-oriented introduction to principles of human genetics based on fundamental knowledge introduced in prior courses. Emphasis is placed on recent advances in knowledge, evolving techniques, and the design of research strategies, in the context of the current biomedical literature. Topics include: chromosome structure and function; chromosome aberrations; gene mapping; mutation; sex determination; inborn errors of metabolism; genetic heterogeneity; genotype -environment interaction in health and disease; aneuploidy; carcinogenesis and ethical issues surrounding modern genetic medicine.

RESEARCH OPPORTUNITIES

DR. H. BJORNSSON

Mendelian disorders of the epigenetic machinery

DR. J. BODURTHA

Genetic risk communication; family history; dysmorphology; public health genetics

DR. G. CUTTING

Cystic Fibrosis; modifier genes; DNA diagnostics

DR. H. DIETZ

Elucidation of the pathogenesis and treatment strategies for vascular aneurysm; connective tissue disorders; fibrosis

DR. J. FAHRNER

Abnormal growth caused by aberrations in the epigenetic machinery

DR. M. GUNAY-AYGUN

Inborn errors of metabolism; clinical genetics

DR. A. HAMOSH

Integration of genetic and genomic information into the electronic health record; OMIM; understanding the molecular basis of Mendelian disorders

DR. J. HOOVER-FONG

Skeletal dysplasias and chromosomal abnormalities

DR. H. LEVY

Adult genetics; connective tissue disorders

DR. N. SOBREIRA

Mendelian disease discovery; clinical sequencing informatics; PhenodB

DR. D. L. VALLE

Inborn errors of amino acid metabolism; molecular genetics

DR. H. VERNON

Biochemical genetics

DR. T. WANG

X-linked intellectual disability; brain development and disorders in cognitive function and behaviors.

MEDICINE

ME:250.699

CHARM CITY CLINIC LONGITUDINAL HEALTH COACHING

Course Type: Other

Department/Division: Medicine

Course Director: Dr. Lenny Feldman

Contact: Donna Pirotte, 410-502-2128

Availability/Duration: Availability is based on having completed prerequisite training. The course will run from January through December, as it is meant to foster longitudinal health coach relationships with Charm City Clinic clients who are members of the East Baltimore community.

Prerequisite(s): All students taking this elective course must already serve as Charm City Clinic screening volunteers and complete volunteer training.

Drop Period: 1 month

Description: This course utilizes the existing infrastructure of Charm City Clinic (CCC) to expose first-year medical students to the health challenges faced by low-income East Baltimore residents. Charm City Clinic, Inc. is a 501(c)(3) nonprofit organization dedicated to improving the health of East Baltimore residents by helping them attain health insurance and other social services, and offering screening services to address emerging medical problems before the emergency room.

Under the supervision of board-certified physicians, medical student volunteers from Johns Hopkins University School of Medicine (JHUSOM) perform screenings for hypertension, diabetes, obesity, cholesterol, and visual acuity to identify at-risk clients and to help community members monitor and control preexisting chronic diseases.

Following screening, clients are counseled on selecting treatment plans and implementing healthy practices within the context of their socioeconomic environment. Clients are also referred to local health care providers and receive assistance with health insurance applications, as needed.

Charm City Clinic has adopted a client-student-physician (i.e. preceptor) structure for our collaboration with JHUSOM on this Longitudinal Health Coaching program. Each student is paired with a specific client for longitudinal follow-up outside of regular clinic hours. The clients with whom students will be paired are longstanding clients of Charm City Clinic whom the Board Members believe will comply with and benefit from this longitudinal experience with a student. This client-student partnership is in turn matched with a volunteer physician; this will be the physician who is on duty during the specific Tuesday or Saturday clinic session at which the student first makes contact with their assigned client. These initial encounters will occur during Tuesday or Saturday clinic sessions in November, December, and January of the current school year. The student interacts directly with both the client and physician, though the physician is not in contact with the client outside of the time spent supervising screening services in clinic.

Beyond the basic responsibilities of a Charm City Clinic volunteer, medical student responsibilities in the Longitudinal Health Coaching Program include following up with clients on specific preventive health strategies to fit the client's unique social history. This includes discussion about specific diet, lifestyle, and exercise changes in addition to counseling, motivational interviewing, and support for smoking cessation. Students meet in person with their assigned client as needed for follow-up. At a minimum, students make weekly phone calls and/or conduct home visits to maintain more personalized contact and to better understand the specific hardships faced by the client. The student is also encouraged to accompany the client to outside medical visits, provided that the client agrees.

Structured monthly 1-hour meetings will provide an organized opportunity for students to both discuss counseling protocols and reflect with one another about individual experiences with their clients outside of clinic. In addition, as applicable and subject to their availability, guest speakers from Johns Hopkins Hospital may speak at some sessions.

Evaluation:

Based on participation in monthly group discussions as well as two written reflection papers.

Time Commitment:

On average, 30 minutes/week (this is in addition to regular Charm City Clinic Screening Volunteer requirements, which includes one 6 hour volunteer shift per month)

CLINICAL CLERKSHIP IN CARDIOLOGY

Course Type: Clinical Clerkship

Department/Division: Medicine/Cardiology

Course Director: Drs. Steven Jones and Thomas Traill

Contact: 410-502-0469; sjones64@jhmi.edu; Sarah Lewis, slewis67@jhmi.edu; Tammy Palmore, tpal-mor1@jhmi.edu

Faculty: Drs. S. Jones, J. Lima, E. Arnett, M. Corretti, R. Blumenthal, R. Riley, T. Abraham, and J. Weiss

Availability/Duration: Available all year; ½ or full quarter; lottery

Prerequisite(s): Core Clerkships in Medicine and Surgery

Drop Period: 2 months

Description: The student participates in the activities of the Cardiovascular Division, particularly the clinical service. Through inpatient consultations, the inpatient service, and the outpatient clinics, the student gains experience in the cardiac examination, the use and interpretation of non-invasive and imaging studies (electrocardiography; exercise testing; ultrasound, nuclear, CT and MRI based imaging methods), and invasive procedures (angiography, revascularization and interventional procedures electrophysiologic studies) with emphasis on integration of history, examination and diagnostic modalities in the formulation of treatment plans.

CLINICAL CLERKSHIP IN CARDIOLOGY – JOHNS HOPKINS BAYVIEW MEDICAL CENTER

Course Type: Clinical Clerkship

Department/Division: Medicine/Cardiology

Course Director: Dr. Chandra-Strobos

Contact: 410-550-7036, Joetta Love

Faculty: Drs. Chandra-Strobos, Ouyang, and Shapiro

Availability/Duration: Available all year; ½ or full quarter; lottery

Prerequisite(s): Core Clerkships in Medicine and Surgery

Drop Period: 1 month

Description: The student participates in the activities of the Cardiovascular Division, particularly the clinical service. Through inpatient consultations, the inpatient service, and the outpatient clinics, the student gains experience in the cardiac examination, the use and interpretation of both non-invasive and invasive studies.

CLINICAL CLERKSHIP IN CORONARY INTENSIVE CARE***SITE FOR ADVANCED CLERKSHIP IN CRITICAL CARE/ICU***

Course Type: Clinical Clerkship

Department/Division: Medicine/Cardiology

Contact: Dr. Steven Schulman; ssschulma@jhmi.edu

Telephone Number: 410-955-7378

Faculty: Drs. S. Schulman, G. Gerstenblith, R. McLean, J. Weiss, and I. Wittstein

Availability/Duration: All year; ½ quarter; maximum of two students

Prerequisite(s): Core clerkships in Medicine and Surgery

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The student participates in the daily activities of the Coronary Care Unit and works closely with the medical housestaff, cardiology fellow and attending physician. The student gains experience in: the evaluation and management of critically ill cardiac patients; ventricular and atrial arrhythmias, acute myocardial infarction, and

acute decompensated heart failure. In addition, the student gains experience in the interpretation of electrocardiograms, echocardiograms, and other noninvasive studies; invasive procedures such as line placement, circulatory assist devices, angiography, angioplasty, and electrophysiological studies; and hemodynamic monitoring.

ADVANCED CLINICAL CLERKSHIP IN CORONARY INTENSIVE CARE – JOHNS HOPKINS BAYVIEW MEDICAL CENTER

SITE FOR ADVANCED CLERKSHIP IN CRITICAL CARE/ICU

Course Type: Subinternship

Department/Division: Medicine/Cardiology

Course Director: Dr. Marlene Williams

Telephone Number: 410-550-7040; mswillia@jhmi.edu

Faculty: Drs. M. Williams, D. Bush, N. Chandra-Strobos, D. Desai, S.H. Gottlieb, G. Hirsch, S. Mayer, D. Meyerson, M. Mukherjee, P. Ouyang, R. Rouf, H. Silber, E. Shapiro, D. Sun and S. Zakaria

Availability/Duration: All year; full or ½ quarter; three students; Enrollment limited to JHUSOM students.

Prerequisite(s): Core Clerkship in Medicine and at least one clinical clerkship in Pulmonary, Cardiology, or advanced General Internal Medicine.

Drop Period: 2 months

Description: The student functions as a member of the medical team at the level of an intern, with close supervision by the senior housestaff, cardiology fellow, and attending physician. Experience is gained in: the evaluation and management of critically ill cardiac patients; dysrhythmia diagnosis and management; the interpretation of non-invasive studies; invasive procedures such as line placement and hemodynamic monitoring; and cardiovascular pharmacology. A sound understanding of cardiac physiology and hemodynamics is desirable.

ADVANCED CLINICAL CLERKSHIP IN CARDIOLOGY – UNION MEMORIAL HOSPITAL

Course Type: Clinical Clerkship

Department/Division: Medicine/Cardiology

Course Director: Drs. R. Ferguson and J. Quartner

Telephone Number: 410-554-2284

Faculty: Drs. Ferguson, Quartner and staff

Availability/Duration: All year; ½ quarter; lottery

Prerequisite(s): Core Clerkship

Drop Period: 2 months

Description: The goal is to provide the student with a clinical experience in inpatient cardiology centered around the coronary care unit. Patients will be evaluated by the student as the primary physician functioning at an internship level. Patients will be followed into progressive care with the student participating in decisions relating to diagnosis and management as well as discharge planning. Emphasis will be placed upon daily teaching rounds, through which the student will be exposed to bedside teaching providing experience in auscultation and other means of diagnosis. An active laboratory, including cardiac catheterization, will provide adjunctive information on hospitalized patients. These are four-week rotations. Hours of participation are full time, along the same schedule as housestaff, with every fourth night call. The day begins at 8:00 a.m. with morning report. On-call rooms, food tickets, free parking passes, and a full-service library with Medline search and photocopying privileges are provided.

Description: This elective offers students an introduction to clinical endocrinology, diabetes, and metabolism by participating in the patient care, teaching, and laboratory activities of the division. Students see outpatients in daily ambulatory clinics (General Endocrine, Diabetes, Neuroendocrine-Pituitary, and Thyroid Clinics). They also perform inpatient endocrine consultations under supervision of a fellow and review them with the faculty on daily teaching rounds. In both settings, students perform the primary assessment.

In addition to attending all the division's regular conferences (Endocrine Grand Rounds, Journal Club, Research Conference, Endocrine Pathology, Endocrine Surgery, Pituitary, Adrenal and Thyroid Tumor Center Conferences),

CLINICAL CLERKSHIP IN ENDOCRINOLOGY

Course Type: Clinical Clerkship

Department/Division: Medicine/Endocrinology

Course Director: Dr. Aniket Sidhaye, asidhay1@jhmi.edu

Contact: Nickey Stewart: ph 410-955-2130, email: endorotation@jhmi.edu

Faculty: Trainees spend time with many of the clinical Endocrine faculty:

https://www.hopkinsmedicine.org/endocrinology_diabetes_metabolism/our_team/

Availability/Duration: All year, ½ or full quarter; duration is flexible but we require at least 2 weeks for those who have done their medicine rotation and at least 3 to 4 weeks, for those who have done any non-medicine core rotation.

Prerequisite(s): Any core clerkship

Drop Period: 1 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This elective offers students an introduction to clinical endocrinology and diabetes as practiced in both the outpatient and inpatient setting. Students will get substantial experience interviewing, examining and following patients with both straightforward and complex endocrine conditions. This is accomplished by seeing patients in: i) the faculty general endocrine & specialty endocrine clinics (Thyroid, Pituitary/Adrenal, Gonadal disorders, Diabetes and Metabolic Bone), ii) in the hospital requiring endocrine consultations and rounding with the endocrine consult service. These clinical activities will occur primarily at JHH (east Baltimore campus), and at JH-Bayview Medical center and possibly at Greenspring Station. Further, there are numerous didactic sessions on the East Baltimore campus including: i) intern lecture series (twice per week at 8 am for most weeks of the year), ii) Endocrine clinical conference (weekly on Wednesdays at 1:30, lunch is provided), iii) Endocrine Grand rounds (weekly on Wednesday afternoons during the fall-spring), iv) Bone conference (monthly), v) Pituitary pathology conference (monthly). We have built a “reading list” available on JHBox to supplement the materials you will discover while investigating the patients you see. Other important educational opportunities that can be availed of if there is interest and time include: i) nutrition clinics in the Hopkins Diabetes Center, ii) rounding in the hospital with our nurse practitioner, run inpatient diabetes management services which provide nearly all the glucose management consultations in the hospital; iii) the diabetes foot and wound clinic – a multi-disciplinary clinic including vascular surgery, podiatry and endocrinology; iv) transition clinic for patients with type 1 diabetes at Mt. Washington Pediatric Hospital.

As you can see, we have a wonderful diversity of educational and work experiences from which students can get an excellent grounding in clinical endocrinology. We are always excited to have students on service with us and can tailor aspects of the rotation to your needs and interests so do not hesitate to reach out if you have questions.

SEMINARS IN INTRACELLULAR REGULATION

Course Type: Tutorial

Department/Division: Medicine/Gastroenterology

Course Director: Dr. Mark Donowitz

Contact: 410-955-9675; mdonowit@jhmi.edu

Faculty: Dr. M. Donowitz and staff

Availability/Duration: All year; one hour per week

Prerequisite(s): Arrange with Dr. M. Donowitz

Drop Period: 1 month

Description: A weekly journal club focusing on the regulation of epithelial absorption and secretion by intracellular intermediates - molecular and cell biology studies in signal transduction.

CLINICAL CLERKSHIP IN GASTROENTEROLOGY

Course Type: Clinical Clerkship

Department/Division: Medicine/Gastroenterology and Hepatology

Course Director: Dr. Francis M. Giardiello

Contact: 410-955-2635; lwelch@jhmi.edu; Linda Welch

Faculty: Drs. F. Giardiello, S. Brant, R. Chowdhury, C. Fain, J. Hamilton, M. Donowitz, M. Lazarev, E. Mezey, Z. Li, G. Mullin, A. Kalloo, S. Algahtani, B. Saberi, A. Nimgaonkar and A. Parian

Availability/Duration: All year; 4 weeks or longer; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: Students participate in evaluating inpatients and outpatients with a wide variety of gastroenterology complaints and problems. Interpretation of radiologic procedures, biopsies, and tests of physiologic function is an integral part of the course. Students participate in ward rounds, the Inflammatory Bowel Disease Center, the weekly GI clinical conference, the bi-weekly GI seminar, journal club, and research conference. Circumscribed clinical investigation and clinical-pathologic correlation are possible by arrangement.

CLINICAL CLERKSHIP IN GASTROENTEROLOGY -SINAI HOSPITAL

Course Type: Clinical Clerkship

Department/Division: Medicine/Gastroenterology

Course Director: Drs. Sudhir Dutta, John Rabine, and Vinod Parasher

Contact: 410-601-9720; sdutta@lifebridgehealth.org

Faculty: Dr. Dutta and division faculty

Availability/Duration: All year, 4 weeks, full-time.

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: This well-rounded senior elective in Gastroenterology provides the student with opportunities to evaluate patients on the inpatient consultation service, participate on daily teaching rounds, and attend outpatient office hours with the attending staff.

The student is encouraged to attend Joint GI-Surgery-Radiology conference as well as weekly GI Conference at Johns Hopkins Hospital.

CLINICAL CLERKSHIP IN GERIATRIC MEDICINE BAYVIEW MEDICAL CENTER/GERIATRIC CENTER

Course Type: Elective

Department/Division: Medicine/Geriatric Medicine and Gerontology

Course Director: Dr. Danelle Cayea

Contact: 410-550-7162; crobin44@jhmi.edu; Carolyn Robinson

Faculty: Drs. K. Awan, M. Bellantoni, C. Boyd, J. Burton, C. Christmas, P Colvin, D. Cayea, S. Durso, T. Finucane, W.B. Greenough, and M. McNabney

Availability/Duration: Available in quarters 1-4 only, 2-4 weeks; one student per period

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 2 weeks

Description: This course is designed to provide an in-depth exposure to geriatric medicine and gerontology. The student will work closely with members of the faculty in the following programs:

Geriatric Rehabilitation Unit: The student will work directly in patient care gaining first-hand experience in managing patients with multiple health problems. The value of a multi-disciplinary approach to geriatric medicine will be emphasized and the student will have ample opportunity to learn to evaluate and treat many of the important problems in patients in a long-term care institution. There is no night call.

Physician House Call Program: The student will evaluate and follow a selected group of patients who are homebound because of illness. This involvement will permit the student further exposure to a multidisciplinary team and sensitize the student to this important mode of geriatric health care deliver.

Ambulatory Care: The student may elect to spend a portion of time working with a member of the faculty in the Beacham Ambulatory Center on the Johns Hopkins Bayview Medical Center campus or a geriatrics specialty clinic such as those focused on memory, bone health and continence.

Inpatient Care: Experiences are also available on the hip-fracture co-management service.

Teaching Conference: The student will participate in the weekly clinical geriatrics rounds and seminars attended by faculty members, the clinical and research fellows, and the housestaff on geriatric medicine rotation.

Research Seminars: If interested, the student may participate in the divisional research seminars which often include presentations by visiting professors.

Each student may elect to emphasize one or more aspects of the program.

CLINICAL CLERKSHIP IN HEMATOLOGY

Course Type: Clinical Clerkship

Department/Division: Medicine/Hematology

Course Director: Dr. Alison Moliterno

Contact: 410-614-0167; lthomas4@jhmi.edu; Linda Mitchell

Faculty: Drs. R. Brodsky, J. Gerber, T. Kickler, S. Lanzkron, A. Moliterno, P. Ness, and M. Streiff

Availability/Duration: All year; three students per ½ quarter

Prerequisite(s): Core Clerkship in Medicine is strongly recommended, but not required

Drop Period: 1 month

Description: This course will provide the student with a broad exposure to clinical hematology. Students will evaluate inpatients and outpatients with a wide range of blood disorders under the direct supervision of the division faculty. Clinical experience is supplemented by regularly scheduled conferences and lectures. Formal instruction is provided in the preparation and interpretation of blood and marrow slides, performance of bone marrow examination, aspiration and biopsy with unlimited access to the division's collection of pathology specimens, teaching slides, library and journal collection. Students may also engage in an independent project.

On the first day of the rotation, students should report on Weinberg 4B at 8:30 a.m. for orientation and ask for the Hematology Fellow covering the inpatient Hematology Consult Service.

BENIGN AND MALIGNANT HEMATOLOGY – JOHNS HOPKINS BAYVIEW MEDICAL CENTER

Course Type: Clinical Clerkship

Department/Division: Medicine/Hematology

Course Director: Dr. Satish Shanbhag

Faculty: Drs. S. Shanbhag and R. Naik

Availability/Duration: Year round; 2-4 weeks

Prerequisite(s): There are no prerequisites, but completion of medicine core clerkship or elective will be helpful in fully participating in the elective. This is meant as a serious academic exercise in which the student will actively participate in the working of the division.

Drop Period: 1 month

Description: Develop an understanding of the role of the blood and bone marrow in health and disease. Learn how to evaluate and treat patients with leukemia, lymphoma, and myeloma, both in the inpatient and outpatient settings. Evaluate and treat patients with bleeding and clotting disorders. Interpretation of peripheral blood smears. Performance and interpretation of bone marrow biopsy. Opportunity to participate in tumor board and case conferences.

CLINICAL CLERKSHIP IN ALLERGY AND CLINICAL IMMUNOLOGY – BAYVIEW MEDICAL CENTER/ASTHMA & ALLERGY CENTER

Course Type: Clinical Clerkship

Department/Division: Medicine/Allergy and Clinical Immunology

Course Director: Dr. Antoine Azar

Contact: Antoine.Azar@jhmi.edu Ms. Chenelle Johnson 410-550-2191, cjohnb@jhmi.edu

Faculty: Drs. N. Franklin Adkinson, Romi Saini, Jody Tversky, Jerry Shier, Alpa Jani, Katie Hines and Mia Patternetti

Availability/Duration: All year; minimum of one quarter; discuss schedule with course director; visiting medical students must follow JHUSOM quarter dates.

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: Students will participate in three to five half day outpatient clinical sessions and two to three hours of inpatient consultations and consult rounds during each week. Attendance at teaching conferences each week is required. Divisional research conferences and Journal Clubs provide an opportunity to learn the research interests of the staff. Clinical experience in pediatric allergy and immuno-deficiency clinics can also be provided if desired. Because of the importance of longitudinal follow-up in outpatient medicine, this clerkship is taken as a six to eight week block, but can be shared with other outpatient rotations, such as dermatology, if the student wishes to try more than one subspecialty during a quarter.

RESEARCH IN ALLERGY AND INFLAMMATION

Course Type: Basic Research

Department/Division: Medicine/Allergy and Clinical Immunology

Course Director: Drs. Antoine Azar and Dr. Don MacGlashan

Contact: 410-550-2101, Antoine.Azar@jhmi.edu

Faculty: Dr. B. Bochner and staff

Availability/Duration: All year; full or ½ quarter (3 month minimum).

Drop Period: 1 month

Description: Students may participate in on-going laboratory investigation projects under the supervision of one of the faculty. Each student will attend divisional educational activities including research conferences, journal review sessions, and clinical teaching sessions.

ADULT INFECTIOUS DISEASES AT JOHNS HOPKINS BAYVIEW

Course Type: Consult Service

Department/Division: Medicine/Infectious Disease/JHBMC

Course Director: Dr. Khalil Ghanem

Contact: Mindy Clevenger 410-550-9080

Faculty: Drs. Jonathan Zenilman, Anne Rompalo, Khalil Ghanem, Robin McKenzie, Geeta Sood, Seema Nayak, Erica Johnson, Sue Tuddenham and Jennifer Townsend

Availability/Duration: 4 weeks; (in limited circumstances, we may allow a 2 week elective) all year

Prerequisite(s): Core Clerkships in Medicine and Surgery

Drop Period: 2 months

Description: Students will be assigned one consult per day and will follow their patients throughout their hospital course. Students will be responsible for deriving a care plan on each of these patients, in consultation with the fellow and attending. Students will be exposed to a broad variety of diagnoses. Students will be expected to review the scientific data guiding their clinical decisions and discuss these data with the team. The goal of this elective is to become familiar with diagnosing and managing common infectious diseases with a particular focus on making appropriate antibiotic choices.

CLINICAL CLERKSHIP IN INFECTIOUS DISEASES UNION MEMORIAL HOSPITAL

Course Type: Clinical Clerkship
Department/Division: Medicine/Infectious Disease
Course Director: Dr. Wayne Campbell
Contact: 410-554-2284; wayne.campbell@medstar.net
Faculty: Dr. W. Campbell and staff
Availability/Duration: ½ quarter; all year
Prerequisite(s): Core Clerkship in Medicine
Drop Period: 1 month

Description: This elective provides an opportunity for students to see patients with both medical and surgical infectious diseases. Students will participate as a member of the consult team seeing patients in inpatient and outpatient settings. Instruction is provided through working closely with the attending, attending clinical conferences, and through readings. Free parking and use of the Medline computer and photocopier; no weekend duties required.

CLINICAL CLERKSHIP IN INFECTIOUS DISEASES SINAI HOSPITAL

Course Type: Consultation Service
Department/Division: Medicine/Infectious Disease
Course Director: Dr. John Cmar
Contact: 410-601-7068; jcmar@lifebridgehealth.org
Faculty: Drs. A. Mayrer, J. Gradon, J. Cmar and K. Wiberg
Availability/Duration: All year; one or two students per ½ quarter
Prerequisite(s): Core Clerkship in Medicine
Drop Period: 1 month

Description: This elective offers medical students an opportunity to evaluate patients on the Infectious Diseases (I.D.) teaching and consultative service under the supervision of the division's attending staff Drs. Gradon and Mayrer. Students will also regularly evaluate outpatients with HIV, hepatitis C, and other infectious diagnoses in the Infectious Disease Ambulatory Center under the supervision of Drs. Cmar and Wiberg. Medical students have the opportunity to assist in any Hospital based antibiotic utilization review studies, antibiotic trials, or other ongoing clinical projects.

CLINICAL CLERKSHIP IN INFECTIOUS DISEASES

Course Type: Clinical Clerkship
Department/Division: Medicine/Infectious Disease
Course Director: Dr. Michael Melia
Contact: Donna Greaves, 443-287-4748; dgreaves1@jhmi.edu
Faculty: Dr. M. Melia and division faculty
Availability/Duration: All year; ½ quarter or longer; limited to four students per ½ quarter; lottery
Prerequisite(s): Core Clerkship in Medicine
Drop Period: 2 months

Description: A rotation on the general ID inpatient consultation service provides the opportunity to participate in the evaluation and management of a wide range of ID problems. By working alongside our faculty, fellows, and clinical pharmacists, rotating residents and students experience a rich and educational introduction to the world of clinical ID. Students answer consultation requests, review findings with fellows, and present cases to the attending on afternoon rounds held daily. The goals of the elective are to provide guidelines to an approach to patients with established or suspected infections. Methods to establish an etiologic diagnosis and rational use of antibiotics are emphasized.

ELECTIVE IN AMBULATORY CARE - SINAI HOSPITAL

Course Type: Clinical Clerkship
Department/Division: Medicine
Course Director: Dr. Asha Thomas
Contact: 410-601-5284; athomas@lifebridgehealth.org
Faculty: Division faculty
Availability/Duration: All year; 4 weeks, full-time.
Prerequisite(s): Core Clerkship in Medicine
Drop Period: 1 month

Description: The student is given an opportunity to evaluate and treat patients in an office setting designed as a model group practice. Students are supervised by full-time faculty clinicians, and gain familiarity in treating common ambulatory adult diseases as well as an appreciation for the process and nuances of the office visit. Approach is patient-centered, with a discussion of each patient with a faculty preceptor after the initial student evaluation. There is opportunity to follow a patient longitudinally over the course of the month.

The student has the opportunity to attend all Department of Medicine conferences including Noon Conference.

ELECTIVE IN PRIMARY CARE

Course Type: Clinical Clerkship
Department/Division: Internal Medicine
Course Director: Dr. Maura McGuire
Contact: Ms. Emma Bailey, 410-338-3412; Ms. Iris Knox; iknox1@jhmi.edu
Faculty: Dr. Collen Christmas, Dr. Jason Chen, Dr. Laura Hanyok, Dr. Rosalyn Stewart and Dr. Himani Shoshodia
Availability/Duration: First half of each quarter and during the first and second summer periods; 4 weeks; maximum of four students per quarter
Prerequisite(s): At least one core clerkship is required; 2-3 clerkships, including Medicine, Pediatrics, or Women's Health preferred.
Drop Period: 1 month

Description: This is a four week rotation designed to educate students about the primary care of adult patients. Students will learn by completing 20 half-day clinical practice sessions in general internal medicine or family medicine practices, while completing an online core curriculum. Students will also have the opportunity to participate in home visits, care management, health coaching, and interdisciplinary visits with nurses, social workers and pharmacists. Students may participate in one group quality improvement project during the elective.

STUDENT SUBINTERNSHIP IN INTERNAL MEDICINE -SINAI HOSPITAL

Course Type: Subinternship
Department/Division: Internal Medicine
Course Director: Dr. John Cmar
Faculty: Dr. Cmar and division faculty
Contact: 410-601-7068; jcmr@lifebridgehealth.org
Availability/Duration: All year; 4 weeks, full-time
Prerequisite(s): Core Clerkship in Medicine
Drop Period: 1 month

Description: The Sinai Hospital Program in Internal Medicine offers an outstanding Sub-Internship experience in an academically-oriented community teaching hospital, with a broad-based patient population. Students function as integral members of the house staff team on a general medicine unit in the same capacity as interns except with limited patient load. Students are expected to participate in all aspects of patient care and are encouraged to be primarily responsible for clinical decisions and bedside procedures. Students take new admissions every other day and overnight call is not required because of night float coverage.

Sub-Interns will also participate in all the teaching activities of the department, including daily noon conferences and Department of Medicine Grand Rounds weekly. A wide range of ancillary services are available. Lunch is provided with noon conferences, an allotment for meals is given for admission days and parking are all provided. Students have 24/7 access to both the Physician's Lounge as well as the Eisenberg Medical Library and Simulation Center.

RURAL MEDICINE IN HONDURAS

Course Type: Clinical Clerkship

Department/Division: Medicine/ Cincinnati 2 weeks and Honduras 2 weeks

Course Director: Drs. Edward Zuroweste

Telephone Number: 410-955-7910

Faculty: Drs. E. Zuroweste

Availability/Duration: Fall and Spring, 4 1/2 weeks

Prerequisite(s): 4th years only in Fall: Basic medicine plus one other core clerkship for Spring (3rd or 4th years), or approval of director

Drop Period: 2 months

Description: Offered for one month in Fall and Spring of each year. Students spend 14 days "in country" with Dr. Zuroweste in rural Honduras caring for patients in the community of clinics supported by "Shoulder to Shoulder", a non-profit collaboration between the U of Cincinnati and Honduras. The students are given required independent study material before the trip and are required to complete a final essay assessment following the "in-country" activity.

ADVANCED CLERKSHIP IN MEDICINE (SUBINTERNSHIP)

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Medicine/General Internal Medicine

Course Director: Dr. Amit Pahwa

Contact: Jennifer Sawyer, 410-955-9655

Availability/Duration: Year round

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 2 months. If a student wishes to drop with less than 2 months prior to the rotation, he or she must find a replacement.

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Students can serve as subinterns on one of Osler Firm services or the Polk unit (primarily HIV patients). The Firms are general internal medicine inpatient ward teams that consist of interns, third year residents, and an Assistant Chief Resident as an attending. The Polk team is the Infectious Disease inpatient ward that consists of second year residents and an Infectious Disease Faculty as an attending. The General Medicine Service is a general internal medicine inpatient ward team that consists of interns, second year residents, and Hospitalist Faculty as attending. Patients are assigned to each subintern, who fulfills the responsibilities of an intern by admitting and caring for patients on the medical services. Didactic sessions with several disciplines occur during the clerkship.

SUBINTERNSHIP IN MEDICINE AT JOHNS HOPKINS HOWARD COUNTY GENERAL HOSPITAL

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Medicine/General Internal Medicine

Course Director: Dr. Amit Pahwa

Contact: Dr. Amit Pahwa, apahwa@jhmi.edu

Availability/Duration: Year round

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 2 months. If a student wishes to drop with less than 2 months prior to the rotation, he or she must find a replacement.

Description: Please contact Dr. Pahwa for further information.

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

ADVANCED CLERKSHIP IN MEDICINE - HOSPITALIST SERVICE

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Medicine/ General Internal Medicine

Course Director: Dr. Padmini Ranasinghe

Contact: Lisa Williams Jones; 443-287-3631; lwilli45@jhmi.edu

Faculty: Hospitalists

Availability/Duration: Two-three slots every month; 4 weeks

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: This subinternship allows students to work one-on-one with faculty attendings (no interns or residents) on the general medicine inpatient service. Like the Osler firms the hospitalist service admits a mixture of both community patients with “bread and butter” diagnoses and tertiary referral transfers with more uncommon illnesses. As the primary provider for your patients, you will have great hands-on experiences which lead to valuable “teaching moments” to have before starting any residency. The structure creates many opportunities for you to shine as you are evaluated personally by the hospitalist attendings you work with daily. There is no overnight call, but you will be expected to take call three times per week from 7 a.m. to 10 p.m. Twice a week didactic conferences as well as formal and informal feedback are provided regularly.

For more information, please see the link to the hospitalist sub-intern webpage on: http://www.hopkinsmedicine.org/gim/training/SubI_rotation.html

ADVANCED CLERKSHIP IN HOSPITAL MEDICINE-JOHNS HOPKINS BAYVIEW MEDICAL CENTER

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Internal Medicine/ Collaborative Inpatient Medical Service

Course Director: Dr. Ileana Ponor

Contact: 410-550-5018; iponor1@jhmi.edu

Faculty: Hospitalist physicians of the division of Hospital Medicine

Availability/Duration: 2 weeks; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Completion of year 1 and year 2 of Medical School; has completed medicine core clerkships

Drop Period: 2 months

Description: Over a 4-week period, approximately 20 shifts will be scheduled. This will provide a more robust experience for students to have continuity with attendings and patients, and will prepare sub-Is even better to start their intern. This is a 2 or 4-week elective that exposes students to all key aspects of Hospital Medicine that are not included in a typical medicine clerkship. The elective assesses the students’ knowledge of Hospital Medicine and the students’ skills in various skills required for Hospitalist practice. The course experiences include:

-Direct patient care with attending physicians on the Hospitalist inpatient and medical consultation services;

-Shadowing of Triage physicians to learn the systems based on practice aspects of hospital medicine

-Working with other multidisciplinary team members: case managers, physician assistants, nurse practitioners, physical and occupational therapists, and social workers.

May include Didactic sessions on Hospital Medicine, billing and documentation guidelines, standardized practice guidelines on commonly encountered diseases in hospitalized patients, building communication skills, and contract negotiations.

HOSPITAL MEDICINE ELECTIVE- HOWARD COUNTY GENERAL HOSPITAL

Course Type: Clinical Clerkship

Department/Division: Internal Medicine/ Collaborative Inpatient Medical Service (HCG)

Course Director: Dr. Lily Hua

Contact: Jumana Kaka; jkaka1@jhmi.edu

Faculty: Drs. Melinda Kantsiper, Anirudh Sridharan, Lily Hua, Yojana Dange, Corinne Ahmar and other JHCP hospitalists.

Availability/Duration: 2 weeks

Prerequisite(s): Completion of year 1 and year 2 of Medical School; has started clerkships.

Drop Period: 2 months

Description: This rotation is a clinical elective in hospital medicine for 3rd and 4th year medical students. Students will work one-on-one with Johns Hopkins medical attendings. They will admit and follow a panel of patients, write notes and get training and feedback on all aspects of internal medicine in the hospital. We have a diverse patient population, with some patients who have excellent access to care and high health literacy and some patients who have poor access to outpatient care and who are medically vulnerable. We are an amazing place for students to get one-on-one mentoring from attendings and to see a variety of common internal medicine cases. In addition, we focus on excellent communication with outpatient providers and safe transitions of care. Our physicians are in the hospital 24/7 so students can experience overnight shifts or weekend shifts if they wish.

GENERAL INTERNAL MEDICINE CONSULTATION SERVICE

Course Type: Consultation Service

Department/Division: Medicine/General Internal Medicine

Course Director: Dr. Lenny Feldman

Contact: 410-502-2128

Faculty: GIM Hospitalist Division faculty

Availability/Duration: All year

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: Students care for a diverse group of patients seen by the General Internal Medicine Consultation Service. The most common referring services are neurosurgery, orthopaedics, gynecology, plastic surgery, PM&R, and psychiatry. Particular emphasis is given to peri-operative medicine and an evidence-based approach to care.

The students evaluate the patients initially and then present the patient care problem(s) to the attending faculty and general internal medicine fellows. Students follow-up on the patients daily as they round with the fellow and make additional recommendations for evaluation and management. Near the end of the experience, the students present a case to the fellow and attending that they have seen on the service and discuss the essential features from an evidence-based medicine perspective.

Learning modules (<http://shmconsults.com>) covering a wide-range of consultation topics are provided. Students will receive teaching daily from the fellow on rounds and at least three times a week from the attending. Students will work directly with the attending.

The clerkship is particularly appropriate for students interested in entering a field of surgery, anesthesiology, psychiatry, or internal medicine.

You can find more information about the service on our web-site:

<http://www.hopkinsmedicine.org/gim/training/consult.html>

ADULT GENETICS AND AMBULATORY INTERNAL MEDICINE

ADVANCED TOPICS IN HUMAN GENETICS

CLINICAL CLERKSHIP IN GENETICS

(See Institute of Genetic Medicine for Genetics Courses)

CLINICAL CLERKSHIP IN MEDICAL INTENSIVE CARE

SITE FOR ADVANCED CLERKSHIP IN CRITICAL CARE/ICU

Course Type: Subinternship

Department/Division: Medicine/Pulmonary and Critical Care Medicine

Course Director: Dr. Roy Brower

Contact: 410-614-6292; cweaver1@jhmi.edu; Cate Weaver

Faculty: Dr. R. Brower and division faculty

Availability/Duration: One student each ½ quarter; not available in July or August.

Prerequisite(s): Core Clerkship in Medicine and at least one other rotation in medicine or surgery.

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: During this rotation medical students learn an approach to the critically ill patient, enhance their knowledge of respiratory and circulatory physiology and pathophysiology, and build on their abilities to evaluate and manage patients with complex and/or critical problems, as well as medical patients in general.

Students will see patients with other problems including endocrine emergencies, hyper- and hypothermia, cardiac arrhythmias, CNS hemorrhage, etc. Most patients' problems are complex, involving several organ systems.

Each MICU team consists of an attending physician, the MICU nursing staff, five house officers, and a critical care fellow. Medical students take call with the housestaff, obtain histories and perform physical examinations, gather and integrate laboratory data and pertinent information from literature, participate in decision making, write admission and progress notes, etc. Students will observe various critical care procedures such as managing multiple intravenous lines, Swan-Ganz and central venous catheters, administration of medications such as antibiotics and pressors. Under the supervision of the resident or the attending, students may perform certain procedures.

STUDENT INTERNSHIP IN MEDICAL INTENSIVE CARE - UNION MEMORIAL HOSPITAL

Course Type: Advanced Clinical Clerkship

Department/Division: Internal Medicine/Intensive Care

Course Director: Dr. Robert Ferguson and Dr. Philip Buescher

Contact: 410-554-2284; marge.wolford@medstar.net; Marge Wolford

Faculty: Dr. P. Buescher, Dr. R. Ferguson and staff

Availability/Duration: All year; ½ quarter;

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: An advanced experience for senior students in the management of patients in the intensive care unit. Students will be supervised by the residents and attending physicians. Students will have the responsibility for initial evaluation and management, writing orders, scheduling of diagnostic procedures, and arriving at decisions regarding day-to-day management, all closely supervised by the medical resident. The student works the same schedule as the resident staff, including call every fourth night. The day begins at 8:00 a.m. with morning report. On-call rooms, library privileges, and free parking are provided.

ADVANCED CLINICAL CLERKSHIP IN MEDICINE - JOHNS HOPKINS BAYVIEW MEDICAL CENTER

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Internal Medicine

Course Director: Dr. Janet Record

Contact: 410-550-8375

Faculty: Dr. Record and staff

Availability/Duration: Available September through June; four students; ½ quarter

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The student will have the responsibilities of a medicine intern under the supervision of an assistant resident and an attending physician on one of the medical units. The responsibilities are similar of those of an intern on the service, but with fewer patients and with even more direct resident supervision. The student will admit patients in rotation, evaluate these patients thoroughly, and directly supervise appropriate therapy. The student functions as part of a ward team which takes long call every fourth day and short call in-between. Typically, the subintern admits one to two patients on long call and one patient on short call, with a total service of about four patients. Students participate fully in the activities of the unit and attend conferences, including morning report, noon conference, and Grand Rounds.

The Bayview subinternship offers an outstanding patient population, the ability to function as an important part of team, autonomy supported by supervision and teaching by residents and attending physicians, a collegial and supportive environment, and opportunities for mentoring and career advice by faculty and other program leaders. There will also be opportunities to be introduced to the use of Hand Carried Ultrasound to assess patients' volume status by imaging the inferior vena cava.

ADVANCED CLINICAL CLERKSHIP IN MEDICINE (SUBINTERNSHIP) -GREATER BALTIMORE MEDICAL CENTER

Course Type: Advanced Clinical Clerkship

Department/Division: Internal Medicine

Course Director: Dr. Paul Foster

Telephone Number: Brenda Sizemore-Kuczinski;

bsizemore-kuczinski@gbmc.org

Faculty: Dr. Foster and staff

Availability/Duration: All year; ½ quarter; 2 students. No students in July.

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: The clerkship focuses on the principles of diagnosis and management of medical patients in the inpatient setting. Students will work closely with the resident staff and faculty of the general medical service at GBMC. Night call is not required, but encouraged. Students will carry a patient load of two to three patients.

INTRODUCTION TO INTERNAL MEDICINE - GREATER BALTIMORE MEDICAL CENTER

Course Type: Clinical Clerkship

Department/Division: Internal Medicine

Course Director: Drs. Rudolf Pullmann and David Vitberg

Telephone Number: Jenny Huff, jhuff@gbmc.org 443-849-2682

Faculty: Drs. Pullmann and Vitberg

Availability/Duration: All year; ½ quarter; two students. No students in July.

Drop Period: 1 month

Description: The clerkship focuses on the principles of diagnosis and management of patients in the inpatient setting with a goal of preparing students for their core clerkships. Students will work closely with the resident staff and faculty of the general medical service at GBMC. Night call is not required.

STUDENT INTERNSHIP IN MEDICINE - UNION MEMORIAL HOSPITAL

Course Type: Subinternship

Department/Division: Internal Medicine

Course Director: Drs. Robert P. Ferguson and Stephanie A. Detterline

Contact: 410-554-2284; marge.wolford@medstar.net; Marge Wolford

Faculty: Drs. R. Ferguson, S. Detterline, and attending staff

Availability/Duration: All year; 4 weeks

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 2 months

Description: This program is designed to give senior students clinical experience similar to that of interns. Supervision will be provided immediately by the senior resident with whom the student works quite closely as well as by full-time and part-time attending physicians. The student will be given primary responsibility for initial patient evaluation and management which will include writing of orders, scheduling and performance of special diagnostic procedures and decisions relating to day-to-day management and eventually, discharge and follow-up plans. The student will be an active participant in the department's educational program. The student will follow the house-staff schedule. Free parking in the hospital garage is provided.

CHEMICAL DEPENDENCE AND HIV MEDICINE – JOHNS HOPKINS BAYVIEW MEDICAL CENTER

Course Type: Advanced Clinical Clerkship

Department/Division: Internal Medicine

Course Director: Drs. Michael Fingerhood and Darius Rastegar

Contact: 410-550-1134; mifinger@jhmi.edu

Faculty: Drs. M. Fingerhood, D. Rastegar, M. Buresh, R. Graddyand, L. Martin

Availability/Duration: All year; 1 month

Prerequisite(s): Completion of third year of medical school (at least; including Core Clerkship in Medicine)

Drop Period: 2 months

Description: This one month long rotation exposes senior medical students to expert faculty and innovative treatment facilities for patients with chemical dependence and HIV infection on the Bayview campus. It is based on the existing chemical dependency unit/comprehensive care practice rotation for internal medicine residents, a unique mix of inpatient and outpatient care of patients with substance abuse from an internal medicine perspective. The chemical dependency unit is a 26-bed inpatient service which admits patients for treatment of withdrawal. The Comprehensive Care Practice is an associated primary care practice which focuses on providing ambulatory care for patients with substance abuse, hepatitis C and HIV infection. Over 400 patients receive buprenorphine treatment integrated inpatient with their medical care. The fourth year medical student who takes this elective will work closely with the faculty. This rotation provides an opportunity to follow patients on two different settings in the care continuum.

LEWISOHN LONGITUDINAL ELECTIVE IN CONTINUITY OF CARE

Course Type: Clinical Clerkship

Department/Division: Medicine/General Internal Medicine

Course Director: Dr. Zachary Berger

Contact: 410-955-5000, zberger1@jhmi.edu

Faculty: Division faculty

Availability/Duration: See course director

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: This elective is a longitudinal experience in primary care general internal medicine. Each student will work with an experienced clinician on the full-time faculty for one half-day session every week, and over a year's time, to receive the equivalent of one 1/2 quarter's credit. Students will register for an entire year's work; at the conclusion of the year they have the option of continuing with their preceptor. The longitudinal clerkship is particularly suited for students pursuing one or more years of research training during their medical school years.

This elective is essentially a medical apprenticeship, during which the student will be granted increasing responsibility. Students will be taught excellence in ambulatory care. Students will learn to recognize the manifestations of disease, to manage common medical conditions, and to help patients cope with their illnesses. The major goal is to inspire students to care for individual patients with compassion and technical mastery.

ELECTIVE IN CLINICAL EXCELLENCE WITH THE MILLER-COULSON ACADEMY

Course Type: Other

Department/Division: Medicine

Course Director: Dr. Scott Wright

Contact: 410-550-0512; Kimberly Williams; ksimmers@jhmi.edu

Faculty: Members of the Miller-Coulson Academy of Clinical Excellence

Availability/Duration: All year; 2-4 weeks. The faculty member will provide the specific schedule

Prerequisite(s): None

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This 2-4 week elective will be a great learning experience for students interested in learning about clinical excellence first-hand across specialties and clinical settings. Faculty members inducted into the Miller-Coulson Academy of Clinical Excellence are highly clinically active faculty who are revered for their clinical excellence by their peers, patients, and trainees. Students will have the opportunity to spend a day and work with a selection of Academy members in their various clinical settings while reflecting on the processes and outcomes related to excellence in patient care.

The Miller-Coulson Academy's definition of clinical excellence in academic medicine is "Achieving a level of mastery in the following six areas as they relate to patient care: 1) communication and interpersonal skills; 2) professionalism and humanism; 3) diagnostic acumen; 4) skillful negotiation of the healthcare system; 5) knowledge; 6) scholarly approach to clinical practice, and exhibiting a passion for patient care, and explicitly modeling this mastery to medical trainees."

Elective experiences will include:

Direct patient care with multiple physician Academy members

Review of literature related to excellence in patient care

Narrative reflective writing about what the student observes in spending time with role model clinicians and how this influences their idea of the physician that they aspire to become.

HOPKINS HEALTH MANAGEMENT ADVISORY GROUP

Course Type: Other

Department/Division: Medicine

Course Director: Dr. Sanjay Desai

Contact: sanjaydesai@jhmi.edu

Faculty: Dr. Sanjay Desai

Availability/Duration: 4 to 5 hours per week

Prerequisite(s): None

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The Hopkins Health Management Advisory Group (HHMAG) was established to provide students with an education in the management and administration in academic health systems. Students gain experience in the core skills of communication, problem solving, team and project management. These are skills required for success

as a leader across any roles in healthcare. Students begin the course with a bootcamp experience introducing the basic skills they are expected to learn, as well as an overview of the Johns Hopkins Medicine organization.

The students are divided into teams and assigned an important health system problem to help solve. Each team will have both a student advisor with prior HHMAG experience and a project sponsor, who is an institutional leader within Johns Hopkins Medicine. The team, in conjunction with the project sponsor and course director will determine the goals and scope of the project. They will create a proposal detailing these goals and a timeline to show how they will achieve these goals. Teams will then use a variety of techniques to fulfill their goals and give a presentation to the relevant health system leaders.

CLINICAL PHARMACOLOGY/ INTERNAL MEDICINE

Course Type: Clinical Clerkship

Department/Division: Medicine/Clinical Pharmacology

Course Director: Dr. Brent G. Petty

Contact: 410-955-8181; bgp@jhmi.edu

Availability/Duration: All year; ½ quarter

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 2 months

Description: This elective emphasizes the fundamentals of rational drug therapy in the context of a tertiary care hospital and primary care clinic. Students will participate in an outpatient primary care clinic at the Johns Hopkins Outpatient Center one half-day per week, as well as inpatient care of this clinic population when necessary. Students will join in review sessions of questions posed to the Drug Information Center and learn how to use various resources to answer these questions. Research conferences within the Clinical Pharmacology Division will be open to the student and attendance at twice monthly student journal clubs will be required. The student will be invited to attend the monthly Pharmacy and Therapeutics Committee meeting and join the Hospital Pharmacist and Drug Center staff in responding to questions and issues arising within the hospital.

CLINICAL CLERKSHIP IN PULMONARY DISEASES AND CLINICAL PULMONARY PHYSIOLOGY

Course Type: Clinical Clerkship

Department/Division: Medicine/Pulmonary and Critical Care Medicine

Course Director: Dr. Leann Silhan

Contact: 410-614-6292; cweaver1@jhmi.edu; Cate Weaver

Faculty: Dr. Silhan and division faculty

Availability/Duration: All year; ½ quarter or longer by prior arrangement

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: Students participate in the consultation service of the Respiratory Division at the Johns Hopkins Hospital. Students will evaluate, under the supervision of a fellow and an attending physician, patients with a wide variety of lung diseases, recommend diagnostic and therapeutic options, and follow patients during the course of their pulmonary problems. Students attend radiology conferences and seminars of the division and may participate in the activities of the Pulmonary Function Laboratory.

PULMONARY DISEASES AND CRITICAL CARE MEDICINE - UNION MEMORIAL HOSPITAL

Course Type: Clinical Clerkship

Department/Division: Medicine/Pulmonary and Critical Care Medicine

Course Director: Drs. Raja Ayash and Robert Ferguson

Contact: 410-554-2284; marge.wolford.medstar.net; Marge Wolford

Faculty: Drs. R. Ayash, P. Buescher, P. Sloane, R. Ferguson, and S. Rizk.

Availability/Duration: All year. 4 to 8 weeks, full time.

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: The pulmonary elective involves exposure to pulmonary medicine and critical care medicine on a daily basis. The student is involved with pulmonary consultations on an inpatient and outpatient basis with faculty supervision. The student is also involved with pulmonary and critical care procedures to include interpretation of pulmonary function tests and arterial blood gases. The student will attend all conferences, an outpatient Chest Clinic, daily teaching rounds and radiology rounds. Free parking is available in the hospital lot; full service library with Medline computer search available.

CLINICAL CLERKSHIP IN PULMONARY DISEASES -SINAI HOSPITAL

Course Type: Consultation Service

Department/Division: Medicine/Pulmonary and Critical Care Medicine

Course Director: Dr. Steven Schonfeld

Contact: 410-484-9595; sschonfe@lifebridgehealth.org

Faculty: Drs. S. Schonfeld, I. Hoffman, R. Rubinfeld, J. Brauer, and J. Klein

Availability/Duration: All year, ½ quarter; one student.

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: This elective involves the student in the full spectrum of inpatient pulmonary consultations. The student will see patients with the attending physician and have the opportunity to learn the technique of thoracentesis and observe bronchoscopies and other procedures. The student will also see patients with various sleep disorders. The student will learn the proper indications for pulmonary function studies and other pulmonary diagnostic studies. The student will receive instruction on the proper interpretation of pulmonary function studies.

CLINICAL CLERKSHIP IN NEPHROLOGY

Course Type: Clinical Clerkship

Department/Division: Medicine/Nephrology

Course Director: Dr. Derek Fine

Contact: 410-955-5268; bcarson6@jhmi.edu; Barbara Carson

Faculty: Drs. M. Atta, M. Choi, D. Fine, D. Harrington, M. Estrella, S. Turban, and C. Sperati

Availability/Duration: JHUSOM Students; all year; two students; ½ or full quarter. Non-JHUSOM students: October-June only

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 2 months

Description: This clinical elective is designed to provide the student with practical clinical work in nephrology including diagnostic evaluations on inpatients; participation in dialysis and the management of chronic kidney disease; management of electrolyte disorders, and management of acute renal failure. The student works closely with the fellow on the renal service and the attending physician, rounds daily on inpatient consults (which average four per day), and follows patients.

NEPHROLOGY ELECTIVE – JOHNS HOPKINS BAYVIEW MEDICAL CENTER

Course Type: Consultation Service

Department/Division: Medicine/Nephrology

Course Director: Dr. Sumeska Thavarajah

Contact: 410-550-2820; pking@jhmi.edu; Patricia Endicott

Faculty: Drs. P. Scheel, M. Choi, T. Chen, D. Crews, D. Geetha, M. Grams, P. Segal, S. Sozio, T. Shafi, and S. Thavarajah

Availability/Duration: All year; one student per month

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: Students will participate in the complete range of clinical nephrology activities at Johns Hopkins Bayview Medical Center with emphasis on inpatient and outpatient consultative nephrology; daily rounds (Mon-Fri) with the consult team, renal and transplant clinics, several teaching conferences and journal clubs; introduction to end stage renal disease modalities (hemodialysis, CAPD, renal transplant); some required reading, a free textbook and many free lunches.

CLINICAL CLERKSHIP IN RHEUMATOLOGY

Course Type: Clinical Clerkship

Department/Division: Medicine/Rheumatology

Course Director: Dr. Antony Rosen and Dr. Allan Gelber

Contact: 410-550-1925; Caitlin Bishop; cbishop4@jhmi.edu

Faculty: Drs. A. Gelber, A. Rosen, M. Alayda, B. Antiochos, A. Baer, C. Bingham, J. Birnbaum, L. Christopher-Stine, T. Grader-Beck, R. Manno, U. Haque, L. Hummers, S. Levine, Z. McMahan, A. Orbai, J. Paik, M. Petri, P. Seo, A. Shah, H. Timlin and F. Wigley

Availability/Duration: One-two student(s) at a time; available for 2, 3, or 4 weeks

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: This elective teaches a general approach to the differential diagnosis of rheumatic diseases, the rheumatology physical exam, and the principles of treatment of common rheumatic disorders. Students will actively participate on the in-patient consultation service at Johns Hopkins Hospital by working with the fellows and attending rheumatology consultant. There will be significant opportunity for one-to-one teaching. Students will also attend journal clubs and teaching conferences.

CLINICAL RESEARCH IN RHEUMATOLOGY

Course Type: Clinical Research

Department/Division: Medicine/Rheumatology

Course Director: Dr. Michelle Petri

Contact: 410-550-1925, Caitlin Bishop

Availability/Duration: Usually one month during the academic year; summer project may be longer period.

Drop Period: 3 month

Description: Lupus erythematosus is a chronic auto-immune disease of young women that affects virtually every organ system. In the past students have been able to publish an abstract and paper on their work. Recent topics include coronary artery disease, thrombotic events, miscarriage, preterm birth, hyperlipidemia, satisfaction with care and measuring disease damage.

RESEARCH OPPORTUNITIES

CARDIOLOGY DIVISION

DR. S. ACHUFF

Clinical cardiology

DR. A. ARBAB-ZADEH

Coronary circulation and disease; coronary/cardiac imaging; coronary risk prediction

DR. H. ASHIKAGA

Cardiac arrhythmias; cardiology; electrophysiology

DR. T. AVERSANO

Arrhythmia; cardiology; cardiomyopathy; cardiovascular disease; clinical cardiology; coronary artery disease; general cardiology; heart disease; heart failure; hypertension; invasive cardiology; irregular heartbeat; preventive medicine

DR. S. BANSAL

Cardiac arrhythmias; cardiology; electrophysiology

DR. R. BERGER

Cardiac electrophysiology; hemodynamics of cardiac pacing; autonomic influences on cardiovascular system

DR. S. BERKOWITZ

Cardiology

DR. R. BHATIA

Cardiology

DR. M. BLAHA

Cardiology; preventative cardiology

DR. R. BLUMENTHAL

Atherosclerosis progression and regression; medical and interventional management of coronary artery disease

DR. M. BRENNAN

Cardiology; cardiovascular disease; clinical cardiology; echocardiography; heart failure; hypertension; valvular disease

DR. J. A. BRINKER

Angiography; angioplasty; myocardial function

DR. H. CALKINS

Clinical and cellular electrophysiology

DR. A. CAMMARATO

Basic investigation in molecular contractile physiology

DR. M. CHACKO

Coronary artery disease, peripheral arterial disease; carotid artery disease valvular heart disease; structural heart disease; acute coronary syndromes; stents; cardiac critical care

DR. N. CHANDRA-STROBOS

Cardiopulmonary resuscitation

DR. O. CINGOLANI

Heart failure; hypertension; cardiac remodeling and hypertrophy

DR. M. CORRETTI

Ultrasound assessment of endothelial function/vascular physiology; echocardiography; valve disease

DR. S. DESAI

Cardiology; cardiovascular disease; heart disease

DR. R. GEORGE

Cardiovascular CT; nuclear cardiology; myocardial perfusion imaging; non-invasive imaging of coronary atherosclerosis; subclinical atherosclerosis

DR. G. GERSTENBLITH

Age changes in cardiac function

DR. S.H. GOTTLIEB

Ischemic heart disease; diabetes and heart disease

DR. L. GRIFFITH
Clinical cardiology

DR. T. HAILU
Cardiology; echocardiography and nuclear cardiology; heart disease; nuclear stress tests; transesophageal echocardiography

DR. H. R. HALPERIN
Biomedical engineering and biomechanics; electrophysiology

DR. A. HAYS
Cardiac MR; proton spectroscopy; coronary endothelial function; diabetic cardiomyopathy; echocardiography

DR. C. HWANG
Acute coronary care; percutaneous coronary intervention; percutaneous treatment of valvular stenosis; pericardiocentesis; peripheral angiography; trans-radial intervention

DR. P. JOHNSTON
Stem cell therapy; interventional cardiology; coronary disease

DR. S. JONES
Lipids and cardiovascular risk stratification

DR. D. JUDGE
Pathogenesis of Marfan Syndrome; identification of genes responsible for familial cardiomyopathies

DR. E. KASPER
Cardiomyopathy; heart transplantation; clinical cardiology

DR. D. A. KASS
Hemodynamics; left ventricular function

DR. M. KELEMEN
Exercise

DR. A. KOLANDAIVELU
MR imaging of intermingled arrhythmic and non-arrhythmic heartbeats

DR. B. KRAL
Genetic and biological mechanisms of premature coronary artery disease; noninvasive imaging of coronary atherosclerosis; stress myocardial perfusion imaging; cardiovascular and genetic epidemiology; association of mental stress and cardiovascular disease

DR. C. KWON
Basic investigation in cardiovascular development

DR. E. G. LAKATTA
Age and the cardiovascular system

DR. J. LIMA
Left ventricular remodeling; mitral valve disease; transesophageal echocardiography; MRI; CT

DR. J. MARINE
Electrophysiology

DR. S. MAYER
Echocardiography

DR. E. MICHOS

Preventive cardiology; heart disease in women; subclinical atherosclerosis imaging; vitamin D deficiency and cardiovascular risk

DR. J. MILLER

Acute coronary syndromes; antiplatelet and antithrombotic therapy; microvascular obstruction; multidetector computed tomography angiography; novel therapies for myocardial infarction; angiogenesis; peripheral vascular disease; novel therapies for peripheral vascular disease; claudication; angiogenesis

DR. M. MUKHERJEE

Acute coronary care; coronary artery disease; general cardiology; cardiovascular diseases; echocardiography; heart disease prevention and treatment in women, hypertension, non-invasive imaging; pulmonary hypertension

DR. S. NAZARIAN

Clinical electrophysiology

DR. C. NDUMELE

Acute coronary care; coronary artery disease; coronary care unit; dyslipidemia; high cholesterol; ischemic heart disease; preventive cardiology; risk factor modification

DR. B. O'ROURKE

Cellular physiology; mitochondrial metabolism

DR. P. OUYANG

Cardiovascular pharmacology

DR. J. PORTERFIELD

General cardiology; echocardiography

DR. W. POST

Echocardiography and hypertension

DR. E. RATCHFORD

Claudication/peripheral arterial disease; carotid stenosis

DR. J. RESAR

Interventional cardiology

DR. J. RICKARD

Electrophysiology

DR. R. ROUF

Heart failure

DR. S. RUSSELL

Heart failure; cardiac transplantation

DR. M. SALAMEH

Vascular disease and diagnostics

DR. S. SCHULMAN

Clinical trials; hypertension

DR. E. P. SHAPIRO

Echocardiography

DR. H. SILBER
Acute coronary care; MRI

DR. S. SINHA
Clinical electrophysiology

DR. D. SPRAGG
Clinical electrophysiology

DR. K. STEWART
Exercise training for cardiovascular disease and heart failure; exercise training for diabetes and hypertension; weight loss effects through diet and exercise on body composition and CV health; exercise for cancer patients; increasing physical activity in the community

DR. N. STRAHAN
Echocardiography

DR. H. TANDRI
Clinical electrophysiology

DR. J. TANIO
Clinical cardiology

DR. R. TEDFORD
Cardiac transplant; cardiology; cardiomyopathy; congestive heart failure; endomyocardial biopsy; heart failure; right heart catheterization; mechanical circulatory support

DR. D. THIEMANN
Information systems; angioplasty

DR. G. TOMASELLI
Cellular electrophysiology

DR. T. A. TRAILL
Regional cardiac function; congenital heart disease

DR. J. WEISS
Ultrasound imaging; ventricular function

DR. C. VALDIVIEZO-SCHLOMP
Cardiology; cardiovascular disease; cardiovascular disease in women; heart disease; heart disease prevention and treatment in women; non-invasive imaging; preventive cardiology

DR. G. WALFORD
Cardiology; cardiovascular disease; heart disease

DR. R. WEISS
Cardiac metabolism; NMR

DR. M. WILLIAMS
Platelets and acute coronary syndromes

DR. S. WILLIAMS
Cardiology; cardiovascular disease; heart disease

DR. I. WITTSTEIN
Heart failure; clinical trials

DR. K. WU
Echocardiography; MRI

DR. S. ZAKARIA
Cardiac disease; cardiology; cardiovascular disease; cardiovascular medicine; critical care medicine; heart disease

DR. R. ZIEGELSTEIN
Clinical cardiology; depression and its effects on cardiac diseases

ENDOCRINOLOGY DIVISION

DR. D. BALL
Medullary thyroid carcinoma; multiple endocrine neoplasia; regulation of calcitonin gene expression

DR. T. BROWN
Endocrine problems in HIV; diabetes mellitus; osteoporosis; hypogonadism

DR. A. DOBS
Hyperlipidemia and diabetes mellitus; gonadal disorders

DR. T. DONNER
Diabetes mellitus

DR. S. GOLDEN
Cardiology and diabetes

DR. S. JAN DE BEUR
Metabolic bone disorders

DR. R. KALYANI
Diabetes mellitus

DR. P. W. LADENSON
Thyroid disorders; thyroid hormone therapy; endocrine health economic analysis

DR. J. MAMMEN
Thyroid disorders

DR. N. MATHIOUDAKIS
Diabetes mellitus

DR. K. MOSELEY
Metabolic bone disorders

DR. R. SALVATORI
Neuroendocrine and pituitary disorders

DR. D. SELLMAYER
Metabolic bone disorders

DR. G. S. WAND
Neuroendocrine and pituitary disease; cellular mechanisms of addiction

DR. M. XING
Thyroid cancer; pituitary disorders

GASTROENTEROLOGY DIVISION

DR. J. ABRAHAM

Delivery of radioisotope to cancer cells by novel small peptides

DR. S. BRANT

Ulcerative colitis; genetics of inflammatory bowel disease; Crohn's disease

DR. M. CANTO

Therapeutic endoscopy; endoscopic ultrasonography, Barrett's esophagus; outcomes research in endoscopy;

DR. S. CHAKRAVARTI

Extracellular matrix changes in inflammatory bowel disease; gene expression profiling DNA microarray techniques

DR. J. CLARK

Swallowing disorders; esophageal disorders; gastroesophageal reflux disease; eosinophilic esophagitis; motility disorders

DR. M. DONOWITZ

Diarrheal diseases; inflammatory bowel disease

DR. F. GIARDIELLO

Colon cancer; polyps and colon cancer risk assessment

DR. M. GOGGINS

Molecular biology of pancreatic cancer

DR. J. HAMILTON

Acute and chronic viral, alcoholic, nonalcoholic, autoimmune, cholestatic, and drug-induced liver disease

DR. S. HUTFLESS

Inflammatory bowel disease epidemiology

DR. A. KALLOO

Therapeutic endoscopy; pancreatitis; sphincter of Oddi motility disorders

DR. M. KHASHAB

Pancreatitis; pancreatic cyst; endoscopic ultrasound; ERCP

DR. O. KOVBASNJUK

Ion transport properties of ionophores in artificial bilayer lipid membranes; analytical and quantitative optical microscopy; quantitative fluorescence microscopy

DR. L. LEE

GI and liver complications following bone marrow transplantation; molecular genetics of hepatocellular carcinoma; transcriptional regulation of the c-Myc oncoprotein

DR. A. LENNON

Pancreatitis; pancreatic cyst; endoscopic ultrasound; ERCP

DR. X. LI

Regulation of Na-H₂ channels by lipid RAFTS; IBD research

DR. Z. LI

Nutritional effects on hepatic innate immune system and their roles in liver injury and regeneration

DR. S. MELTZER

Gastrointestinal cancer and precancer biomarker discovery; development and validation, genomics, epigenomics, and bioinformatics; early detection of cancer; outcomes research in cancer and precancer

DR. E. MEZEY

Alcoholic liver disease and fibrosis; liver transplantation

DR. Y. MORI

Identification and characterization of novel tumor suppressor genes in gastric and colon cancers utilizing systematic genome-wide genetic and epigenetic screening methods; mismatch-repair deficiency-associated cancers including HNPCC

DR. G. MULLIN

The role of early intervention of nutritional support in the hospitalized setting to improve outcomes

DR. J. POTTER

Effect of ethanol and its metabolites on the $\alpha_2(I)$ and $\alpha_1(I)$ collagen promoters; role of leptin on fibrogenesis; role of Kupffer cells, cytokines, retinoic acid, and leptin in stellate cell activation (transdifferentiation) and collagen production; hormonal regulation of rat class I alcohol dehydrogenase; transcriptional regulation of rat class I alcohol dehydrogenase promoter

DR. R. SARKER

Signaling pathway of human intestinal Na^+/H^+ exchanger 2 (NHE3) regulation; transactivation of NHE3; knock-down NHE3 regulatory proteins by shRNA

DR. V. SINGH

Acute and chronic pancreatitis; therapeutic endoscopy; resource utilization and cost effectiveness in pancreaticobiliary disease

DR. E. STEIN

Motility of GI tract; swallowing disorder; esophageal disorders; gastroesophageal reflux disease; eosinophilic esophagitis; gastroparesis; GI motility disorders

DR. C. M. TSE

Function and regulation of sodium/hydrogen exchange-2 isoform; molecular biology of nucleoside transporters; roles in nutrient and drug absorption

DR. N. ZACHOS

Regulation of intestinal ion transport by protein trafficking and multi-protein complexes; intracellular calcium signaling; cell-penetrating peptides as therapy for acute diarrhea

GERIATRIC MEDICINE DIVISION

DR. P. ABADIR

Basic research mitochondria/frailty

DR. A. ARBAJE

Health services research on care transition

DR. J. BARRON

Primary care of older adults

DR. M. BELLANTONI

Osteoporosis; postacute care

DR. C. BOYD

Primary care; research on multimorbidity

DR. J. R. BURTON
Primary care; continence evaluations; geriatrics education

DR. D. CAYEA
Primary care; educational outcomes research

DR. C. CHRISTMAS
Primary care; educational outcomes research

DR. J. COLBURN
Outpatient geriatric primary care

DR. P. COLVIN
Hip fracture geriatrics co-management service

DR. S. DURSO
Community-based geriatrics; consultation for complex medical illness

DR. N. FEDARKO
Bone metabolism; tumor progression

DR. J. FINKELSTEIN
Chronic disease informatics program

DR. T. FINUCANE
Primary care; postacute care; ethical issues regarding health care decisions

DR. J. HAYASHI
House calls

DR. B. LEFF
Primary care; new approaches to treating elderly patients at home

DR. S. LENG
Postacute care; molecular biology of aging and frailty

DR. M. MCNABNEY
Health care delivery in a capitated model; community-based long-term care

DR. E. OH
Clinical dementia care; biomarkers for Alzheimer's disease research

DR. R. VARADHAN
Mathematical modeling of multisystem dysregulation in frailty

DR. J. WALSTON
Postacute care; genetics and clinical research applications to diabetes in the elderly

DR. Q. XUE
Biostatistical models of frailty

DR. S. YASAR
Dementia; clinical care and research

HEMATOLOGY DIVISION

DR. R. BRODSKY

Bone marrow failure disorder

DR. J. GERBER

Leukemic stem cell biology

DR. T. S. KICKLER

Immunohematology

DR. S. LANZKRON

Anemias and other bleeding disorders, with emphasis on sickle cell disorders

DR. M. MCDEVITT

Myeloproliferative and myelodysplastic disorders

DR. A. MERCHANT

Cancer stem cells

DR. A. MOLITERNO

Polycythemia vera

DR. P. NESS

Transfusion practices

DR. S. SHANBHAG

General hematology and lymphoproliferative disorders

DR. M. STREIFF

Hemorrhagic and thrombotic disorders

ALLERGY & CLINICAL IMMUNOLOGY DIVISION

DR. D. AKINYEMI

Outcomes in drug allergy

DR. K. BARNES

The genetic epidemiology and molecular genetics/genomics of complex lung inflammatory diseases

DR. B. CANNING

Innervation of the airways

DR. L. GAO

Genetic epidemiology and functional genomics of complex lung disease

DR. P. GAO

Molecular genetics of asthma

DR. R. HAMILTON

Humoral immune responses in allergic disease

DR. N. HANSEL

Genetic and environmental determinants of obstructive airway disease

DR. M. KOLLARIK

Influence of inflammation on the visceral nervous system

DR. D. W. MACGLASHAN, JR.
Mechanisms of signal transduction

DR. R. MATHIAS
Genetics of asthma, allergy and cardiovascular disease

DR. A. MYERS
Airway inflammation and neurobiology

DR. S. SAINI
Mast cell and basophil biology in allergic disease

DR. J. SCHROEDER
Innate vs adaptive immunity in regulating cellular responses

DR. J. TVERSKY
Dendritic cells and immunotherapy

DR. B. J. UNDEM
Nerve inflammation interactions

DR. B. VONAKIS
Epithelial cell biology and eicosanoid receptors

DR. Z. ZHU
Transgenic mouse models of asthma

INFECTIOUS DISEASES DIVISION

DR. A. ANDRADE
HIV clinical trials

DR. P. AUWAERTER
Lyme disease; general ID clinical care

DR. R. AVERY
Transplant and oncology infectious diseases

DR. A. BALAGOPAL
HIV/HCV pathogenesis

DR. J. G. BARTLETT
Anaerobic infections; antibiotic-associated diarrhea and colitis; HIV/AIDS

DR. S. BERRY
HIV health outcomes

DR. W. BISHAI
Tuberculosis

DR. J. BLANKSON
HIV pathogenesis

DR. R. BOLLINGER
Host defense in HIV; tropical infections

DR. R. CHAISSON
Mycobacterial infections; HIV/AIDS

DR. L. CHANG
International HIV

DR. S. COSGROVE
Infection control and antibiotic control

DR. A. COX
Pathogenesis of Hepatitis C

DR. S. DORMAN
TB and atypical mycobacteria

DR. C. FLEXNER
AIDS; clinical pharmacology

DR. J. GALLANT
Epidemiology of HIV

DR. C. GAYDOS
Chlamydia pneumonia and STDs

DR. K. GEBO
HCV and HIV databases

DR. K. GHANEM
Sexually transmitted infections

DR. D. GRIFFIN
Pathogenesis of viral infections of the central nervous system

DR. A. GUPTA
HIV and co-morbidities management research in resource-limited settings

DR. C. HOFFMAN
International HIV

DR. N. HYNES
STD's; tropical medicine

DR. P. KARAKOUSIS
Tuberculosis

DR. G. KIRK
HCV Epidemiology

DR. J. KERULY
Epidemiology and service utilization in HIV management

DR. G. LUCAS
HIV and substance abuse

DR. L. MARAGAKIS
Infection control

DR. K. MARR
Transplant and oncology infectious diseases

DR. R. MCKENZIE
Travel medicine; HIV

DR. M. MELIA
ID and HIV clinical care

DR. R. MOORE
HIV clinical cohort studies

DR. E. NUERMBERGER
TB and pneumonia

DR. W. OSBURN
Neutralizing antibody responses in HCV infection; role of CCR5 in clearance of HBV

DR. T. PERL
Hospital infection control

DR. T. C. QUINN
Sexually transmitted diseases; chlamydia; AIDS

DR. S. RAY
Hepatitis C virology

DR. A. ROMPALO
Sexually transmitted diseases

DR. C. SEARS
Mechanisms of diarrhea

DR. M. SHAH
TB diagnostics

DR. S. SHOHAM
Transplant and oncology infectious diseases

DR. J. SILICIANO
Pharmacodynamics of HIV-1 drugs; mechanisms of viral persistence

DR. R. SILICIANO
Pharmacodynamics of HIV-1 drugs; mechanisms of viral persistence

DR. M. SULKOWSKI
Hepatitis

DR. C. THIO
Viral Hepatitis

DR. D. THOMAS
Hepatitis

DR. J. ZENILMAN
Sexually transmitted diseases; H. simplex; HIV

GENERAL INTERNAL MEDICINE DIVISION

DR. A. ALVANZO

Substance use disorders and posttraumatic stress with emphasis on relationship between physical, sexual, and/or emotional abuse and substance abuse in women; race/ethnicity and sex differences in substance use disorders; screening and brief interventions for substance misuse

DR. L. APPEL

Prevention of blood pressure-related cardiovascular and kidney diseases through pharmacologic and non-pharmacologic approaches, often nutrition-based

DR. B. ASHAR

Dietary supplements; disease prevention; complementary and alternative medicine; physician conflicts of interest; anemia; medical education

DR. E. BASS

Evidence-based medicine; medical and surgical outcomes research; cost-effectiveness; community health partnerships; medical education and curriculum development

DR. M. BEACH

Physician-patient relationships and communication, respect, bioethics, health care quality for vulnerable populations; HIV; sickle-cell disease.

DR. D. M. BECKER

Genetics/epidemiology of premature cardiovascular disease (CVD); molecular and physiologic aspects of CVD risk; community based CVD prevention; social/behavioral science; health disparities

DR. W. BENNETT

Women's health; diabetes and obesity

DR. Z. BERGER

Patient-provider communication; bioethics; clinical epidemiology; the primary care physician's role in cancer control

DR. G. BERKENBLIT

Improving resident training in HIV outpatient care; design and evaluation of an internet-based curriculum

DR. R. BOONYASAI

Care coordination at hospital discharge; teamwork; quality improvement for chronic disease; hypertension

DR. L. BOULWARE

Quality and access to care in chronic kidney disease; organ donation; racial and ethnic disparities

DR. D. BROTMAN

Hospital medicine; perioperative medicine; hemostasis and thrombosis; the physiological stress response

DR. R. BROWN

Obesity

DR. G. CHANDER

Clinical epidemiology of HIV/AIDS and hepatitis C

DR. J. CLARK

Obesity, diabetes, and related conditions including nonalcoholic fatty liver disease (NAFLD)

DR. S. CLEVER

Patient-physician communication; medical education

DR. J. COFRANCESCO

Medical education; HIV care and antiretroviral management; HIV lipodystrophy and metabolic complications

DR. L. COOPER

Patient-physician relationship and communication; patient-centered care; race/ethnic disparities

MS. A. DALCIN

Obesity; prevention and treatment of cardiovascular disease; health disparities

DR. G. DAUMIT

Medical comorbidity; access to and quality of primary medical care for individuals with severe and persistent medical illness; health disparities

DR. L. FELDMAN

Resident education; evidence-based medicine; consult medicine

DR. A. FITZGERALD

Medical education; leadership skills training; primary care; Johns Hopkins Medicine International patient care; health care disparities education

DR. L. FLOREA

Algorithms and tools for cDNA and genomic sequence alignment; comparative and evolutionary genomics; gene annotation; alternative splicing and its regulation; miRNA genomics; peptide-based vaccine design

DR. J. FLYNN

Arthritis; ambulatory education and the delivery of primary care in an academic setting

DR. D. FORD

Primary care research; epidemiology and treatment of depression; internet health applications; physician health

DR. G. GELLER

Communication and decision-making; ethics and professionalism; genetics; women's health; medical education; complementary and alternative medicine

DR. M. GOYAL

Effects of meditation on chronic pain and symptoms; stress and overall health; low-cost means to improve health in rural India; ethics

DR. R. GREER

Chronic kidney disease; primary care; ethnic/race disparities

DR. K. GUDZUNE

Obesity; patient-physician communication; social networks

DR. C. HERZKE

Resident and student education; infectious diseases-notably infection control; quality improvement

DR. F. HILL-BRIGGS

Chronic disease self-management; disability; behavioral intervention trials; health disparities; functional impairment and disability

DR. M. HUGHES

Clinical bioethics; research ethics; palliative care; philosophy of medicine; ambulatory care

DR. M. LAZO

Nonalcoholic fatty liver disease; diabetes; epidemiologic studies

DR. D. LEVINE

Community-based prevention of cardiovascular disease; behavioral aspects of prevention

DR. H. LEVY

General internal medicine; genetics

MR. D. LICHTMAN

Medical procedures; hospitalist medicine

DR. S. MARINOPOULOS

Evidence-based medicine; health care administration

DR. M. MARKOWSKI

Anti-inflammatory agents and cancer incidence; prostate cancer; men's health; hospitalist medicine

DR. N. MARUTHUR

Primary care; individualized medicine for the prevention and treatment of type 2 diabetes and obesity; pharmacogenomics of type 2 diabetes; comparative effectiveness

DR. H. MICHTALIK

Quality improvement and systems management; patient safety issues especially as related to patient census; transitions of care from acute to primary care

DR. E. MILLER

Hypertension; clinical trials; non-pharmacologic therapies; antioxidants.

DR. R. MILLER

Women's health; physician practice issues; medical education

DR. A. MONROE

Cardiovascular disease risk reduction in HIV-infected patients; optimizing care of HIV-infected patients with medical comorbidities

DR. R. D. MOORE

Pharmacoepidemiology; outcomes research in HIV treatment; epidemiology of substance abuse and alcoholism

DR. T. NIESSEN

Medical education; patient safety; quality improvement

DR. A. PAHWA

Hospitalist medicine

DR. K. PEAIRS

Cancer survivorship and screening; medical education

DR. M. PERTEA

Computational gene finding; splice site prediction; sequence motif finding

DR. G. PROKOPOWICZ

General internal medicine; medical informatics; hypertension

DR. R. QAYYUM

Platelet biology; hemostasis and thrombosis; pharmacogenomics of anti-platelet agents; genetic epidemiology; systematic reviews; meta-analysis

DR. P. RANASINGHE

Internal and preventive medicine; international health; health and wellness

DR. K. ROBINSON

Evidence-based health care; health informatics

DR. S. SALZBERG

Genomics; bioinformatics; gene finding; genome assembly; genome technology

DR. J. SEGAL

Pharmacoepidemiology; comparative effectiveness research including evidence based review; advanced methods for using observational data; evaluation of diagnostic tests; diabetes; venous thrombosis and blood disorders;

DR. Z. SIDDIQUI

Clinical reasoning; preoperative medicine; international medicine

DR. S. SINGH

Pharmacoepidemiology; drug safety; comparative effectiveness; health equality

DR. S. SISSON

Ambulatory medicine; medical education; community outreach

DR. C. SNYDER

Quality of life for cancer patients undergoing treatment; coordination of care for cancer survivors; patient-reported outcomes assessment; quality of medical care; cancer outcomes and health services research

DR. R. STEWART

Medical education; preventive medicine; health outcomes; community outreach

DR. J. SUGARMAN

Philosophical and empirical research in biomedical ethics

MS. L. SWARTZ

Project management; multi-center randomized controlled trials

DR. D. VAIDYA

Mechanisms of vascular dysfunction; assessment of cardiovascular risk factors

DR. N. WANG

Longitudinal data analysis; statistical and epidemiologic methods; randomized controlled trials; multicenter studies

DR. L.D. WOOSTER

Healthcare management; quality clinical outcomes; preventive care in pulmonary diseases; medical economics; medical education integrated into clinical practice

MS. L. YANEK

Cardiovascular disease in families and risk factor modification

DR. H. YEH

Epidemiology; diabetes; obesity; cancer; lung functions

DR. J. YOUNG

Genetic epidemiology; novel risk factors for CVD; hypertension; insulin resistance

OCCUPATIONAL & ENVIRONMENTAL MEDICINE

DR. E. BERNACKI

Occupational epidemiology; cumulative trauma disorders

DR. B. SCHWARTZ
Lyme disease; occupational epidemiology

DR. P. STRICKLAND
Biomarkers of genotoxicity; biomarkers of PAH exposure and susceptibility

DR. X. TAO
Occupational epidemiology

CLINICAL PHARMACOLOGY DIVISION

DR. K. DOOLEY
Anti-tuberculosis drugs; co-treatment of HIV and tuberculosis

DR. C. FLEXNER
Anti-HIV drugs; drug metabolism and transport; mechanisms of drug action and toxicity

DR. C. HENDRIX
Microbicide prophylaxis

DR. B. PETTY
Clinical pharmacology; Phase I, II studies

DR. T. SHAPIRO
Antiparasitic chemotherapy

NEPHROLOGY DIVISION

DR. M. ATTA
HIV kidney disease; acute kidney disease; metabolic bone disease; hypertension

DR. M. CHOI
Electrolyte disorders; nephrolithiasis; glomerular disease

DR. M. ESTRELLA
HIV; Diabetic nephropathy

DR. D. FINE
SLE; HIV; glomerular kidney disease ; toxin related kidney disease

DR. P. SCHEEL
Dialysis vascular access; dialysis; retroperitoneal fibrosis ; acute kidney injury

DR. C. SPERATI
Hypertension; glomerular disease; electrolyte disorders

DR. S. TURBAN
Chronic kidney disease; hypertension

DR. T. WATNICK
Genetic diseases of the kidney

PULMONARY & CRITICAL CARE MEDICINE DIVISION

DR. N. AGGARWAL
Acute lung injury; gene expression

DR. R. AURORA
Sleep medicine

DR. S. BOSE
Chronic obstructive pulmonary disease; asthma; vitamin D deficiency

DR. M. BOYLE
Adult cystic fibrosis; clinical cystic fibrosis research

DR. R. BROWER
Critical care medicine; adult respiratory distress syndrome

DR. W. CHECKLEY
Critical care; acute lung injury; international clinical trials

DR. F. D'ALESSIO
Acute lung injury resolution

DR. M. DAMARLA
Endothelial barrier dysfunction; MAP Kinase signaling in apoptosis-induced ventilator-associated lung injury

DR. R. DAMICO
Endothelial cell apoptosis; LPS-induced acute lung injury

DR. S. DANOFF
Transcription genes, neuronal development, BAP135 protein; interstitial lung disease

DR. E. DAUGHERTY
Infection prevention in the ICU; critical care during epidemics

DR. G. DIETTE
Asthma outcomes; quality of care, quality improvement

DR. D. FELLER-KOPMAN
Interventional pulmonology

DR. H. FESSLER
Cardiopulmonary interactions; intensive care

Dr. B. GARIBALDI
Idiopathic pulmonary fibrosis; interstitial lung disease

DR. D. HAGER
Critical care medicine; catastrophic event preparedness and response

DR. P. HASSOUN
Pulmonary hypertension; xanthine oxidoreductase in acute lung injury

DR. M. HORTON
Interstitial lung disease; idiopathic pulmonary fibrosis; extra cellular matrix; chemokines

DR. J. JUN
Sleep medicine; obstructive sleep apnea

DR. B. KIM
Pulmonary hypertension; xanthine oxidoreductase in acute lung injury

DR. L. KING
Acute lung injury; critical care; epithelial cell biology

DR. J. KIRKNESS

Sleep disordered breathing

DR. T. KOLB

Pulmonary arterial hypertension; vascular remodeling; acute lung injury

DR. N. LECHTZIN

Neuromuscular disease; cystic fibrosis

DR. M. LIU

Studies of asthma and pathogenesis and therapy

DR. S. MATHAI

Pulmonary hypertension; scleroderma in pulmonary hypertension

DR. M. MCCORMACK

Asthma; COPD; environmental impacts on airway disease

DR. C. MERLO

Cystic fibrosis epidemiology; lung transplant

DR. D. MOLLER

Sarcoidosis; Molecular and cellular immunology of lung diseases; mechanisms of T-cell activation

DR. D. NEEDHAM

Critical care medicine; ventilator-induced lung injury outcomes

DR. E. NEPTUNE

Receptor signaling; neutrophils

DR. J. ORENS

Lung transplantation; emphysema; lung volume reduction surgery; exercise physiology

DR. S. PATIL

Neuromodulation of upper airway obstruction during sleep; testing of sleep apnea treatment devices

DR. D. PEARSE

Ischemia-reperfusion lung injury; airway smooth muscle hyper-responsiveness

DR. V. POLOTSKY

Cardiorespiratory abnormalities in obesity and sleep disorders

DR. N. PUNJABI

Clinical epidemiology; pulmonary and sleep medicine

DR. C. RAND

Behavioral pulmonology; patient compliance in asthma treatment; smoking cessation

DR. K. REIKERT

Asthma disparities; cystic fibrosis

DR. H. SCHNEIDER

Sleep disordered breathing

DR. A. R. SCHWARTZ

Respiratory and upper airway physiology; sleep apnea

DR. J. SHAM
Electrophysiology and calcium homeostasis in pulmonary and cardiac myocytes and smooth muscle transport

DR. L. SHIMODA
Pulmonary vascular biology; oxidative stress; endothelial cell signaling

DR. R. SIDHAYE
Aquaporins in the lung; epithelial cell biology; acute lung injury

DR. L. SILHAN
Lung transplantation; interstitial lung disease

DR. P. L. SMITH
Sleep disordered breathing

DR. P. SOSNAY
Adult cystic fibrosis; genomics

DR. J. T. SYLVESTER
Pulmonary vascular biology; medical intensive care

DR. P. B. TERRY
Pulmonary physiology; medical ethics

DR. E. WAGNER
Angiogenesis in the lung; bronchial vascular proliferation and function

DR. J. WANG
Calcium pathways in hypoxic pulmonary hypertension

DR. R. A. WISE
Cardiopulmonary physiology; autoimmune pulmonary disease; chronic obstructive pulmonary disease

DR. L. YARMUS
Interventional pulmonology

DR. R. C. YUNG
Diagnosis of and therapy for early and advanced cancer; aerosolized cytokines

RHEUMATOLOGY DIVISION

DR. F. ANDRADE
Mechanisms of autoimmunity

DR. A. BAER
Evaluation and management of Sjogren's syndrome, metabolic myopathies, and gout

DR. C. BINGHAM
Clinical therapeutics of rheumatoid arthritis and osteoarthritis; oral health in rheumatic diseases; RA & OA clinical trial design

DR. J. BIRNBAUM
Neurological manifestations of systemic rheumatic disease

DR. L. CASCIOLA-ROSEN
Mechanisms of autoimmunity, especially myositis and scleroderma

DR. L. CHRISTOPHER-STINE
Epidemiology and therapy of inflammatory myositis

DR. E. DARRAH
Mechanisms of autoimmunity

DR. A. GELBER
Epidemiology of arthritis and rheumatic disorders

DR. T. GRADER-BECK
Translational research in systemic autoimmunity

DR. U. HAQUE
Evaluation and management of inflammatory arthritis

DR. L. HUMMERS
Epidemiology and treatment of scleroderma

DR. R. MANNO
Epidemiology of aging and arthritis

DR. Z. MCMAHAN
Evaluation and management of arthritis and fibromyalgia

DR. A. ROSEN
Mechanisms of rheumatic diseases

DR. P. SEO
Disease activity and novel therapeutics of systemic vasculitis

Dr. A. SHAH
Epidemiology and management of scleroderma

DR. S. SULE
Evaluation and management of pediatric rheumatology

DR. M. SOLOSKI
T-cell immunity in infection

DR. F. WIGLEY
Raynaud's phenomenon, scleroderma, and related disorders

MOLECULAR BIOLOGY AND GENETICS

ME:260.699

FUNDAMENTALS OF GENETICS (ME:260.708)

Course Type: Other

Department: Molecular Biology and Genetics

Course Director: Dr. Duojia Pan

Telephone Number: 410-502-3179

Faculty: Biochemistry, Cell, and Molecular Biology and Genetics faculty

Availability/Duration: Q2; 16 lectures and exam; Tues & Thurs 9-10:30 a.m.

Prerequisite(s): Molecular Biology, special permission

Drop Period: 1 month

Description: This lecture course will cover fundamental principles of genetics, focusing primarily on model systems. Problem sets will be an integral learning tool in this course

SPECIAL STUDIES AND RESEARCH

Course Type: Basic Research

Department: Molecular Biology and Genetics

Course Director: As arranged

Faculty: All faculty in the Department of Molecular Biology and Genetics

Availability/Duration: As arranged

Drop Period: 1 month

Description: Opportunities to carry out special studies and research in various branches of molecular genetics, immunology, and microbiology will be made available not only to candidates for advanced degrees but also to other qualified students. Arrangements for such work must be made with individual members of the staff.

MOLECULAR BIOLOGY AND GENOMICS (ME:260.709)

Course Type: Other

Department: Molecular Biology and Genetics

Course Director: Dr. Rachel Green

Telephone Number: 410-614-4922

Faculty: Biochemistry, Cell, and Molecular Biology and Genetics faculty

Availability/Duration: Q2, MWF, 9-10:30 a.m.; 17 lectures and exam

Prerequisite(s): Courses in organic chemistry, physical chemistry and Biochemistry B1 or its equivalent, or by special permission.

Drop Period: 1 month

Description: A lecture course dealing with the structure, physical properties, biosynthesis and degradation of nucleic acids and proteins. There will also be a focus on genetics and genetic regulatory mechanisms of bacteria and bacteriophages. The course is experimental approach-focused in an effort to train students to be analytical research scientists.

GREAT EXPERIMENTS IN BIOLOGY

Course Type: Other

Department: Molecular Biology and Genetics

Course Director: Dr. Jeremy Nathans

Telephone Number: 410-955-4679

Faculty: Dr. Nathans

Availability/Duration: Q4; 11 lectures and exam

Prerequisite(s): Basic knowledge of molecular biology, genetics, cell biology, and biophysics

Drop Period: 1 month

Description: In this course, we will read approximately 30 classic papers in the biological sciences. The course aims to expose students to some of the great experiments from 1700 to the present, and the creative thinking that inspired them. Authors include Benjamin Franklin, Robert Koch, Selig Hecht, Lubert Stryer, Christine Nusslein-Volhard, Alec Jeffries, and Avram Hershko.

RESEARCH OPPORTUNITIES

DR. ELIZABETH CHEN

Cell-cell fusion in development and regeneration

DR. JEFFRY CORDEN

Regulation of eukaryotic gene expression

DR. BRENDAN CORMACK

Microbial pathogenesis; chromatin silencing

DR. STEPHEN DESIDERIO

Genome plasticity; immunologic diversity and cancer

DR. RACHEL GREEN

Molecular mechanisms of translation; mRNA surveillance in bacteria and eukaryotes

DR. CAROL GREIDER

Chromosome structure and function; telomere length regulation

DR. SE-JIN LEE

Growth and differentiation factors in mammalian development

DR. JEREMY NATHANS

Molecular biology of vision; developmental neurobiology

DR. DUOJIA PAN

Molecular genetics of tumor suppression genes and oncogenes

DR. RANDALL REED

Molecular basis of olfaction; mechanisms of neurogenesis

DR. SERGI REGOT

Single cell signaling dynamics; live cell biosensors

DR. GERALDINE SEYDOUX

Establishment of embryonic polarity and germ cell fate

DR. SINISA URBAN

Proteolysis inside the cell membrane; cell signaling and pathogen infection

NEUROLOGY

ME:200.699

NEUROPATHOLOGY CONFERENCE

Course Type: Tutorial
Department/Division: Neurology
Course Director: Dr. Juan Troncoso
Telephone Number: 410-955-5632
Faculty: Neurology faculty
Availability/Duration: By appointment
Prerequisite(s): Neuropathology - neurology course
Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Students will become familiar with the principles of neuropathology and clinical pathologic correlation. Students attend weekly Brain Cutting Conference, Neurology CPC, and Neurology and Neurosurgery Grand Rounds. Opportunities for research in experimental techniques in neurobiology as applied to CNS disease are available.

NEUROLOGY ELECTIVE

Course Type: Clinical Elective
Department/Division: Neurology
Course Director: Dr. Christopher Oakley
Contact: Bernadette Clark, Course Administrator; mclark44@jhmi.edu 410-502-7393
Faculty: Dr. Christopher Oakley and Neurology faculty
Availability/Duration: Contact course administrator; clinical elective rotations must follow the JHUSOM schedule for the Neurology Core Clerkship, **offered year round for visiting students.**
Prerequisite(s): Core Clerkships in Medicine and Neurology (if applicable)
Drop Period: 1 month

Description: A clinical elective is offered on the adult neurology inpatient services at the Johns Hopkins Hospital or at the Johns Hopkins Bayview Medical Center. Neurology elective students must devote a minimum of four weeks to inpatient neurology during the elective.

THE HOSPITAL

Course Type: Other
Department/Division: Interdepartmental
Course Director: Dr. Rachel Salas
Contact: 410-502-3231
Faculty: Dr. Rachel Salas
Availability/Duration: All year; two weeks. Limited to one student.
Prerequisite(s): None
Drop Period: 1 month

Description: As a physician, and especially an intern, you will depend on a host of providers in order to efficiently care for your patients, from nurses and social workers, to pharmacists and occupational therapists. An understanding of how these staff function in the hospital can help make you a more efficient (and happy) intern. An excellent complement to the Transition to Internship course (TRIPLE), *The Hospital* is a two-week immersion in the world of non-physician patient care. You will spend one day each "walking in the shoes of" various non-physician providers, under the individual guidance of expert preceptors from each field. The disciplines included are nursing, social work; case management; hospital administration; infection control; pharmacy, and rehabilitation (PT, OT, speech pathology), home care, palliative care, respiratory therapy, nutrition, hospital administration, and infection control. A pioneering venture in interdisciplinary learning, *The Hospital* will help you become a better leader and

collaborator as an intern, resident, and attending physician. Grading is pass/fail and will be determined by attendance and completion of a short essay.

ADVANCED NEUROLOGY CLERKSHIP

Course Type: Subinternship

Department/Division: Neurology

Course Director: Dr. Christopher Oakley

Contact: Bernadette Clark, Course Administrator; mclark44@jhmi.edu 410-502-7393

Faculty: Dr. Christopher Oakley and Neurology faculty

Availability/Duration: Contact Course Administrator; subinternship rotations must follow the JHUSOM schedule for the Neurology Core Clerkship; 4 weeks; **offered year round (contingent upon availability) for visiting students.**

Prerequisite(s): Core Clerkship in Neurology

Drop Period: 1 month

Description: Students may choose to focus on inpatient or outpatient adult neurology and may tailor their experience to their educational needs in consultation with the course director.

CLINICAL ELECTIVE IN PEDIATRIC NEUROLOGY

Course Type: Clinical Elective

Department/Division: Neurology

Course Director: Dr. Christopher Oakley

Contact: Bernadette Clark, Course Administrator; mclark44@jhmi.edu 410-502-7393

Faculty: Dr. Oakley and Pediatric Neurology staff

Availability/Duration: Contact course administrator; clinical elective rotations must follow the JHUSOM schedule for the Neurology Core Clerkship; 4 weeks; **offered September through May (June-August contingent upon availability) for visiting students.**

Prerequisite(s): Core Clerkships in Neurology and Pediatrics

Drop Period: 1 month

Description: Tailored primarily for the visiting medical student, the clinical elective in Pediatric Neurology is similar in structure to the Neurology Core Clerkship. Students have the flexibility to arrange a schedule that will focus the experience toward their interests in consultation with the course director.

SUBINTERNSHIP IN PEDIATRIC NEUROLOGY

Course Type: Clinical Subinternship

Department/Division: Neurology

Course Director: Dr. Christopher Oakley

Contact: Bernadette Clark, Course Administrator; mclark44@jhmi.edu 410-502-7393

Faculty: Dr. Oakley and Pediatric Neurology staff

Availability/Duration: Contact course administrator; clinical elective rotations must follow the JHUSOM schedule for the Neurology Core Clerkship; 4 weeks; **offered year round (contingent upon availability) for visiting students.**

Prerequisite(s): Core Clerkships in Neurology and Pediatrics

Drop Period: 1 month

Description: A subinternship in Pediatric Neurology is offered on both inpatient and outpatient Pediatric Neurology Services.

PRINCIPLES OF PEDIATRIC NEUROLOGY AT ALL CHILDREN'S HOSPITAL

Course Type: Other

Department/Division: Pediatric Neurology, All Children's Hospital (ACH), St. Petersburg, FL

Course Director: Dr. Parrish Winesett

Telephone Number: 727-767-4106, Gwen Harmon, gharmon2@jhmi.edu, Dawn Jones, dawn.jones@jhmi.edu

Faculty: Drs. Colin Nguyen, Parrish Winesett, Peter Huszar, Himali Zayakody and Paul Carney

Availability/Duration: Rolling availability; duration is flexible and can be adjusted to fit student needs.

Prerequisite(s): Core Clerkship in Pediatrics or Medicine

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Principles of pediatric neurology will be taught in outpatient and inpatient encounters at ACH-JHM. As a free-standing children's hospital, patient cases will reflect both general pediatric neurology exposure as well as exposure to highly specialized patient cases reflecting ACH-JHM's status as a quaternary care center. Participation in clinical or basic research in pediatric neurology may also be coordinated pending project and faculty availability.

Students will attend daily neurology clinics at ACH. Emphasis will be placed on teaching the student to evaluate and manage common neurological problems of infancy, childhood, and adolescents including epilepsy, seizure disorders, sleep disorders, and other neurologic deficits.

Students will participate in work up and care of neurology patients. The goal is to enhance student understanding of the diagnosis and management of hospitalized patients with neurologic issues. Students are expected to participate in weekly conferences including neurology specific conferences as well as resident noon conferences, JHUSOM Pediatric Neurology Grand Rounds and ACH-JHM Grand Rounds.

PRINCIPLES IN NEUROIMMUNOLOGY

Course Type: Other

Department/Division: Neurology/Neuroimmunology

Course Director: Drs. Peter Calabresi and Monique Stins

Contact: 443-287-8027

Faculty: Drs. Calabresi and Stins

Availability/Duration: March- May; Tues & Thurs; eight weeks

Prerequisite(s): Basic knowledge of brain anatomy, physiology and biology

Drop Period: 1 month

Description: Neurodegenerative brain diseases, neurological trauma and brain circulatory diseases involve activation of immune mechanisms and inflammation, contribute to disease development and can seriously affect quality of life and ability to work.

This course covers the specific cells of the central nervous system (CNS), immune functions of CNS cells, and trafficking of leukocytes into the CNS. Relevant anatomy (e.g. blood brain barrier) will be addressed. Discusses various immune cells (monocytes, T-, B- cells), inflammatory mediators (cytokines, chemokines, metalloproteinases, and prostaglandins) and explores how these mediators contribute to the development, plasticity and pathology of the CNS.

Speakers that are active researchers in their field will provide introductions to their respective fields and present their research. Presentations address several neuroimmunological diseases, including multiple sclerosis, HIV dementia and Alzheimer's disease. The molecular basis of novel treatment approaches of these diseases and regulation of the inflammatory mediators in neurodegeneration will also be reviewed. Interactions and discussions between lecturers and students are encouraged.

This elective follows the schedule for the School of Public Health

NEURO CRITICAL CARE/NCCU

SITE FOR ADVANCE CLERKSHIP IN CRITICAL CARE

Course Type: Clinical Elective

Department/Division: Neurology

Course Director: Dr. Romergryko Geocadin

Telephone Number: 410-955-7481

Faculty: Dr. Geocadin

Availability/Duration: Four and 1/2 weeks; offered year round. Enrollment limited to JHUSOM students.

Prerequisite(s): Core Clerkship in Neurology

ENROLLMENT LIMITED TO JHUSOM STUDENTS

NEUROLOGY OSLER APPRENTICESHIP

Course Type: Other

Department/Division: Neurology

Course Director: Dr. Christopher Oakley

Contact: Bernadette Clark; 410-502-7393; mclark44@jhmi.edu

Faculty: Drs. Salas and Gamaldo

Availability/Duration: All year; two to four students are chosen in the Spring to serve as OAs for the following academic year

Prerequisite(s): Neurology Core Clerkship

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS

Description: The Osler Apprenticeship in Neurology is an opportunity for senior medical students with an interest in academic neurology to gain experience and exposure to the technical, administrative, and educational skills central to pursuing a clinician educator academic pathway.

Osler Apprenticeships (OAs) are, first and foremost, medical students interested in becoming academic scholars. This program affords these students the opportunity to work closely with faculty members and medical students in teaching, research or administrative environments as an integral part of that education. By the end of the program OAs will be able to do the following:

- Enhance their educational research skills and develop pedagogical skills
- Acquire experience in leadership, interpersonal effectiveness and performance evaluation
- Acquire academic administrative experience and enjoy collegial collaborations with advisors that may result in joint publications and other professional activities

RESEARCH OPPORTUNITIES

DR. MARILYN ALBERT

Alzheimer's disease

DR. PETER CALABRESI

Neuroimmunology and neuroimaging

DR. DAVID CORNBLATH

Neurology peripheral nerve disease and electromyography.

DR. TED DAWSON

Molecular mechanisms of neurodegenerative disease; neuronal cell death and survival

DR. VALINA DAWSON

Molecular mechanisms of neurodegenerative disease

DR. DANIEL DRACHMAN

Neuromuscular diseases; neuroimmunology; gene transfer strategies for therapy of Myasthenia and ALS

DR. CHRISTOPHER EARLEY

Sleep related disorders; sleep-wake dysfunctions; restless leg syndrome; circadian rhythm disorders

Dr. JEFFREY ELLENBOGEN

Sleep physiology and brain sciences; sound perception during sleep

DR. RYAN FELLING

Neurogenesis after perinatal brain injury

DR. ROMERGRYKO GEOCADIN

Brain resuscitation; acute disorders of consciousness (coma, vegetative states); targeted temperature management of therapeutic hypothermia

DR. GARY GOLDSTEIN

Cerebral endothelial cells

DR. BARRY GORDON

Neuropsychology

DR. DANIEL HANLEY

Brain injury outcomes

DR. ARGYE HILLIS

Neural basis of cognitive impairment and recovery after stroke

DR. AHMET HOKE

Peripheral neuropathies; nerve regeneration and drug development for neuroprotection

DR. MICHAEL JOHNSTON

Excitatory amines in cerebral anoxia

DR. PETER KAPLAN

Epilepsy and sleep disorders

Dr. AMIR KHERADMAND

Neurophysiology of spatial orientation and perception of upright

DR. ERIC KOSSOFF

Ketogenic diet; hemispherectomy; infantile spasms; migraines; intractable epilepsy; neurocysticercosis

DR. JOHN LATERRA

Studies of brain tumors; neuro-oncology

DR. RONALD LESSER

Epilepsy and electroencephalography

DR. MICHAEL LEVY

Animal modeling of autoimmune neurological diseases

DR. ZOLTAN MARI

Parkinson's disease and movement disorders

DR. ELISABETH MARSH

Outcomes in stroke recovery

DR. JUSTIN C. MCARTHUR

Therapies for HIV-associated dementia and sensory neuropathies; cutaneous innervations in diverse neuropathic states; multiple sclerosis; neurological infections

DR. ABHAY MOGHEKAR

Alzheimer's disease; cerebrospinal fluid disorders

DR. BRETT MORRISON

The role of myelinating cells and lactate in peripheral nerve regeneration and ALS

Dr. DAVID NEWMAN-TOKER

Diagnostic errors; diagnostic cost-effectiveness; diagnostic decision support

Eye movement-based stroke diagnosis in dizziness/vertigo

DR. ALEXANDER PANTELYAT

Atypical parkinsonian disorders; music and rhythm based interventions for neurological disorders

DR. LIANA ROSENTHAL

Clinical research in movement disorders

DR. NICOLINE SCHIESS

Multiple Sclerosis

DR. ANJA SOLDAN

Cognitive aging, Alzheimer's disease; cognitive reserve

DR. HONGJUN SONG

Regulation and application of adult neural stem cells

DR. CHARLOTTE SUMNER

Genetic and cellular mechanisms of inherited motor neuron and peripheral nerve disease

DR. MARK WU

Genetic analysis of sleep disorders

NEUROSCIENCE

ME:440.699

NEUROSCIENCE AND COGNITION I

Course Type: Tutorial

Department: Neuroscience

Course Directors: Dr. Xinzhong Dong

Telephone Number: 410-502-2993

Availability/Duration: Taught every year; Q1 & Q2

Prerequisite(s): Basic cell and molecular biology or consent of course director

Drop Period: 1 month

Description: This is the first half of a 4-quarter course on the cellular and molecular basis of neural function and the neural basis of perception, cognition, and behavior. Topics covered in this half include (1) development and structure of the nervous system, (2) cellular neurophysiology, (3) neural signaling and coding, and (4) audition, vocalization, and language. Lectures will be presented by faculty in the Neuroscience, Neurology, Biomedical Engineering, Psychology, and Cognitive Science Departments. The course will also include discussion sections based on current literature and several neurotechniques sessions designed to familiarize students with current experimental approaches in cellular, systems, and molecular neuroscience. This course is required of all students in the Neuroscience Graduate Program. Students outside the program may take this course independent of Neuroscience and Cognition II.

NEUROSCIENCE AND COGNITION II

Course Type: Tutorial

Department: Neuroscience

Course Director: Dr. Veit Stuphorn

Telephone Number: 410-516-7963

Availability/Duration: Taught every year; Q3 & Q4

Prerequisite(s): Basic cell and molecular biology or consent of course director

Drop Period: 1 month

Description: This is the second half of a 4-quarter course on the cellular and molecular basis of neural function and the neural basis of perception, cognition, and behavior. Topics covered in this half include (1) perception of objects, space, and self, (2) movement and balance, (3) learning and memory, (4) neurological and psychiatric disorders, and, (5) global function in the nervous system. Lectures will be presented by faculty in the Neuroscience, Neurology, Biomedical Engineering, Psychology, and Cognitive Science Departments. The course will also have a laboratory component. This course is required of all students in the Neuroscience Graduate Program.

CURRENT ISSUES IN SYSTEMS AND COGNITIVE NEUROSCIENCE

Course Type: Tutorial

Department: Neuroscience

Course Director: Dr. Jeremiah Cohen

Telephone Number: 410-502-9193

Availability/Duration: Q3; every year

Prerequisite(s): Neuroscience A or Neuroscience & Cognition II (may be taken concurrently) or permission of course director.

Drop Period: 1 month

Description: The brain is an information processing system without parallel. It excels at recognizing objects and substances, reconstructing space, analyzing sound environments, controlling complex behaviors, and storing a lifetime's worth of events and experiences. The neural mechanisms underlying these abilities are studied by a large community of systems and cognitive neuroscientists. This research has generated a rapidly evolving field of high-profile discoveries and lively debates between competing laboratories. This course aims to convey a clear sense of this field by focusing on current experimental and conceptual controversies regarding organization and function in

the vertebrate nervous system. Each week will focus on a different topic represented by two or more recent papers (selected by an instructor) reflecting opposing points of view. Students will present the papers informally and direct a debate over the relative merits of the conflicting viewpoints. The quarter-long course will be divided into 2-3 week sections covering different sensory, motor, or cognitive systems, in addition to computational neuroscience. There will be one 2-hour debate each week, and participation in the 1-hour Systems Journal Club (Readings in Systems Neuroscience, ME440.810) will also be required.

READINGS IN SYSTEMS NEUROSCIENCE

Course Type: Tutorial

Department: Neuroscience

Course Director: Drs. Marshall Shuler and Kristina Nielsen

Telephone Number: 410-502-1612; 410-516-5833

Availability/Duration: All year

Prerequisite(s): Consent of course director

Drop Period: 1 month

Description: This course will focus on neural mechanisms of perception, attention, learning, and memory from the perspective of systems neuroscience and will be based on the current original literature.

PHYSIOLOGY OF SENSORY TRANSDUCTION

Course Type: Tutorial

Department: Neuroscience

Course Director: Dr. King-Wai Yau

Telephone Number: 410-955-1260

Availability/Duration: Q2, alternate years

Prerequisite(s): Consent of course director

Drop Period: 1 month

Description: A seminar and reading course that covers current research in sensory transduction from a physiological perspective. Visual, chemical, and auditory transductions will be covered.

CURRENT TOPICS IN NEUROSCIENCE

Course Type: Tutorial

Department: Neuroscience

Course Director: Dr. Jeremiah Cohen

Telephone Number: 410-502-9193

Availability/Duration: Thursdays at 1 p.m.; all year

Drop Period: 1 month

Description: Weekly lecture on current research by active researchers. Topics are chosen so that an overall balance of subjects in neuroscience are covered in the course of a year.

NEUROPHARMACOLOGY

Course Type: Tutorial

Department: Neuroscience

Course Director: Dr. Jay Baraban

Telephone Number: 410-955-2499

Faculty: Dr. Jay Baraban and Dr. Solomon Snyder

Availability/Duration: Q1; alternate years. Three hours per week plus assigned reading

Prerequisite(s): Neurocog I and II or consent of course director

Drop Period: 1 month

Description: Focusing on several major classes of psychotropic drugs, the course will illustrate the use of diverse approaches (molecular, biochemical, electrophysiological and behavioral) to decipher how psychotropic drugs influence the nervous system. The course will utilize a lecture format for the first two classes and then switch to a “journal club” format with students presenting and discussing classic and recent articles. Topics covered include opiates, benzodiazepines, antipsychotic drugs, antidepressant drugs, and cannabinoids.

BRAIN DISEASES: NEURODEVELOPMENTAL DISEASES

Course Type: Tutorial

Department: Neuroscience

Course Director: Dr. Christopher Ross and Dr. Daniel Weinberger

Telephone Number: 410-614-9494

Availability/Duration: Q4; alternate years beginning Spring 2016

Prerequisite(s): Neuroscience and Cognition I & II or consent of course director

Drop Period: 1 month

Description: This course will consider the emerging unity of approaches and concepts in understanding a range of brain diseases such as schizophrenia, bipolar disorder, autism and related disorders. Genetic mutations or risk factors for many of these diseases are beginning to illuminate pathogenesis, and genetic relationships among the diseases are beginning to change our thinking about diagnostic categories. Interactions among protein or RNA products of genes mutated in each disease may help establish pathogenic pathways. Environmental influences also appear to be important, including possible roles of infection and immunity. Schizophrenia and related adult onset disorders appear to be caused by mechanisms involving neurodevelopment, whose major consequences are most visible during adulthood. Cell and mouse models are increasingly central for understanding pathogenesis and developing novel therapeutics. For all the disorders, it is possible to conceive of a unified understanding ranging from molecular manifestations to systems neurobiology. Ultimately, the goal is to devise rationale disease-modifying treatments. Lectures by experts in each disease will be followed by student-led discussions critically reviewing current literature. Discussions will focus on strengths and limitations of current models, controversies about mechanisms, unresolved research questions, and potential paths to therapeutics. Student participation will include leading and participating in discussions of papers and writing a research proposal using an abbreviated NIH grant format on any topic related to the course.

BRAIN DISEASES: NEURODEGENERATIVE DISEASES

Course Type: Tutorial

Department: Neuroscience

Course Director: Dr. Christopher Ross and Dr. Jeffrey Rothstein

Telephone Number: 410-614-9494

Availability/Duration: Q4; alternate years beginning Spring 2015

Prerequisite(s): Neuroscience and Cognition I & II or consent of course director

Drop Period: 1 month

Description: The course will provide an in-depth examination of the biology of the classic neurodegenerative disease such as Huntington's disease, Parkinson's disease, ALS and Alzheimer's disease, and other diseases may be considered depending on student and faculty interest. All involve toxicity or death of neurons. Rare genetic variants of many of the neurodegenerative diseases have greatly illuminated the more common, apparently sporadic, forms. Interactions among protein products of genes mutated in each disease are helping establish pathogenic pathways. Inflammation and metabolic stress are other common themes, environmental contributions, possibly involving toxins, are important for some diseases. Cell and mouse models are increasingly central for understanding pathogenesis and several diseases, though the exact mechanisms and relation to cell death are controversial. It is increasingly possible to conceive of a unit understanding ranging from molecular manifestations to systems neurobiology. Ultimately the goal is to devise rational disease-modifying treatments. Lectures by experts in each disease will be followed by student-led discussions critically reviewing current literature. Discussions will focus on strengths and limitations of current models, controversies about mechanisms, unresolved research questions, and potential paths to therapeutics. Student participation will include leading and participating in discussion of papers, and writing a research proposal, using an abbreviated NIH grant format, on any topic related to the course.

SCIENCE, ETHICS AND SOCIETY

Course Type: Tutorial

Department: Neuroscience

Course Director: Dr. Dan O'Connor

Telephone Number: 443-287-8808

Faculty: Neuroscience faculty

Availability/Duration: September-December; Wednesdays

Prerequisite(s): Consent of director

Drop Period: 1 month

OPEN ONLY TO NEUROSCIENCE GRADUATE STUDENTS.

Description: Science as a profession has undergone radical changes in the last decade. Central issues include mentoring, misconduct in science, preparedness of graduate students and postdoctoral fellows for careers in science, and the career choices currently available. To this end, this course will focus on mentoring and issues of ethics and scientific misconduct. Preparedness for a career in science issues will be discussed in the context of funding currently available to scientists and preparation strategies involved in grant writing. In addition, methods of oral presentation and slide preparation will be discussed.

THE CELLULAR AND MOLECULAR BASIS OF NEURAL DEVELOPMENT

Course Type: Tutorial

Department: Neuroscience

Course Directors: Drs. Christopher Potter, Alex Kolodkin, and Shanthini Sockanathan

Telephone Number: 410-614-9494, 410-502-3084, 410-614-9499

Faculty: Drs. Christopher Potter, Alex Kolodkin, and Shanthini Sockanathan

Availability/Duration: Q4; yearly

Prerequisite(s): Completion of Neuroscience Cognition I or consent of course director

Drop Period: 1 month

Description: A seminar and reading course devoted to the discussion of the cellular and molecular processes underlying neuronal development. Topics to be covered include neural induction, cell differentiation, neurotrophic factors and their mechanism of action, mechanisms of axonal growth and guidance, target recognition and synapse formation, and the basis of synaptic specificity. Students must have completed Neurocognition I & II.

CELLULAR AND MOLECULAR BASIS OF NEURAL DEVELOPMENT I: NEURONAL DIFFERENTIATION

Course Type: Tutorial

Department: Neuroscience

Course Directors: Drs. Alex Kolodkin, Christopher Potter, and Shan Sockanathan

Telephone Number: 410-614-9499; 443-287-4151; 410-502-3084

Faculty: Drs. S. Blackshaw, A. Doetzlhofer, A. Kolodkin, G. Lee, S. Margolis, C. Potter, S. Sockanathan, and F. Zhou

Availability/Duration: Alternates with Cellular and Molecular Basis of Neural Development II: Regulation of Neural Connectivity; **visiting medical students must follow JHUSOM quarter dates**

Prerequisite(s): Completion of Neuroscience Cognition I or consent of course directors

Drop Period: 1 month

Description: A seminar and reading course devoted to the discussion of the cellular and molecular processes underlying neuronal development. Topics include cell proliferation and migration, nervous system patterning, differentiation of neurons and glia, morphogen and growth factor signaling mechanisms, neuronal polarity, among others. Examples from vertebrate and invertebrate model systems will be covered. This course is designed to complement The Cellular and Molecular Basis of Neural Development II: Axon Guidance and Synaptogenesis, offered alternate years. Students must have completed Introduction to Neuroscience and Cognition I or receive the consent of course directors prior to registering for this course.

CELLULAR AND MOLECULAR BASIS OF NEURAL DEVELOPMENT II: REGULATION OF NEURAL CONNECTIVITY

Course Type: Tutorial

Department: Neuroscience

Course Directors: Drs. Christopher Potter, Alex Kolodkin, and Shan Sockanathan

Telephone Number: 443-287-4151; 410-614-9499; 410-502-3084

Faculty: Drs. S. Brown, A. Hurtado, A. Kolodkin, S. Margolis, C. Potter, R. Schnaar, S. Sockanathan and F. Zhou

Availability/Duration: Alternates with Cellular and Molecular Basis of Neural Development II: Neuronal Differentiation

Prerequisite(s): Completion of Neuroscience Cognition I or consent of course directors

Drop Period: 1 month

Description: A seminar and reading course devoted to the discussion of the cellular and molecular processes underlying neuronal development.

MECHANISMS OF SYNAPTIC TRANSMISSION

Course Type: Tutorial

Department: Neuroscience

Course Director: Drs. Dwight Bergles, Elisabeth Glowatzki, and Paul Worley

Telephone Number: 410-955-4050, 410-955-6939, 410-502-5489

Faculty: Drs. Bergles, Glowatzki and Worley

Availability/Duration: Q4; alternate years

Prerequisite(s): Consent of course director

Drop Period: 1 month

Description: A seminar and reading course devoted to the molecular mechanisms underlying synaptic transmission and the regulation of synaptic plasticity. The structure and function of neurotransmitter receptors, ion channels and synaptic vesicle proteins will be discussed. In addition, the molecular mechanisms involved in the control of synaptic transmission such as the trans-synaptic regulation of the function and expression of synaptic proteins will be examined.

TRENDS IN THE NEUROBIOLOGY OF AGING

Course Type: Tutorial

Department: Neuroscience

Course Director: Dr. Mark P. Mattson

Telephone Number: 410-558-8463

Faculty: Dr. Mattson

Availability/Duration: Q1; alternate years

Prerequisite(s): None

Drop Period: 1 month

Description: As the average lifespan of humans increases, age-related dysfunction of the nervous system and neurodegenerative disorders such as Alzheimer's and Parkinson's diseases are becoming major concerns in our society. Recent advances in understanding the molecular and cellular underpinnings of nervous system aging and neurodegenerative disorders will be the focus of this course. Emerging findings of genetic and environmental factors that either promote successful brain aging or predispose to age-related neurological disorders, and the elucidation of their underlying molecular and cellular mechanisms, will be emphasized. This course will consist of several introductory lectures and subsequent sessions in which hot topics in the field are discussed.

STEM CELLS: UNIT OF DEVELOPMENT AND UNIT OF REGENERATION

Course Type: Tutorial

Department/Division: Neuroscience

Course Director: Drs. Guo-li Ming, Hongjun Song and Kimberley Christian

Telephone Number: 443-287-7498; 443-287-7499

Faculty: Drs. Ming, Song and Christian
Availability/Duration: Q3; alternate years
Prerequisite(s): Consent of course director
Drop Period: 1 month

Description: This is a seminar and reading course devoted to the discussion of different types of stem cells. The course is designed to give a broad view of stem cells in different model systems. The topics will range from pluripotent stem cells (embryonic stem cells and embryonic germ cells) to multipotent somatic stem cells (in brain, heart, blood, etc.) during development as well as in adult. We will cover the basic biology of these stem cells as well as bioengineering and application of these stem cells to potential treatments of human diseases. This elective course is limited to 20 students.

TOPICS IN CORTICAL PLASTICITY

Course Type: Tutorial
Department: Neuroscience
Course Director: Drs. Alfredo Kirkwood and Hey-Kyoung Lee
Telephone Number: 410-516-6410; 410-516-5712
Faculty: Drs. Kirkwood and Lee
Availability/Duration: Q1
Prerequisite(s): Consent of course director
Drop Period: 1 month

Description: Experience-dependent changes in cortical synapses and circuits are critical for proper development of the nervous system and for memory storage. This course will focus on recent findings on fundamental mechanisms of plasticity from synapses to circuit level through discussions of recent research papers. Grades will be based on student presentations and participation.

VISUAL SYSTEM

Course Type: Tutorial
Department: Neuroscience
Course Director: Dr. Stewart Hendry
Telephone Number: 410-516-4583
Faculty: Dr. Hendry
Availability/Duration: Q1& 2
Prerequisite(s): Consent of course director
Drop Period: 1 month

Description: From outer segments of photoreceptors to the Fusiform Face Area of the cerebral cortex we have come to understand how the visual system works at each of many fundamental levels. This course examines the basis for perception of visible objects at each of these levels. We will use the secondary literature (scientific reviews) to accent the hard-won truths about visual system functional organization and to highlight ongoing controversies. Students will be lead through carefully chosen reviews in a series of lectures and written summaries prepared by faculty. Three exams and a final exam will test students not on their memorization of minutiae but on their understanding of fundamental principles.

NEUROSCIENCE CAREER SKILLS

Course Type: Tutorial
Department: Neuroscience
Course Director: Dr. Alex Kolodkin
Telephone Number: 410-614-9499
Availability/Duration: Q3&4; every other year
Prerequisite(s): Consent of course director
Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This course is intended for Neuroscience Program graduate students who are in their fourth year or beyond. There will be ten sessions, and each session we will include one or more invited discussion leaders. This is a pass/fail course and every participant is required to take it for credit. A grade of pass or fail will be decided based on attendance.

NEUROBIOLOGY OF SUBSTANCE USE DISORDERS

Course Type: Tutorial

Department: Neuroscience

Course Director: Drs. Antonello Bonci, Jean Lud Cadet, and Eric Strain

Telephone Number: 443-740-2656; 443-740-2463; 410-550-1191

Availability/Duration: Q3; every other year

Prerequisite(s): Consent of course director

Drop Period: 1 month

Description: Recent progress in basic and clinical neurobiology has helped to identify specific cellular and molecular mechanisms that are involved in the development and maintenance of drug-taking behaviors. Similarly, clinical studies have identified behavior patterns and brain structures that are relevant to drug addiction.

The purpose of this course is to provide an overview of the neural circuitries and of the molecular and cellular mechanisms involved in the addictive process. The lecturers will also provide an overview of the clinical presentations and course of substance use disorders. Lectures will be primarily provided by senior addictions researchers from the National Institute on Drug Abuse's Intramural Research Program. The course will consist of 13 lectures given over a period of 8 weeks, with 2 hourly lectures per week. Topics will include the amphetamines, cocaine, heroin, marijuana, and designer drugs. Grading will be primarily based upon a mid-term and final examination.

WRITING ABOUT THE BRAIN

Course Type: Tutorial

Department/Division: Neuroscience

Course Director: Dr. David Linden

Faculty: Dr. David Linden

Telephone Number: 410-614-1529

Availability/Duration: Q3; every other year, 8 student maximum

Prerequisite(s): Neuroscience and Cognition I and consent of course director

Drop Period: 1 month

Description: The goal of this course is to train neuroscientists to effectively and clearly communicate ideas about nervous system function to a general audience. Students shall read and analyze writings about neuroscience and shall interact with established science writers. More importantly, they shall develop, research and write both news and feature-length stories that shall be presented, critiqued and revised each week in a workshop format. Enrollment limited to 10 students.

RESEARCH OPPORTUNITIES

DR. MARILYN ALBERT

Cognitive processes in aging and neurodegenerative disorders

DR. YEXICA APONTE

Neuronal circuits underlying goal-directed behaviors

DR. JAY M. BARABAN

Molecular mechanisms of neural plasticity

DR. AMY BASTIAN

Mechanism of human movement disorders

DR. DWIGHT BERGLES

Synaptic physiology: glutamate transporters and glial involvement in neuronal signaling

DR. SETH BLACKSHAW

Molecular basis of cell specification in vertebrate retina and hypothalamus

DR. MARY BLUE

Neurotransmitter mechanisms in the development and activity-dependent plasticity

DR. ANTONELLO BONCI

Synaptic plasticity; dopamine and substance abuse disorders

DR. FRANK BOSMANS

Molecular organization and pharmacologic properties of the voltage-gated sodium channel signaling complex

DR. SOLANGE BROWN

Functional organization of local circuits of the neocortex

DR. PETER CAMPOCHIARO

Molecular aspects of retinal repair and regeneration

DR. MICHAEL CATERINA

Molecular mechanisms of thermosensation and nociception

DR. PABLO CELNIK

Neurophysiological mechanisms underlying human motor learning

DR. JEREMIAH COHEN

Neural circuits for reward, mood, and decision making

DR. CARLO COLANTUONI

Functional genomics of human brain development

DR. CHARLES CONNOR, JR

Object synthesis in higher level visual cortex

DR. SUSAN COURTNEY-FARUQUEE

Functional organization of the neural system for human working memory

DR. NOAH COWAN

Locomotion in Mechanical and Biological Systems (LIMBS) Laboratory

DR. KATHLEEN CULLEN

Neural mechanisms underlying the computation of Self-Motion: understanding and advancing the treatment of vestibular and other motor disorders

DR. TED DAWSON

Molecular and cellular signals controlling neurodegeneration; neuronal survival and cell death

DR. VALINA DAWSON

Molecular mechanisms of neuronal death and survival

DR. JOHN DESMOND

Cognitive neuroscience; cerebro-cerebellar circuits in learning and memory

DR. ANGELIKA DOETZLHOFER
Cell fate specification and differentiation in the mammalian auditory system

DR. GUL DOLEN
Synaptic and circuit mechanisms of social behavior

DR. XINZHONG DONG
Molecular and genetic studies of pain-sensing neurons

DR. WENZHEN DUAN
Translational neurobiology research

DR. SASCHA DU LAC
Eye movements, the cerebellum and the vestibular system

DR. DANIEL EBERT
Molecular mechanisms of autism and schizophrenia

DR. HOWARD EGETH
Perception and cognition; attention and attentional selectivity; eyewitness testimony

DR. MOHAMED FARAH
Axonal regeneration in the peripheral nervous system

DR. PAUL FUCHS
Excitability and synaptic function in cochlear hair cells

DR. MICHELA GALLAGHER
Neural mechanisms of memory and attention

DR. ELISABETH GLOWATZKI
Synaptic transmission at hair cell synapses in the inner ear

DR. LOYAL GOFF
Long non-coding RNAs in neuronal and glial cell fate specification

DR. MARNIE HALPERN
Zebra fish neural development

DR. SAMER HATTAR
Physiological effects of light on mammals: role of the novel melanopsin-containing retinal ganglion photoreceptors

DR. STEWART HENDRY
Functional organization of primate visual system

DR. AHMET HOKE
Neurobiology of peripheral neuropathies; development and regeneration of the peripheral nervous system

DR. RICHARD L. HUGANIR
Molecular mechanisms in the regulation of synaptic plasticity

DR. PATRICIA JANAK
Behavioral neuroscience of addiction

DR. ALFREDO KIRKWOOD
Mechanisms of cortical modification

DR. JAMES KNIERIM

Behavioral neurophysiology of the hippocampal formation

DR. ALEX L. KOLODKIN

Molecular mechanisms of growth cone guidance

DR. JOHN KRAKAUER

Mechanisms of human sensorimotor learning and motor recovery after brain injury

DR. REJJI KURUVILLA

Signaling and trafficking of growth factors in neuronal development

DR. JOHN J. LATERRA

CNS tumor biology and blood-brain barrier

DR. GABSANG LEE

Disease modeling of muscular dystrophies and peripheral neuropathies with human pluripotent stem cells

DR. HEY-KYOUNG LEE

Cellular/molecular mechanisms of synaptic plasticity underlying memory formation and cross-modal plasticity

DR. FREDERICK LENZ

Neurophysiology and psychophysics for sensory and motor processing in the human forebrain

DR. DAVID LINDEN

Cellular substrates of memory

DR. TOM LLOYD

Neuronal intracellular transport in development and disease

DR. BRADY MAHER

Functional analysis of genes associated with psychiatric disorders

DR. SETH MARGOLIS

Molecular mechanisms of synapse formation in development and disease

DR. KERI MARTINOWICH

Molecular and cellular regulation of neural plasticity

DR. MARK MATTSON

Cellular and molecular mechanisms of brain aging and neurodegenerative disorders

DR. MOLLIE MEFFERT

Transcriptional regulation of neuronal function in health and disease

DR. GUO-LI MING

Molecular mechanisms of neuronal navigation during development and in adulthood

DR. CYNTHIA MOSS

Spatial perception, attention and memory

DR. ULRICH MUELLER

Auditory perception and development of neocortical circuits

DR. JEFF MUMM

Neural circuit formation, function and regeneration

DR. SHREESH MYSORE
Neural circuits and computations for behavior

DR. JEREMY NATHANS
Molecular biology of the visual system

DR. ERNST NIEBUR
Computational neuroscience

DR. KRISTINA NIELSEN
Neural circuits underlying object recognition

DR. DANIEL O'CONNOR
Neural circuits for touch perception

DR. PANKAJ JAY PASRICHA
Enteric neuroscience, visceral pain and neural control of metabolic syndromes

DR. JONATHAN PEVSNER
Molecular basis of neurological disorders

DR. MIKHAIL PLETNIKOV
Gene-environment interactions in neurodevelopmental disorders

DR. CHRISTOPHER POTTER
Neural circuits required for insect olfaction

DR. ZHAOZHU QIU
Mechanisms of Osmotic Regulation in Physiology and Disease

DR. RANDALL R. REED
Molecular mechanisms of signal transduction; neurogenesis in the olfactory system

DR. IRVING RETI
Behavioral neuroscience and its clinical applications

DR. CHRISTOPHER A. ROSS
Biology of neuropsychiatric disorders

DR. JEFFREY ROTHSTEIN
Molecular mechanisms of neurodegeneration and transporters

DR. AKIRA SAWA
Neurobiology of psychiatric illness

DR. RONALD L. SCHNAAR
Cell surface molecules in neural cell-cell recognition; myelin maintenance; axon regeneration

DR. GEOFFREY SCHOENBAUM
Associative learning, decision making, and addiction

DR. LAWRENCE P. SCHRAMM
Regulation of sympathetic neurons

DR. REZA SHADMEHR
Computational motor control and learning

DR. MARSHALL SHULER
Neural mechanisms of reward dependent learning

DR. BARBARA SLUSHER
Drug-discovery

DR. SOLOMON SNYDER
Neurotransmitters, second messengers, and drug action in the nervous system

DR. SHANTHINI SOCKANATHAN
Cell fate specification in the central nervous system

DR. HONG-JUN SONG
Mechanisms of regulating adult neural stem cells of mammalian CNS

DR. VEIT STUPHORN
Neurophysiological mechanisms of decision making and self-control

DR. CHARLOTE SUMNER
Genetic and cellular mechanisms of motor neuron disease

DR. JOSHUA VOGELSTEIN
Open connectome project

DR. RUDIGER VON DER HEYDT
Neurophysiology of the visual system

DR. KATHRYN WAGNER
Muscle growth and regeneration

DR. JIOU WANG
Mechanisms of neurodegeneration and protein quality control

DR. XIAOQIN WANG
Neural basis of auditory perception and learning

DR. SHIGEKI WATANABE
Cellular and molecular characterizations of rapid synaptic membrane trafficking

DR. DANIEL WEINBERGER
Neurobiological mechanisms of genetic risk for developmental brain disorders

DR. MARY ANN WILSON
Mechanisms of development, plasticity, and injury in the immature brain

DR. DEAN WONG
In vivo PET/SPECT neuroimaging of neuroreceptor systems

DR. PHILIP WONG
Molecular mechanism and experimental therapeutic of neurodegenerative diseases

DR. PAUL F. WORLEY
Molecular mechanisms of neuronal plasticity

DR. MARK WU
Genetic mechanisms and neuronal circuitry underlying sleep in drosophila

DR. KING-WAI YAU

Visual and olfactory sensory transduction

DR. DONALD J. ZACK

Molecular approaches to the study of retinal development

DR. DAVID S. ZEE

Regulation of eye movements; vestibular perception and eye-movement based stroke diagnosis

DR. KECHEN ZHANG

Theoretical neuroscience

DR. FENGQUAN ZHOU

Molecular mechanisms of axon growth and guidance during development; CNS regeneration

ONCOLOGY CENTER

ME:510.699

SEMINAR COURSE: BIOLOGY OF CANCER

Course Type: Other

Department/Division: Oncology

Course Directors: Drs. Dipali Sharma and Mathias Holdhoff

Telephone Number: 410-955-8823

Faculty: Drs. Sharma and Holdhoff

Availability/Duration: Q4; 2 hours per week. Offered every other year; alternates with New Approaches to Cancer Prevention Therapy. M, W 4:00 PM, Owens Auditorium, call Gail Voelker, Course Coordinator for further details (5-8823); **visiting medical students must follow JHUSOM quarter dates**

Prerequisite(s): None

Drop Period: 1 month

Description: Selected timely topics will be considered in some detail. Emphasis is placed on the fundamental biological processes underlying oncogenesis and factors affecting the course of various neoplastic diseases. A basic foundation will be developed that will permit the student to approach various aspects of oncology including epidemiology, carcinogenesis, environmental issues, biologic behavior of the neoplastic cell and the rationale for the use of various treatment modalities with understanding.

SEMINAR COURSE: NEW APPROACHES TO CANCER PREVENTION AND THERAPY

Course Type: Other

Department/Division: Oncology

Course Directors: Drs. Dipali Sharma and Mathias Holdhoff

Telephone Number: 410-955-8823

Faculty: Drs. Sharma and Holdhoff

Availability/Duration: Q4; 2 hours per week. Offered every other year; alternates with Biology of Cancer. Contact: Gail Voelker (5-8823) with questions regarding the schedule; **visiting medical students must follow JHUSOM quarter dates**

Prerequisite(s): None

Drop Period: 1 month

Description: Selected timely topics relevant to novel diagnostic and treatment techniques being developed for the management of patients with cancer are considered with a view toward illustrating the underlying principles. Emphasis is placed on illuminating the chemical and biologic basis of therapeutics and their translation impact on clinical practice.

FUNDAMENTALS OF CANCER: CAUSE TO CURE (ME:510.706)

Course Type: Other

Department/Division: Oncology

Course Director: Dr. Leisha Emens

Telephone Number: Gail Voelker, 410-955-8823 or email: voelkga@jhmi.edu

Faculty: Oncology Center faculty

Availability/Duration: Monday and Wednesdays starting in mid-August through December, 8 – 9 a.m. biennially (see schedule when available); **visiting medical students must follow JHUSOM quarter dates**

Prerequisite(s): None

Drop Period: 1 month

Description: This course is designed to be highly translational, covering fundamental cancer molecular biology to the processes of transformation and metastases, and how targeted therapies emerge from new scientific

knowledge. There are four modules: 1) Origins of Cancer; 2) Progression of Cancer; 3) Treatment, and; 4) Prevention. Student evaluation is pass/fail. A passing grade will include 80% attendance at lectures/class meetings and active participation in the small group presentations. Students are required to record their attendance by swiping their ID badge into the computer system. A sign-in sheet will also be available. **Students are responsible for making sure their attendance is recorded.**

INTRODUCTION TO CANCER RESEARCH

Course Type: Basic or clinical research

Department/Division: Oncology

Course Director: Dr. Stuart Grossman

Telephone Number: 410-955-8823 or email: voelkga@jhmi.edu; **visiting students** should not contact the department directly as the application process must be coordinated through the Registrar's Office.

Faculty: Oncology Center faculty

Availability/Duration: All year; minimum of 4 weeks for Johns Hopkins students; 9 weeks for visiting students. Research experiences are offered on a space available basis to U.S. and international trained medical students who submit appropriate materials to the Registrar's Office. Positions are based on limited availability and are not guaranteed

Prerequisite(s): None; arrange with faculty member (visiting students must contact the Registrar's Office)

Drop Period: 1 month

Description: Interested and properly qualified students are encouraged to collaborate in clinical and laboratory research projects with members of the staff. Students will participate in research seminars and related teaching sessions. Interviews will be arranged with staff members to develop a mutually agreed-upon plan of study and research.

CLINICAL CLERKSHIP IN BONE MARROW TRANSPLANTATION

Course Type: Clinical Clerkship

Department/Division: Oncology/ Hematologic Malignancies

Course Director: Dr. Richard Jones

Telephone Number: 410-955-2006

Faculty: Attending physicians of the Bone Marrow Transplantation Program

Availability/Duration: All year; ½ quarter; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkship in Medicine or Pediatrics

Drop Period: 1 month

Description: The principles and practice of bone marrow transplantation (BMT) will be stressed. Students will work on the inpatient BMT Unit of the Oncology Center and participate in the daily activities of the service including rounds, lectures, seminars and informal discussions. Under supervision, the student will follow the clinical course of selected inpatients including follow up marrow graft recipients in the BMT Outpatient Clinic. The student will have the opportunity to become acquainted with the allied disciplines and procedures that relate to clinical BMT, including histocompatibility testing, marrow collection ("harvesting"), and ex vivo marrow processing.

A syllabus of pertinent literature will be provided. The student will also be encouraged to conduct and present a BMT-related research/literature review project.

ADVANCED CLINICAL CLERKSHIP IN ONCOLOGY

Course Type: Advanced Clinical Clerkship

Department/Division: Medical Oncology

Course Director: Dr. Ross C. Donehower

Telephone Number: 410-955-8838

Faculty: Dr. Donehower and Medical Oncology faculty

Availability/Duration: All year; ½ quarter; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkship in Medicine

Drop Period: 1 month

Description: This elective will acquaint students with the principles and practice of oncology. Each student will serve as an advanced clinical clerk on one of three inpatient units. The student is expected to attend weekly outpatient clinic, daily rounds with the attending physician as well as two weekly conferences: Oncology Grand Rounds and the Multidisciplinary Clinical Conference. Other disease oriented conferences should be attended as appropriate. Appropriate readings are recommended.

ADVANCED CLERKSHIP IN PEDIATRIC ONCOLOGY

Course Type: Advanced Clinical Clerkship

Department/Division: Pediatric Oncology

Course Director: Dr. Stacy Cooper

Telephone Number: 410-614-5055

Faculty: Pediatric Oncology Division Faculty

Availability/Duration: All year; 4 weeks; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkship in Pediatrics

Drop Period: 1 month

Description: Students will have the opportunity to help care for children with cancer on the inpatient Pediatric Oncology and Bone Marrow Transplant Services. Patient population includes children with brain tumors, solid tumors, leukemia, lymphoma and bone marrow transplant recipients, as well as those requiring admission related to complications of treatment. Students will be assigned patients and become an integral member of the medical team and have outpatient once per week. Lectures focused on the inpatient service occur at least twice a week. Students also attend a weekly conferences including fellows' educational session and tumor board.

ADVANCED LABORATORY RESEARCH

Course Type: Basic Research

Department/Division: Oncology Center

Course Director: Leisha Emens

Telephone Number: Gail Voelker, 410-955-8823 or email voelkga@jhmi.edu

Faculty: Oncology faculty as arranged

Availability/Duration: All four quarters; 1 year. Positions are based on limited availability and are not guaranteed.

Prerequisite(s): Completion of years one and two

Drop Period: 1 month

Description: Advanced research under the supervision of an Oncology faculty member. Research fellowships in basic and translational laboratory research on clinically relevant questions are available to students preparing themselves for careers in teaching and research.

CLINICAL CLERKSHIP IN MEDICAL ONCOLOGY AT JOHNS HOPKINS BAYVIEW MEDICAL CENTER

Course Type: Clinical Clerkship

Department/Division: Oncology

Course Director: Dr. Satish Shanbhag

Telephone Number: 410-550-5850

Faculty: Drs. Richard Battafarano, Julie Brahmer, Malcolm Brock, Ilene Browner, David Ettinger, Patrick Forde, Russell Hales, Christine Hann, Danijela Jelovac, Ronan Kelly, Jarushka Naidoo, Rakhi Naik, Michael Purtell, and Stephen Yang

Availability/Duration: All year; 2-4 weeks; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): There are no absolute prerequisites but completion of a Core Clerkship in Medicine will help the student fully participate in the elective.

Drop Period: 1 month

Description: This clinical experience in medical oncology exposes trainees to the multi-disciplinary practice of medical oncology, including inpatient consults and outpatient clinics in solid tumor and malignant hematology. A special feature of the clerkship is the weekly Thoracic Multidisciplinary Clinic with medical, radiation, and surgical oncologists.

SUBINTERNSHIP IN CLINICAL BONE MARROW TRANSPLANTATION

Course Type: Subinternship

Department/Division: Oncology Center/ Hematologic Malignancies

Course Director: Dr. Richard Jones

Telephone Number: 410-955-2006

Faculty: Attending physicians of the Bone Marrow Transplantation Program

Availability/Duration: Any ½ quarter, including summers; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Senior students only. Completion of Core Clerkship(s) in Medicine and/or Pediatrics is essential. Students interested in this subinternship should contact the course director (410-955-8464) to arrange an interview and to discuss availability of elective.

Drop Period: 2 months

Description: This clinical elective will provide an in-depth experience in the management of patients undergoing allogeneic or autologous bone marrow transplantation (BMT) in the Johns Hopkins Oncology Center SKCCC. The student subintern will work with the BMT team, which consists of an attending physician, a clinical oncology fellow, a medical resident, and a physician assistant, plus staff members in nursing, nutrition, pharmacy, and social work.

The subintern will assume responsibilities for the direct care of selected BMT inpatients, under the guidance of the attending physician and clinical fellow, and will assume night call every fourth night.

The subintern is expected to participate in daily work rounds, didactic BMT lectures given by the inpatient attending physician, informal discussions about allied topics and current research activities, graft-versus-host disease walk rounds, and Oncology Center departmental seminars. The student will receive a syllabus of pertinent literature on both the clinical aspects and basic immunobiology of bone marrow transplantation.

During this elective, the subintern will also have the opportunity to become acquainted with the allied disciplines and procedures that relate to clinical BMT, including histocompatibility testing, marrow collection ("harvesting"), and ex vivo marrow processing (e.g. lymphocyte depletion, chemotherapeutic treatment, cryopreservation). As part of this subinternship, the student will also be introduced to the basic and clinical research activities of the BMT program.

PALLIATIVE CARE AND PAIN CLINICAL ELECTIVE

Course Type: Clinical Research

Department/Division: Oncology/ Palliative Medicine

Course Director: Dr. Danielle Doberman

Faculty: Dr. Rab Razzak and Dr. Thomas Smith

Telephone Number: 410-955-2097

Contact: Gaurav Singh, gsingh13@jhmi.edu

Faculty: Drs. Razzak and Smith

Availability/Duration: 2 weeks

Drop Period: 1 month

Description: The elective will provide an introduction to Hospice and Palliative Medicine, the newest and the fastest-growing medical specialty. Over 90% of hospitals now have Palliative Care programs based on the randomized clinical trial evidence that shows better quality of life, better quality of care, lower cost and even improved survival compared to usual care. Clinical experiences may include the following: 1) Inpatient consultations at JHH; 2) Inpatient PC unit rotations at JHH; 3) PC outpatient clinic at Sidney Kimmel Comprehensive Cancer Center and JHOC 4)

Home PC visits. The curriculum will emphasize the evidence base behind PC, communication about serious topics, advanced symptom management, and interdisciplinary care with chaplains, social workers, and advanced practice nurses. Research opportunities into clinical symptom control (dyspnea, pain, neuropathic pain) and quality improvement (measuring and improving care in the hospital) may be arranged upon request.

RESEARCH OPPORTUNITIES

Dr. A. SYED ALI

Multiple myeloma

DR. R. AMBINDER

Molecular virology; lymphoma

DR. M. ARYEE

Cancer bioinformatics and computational biology

DR. E. ANTONARAKIS

Urologic oncology; prostate cancer; clinical trials; outcomes research

DR. M. ARMANIOS

Biology of aging; telomere syndromes; pulmonary fibrosis; solid tumors

DR. D. ARMSTRONG

Gynecology and breast cancer

DR. N. AZAD

Phase I studies and drug development; GI cancers (liver and colon)

DR. S. BAYLIN

Epigenetic abnormalities in cancer

DR. J. BLAKELY

Neuro-oncology/neurofibromatosis type 1 (NF1)

DR. J. BOLANOS-MEADE

Graft versus host disease; bone marrow transplantation

DR. I. BORRELLO

Multiple myeloma immunotherapy; myeloid derived suppressor cells; marrow infiltrating lymphocytes

DR. J. BRAHMER

Lung cancer; novel therapeutics; mesothelioma; lung cancer prevention

DR. W. BRENNEN

Prostate cancer, tumor microenvironment, mesenchymal stem cells, novel cell-based, prodrug and immunotherapies

DR. P. BROWN

Molecularly targeted therapies for childhood leukemias

DR. I. BROWNER

Geriatric and general oncology

DR. J. CASELLA

Pediatric hematology

DR. R. CASERO

Amine oxidases as antineoplastic targets; chromatin remodeling; inflammation/infection induced cancer; molecular pharmacology

DR. A. CHEN

Bone marrow transplantation; immunotherapy

Dr. Y. CHOI

Molecular mechanisms of mitochondrial quality control by human oncogenic virus

DR. K. COHEN

Pediatric neuro-oncology

DR. K. COOKE

Immune mechanisms of graft –vs.-host disease; pulmonary dysfunction after blood stem cell transplantation

DR. L. COPE

Methods for the analysis of gene expression data

DR. A. DE JESUS-ACOSTA

Drug development

DR. S. DENMEADE

Novel therapies for prostate cancer; urologic oncology

DR. P. DESAI

Molecular genetics of herpes simplex virus assembly and morphogenesis

DR. R. DONEHOWER

Early clinical trials of cancer therapies; GI cancers

DR. M. EISENBERGER

Urologic oncology; prostate cancer

DR. P. FORDE

Lung cancer; immunotherapy

DR. A. FRIEDMAN

Hematopoiesis; leukemogenesis; inflammation and cancer

DR. E. FUCHS

Tumor immunology; t-cell activation and tolerance; immunotherapy

DR. C. GAMPER

Regulation of anti-cancer immune responses

DR. D. GLADSTONE

BMT; CLL; mantle cell lymphoma; multiple sclerosis; autoimmunity cancer

DR. S. GROSSMAN

Neuro-oncology

DR. C. HANN

Bladder cancer

DR. M. HOLDHOFF

Neuro-Oncology

DR. F. HOUSSEAU

Dendritic cell and innate immunity

DR. J. ISAACS

Experimental therapeutics for solid malignancies, particularly prostate cancer

DR. E. JAFFEE

Developing vaccine approaches that bypass mechanisms of immune tolerance in mice and patients

DR. Y. JANG

Stem cells and microenvironment; pluripotent stem cells; hepatic differentiation; liver regeneration

DR. R. JONES

Bone marrow transplantation; hematopoiesis

DR. S. KACHHAP

DNA repair; metastasis; prostate cancer

DR. H. KANG

Head and neck cancers

DR. R. KELLY

Upper aerodigestive diseases/oncology

DR. S. KERN

Genetics of pancreatic cancer

DR. K. KINZLER

Molecular genetics of human cancer

DR. A. KLEIN

Genetic epidemiology; pancreatic cancer; cancer epidemiology; statistical genetics

DR. D. LAHERU

GI, drug development

DR. D. LE

GI cancers; immunotherapy

DR. M. LEVIS

Molecular biology of leukemia; molecularly targeted cancer therapy

DR. E. LIPSON

Melanoma

DR. E. LUTZ

Identifying new targets and approaches for tumor immunotherapy

DR. L. LUZNIK

Adoptive immunotherapy of cancer; allogeneic bone marrow transplantation

DR. L. MARCHIONI

Cancer genomics and computational biology

DR. C. MEYER

Adult sarcoma

DR. R. MILLER
Breast cancer

DR. A. MURPHY
GI oncology, drug development, cholangiocarcinoma

DR. J. NAIDOO
Lung cancer, immunotherapy

DR. W. NELSON
Molecular mechanisms of drugs for urological cancer prevention and treatment

DR. J. NICHOLAS
Signal transducing cytokines and receptors of humanherpesvirus-8

DR. C. PALLER
Novel and natural therapeutics; combination therapies; urologic cancer

DR. F. PAN
T cell biology; cellular therapy

DR. N. PAPADOPOULOS
Molecular genetics of human neoplasia

DR. D. PARDOLL
Dedritic cell biology; T-cell regulation

DR. J. POWELL
T Cell activation and tolerance; BMI immunotherapy

DR. C. PRATILAS
Molecularly targeted therapy for pediatric solid tumors

DR. E. RAABE
Neural stem cell biology; pediatric brain tumors; medulloblastoma; glioblastoma; diffuse intrinsic pontine glioma; targeting stem cell factors in brain tumors

DR. R. RAVI
Apoptosis; signal transduction

DR. K. RUBLE
Cancer survivorship

DR. M. RUDEK
Drug development; clinical pharmacology

DR. W. SHARFMAN
Malignant melanoma

DR. D. SHARMA
Breast cancer prevention; obesity-cancer axis; bioactive compounds; endocrine resistance

DR. M. SHOWEL
Leukemia; All research

DR. D. SMALL
Molecular biology and molecular targeting of leukemia; leukemia stem cells

DR. D. SMITH

Myeloid malignancies (AML, CML, MDS); cancer stem cell biology

DR. V. STEARNS

Breast cancer

DR. S. SUKUMAR

Molecular genetics of breast cancer

DR. L. SWINNEN

Lymphoma; viral oncology; neoplasia and immunodeficiency; Epstein Barr virus

DR. H. SYMONS

Immunobiology of bone marrow transplantation; alternative donor bone marrow transplantation for malignant and nonmalignant diseases

DR. V. VELCULESCU

Genomic analyses of human cancer

DR. K. VISVANATHAN

Genetic oncology; breast cancer

DR. B. VOGELSTEIN

Exploring and exploiting the genetic alterations in human cancers

DR. N. WAGNER-JOHNSTON

Lymphoma

DR. A. WOLFF

Breast cancer; novel therapies; biomarkers; survivorship; guidelines

DR. S. YEGNASUBRAMANIAN

Molecular genetics and epigenetics of cancer; DNA methylation

DR. C. A. ZAHNOW

Mouse models and epigenetic therapeutic approaches for epithelial cancers

DR. E. ZAMBIDIS

Developmental biology of human hematopoietic and vascular stem cells; embryonic stem cell biology; regenerative medicine; stem cell transplantation; cancer stem cells

DR. L. ZHENG

GI cancers (pancreatic, colon, and liver); vaccines and immunotherapy; molecularly targeted therapies

DR. S. ZHOU

Experimental cancer therapeutics

OPHTHALMOLOGY

ME:280.699

CLINICAL ELECTIVE IN OPHTHALMOLOGY

Course Type: Tutorial

Department/Division: Ophthalmology

Course Directors: Dr. Henry Jampel

Faculty: Dr. Henry Jampel and departmental staff

Contact Information: Irene Lao, lao1@jhmi.edu

Availability/Duration: All year; 4 weeks; register at least one month before start of elective **Drop Period:** 1 month

Description: Supervised clinical experience in the diseases of the eye, including retinal disease, macular disease, cataracts, corneal disease, strabismus, glaucoma, ophthalmic plastic surgery, emergency room, refractive surgery and pediatric ophthalmology. The course includes daily tutorials, reading assignments, lectures and seminars as well as observation of eye surgery, attendance at private offices of part-time Wilmer faculty as well as clinical experience with full time Wilmer faculty, library research and oral presentation on clinical topic. Major topics in ophthalmology will be reviewed as well as the diagnostic and therapeutic approaches to most of the common eye problems presenting to ophthalmic and non-ophthalmic physicians.

ADVANCED WORK AND RESEARCH IN OPHTHALMOLOGY AND NEUROSURGERY

Course Type: Basic Research

Department/Division: Ophthalmology

Course Director: Dr. Henry Brem

Telephone Number: 410-614-0477

Faculty: Dr. H. Brem

Availability/Duration: To be arranged with preceptor; individually tailored

Drop Period: None

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Research in angiogenesis immunology and controlled drug delivery

CLINICAL NEURO-OPHTHALMOLOGY

Course Type: Consultation Service

Department/Division: Ophthalmology

Course Director: Dr. Neil Miller

Telephone Number: 410-955-8679

Faculty: Drs. Neil Miller, Thomas (Mac) Bosley, Amanda Henderson, Andrew Carey and Timothy McCulley

Availability/Duration: All year; minimum of 4 weeks. Dates must be negotiated at least 3 months in advance for visiting students.

Prerequisite(s): Preferably neurology (or neurosurgery) and ophthalmology general electives; special considerations will be made for some students who have only taken one of the above.

Drop Period: 2 months

Description: Patients with presumed or proven neuro-ophthalmological disorders are evaluated and managed. Literature concerning specific syndromes encountered will be discussed, both during the clinic and at evening rounds. Journal club is held once a month. Students are expected to participate in all aspects of the clinics and rounds.

OPHTHALMOLOGY INFORMATICS (COMPUTERS IN OPHTHALMOLOGY)

Course Type: Basic Research

Department/Division: Ophthalmology

Course Director: Dr. Michael Boland

Telephone Number: 410-502-4074; boland@jhmi.edu

Faculty: Dr. Boland

Availability/Duration: As a research elective, students can negotiate the starting date and duration of their rotation

Prerequisite(s): Technical background appropriate to the planned project, if necessary

Drop Period: 1 month

Description: This elective affords the student the opportunity to work with faculty from ophthalmology in the field of medical informatics. The student will be allowed to develop either a research project or practical experience focused on the use of computers and information technology in ophthalmology. Examples of possible projects include: development of user interfaces for electronic patient records; computer-aided analysis and/or diagnosis of ophthalmic images; assessment of information needs in ophthalmology; assessment of the impact of information technology on ophthalmology; development and assessment of electronic patient education material; and development and assessment of clinician decision support. Students will be expected to generate a formal report describing their project and will be evaluated on their ability to plan and carry out that project.

ELECTIVE IN OCULOPLASTIC SURGERY

Course Type: Clinical Clerkship

Department/Division: Ophthalmology/Oculoplastics

Course Director: Dr. Fatemeh Rajaii

Telephone Number: 410-955-1112

Faculty: Dr. Ashley Campbell, Dr. Roxana Fu, Dr. Tim McCulley, Dr. Nicholas Mahoney, Dr. Shannath Merbs Dr. Fatemeh Rajaii

Availability/Duration: All year; 4 weeks

Drop Period: 1 month

Description: The one month elective in Oculoplastic Surgery provides clinical and surgical experience for the medical student in this subspecialty. Three days a week will be spent in clinic and two days in the operating room. At all times the student will be directly supervised by one of the faculty in the Division of Ophthalmic Plastic and Reconstructive Surgery. In the clinic there will be the opportunity to observe the evaluation and management of patients presenting with all aspects of Oculoplastic disease including trauma, neoplasia, aging, and congenital defects involving the ocular adnexae seen. There will be opportunity to do portions of the workups and then present to the preceptor(s). In the operating room, there will be observation of surgical techniques and opportunity to scrub in and assist on cases. There is also an opportunity to participate in research with the faculty.

RETINA/OPHTHALMOLOGY CLERKSHIP (FOR CLINICIAN SCIENTISTS)

Course Type: Clinical Clerkship (& Basic Research)

Department/Division: Ophthalmology/Retina

Course Director: Dr. Peter Gehlbach

Telephone Number: 410-502-3494 or 410-502-0782

Faculty: Dr. Gehlbach

Availability/Duration: One student each semester; 1 month

Prerequisites: Completion of basic sciences portion of an approved medical school program; an interest in ophthalmology, retina, or vision science as a career.

Drop Period: 2 months

Description: Exposure to medical and surgical retina practice and retina research. The rotation will include attendance in retina clinic and the retina operating room. There will be assigned readings and a retina related project that will contribute to a publication level document. Visitation to the retina engineering laboratories with project development related to retinal disease, engineering and biomedical engineering principles is on-going and will be incorporated into the experience.

SIGNAL ACQUISITION AND PROCESSING IN OPHTHALMIC OPTICS

Course Type: Basic Research

Department/Division: Ophthalmology/Pediatric Ophthalmology and Adult Strabismus

Course Director: Dr. Boris Gramatikov

Contact: 443-287-0073; bgramat@jhmi.edu

Faculty: Dr. Gramatikov

Availability/Duration: By arrangement; 4 ½ weeks

Prerequisites: Some background in ophthalmology, math, physics/optics, computer programming, and/or statistics would be desirable.

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This elective provides the student with an introduction to the physical principles, hardware design, and signal processing techniques used in ophthalmic optics and electronics. The course is designed for students who wish to pursue research in ophthalmic optics. Emphasis will be placed on low-power lasers, retinal scanning, optical sensors, amplifiers and filters, noise reduction, pattern recognition and data analysis in time, and frequency domains, as well as decision making rules based on statistical data. The project may include elements of computer programming, modeling, and optimization; possibly also implementing algorithms for diagnostics. Experimental data will be collected, analyzed, and statistically assessed. The end goal is to develop algorithms to be applied in functional and reliable diagnostic therapeutic devices in the field of ophthalmology or neuro-ophthalmology.

Student will be expected to write a formal report and will be evaluated on their ability to plan and carry out their project independently.

CLINICAL ELECTIVE IN OPHTHALMOLOGY-GREEN SPRING STATION

Course Type: Clinical Clerkship

Department/Division: Ophthalmology/Green Spring Station

Course Director: Dr. Craig S. Bower

Contact: Rebecca Scarborough at 410-583-2843 for availability

Faculty: Dr. K. Bower and Dr. A. Jun

Availability/Duration: By arrangement; 3 or 4½ weeks

Prerequisites: Medical student in clinical years

Drop Period: One month

Description: Supervised clinical rotation with full time Wilmer faculty at Green Spring Station. This course will focus on diagnosis and treatment of many common eye diseases, with particular attention to conditions of the anterior segment, including cataract, cornea, and refractive surgery. Curriculum will include clinical experience, observation in the operating room and during laser refractive surgery, reading assignments, lectures and seminars, and one-on-one teaching.

CLINICAL ELECTIVE IN OPHTHALMOLOGY-ODENTON/COLUMBIA

Course Type: Clinical Clerkship

Department/Division: Ophthalmology/Anterior Segment/Odenton/Columbia

Course Directors: Drs. Divya Srikumaranand

Contact: Dr. Divya Srikumaran; dsrikum1@jhmi.edu

Faculty: Divya Srikumaran, M.D.

Availability/Duration: By arrangement; 3 weeks or longer

Prerequisites: Medical student in clinical years

Drop Period: One month

Description: Supervised clinical rotation with full time Wilmer faculty at Odenton and Columbia sites. This course will focus on diagnosis and treatment of many common eye diseases, with particular attention to conditions of the

anterior segment, including cataract and cornea. Curriculum will include clinical experience and the development of basic ophthalmic examination skills as well as observation in the operating room. Students will have the opportunity to develop research projects if interested in the medical education, cornea or trauma. Should have transportation to get to satellite locations.

INVESTIGATING THE GENETIC BASIS OF INHERITED OCULAR DYSTROPHIES

Course Type: Research

Department/Division: Ophthalmology/Anterior Segment

Course Directors: S. Amer Riazuddin, Ph.D.

Contact: 600 N. Wolfe Street, Maumenee 809A; 410 955 3656, sriazud1@jhmi.edu

Faculty: S. Amer Riazuddin, Ph.D.

Availability/Duration: By arrangement with preceptor, individually tailored

Prerequisites: None

Drop Period: One month

Description: Over the course of the rotation, the student will be introduced to a multifaceted approach to determine the genetic basis of different inherited ocular dystrophies including Fuch corneal dystrophy, congenital cataracts, primary congenital glaucoma, Retinitis pigmentosa, etc. The student will rotate under the supervision of Dr. Riazuddin and will be assisted by senior postdoctoral fellows Drs. Khan and Ali. The student will be exposed to various techniques commonly used in genetic analysis including but not limited to genome-wide linkage analysis using STR or SNP markers, next generation whole exome sequencing, etc.

The goal of the rotation is an understanding of the overall approach to decipher genetic determinants responsible for inherited dystrophies and the completion of a research project to generate a meeting abstract submission and or paper.

ARGUS II RETINAL IMPLANT

(Re-creating vision for patients blind from end-stage retinal degenerations)

Course Type: Clinical Research

Department/Division: Ophthalmology/SOM

Course Director: Gislin Dagnelie, Ph.D.

Contact: Olukemi Adeyemo, 443-287-0072, oadeyem2@jhmi.edu

Faculty: Drs. James Handa, Judith Goldstein, and Gislin Dagnelie,

Availability/Duration: Course available year round

Prerequisites: Undergraduate Neuroscience or equivalent

Drop Period: One month

Description: The Argus II retinal prosthesis system was approved for clinical implantation in patients blind from end-stage retinitis pigmentosa in 2013 and is now being implanted clinically at the Johns Hopkins Wilmer Eye Institute and other centers in the US and Europe. At Wilmer we have been working with Argus II recipients since the start of the FDA-supervised feasibility study in 2007.

This elective will offer medical students and graduate students in Optometry, Biomedical Engineering and related fields, with an interest in ophthalmology and or rehab medicine, an opportunity to participate in the evaluation, treatment and rehabilitation of patients with end-stage retinitis pigmentosa as they receive an Argus II retinal implant and go through the subsequent process of adapting to prosthetic vision.

The opportunity for a participating student will not be limited to a 6 to 8 week (summer) elective, but can extend throughout the year and will include opportunities to participate in studying novel aspects of prosthetic vision.

PEDIATRIC OPHTHALMOLOGY AND STRABISMUS

Course Type: Clinical Research

Department/Division: Ophthalmology/Strabismus and Pediatric Ophthalmology

Course Director: Dr. Courtney Kraus

Contact: Dr. Courtney Kraus (919) 697-0450 or ckraus6@jhmi.edu

Faculty: Dr. Courtney Kraus and Dr. Alex Cristoff

Availability/Duration: To be arranged with Preceptor; individually tailored

Prerequisites: None

Drop Period: One month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Over the course of the rotation, the medical student will be introduced to a multifaceted approach to pediatric ophthalmology across two different clinic settings and the operating room. The goal of the rotation will be to familiarize the student with academic pediatric ophthalmology practice. The two clinic settings will encompass an “attending” clinic as well as a “resident” clinic. In addition, weekly time in the operating room will be anticipated.

The goal of this rotation will be to gain an understanding of strabismus and strabismus surgery. Through work with Dr. Kraus, a research project on the impact of SES outcomes following strabismus surgery will be planned. There will be built in independent research days for the student to work on data acquisition, analysis and writing.

The goal of the rotation is an understanding of pediatric ophthalmology and strabismus and the completion of a research project to generate a meeting abstract submission or paper.

RESEARCH OPPORTUNITIES

Medical Retina: Dr. Morton Goldberg and Dr. Sharon Solomon

Cornea/Cataract: Dr. Oliver Schein, Dr. John Gottsch, Dr. Irene Kuo, Dr. Robert Weinberg, Dr. Esen Akpek, Dr. Shameema Sikder, Dr. Allen Eghrari, Dr. Uri Soiberman

Clinical neuro-ophthalmology: Drs. Neil Miller, Thomas (Mac) Bosley, Amanda Henderson , Andrew Carey and Timothy McCulley

Experimental Optic Nerve Studies/Glaucoma: Dr. Harry Quigley, Dr. Henry Jampel, Dr. Donald Zack, Dr. David Friedman

Pathophysiology of Eye-Movement Disorders and Nystagmus: Dr. David Zee

Ocular Tumors; Methods of Diagnosis and Treatment: Dr. James Handa

Oculoplastics: Dr. Nick Iliff, Dr. Shannath Merbs, Dr. Michael Grant, Dr. Timothy McCulley, Dr. Nicholas Mahoney

Ocular Epidemiology: Dr. Sheila West, Dr. Oliver Schein, Dr. Harry Quigley, Dr. David Friedman, Dr. Pradeep Ramulu

Refractive Eye Surgery: Dr. K. Scot Bower

Sickle Cell Eye Disease: Dr. Morton Goldberg, Dr. Adrienne Scott

Angiogenesis Research and Controlled Drug Delivery: Dr. Henry Brem

Uveitis; Scleritis, Cytomegalovirus Retinitis, Autoimmune Diseases of the Eye: Dr. Richard Semba, Dr. Jennifer Thorne

Surgical Retina: Dr. Peter Campochiaro, Dr. Ingrid Zimmer-Galler, Dr. Peter Gehlbach, Dr. Jim Handa, Dr. Adrienne Scott

Medical Informatics and Electronic Health Record: Dr. Michael Boland

Retinal Molecular Biology: Dr. Don Zack

Surgical Education: Dr. Shameema Sikder

Automation of eye exam, telemedicine, optimization of clinic flow: Dr. Eric Singman

Pediatric ophthalmology and adult strabismus: Dr. Megan Collins

Pediatric ophthalmology and Public Health and/or Health care policy: Dr. Megan Collins

Medical ethics: Dr. Megan Collins

Engineering in Ophthalmology: Dr. Peter Gehlbach

Contact preceptor to arrange research.

PATHOLOGY

DIAGNOSTIC CYTOPATHOLOGY

Course Type: Clinical Clerkship

Department/Division: Cytopathology

Course Director: Dr. Syed Ali

Telephone Number: 410-955-1180

Faculty: Dr. Ali and staff

Availability/Duration: 1 quarter or shorter; arrange with course director

Prerequisite(s): Introduction to Pathology

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: An opportunity to learn about the clinical significance of morphologic changes in cells and other elements of the cytologic specimen in health and in disease. The materials utilized are specimens from the Johns Hopkins Hospital Diagnostic Cytopathology Service, including Pap tests and biopsies from the Fine Needle Aspiration (FNA) Service. There will be an active correlation of the clinico-radiologic, cytomorphologic and histopathologic findings and follow-up information.

GYNECOLOGIC PATHOLOGY

Course Type: Tutorial

Department/Division: Gynecologic Pathology

Course Director: Dr. Russell Vang

Faculty: Dr. Russell Vang and faculty

Availability/Duration: Negotiable; also offered as a 4 week elective

Prerequisite(s): Permission of instructor

Drop Period: 1 month

Description: Students observe and participate in the gross and histological assessment of gynecologic pathology specimens under the supervision of residents, fellows, and attendings.

AUTOPSY PATHOLOGY – JHH

Course Type: Clinical Elective

Department/Division: Pathology

Course Director: Dr. Jody Hooper

Telephone Number: 410-955-3765

Faculty: Dr. Hooper, Dr. David Nauen, others

Availability/Duration: All year except July. Available as either a full quarter rotation or as a one month rotation if followed by pathology elective.

Prerequisite(s): Completion of Genes to Society

Drop Period: 2 months

Description: Students are trained to function as first year house officers on the autopsy service. They become responsible for work-up and sign-out of their cases and in other respects participate fully in the life of the department. There are informal case conferences at the autopsy table and at multi headed microscopes. Students have the opportunity to present cases at departmental and interdepartmental conferences or to write cases for publication. Brief supplementary exposures to other aspects of pathology (general surgery pathology, surgical pathology subspecialties, forensic pathology, and clinical pathology) are offered to students who enroll for a full quarter.

CLERKSHIP IN SURGICAL PATHOLOGY – JHH

Course Type: Clinical Clerkship

Department/Division: Surgical Pathology

Course Director: Dr. Edward McCarthy

Telephone Number: 410-614-3653

Faculty: Dr. McCarthy and staff

Availability/Duration: Throughout the year; by calendar month

Prerequisite(s): Completion of Introduction to Pathology or Genes to Society

Drop Period: 2 months

Description: Students are trained in the techniques of general surgical pathology and then become responsible for the gross description, gross dissection, and microscopic examination of their assigned cases. Students are supervised by faculty members and senior residents, and they participate in all conference activities in the division. The elective exposes the student to a variety of modern techniques employed in the pathologic diagnosis of medical and surgical diseases and increases their awareness and understanding of the role played by surgical pathology in patient management. There are opportunities for exposure to other diagnostic pathology services (e.g., cytopathology and neuropathology)

SURGICAL PATHOLOGY - BAYVIEW MEDICAL CENTER

Course Type: Clinical Clerkship

Department/Division: Pathology

Course Directors: Dr. Fred Askin

Telephone Number: 410-550-4841

Faculty: Dr. Askin and staff

Availability/Duration: All year; ½ quarter or full quarter

Prerequisite(s): Introduction to Pathology or Genes to Society

Drop Period: 2 months

Visiting Medical Students accepted upon approval of Course Director

Description: This course offers an opportunity to see and experience at first hand a wide spectrum of activities in anatomic pathology. Students will rotate in Surgical Pathology, functioning at the level of a first year resident in pathology. The student will perform gross dissections, dictate clinical summaries, review microscopic sections and sign out the surgical pathologic material under senior staff supervision.

CLINICAL CHEMISTRY

Course Type: Tutorial

Department/Division: Pathology/Clinical Chemistry

Course Director: Dr. Daniel Chan

Telephone Number: 410-955-2674

Faculty: Dr. Chan and staff

Availability/Duration: All year; to be arranged with instructor

Prerequisite(s): Third or fourth year medical student; completion of Introduction to Pathology

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This course will provide an introduction to the clinical and research activities of the Clinical Chemistry Division. Clinical aspects will focus on the analytical methods, quality assurance and the clinical interpretation of biochemical, immunological, and proteomics tests. Laboratories include: automated chemistry, critical care, emergency department, immunoassay for hormones and tumor markers, toxicology, and therapeutic drug monitoring. Research aspects will focus on clinical proteomics through interaction with the biomarker discovery laboratory. Students will meet with individual faculty members, attend laboratory meetings, rotate in the laboratories and be involved in research projects.

MEDICAL MICROBIOLOGY

Course Type: Other (Laboratory Rotation)

Department/Division: Pathology/Microbiology

Course Director: Dr. Karen Carroll
Telephone Number: 410-955-5077 (Paula Mister)
Faculty: Dr. Karen Carroll and faculty within the Division of Medical Microbiology
Availability/Duration: All year; 4 weeks, limited to two students per quarter
Prerequisite: Basic knowledge of Microbiology
Drop Period: 1 month

Description: Laboratory diagnosis of infectious diseases and therapeutic monitoring of antimicrobial agents.

Visiting Medical Students accepted upon approval of Course Director and must arrange times directly with the Education Coordinator, Paula Mister.

This course will emphasize all facets of diagnostic testing. The student will review specimen collection guidelines as they pertain to microbiology samples. Diagnostic methods and specific technologies for detection of a broad range of clinically significant pathogens will be learned. Susceptibility testing methods including special antibiotic studies will be covered. A major objective is to provide correlation of laboratory information with disease presentations in patients through a dynamic interface with healthcare providers and other divisions within the Department of Pathology. Learning objectives are fulfilled through bench rotations in the laboratory, daily work rounds, didactics, and interdisciplinary conferences.

FORENSIC PATHOLOGY - OFFICE OF THE CHIEF MEDICAL EXAMINER

Course Type: Other
Department/Division: Pathology
Course Director: Dr. Nikki Mourtzinis, Program Director, 900 West Baltimore St, Baltimore, MD 21223 (BioPark)
Telephone Number: 410-333--3353
Faculty: Staff
Availability/Duration: All year; 4 weeks or one quarter; only one student rotating at any given time unless approved. To request approval contact Eleanor Thomas at 410-333-8159 or thomase@ocmemd.org. **Visiting medical students must follow JHUSOM quarter dates**
Prerequisite(s): Completion of Introduction to Pathology
Drop Period: 1 month

Description: Students will acquire first-hand knowledge of legal medicine by participating in regular functions of the Office of the Chief Medical examiner. Included are investigations of sudden, unexpected, and violent deaths, autopsy procedures, and toxicological and histological studies. Students are encouraged (after adequate orientation) to assist at autopsies, to participate in on-the-scene investigations, and to observe staff members testifying in court. They participate in daily rounds, lectures, and seminars. There are also opportunities to participate in on-going research projects centered on forensic pathology.

BLOOD BANK/ TRANSFUSION MEDICINE

Course Type: Tutorial or Clerkship
Department/Division: Pathology/Transfusion Medicine
Course Director: Dr. Evan Bloch
Telephone Number: 410-614-0205
Contact: Lorraine Blagg, 410-502-9584 or lblagg1@jhmi.edu or ebloch2@jhmi.edu
Faculty: Dr. Evan Bloch and staff
Availability/Duration: All year, usually 1 month.
Prerequisite(s): Introduction to Pathology
Drop Period: 1 month

Description: This course provides an opportunity for medical students to experience the role of transfusion medicine in the care of adult and pediatric patients with a variety of conditions in one of the largest and most active blood banks in the country. Students will learn about different types of blood products and the indications for their use in various clinical settings. Alternatives to blood transfusion will also be discussed. Students will take an active

role in consultations from the transfusion medicine and apheresis services. Interested students are encouraged to undertake small research projects. Particularly recommended for students interested in pathology, surgery, anesthesiology, hematology, oncology, and intensive care medicine.

NEUROPATHOLOGY

Course Type: Tutorial

Department/Division: Pathology/Neuropathology

Course Director: Dr. Juan Troncoso

Telephone Number: 410-955-5632

Faculty: Drs. Juan Troncoso, David Nauen, Charles Eberhart, Fausto Rodriguez, and Liam Chen

Availability/Duration: 1 month or longer; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Introduction to Pathology. Approved neuroanatomy and histology.

Drop Period: 1 month

ENROLLMENT LIMITED TO US MEDICAL STUDENTS ONLY

Description: An opportunity to learn the fundamentals of diagnostic neuropathology. The student will examine brain and spinal cord specimens obtained at Hopkins and the Office of the Chief Medical Examiner and will also participate in the evaluation of surgical neuropathology specimens from the inpatient and outside consultation services. Self-study materials and individual tutoring sessions on special topics in neuropathology are available. Students are encouraged to identify small research projects in their areas of interest. This experience is recommended for students interested in pathology, neurology and neurosurgery.

RESEARCH OPPORTUNITIES

DR. SYED ALI

Cytopathology; digital photoimaging; web-based teaching tools

DR. TIMOTHY AMUKELE

Pathology and Lab Medicine Overseas; Medical Drones; WHO Essential Diagnostic List; Non-communicable diseases in sub-Saharan Africa

DR. ROBERT ANDERS

Tumor immunology, tumor immune microenvironment, liver and gastrointestinal pathology

DR. PEDRAM ARGANI

Breast cancer, gall bladder, and bile duct carcinomas; pediatric renal tumors

DR. FREDERIC ASKIN

Pulmonary disease; placental pathology; pediatric neoplasia

DR. SERENA BAGNASCO

Pathology of native and transplanted kidney

DR. DENISE BATISTA

Prenatal and Postnatal Clinical Cytogenetics; Chromosome Microarray; delineation of genetic syndromes

DR. MICHAEL BOROWITZ

Leukemia and lymphoma, especially pediatric leukemia; flow cytometry

DR. KAREN CARROLL

Diagnostic test development and evaluation for bacteria with emphasis on healthcare associated infections

DR. PATRIZIO CATUREGLI

Autoimmune diseases; thyroiditis; hypophysitis; mouse models

DR. DANIEL CHAN

Tumor markers; proteomics; immunoassay

DR. DANIELA CIHAKOVA

Immunology, cardiac inflammation, myocarditis, dilated cardiomyopathy, myocardial infarction, T cells, Macrophages, Innate lymphoid cells, cytokines

DR. WILLIAM CLARKE

Therapeutic drug monitoring; clinical toxicology; drug assay development

DR. ANGELO DE MARZO

Molecular pathogenesis of prostate cancer

DR. BARBARA DETRICK

Clinical immunology; immunoregulation in the retina and ocular diseases; cytokine biology in immune-based disorders

DR. CHARLES EBERHART

Pathogenesis of brain and eye tumors

DR. JONATHAN EPSTEIN

Genitourinary pathology

DR. JAMES ESHLEMAN

Early detection of pancreatic cancer; genes causing familial pancreatic cancer; liquid biopsy for patients with solid tumors; novel molecular therapeutic and diagnostic tools for cancer

DR. SUSAN ESHLEMAN

HIV genetic diversity, transmission and drug resistance; novel methods for HIV analysis

DR. MARY GLENN FOWLER

Prevention of mother and child transmission of HIV; treatment of pediatric HIV infection; and prevention among high risk adolescents and women in international settings

DR. EDWARD GABRIELSON

Molecular pathology of breast and lung cancer

DR. CHRISTOPHER GOCKE

Molecular diagnostics and hematopathology

DR. MICHAEL GOGGINS

Pancreatic cancer, particularly early detection; cancer genetics; cancer epigenetics

DR. MARC HALUSHKA

Cellular expression and cardiovascular disease

DR. ABDU HAMAD

Type I diabetes, underlying mechanisms and innovative therapeutic strategies, role of B cells and Natural killer T cells

DR. RALPH H. HRUBAN

Cancer of the pancreas

DR. CHIEN-FU HUNG

Cancer vaccine; immunotherapy; DNA vaccine

DR. PETER ILLEI
Pulmonary pathology and cytopathology

DR. THOMAS KICKLER
Hemostasis/thrombotic disorders

DR. CLAIRE KNEZEVIC
Critical care testing, TDM/toxicology, Mass Spectrometry

DR. VASSILIS KOLIATSOS
Traumatic brain injury, traumatic axonopathy; stem cell therapies for neural injury

DR. SHENGHAN LAI
Data mining; statistical modeling; subclinical atherosclerosis; epidemiology of HIV infection; drug abuse; cardiovascular complication of drug abuse and HIV infection; HIV prevention and intervention

DR. ANNE LE
Metabolism of disease and metabolomics technologies

DR. QING KAY LI
Biomarkers in lung cancer and prostate cancer

DR. TONG LI
Molecular biology of neurobiological diseases

DR. MING-TSEH LIN
Molecular diagnosis of solid tumor

DR. TAMARA LOTAN
Prognostic and predictive molecular biomarkers for prostate cancer; PTEN/Pi3k/mTOR signaling in development and tumorigenesis; genitourinary pathology

DR. ZAHRA MALEKI
Cytopathology; Lung Neoplasms, Salivary Gland and Head and Neck Cytopathology

DR. JOSEPH L. MANKOWSKI
Comparative pathology and viral pathogenesis; neuroimmunology

DR. LEE J. MARTIN
Amyotrophic lateral sclerosis; Parkinson's disease; mitochondria; stroke; neonatal brain ischemia; cell death; apoptosis-necrosis continuum; motor neuron disease; transgenic mice

DR. MARK MARZINKE
Analytical pharmacology, laboratory automation, precision medicine and pharmacogenetics

DR. EDWARD MCCARTHY
Bone pathology

DR. ALAN MEEKER
Molecular pathology and telomere biology of prostate and other cancers

DR. ELIZABETH MONTGOMERY
Surgical pathology: focusing on gastrointestinal and soft tissue pathology

DR. PAUL NESS
Transfusion medicine; immune hemolysis; transfusion alternatives; clinical trials in transfusion recipients; blood donor epidemiology studies

DR. NICOLE PARRISH

Antibiotic development; use of natural compounds as antimicrobials and the basis for synthetic scaffolds; diagnostic development for rapid detection of antimicrobial resistance; understanding antibiotic consumption and the relationship to development of antimicrobial resistance in both pathogens and commensal organisms

DR. RICHARD RODEN

Cervical cancer; ovarian cancer; papillomavirus; vaccine development; virology

DR. FAUSTO RODRIGUEZ

Surgical neuropathology and pediatric brain tumors

DR. BRIGITTE RONNETT

Gynecologic pathology

DR. SCHEHERAZADE SADEGH-NASSERI

Molecular mechanisms of antigen processing and T cell recognition; Antigen processing in relation to autoimmune diseases, infectious disease, and cancer; Understanding memory T cells longevity and survival

DR. ALENA SAVONENKO

Cognitive deficits in animal models of Alzheimer's, Parkinson's, and schizophrenia; testing experimental treatments for these diseases; their mechanisms, safety, and side effects

DR. JONATHAN SCHNECK

Basic mechanisms controlling T-cell mediated immune responses; cellular engineering; adoptive immunotherapy; cellular microarray-based high-throughput analysis of immune responses

DR. KAREN SFANOS

Cancer biology; prostate cancer

DR. IE MING SHIH

Molecular events that drive precursor lesion to invasive cancer; Molecular targets for new therapy by exploring cancer genomics; Integrated proteo-genomic analysis of human cancer

DR. TRISH SIMNER

Clinical microbiology, antimicrobial resistance and novel diagnostic tools for infectious diseases

DR. LORI SOKOLL

Clinical chemistry; tumor markers; immunoassays

DR. CHARLES STEENBERGEN

Cardiac pathology; myocardial ischemia/reperfusion injury and cardio protection

DR. AARON TOBIAN

Transfusion medicine and HIV

DR. JUAN TRONCOSO

Neuropathology of normal aging, Alzheimer's, Parkinson's, and Huntington's disease; stereological quantitation of neurons in hippocampus and substantia nigra; neuropathology of transgenic models of neurodegenerative disorders; immunotherapy models of Alzheimer's disease

DR. RUSSELL VANG

Gynecologic pathology

DR. TIAN-LI WANG

DNA damage repair in cancer development; Chromatin remodeling in ovarian cancer; Cancer stem cell study; Innovative cancer detection using body fluid

DR. PHILIP WONG

Molecular mechanisms and mouse models of neurodegenerative and psychiatric diseases; experimental therapeutics

DR. LAURA WOOD

Cancer genomics; pancreatic and liver cancers; gastrointestinal and liver pathology

DR. T.C. WU

Cancer, immunotherapy for HPV associated malignancies and other gynecological cancers; molecular pathology and DNA vaccines

DR. HUI ZHANG

Developing and applying high-throughput mass spectrometric technologies and data analysis pipeline for multi-omics characterization of proteins and protein phosphorylation/glycosylation

DR. SEAN ZHANG

Medical mycology; molecular diagnosis of fungal infections

DR. ZHEN ZHANG

Bioinformatics; biomarker discovery; computational methods for expression data analysis; biomarkers for ovarian cancer

PEDIATRICS

ME:320.699

SUBINTERNSHIPS IN THE DEPARTMENT OF PEDIATRICS

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Pediatrics/Inpatient, Emergency Medicine, Harriet Lane Clinic

Course Directors: Drs. Amit Pahwa, Mitchell Goldstein, and Megan Tschudy

Telephone Number: 410-955-5977; contact Rebekah Reisig

Faculty: Pediatrics Faculty

Availability/Duration: 4 weeks; lottery system.

Prerequisite(s): Core Clerkship in Pediatrics

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description:

Inpatient Pediatrics: A subinternship experience on a ward service in the Children's Center, with primary responsibility for patients admitted to that service. Supervised by the SAR on that service, with some night shift and weekend responsibilities. This course will enhance the student's knowledge of pediatrics and provide responsibility appropriate to the level of subintern. Evaluation will be performed by ward attending and senior residents.

Emergency Medicine: Evaluation and treatment of children presenting to the Pediatric Emergency Department. Duties to approximate the workload of a pediatric intern- approximately 17 ten hour shifts carrying on average three to four patients at a time.

Harriet Lane Clinic: The acute care Harriet Lane team sees pediatric patients aged birth to 21 years for acute complaints, newborn visits and immunizations. Each day begins with an hour long lecture on a topic relevant to primary care pediatrics. The subintern will perform histories and physical exams, present to the senior resident, fellow or faculty attending, participate in decisions regarding treatment plans, and communicate with the patient's primary care provider and subspecialist consultants as necessary. The subintern will work closely with our social workers, nurses, child life specialists, legal advocate and mental health counselors in providing care to our patients. The student will also have the opportunity to join the lactation consultant during a breastfeeding clinic session. The subintern will also participate in the monthly case conference and journal club.

CHILD AND ADOLESCENT PSYCHIATRY

(also listed under Psychiatry)

Course Type: Clinical Clerkship

Department/Division: Division of Child & Adolescent Psychiatry

Course Director: Dr. Roma Vasa

Contact: 410-955-7858; Denise Jones; djones4@jhmi.edu

Faculty: Dr. Vasa and division faculty

Availability/Duration: Variable; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): None

Drop Period: 1 month

Description: This course offers the opportunity to observe and participate in a variety of clinical-teaching settings, including inpatient child and adolescent units, day hospital, consultation liaison service, outpatient specialty clinics (affective disorders, anxiety disorders, developmental neuropsychiatric disorders, psychosomatic disorders) as well as community psychiatric programs including outpatient services, community liaison, and school based programs. The student will learn about a variety of psychiatric presentations of children, adolescents, and their families and the range of psychotherapeutic interventions available. In addition, students have the opportunity to participate in a large number of ongoing research projects within the division. The elective is tailored to meet individual interests.

NEURODEVELOPMENTAL PEDIATRICS - KENNEDY KRIEGER INSTITUTE

Course Type: Clinical Clerkship

Department/Division: Pediatrics

Course Director: Dr. Bruce Shapiro

Telephone Number: 443-923-9136; shapiro@kennedykrieger.org

Faculty: Drs. Shapiro and staff

Availability/Duration: Offered Q1-Q4; 1 month; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkship in Pediatrics

Drop Period: 1 month

Description: The goal of this elective is to provide the student with an overview to neurodevelopmental disabilities including cerebral palsy, autism, intellectual disability, attention deficit hyperactivity disorder and other disorders of communication and learning. Students will actively participate in the diagnostic and interdisciplinary evaluation and management of infants, children, and adolescents with neurodevelopmental disorders. Directed readings, lectures, and regular meetings with a faculty preceptor will be used to increase the student's knowledge of principles of development, specific diagnostic entities, brain-behavior relationships, and current issues in care. This elective is recommended for those students who are considering careers in pediatrics, neurology, genetics, or psychiatry.

CLINICAL RESEARCH ELECTIVE IN ADOPTION MEDICINE

Course Type: Clinical Research

Department/Division: Pediatrics/ACCM

Course Director: Dr. Deborah Schwengel

Telephone Number: 410-955-7610

Faculty: Dr. Deborah Schwengel

Availability/Duration: Only by specific arrangement and a short training period is required; 2-3 months.

Prerequisite(s): Language fluency is helpful but not required. Most important is the student's ability to function as an ambassador and be culturally sensitive. Previous experience in the third world or immersion in other cultures is ideal.

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This is a clinical research elective in which the student evaluates children in orphanages abroad. The student will weigh and measure children living in orphanages and will develop a project of special interest such as nutrition, language development, vaccines, caretaking in orphanages, etc. The student will be expected to present findings at national meetings and make a publication attempt. Expenses are paid.

RESEARCH IN PEDIATRIC ALLERGY

Course Type: Patient Care and/or Clinical Research

Department/Division: Pediatrics/Immunology

Course Director: Dr. Robert Wood

Telephone Number: 410-955-5883

Faculty: Dr. Robert Wood

Availability/Duration: All quarters; nine weeks; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): None

Drop Period: 1 month

Description: The student may attend clinic for patients with allergic (primarily food allergy and asthma) or immunologic (primarily immunodeficiency) disorders and/or participate in a variety of ongoing research studies on children with allergic or immunologic disorders. Current projects include studies on the natural history of food allergy, treatment options for food allergy, the relationship of the environment to asthma, and novel treatment approaches for childhood asthma.

CLINICAL CLERKSHIP IN FULL-TERM NURSERY

Course Type: Clinical Clerkship

Department/Division: Pediatrics/Neonatology

Course Director: Dr. Christopher Golden

Telephone Number: 410-955-4588 or 410-955-5259

Faculty: Dr. Golden and Nurse Practitioner staff.

Prerequisite(s): Core Clerkship in Pediatrics

Availability/Duration: All year; 4 weeks; visiting medical students must follow JHUSOM quarter dates

Drop Period: 1 month

Description: Clinical experience in the care of full-term and near-term newborns, including both normal and "at-risk" infants. Student will be expected to follow newborns and families throughout the nursery stay. On completion of the clerkship, the student should be able to: perform a newborn physical exam, including assessment of gestational age; recognize normal patterns of transition at birth; recognize risk factors for and signs of abnormal transition; identify many normal variants and abnormal findings on the newborn physical examination; understand the diagnosis and management of common neonatal problems (such as jaundice, suspected sepsis, feeding problems, congenital infections, drug withdrawal, skin rashes); understand important issues in counseling parents regarding care of the newborn. Students will have the opportunity to rotate in the Neonatal Intensive Care Unit (NICU) and to attend deliveries with the pediatric house staff and participate in resuscitation. At the end of the clerkship, students will prepare a short presentation (Powerpoint recommended) on a newborn topic of his/her choice.

ADOLESCENT MEDICINE

Course Type: Advanced Clerkship/Subinternship

Department/Division: Pediatrics/General Pediatrics and Adolescent Medicine

Course Director: Dr. Maria Trent (Program Coordinator: Lynette Forrest)

Telephone Number: 410-614-3865

Faculty: Drs. H. Adger, A. Marcell, and M. Trent

Availability/Duration: ½ quarter (not offered June/July); visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkships in Pediatrics and Ob/Gyn

Drop Period: 2 months

Description: Students will gain increased experience working with adolescents (ages 10-21 years). Time is primarily spent in the Adolescent Clinic with additional clinical opportunities at the Baltimore City school-based clinics, and an adolescent substance abuse treatment program. Clinical interviewing skills are emphasized, and there is a weekly didactic seminar series. A case presentation or literature review is required during the month.

GENERAL PEDIATRICS & ADOLESCENT MEDICINE CLINICAL RESEARCH

Course Type: Clinical Research

Department/Division: Pediatrics/General Pediatrics and Adolescent Medicine

Course Director: Dr. Jacky Jennings

Telephone Number: 410-955-2910

Faculty: Division of General Pediatrics faculty

Availability/Duration: 9 weeks minimum; all year pending match with a faculty member; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkship in Pediatrics

Drop Period: 1 month

Description: Opportunities are available for studies to participate in ongoing clinical research projects within the Center for Child and Community Health Research in the Division of General Pediatrics & Adolescent Medicine. Research opportunities exist at the East Baltimore and Bayview campuses. Division faculty provide clinical care to children, adolescents and young adults in the Harriet Lane Clinic (including the Adolescent Medicine Clinics and Intensive Primary Care Clinic for youth with HIV infection) and the Bayview Children's Medical Practice. Students

may be involved in developing critical literature reviews or pre-testing research instruments, in collecting data through interview or chart review, or in analyzing data, depending on the student's interest and previous experience and the stage of the project. Students who choose this elective will increase their depth of knowledge in at least one pediatric content area.

CLINICAL ISSUES IN CHILD MALTREATMENT AND ADVOCACY

Course Type: Clinical Clerkship

Department/Division: Pediatrics/ Emergency Medicine

Course Director: Dr. Mitchell Goldstein

Telephone Number: 410-955-6143

Faculty: Dr. Mitchell Goldstein and Simone Thompson LCSW

Availability/Duration: All year except July and December; 3 weeks; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkship in Pediatrics

Drop Period: 2 months

Description: The Clinical Issues in Child Maltreatment and Advocacy offers the student an intensive exposure to the many facets of caring for abused children and their families. The student will gain an understanding of the identification, evaluation and treatment of the physically abused child in both the acute and inpatient settings. Likewise, the student will participate in the identification and evaluation of suspected sexual abuse. The student will observe the multidisciplinary approach to medical and psychological treatment of abused children and their families; the investigation, the prosecution and treatment of perpetrators and the roles of child advocacy groups in education and prevention.

CLINICAL CLERKSHIP IN PEDIATRIC EPILEPSY

Course Type: Clinical Clerkship

Department/Division: Pediatric Neurology

Course Director: Dr. Adam Hartman

Telephone Number: 410-955-9100

Faculty: Drs. Hartman and Kossoff

Availability/Duration: All year; 2 weeks; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkships in Pediatrics and Neurology

Drop Period: 1 month

Description: This elective will give the student experience in the "trenches" of managing pediatric epilepsy including participation in clinic or in a more structured and intensive experience, including ward duty. There also is experience reading EEG's in both outpatient and epilepsy monitoring unit environments. The student may spend time with ketogenic diet patients and in epilepsy surgery cases, as available.

PEDIATRIC GASTROENTEROLOGY AND NUTRITION

Course Type: Clinical Clerkship

Department/Division: Pediatrics/Gastroenterology

Course Director: Dr. Carmen Cuffari

Telephone Number: 410-955-8769

Faculty: Drs. Maria Oliva-Hemker, Carmen Cuffari, Ann Scheimann, Anthony Guerrerio, Christine Karwowski and Wikrom Karnsakul

Availability/Duration: 3rd and 4th year students; ½ quarter; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Pediatrics Core Clerkship preferred

Drop Period: 1 month

Description: Students will receive exposure to children with a wide variety of pediatric gastrointestinal, hepatic and/or pancreatic disorders as well as disorders of under and over nutrition. Students will round daily with ward team beginning at 8 a.m. from CMSC 9, M-F.

Additionally, students will be expected to participate in various divisional outpatient clinics, including General GI/Inflammatory Bowel Disease Clinic Tuesday 9 a.m. -12 p.m. and/or 1-4 p.m. General GI Clinic on Thurs. 8 a.m.-12 p.m. and Liver clinic on Friday 9 a.m.-12 p.m. Clinic is in the David M. Rubenstein Children's Health Building, Lower Level. Students are also encouraged to participate in various divisional teaching sessions. Students will be asked to present an interesting case on the last Wednesday of their rotation.

PEDIATRIC GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION AT ALL CHILDREN'S HOSPITAL

Course Type: Other

Department/Division: Pediatric Gastroenterology, All Children's Hospital (ACH), St. Petersburg, Florida

Course Director: Dr. Mike Wilsey

Telephone Number: 727-767-4106

Faculty: Drs. Daniel McClenathan, Michael Wilsey and Sara Kajoo

Availability/Duration: Rolling availability; 3-4 weeks

Prerequisite(s): Core Clerkship in Pediatrics or Medicine

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The Pediatric Gastroenterology/Nutrition Department is a very active clinical service. The student will participate in the evaluation and management of children with gastrointestinal disease disorders.

Students will attend daily gastroenterology clinics at ACH and interview and examine outpatients referred for gastrointestinal disorders. Students will assist in planning the diagnostic and therapeutic program for these patients.

Students will be expected to participate in clinical gastrointestinal rounds and Gastroenterology Journal Club.

Students will observe diagnostic modalities such as endoscopy, manometry, esophageal dilation, suction rectal biopsies and Ph probes. The student will be evaluated on faculty evaluations, attendance and overall performance.

PEDIATRIC INTENSIVE CARE

SITE FOR ADVANCED CLERKSHIP IN CRITICAL CARE/ICU

Course Type: Clinical Clerkship

Department/Division: Anesthesiology and Critical Care Medicine

Course Director: Dr. Erik Su

Telephone Number: 410-614-6598

Faculty: Dr. Erik Su and PICU on-service faculty

Availability/Duration: One student per rotation; 2-4 weeks (4 weeks preferred).

Prerequisite(s): Core Clerkship in Pediatrics required; clinical preceptorship in anesthesiology recommended, but not required.

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The course is designed for students planning a career in anesthesiology, pediatrics, or a pediatric surgery specialty and encourages students to become familiar with medical and surgical problems of critically ill infants and children. Basic pathophysiology and pharmacology will be stressed, along with principles of pediatric resuscitation. Students should be prepared to help contribute to the care of these patients on rounds and by following them throughout the day. Students are expected to attend daily didactic sessions and in-depth case discussions for residents and students held by the PICU faculty and fellows, as well as monthly in situ simulations in the PICU. If the student rotates for more than two weeks, there is the option of spending one to two days with the

PICU transport team, during which the students may have the opportunity to attend ambulance transports of pediatric patients.

PEDIATRIC CARDIOLOGY AT ALL CHILDREN'S HOSPITAL

Course Type: Other

Department/Division: Pediatric Endocrinology, All Children's Hospital (ACH), St. Petersburg, FL

Course Director: Dr. Patricia Quigley

Telephone Number: 727-767-4106

Faculty: Drs. Jamie Decker, Gul Dadlani, Thieu Nguyen, Marguerite Crawford, Gary Stapleton and James Huhta

Availability/Duration: Rolling availability; 3-4 weeks

Prerequisite(s): Core Clerkship in Pediatrics or Medicine

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Principles of pediatric cardiology will be taught in outpatient and inpatient encounters at ACH-JHM. As a freestanding children's hospital, patient cases will reflect both general pediatric cardiology exposure as well as exposure to highly specialized patient cases reflecting ACH-JHM's status as a quaternary care center. Participation in clinical or basic research in pediatric cardiology may also be coordinated pending project and faculty availability.

Students will attend daily cardiology clinics at All Children's Hospital Johns Hopkins Medicine. Emphasis will be placed on understanding of cardiac physiology and pathophysiology of pediatric patients, physical diagnosis and outpatient management. Principles in cardiac electrophysiology and anatomy will be taught using electrocardiography and echocardiography.

Students will participate in work up and care of cardiac patients including those admitted for diagnostic cardiac catheterization and inpatient consultation. Students will be expected to round and follow patients assigned to the cardiology team throughout the clerkship rotation.

Students are expected to participate weekly conferences including cardiology specific conferences as well as resident noon conferences, JHUSOM Pediatric Grand Rounds and ACH-JHM Grand Rounds.

PEDIATRIC CARDIOLOGY

Course Type: Consultation Service

Department/Division: Pediatrics/Cardiology

Course Director: Dr. Joel Brenner

Telephone Number: Contact Chyna Allen; 410-614-0897; clawren@jhmi.edu

Faculty: Dr. Brenner and division faculty

Availability/Duration: All quarters ½ or full quarter; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkship in Pediatrics

Drop Period: 1 month

Description: Students actively participate on the service working primarily with the cardiologist on call for the month. Students attend a weekly schedule of divisional conferences and teaching seminars; video-tape, tape-slide and computer interactive learning resources are available.

Emphasis is placed on the following areas: acquisition of basic skills of cardiovascular assessment in infants and children; understanding the hemodynamic principles of pressure, flow and resistance, and relating them to the clinical picture and the findings at cardiac catheterization; overview of the natural history of common congenital and acquired heart disease in infancy, childhood and adolescence; introduction to electrocardiography and two-dimensional color and Doppler echocardiography.

NEONATOLOGY AT ALL CHILDREN'S HOSPITAL

Course Type: Other

Department/Division: Neonatology, All Children's Hospital (ACH), St. Petersburg, FL

Course Director: Dr. Patricia Quigley

Telephone Number: 727-767-4106, Dawn Jones, dawn.jones@jhmi.edu

Faculty: Drs. Roberto Sosa, Fauzia Shakeel, Anthony Napolitano, and Aaron Germain

Availability/Duration: Rolling availability; 3-4 weeks

Prerequisite(s): Core Clerkship in Pediatrics or Medicine

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Students will be taught to provide patient care that is compassionate, appropriate and effective for the promotion of health, prevention of illness, treatment of disease and at the end of life in the neonatal intensive care unit. Opportunities to participate in simulated resuscitative scenarios will also be available.

Students will attend the NICU follow-up clinic. Students will have the opportunity to follow nutritional, developmental and other clinical issues on discharged neonatal patients. Students are expected to participate daily rounds and didactic conferences and other structured learning opportunities. Students will attend JHUSOM Pediatric Grand Rounds and ACH-JHM Grand Rounds.

Students will be able to observe a variety of procedures including but not limited to sterile gowning and aseptic preparation, venipuncture, intubation, lumbar puncture, suprapubic bladder aspiration, bladder catheterization and umbilical line placement.

ELECTIVE IN PEDIATRIC HEMATOLOGY

Course Type: Consultation Service

Department/Division: Hematology

Course Director: Dr. J. Casella

Telephone Number: 410-955-6132

Availability/Duration: All year; 4½ weeks; one student; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Core Clerkship in Pediatrics or Medicine

Drop Period: 2 months

Faculty: Drs. James Casella, Jeffrey Keefer, John Strouse, and Clifford Takemoto

Description: Clinical and laboratory experience in pediatric hematology, including assignments in clinic, ward rounds, training in morphologic hematology, and attending research and clinical seminars and conferences. Each student is requested to organize a research seminar at the end of the elective.

ADVANCED CLERKSHIP IN PEDIATRIC ONCOLOGY

Course Type: Clinical Clerkship

Department/Division: Oncology/Pediatric Oncology

Course Director: Dr. Stacy Cooper

Telephone Number: 410-614-5055, Gladys Novak

Faculty: Drs. Robert J. Arceci, Patrick Brown, Allen R. Chen, Alan Friedman, Christopher Gamper, David Loeb, Ido Paz-Priel, Eric Raabe, Donald Small, Heather Symons, and Elias Zambidis

Availability/Duration: All year; arranged with course director

Prerequisite(s): Core Clerkship in Pediatrics

Drop Period: 1 month

Description: Students will have the opportunity to become familiar with pediatric oncology patient care during this one month inpatient-based rotation. The elective includes exposure and education to a wide-range of oncologic conditions and complications. Students will have the opportunity to participate in the management of children

with hematologic malignancies and solid tumors. In addition, students can participate in the management of pediatric bone marrow transplantation patients. Students primarily manage selected inpatients with resident, fellow, and attending supervision. Students may have the opportunity to see consults in concert with the inpatient team and to follow the progress of patients as they transition to the outpatient setting.

PEDIATRIC HEMATOLOGY ONCOLOGY AT ALL CHILDREN'S HOSPITAL

Course Type: Other

Department/Division: Pediatric Hematology Oncology, All Children's Hospital (ACH), St. Petersburg, FL

Course Director: Dr. Patricia Quigley

Telephone Number: 727-767-4106, Dawn Jones, dawn.jones@jhmi.edu

Faculty: Drs. Gregory Hale, Nanette Grana, Irmel Ayala, Neil Goldenberg, Jody Kerr, Jennifer Mayer, Damon Reed, and Stacie Stapleton

Availability/Duration: Rolling availability; 2-4 weeks

Prerequisite(s): Core Clerkship in Pediatrics or Medicine

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The student will be involved in the diagnosis, evaluation and management of patients with a spectrum of pediatric hematology and oncology disorders, both in the inpatient and outpatient settings at ACH.

In the outpatient setting, the student will actively participate in interviewing and examining newly referred and follow-up patients. Students will additionally gain exposure to the multi-disciplinary approach to the care of children with chronic oncologic and hematologic conditions.

The student will be an active participant in daily rounds and will be expected to interact with patients and team members. Students will develop a basic understanding of hematologic and oncologic pathophysiology as well as cancer chemotherapy. Written histories, physical examinations and plans for evaluation and treatment will be reviewed with the attending physician.

Students will attend the weekly multidisciplinary patient care and teaching rounds and monthly tumor board as well as resident noon conferences, JHUSOM Pediatric Grand Rounds and ACH-JHM Grand Rounds. Students will have the ability to participate in other settings related to the care of this population of children including the Child-life Center, infusion clinics and other related patient care settings at ACH.

CLINICAL CLERKSHIP IN PEDIATRIC ENDOCRINOLOGY

Course Type: Clinical Clerkship

Department/Division: Endocrinology

Course Director: Dr. David Cooke

Telephone Number: 410-955-6463; dcooke@jhmi.edu

Faculty: Drs. D. Cooke, D. Long, S. Blackman, J. Crane, and K. Arcara

Availability/Duration: All year; 4 weeks minimum; two to three students

Prerequisite(s): None

Drop Period: 2 months

Description: This elective offers the student an intensive outpatient exposure to a wide variety of endocrine problems in children and adolescents. The student will gain an understanding of normal growth and sexual maturation and how these patterns are affected by endocrine disorders at different ages. Also, the outpatient management of complex chronic disease on a long-term basis is emphasized. Students have the same clinical responsibilities as residents and fellows. A research conference and clinical conference are held weekly throughout the academic year. Disorders seen include pituitary, thyroid, bone/mineral, adrenal, growth, puberty, gonad and sexual differentiation abnormalities, and diabetes.

PEDIATRIC ENDOCRINOLOGY AT ALL CHILDREN'S HOSPITAL

Course Type: Other

Department/Division: Pediatric Endocrinology, All Children's Hospital (ACH), St. Petersburg, FL

Course Director: Dr. Patricia Quigley

Telephone Number: 727-767-4106

Faculty: Drs. Pallavi Iyer, Frank Diamond, Allen Root and Suzanne Jackman

Availability/Duration: Rolling availability; 3-4 weeks

Prerequisite(s): Core Clerkship in Pediatrics or Medicine

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This course offers the student in-depth exposure to a wide variety of endocrine related problems and diseases in children and adolescents.

Students will gain an understanding of the management of common and complex endocrine diseases in children of all ages. Medical management and understanding of growth physiology, sexual maturation and other hormonal processes/diseases will be emphasized. Students will additionally gain insight into the appropriate laboratory/diagnostic tests necessary to diagnose and evaluate common endocrine diseases in children.

Students will be expected to attend regularly scheduled research conferences and clinical conferences as well as JHUSOM Pediatric Grand Rounds and ACH-JHM Grand Rounds.

Students will have the opportunity to see and provide care for children with disorders including pituitary, thyroid, bone/mineral, adrenal, growth, puberty, gonad and sexual differentiation and diabetes.

PEDIATRIC INFECTIOUS DISEASES

Course Type: Consultation Service

Department/Division: Pediatrics/Infectious Disease

Course Director: Dr. Kwang Sik Kim

Telephone Number: 410-614-3917, Candita Polk; cpolk1@jhmi.edu

Faculty: Dr. Kim and division faculty

Availability/Duration: All year; 4½ and 9 weeks; one or two students

Prerequisite(s): Core Clerkship in Pediatrics

Drop Period: 1 month

Description: Consultation service seeing a variety of ward, intensive care, oncologic, transplantation, neonatal and HIV-infected patients. The service also serves as primary attending on select inpatients such as meningitis. Students have primary responsibility for selected patients and will accompany the faculty and fellow on daily consultation rounds as well as participating in daily "plate rounds" in the microbiologic laboratories. Students will select a topic to study and present to the division faculty in the division's weekly conferences.

CLINICAL RESEARCH ELECTIVE IN PEDIATRIC INFECTIOUS DISEASES

Course Type: Clinical Research

Department/Division: Pediatrics/Infectious Disease

Course Director: Dr. Kwang Sik Kim

Contact: Candita Polk; 410-614-3917, cpolk1@jhmi.edu

Faculty: Dr. Kim and division faculty

Availability/Duration: 9 weeks; all year

Prerequisite(s): Enthusiasm

Drop Period: 1 month

Description: Clinical research opportunities are available on a range of topics related to the pathogenesis, epidemiology, diagnosis and management of infectious diseases, patient care (including HIV-infected children), outcome assessment, critical pathways, epidemiology, antibiotic utilization, and vaccine-related issues.

LABORATORY ELECTIVE IN PEDIATRIC INFECTIOUS DISEASES

Course Type: Laboratory Research

Department/Division: Pediatrics/Infectious Disease

Course Director: Dr. Kwang Sik Kim

Contact: Candita Polk, 410-614-3917, cpolk1@jhmi.edu

Faculty: Dr. Kim and Infectious Diseases faculty

Availability/Duration: All year; one quarter or longer; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): Regular time commitment essential

Drop Period: 1 month

Description: Laboratory projects on the biology of the blood-brain barrier in central nervous system infections, inflammation, and on HIV. Laboratory skills include tissue culture, assays for microbial interaction with the blood-brain barrier, recombinant protein expression systems, microbial genetics, microarrays, proteomics, PAGE, 2D gels and Western blots, ELISA assays, signal transduction pathways and protein biochemistry.

PEDIATRIC DERMATOLOGY

Course Type: Clinical Clerkship/ Clinical Research

Department/Division: Pediatrics/Dermatology

Course Director: Dr. Bernard Cohen

Telephone Number: 410-955-2049

Faculty: Drs. Bernard Cohen and Katherine Puttgen

Availability/Duration: 4½ weeks; all year; visiting medical students must follow JHUSOM quarter dates

Prerequisite(s): See course director

Drop Period: 2 months

Description: This is an intensive clinical experience in Pediatric Dermatology. The student will participate in outpatient clinics, inpatient consults, dermatology rounds, and grand rounds. Students are also encouraged to design and complete clinical research projects and contribute to the online image resource dermatlas.org.

RESEARCH OPPORTUNITIES

DR. HOOVER ADGER

Adolescent medicine (including sexually transmitted diseases, substance abuse, alcohol-drug prevention)

DR. MARILEE ALLEN

Assessment and follow-up of high risk neonates and premature infants, focusing on developmental disabilities

DR. EMILY BARRON-CASELLA

Sickle cell disease

DR. HAROLYN BELCHER

Clinical outcome studies affiliated with Substance Abuse and Mental Health Services Administration- National Center of Traumatic Stress Network; child behavior checklist- National Child Traumatic Stress Network (CBCL NCTSN) Study; early head start intervention study

DR. GEORGE CAPONE

Down syndrome- clinical research opportunities; includes attendance at clinic and contribution to ongoing research projects

DR. BERNARD COHEN

Clinical investigations in pediatric dermatology

DR. PAUL COLOMBANI

Effect of cyclosporine on susceptible T-lymphocytes early in immune response

DR. GARRY CUTTING

Identification of genetic and non-genetic modifiers of disease severity in the Mendelian disorder Cystic Fibrosis

DR. ANNE DUGGAN

Health services evaluation; home visiting programs for at-risk families; child abuse prevention; primary care

DR. JOHN GEARHART

Cellular function of bladder muscle

DR. ALEXANDER HOON, JR.

Movement disorders

DR. KWANG SIK KIM

Central nervous system infection and inflammation; pathogenesis; prevention and therapy

DR. REBECCA LANDA

Language and social abnormalities in autistic children and their siblings

DR. BETH LAUBE

In vivo quantification of the deposition and removal of particulates in healthy and diseased lungs using radio-labeled aerosols and scintigraphic lung-image assessments.

DR. HOWARD LEDERMAN

Immunodeficiency diseases (primary and acquired); ataxia-telangiectasia; hypogammaglobulinemia; immunology

DR. MAUREEN LEFTON-GREIF

Swallowing and respiratory coordination, with an emphasis on how these problems affect breathing; development of approaches to evaluate and treat children affected with oropharyngeal dysphagia

DR. PAUL LIPKIN

Attention deficit and learning disorders; developmental screening; autism spectrum disorders

DR. SHARON MCGRATH-MORROW

Growth factors in postnatal lung development

DR. ALICEA NEU

Clinical trials in pediatric renal transplantation, humoral immunity/vaccine response in pediatric renal patients (including chronic renal insufficiency, dialysis, and transplant patients)

DR. MARK RIDDLE

Pediatric psychopharmacology

DR. PETER ROWE

Clinical epidemiology and management of chronic fatigue syndrome

DR. JANET SERWINT

Health care issues of underserved children; medical education; end of life issues; practice based research networks; medical home

DR. BRUCE SHAPIRO

Neurodevelopmental precursors of learning disability; attention deficit disorders

DR. HARVEY SINGER

Immune mechanisms in autism; pediatric movement disorders; motor stereotypy disorders- clinical and basic investigations; Tourette syndrome- treatment and pathophysiological studies; PANDAS (pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections)

DR. CLIFFORD TAKEMOTO
Myeloid development

DR. DAVID VALLE
Molecular biology of human genetic diseases especially inborn errors of metabolism

PHARMACOLOGY AND MOLECULAR SCIENCE

ME:330.699

ORGANIC MECHANISMS IN BIOLOGY

Course Type: Other

Department: Pharmacology and Molecular Sciences

Course Director: Drs. James Stivers and Caren Meyers

Telephone Number: 410-502-2758

Faculty: Drs. James Stivers and Caren Meyers and staff

Availability/Duration: November - January

Prerequisite(s): Organic chemistry

Drop Period: 1 month

Description: This course deals with the chemical mechanisms of enzymes. It is intended to illustrate how catalysis in biological systems can be understood using principles derived from organic reaction mechanisms.

GRADUATE PHARMACOLOGY 1

Course Type: Other

Department: Pharmacology and Molecular Sciences

Course Director: Dr. James Barrow

Telephone Number: 410-955-0894

Faculty: Dr. Barrow and staff

Availability/Duration: August – November (12 weeks)

Drop Period: 1 month

Description: This course is designed for second year graduate students. It covers basic pharmacology concepts and major drug classes related to disease therapies. The course covers basic principles of enzyme kinetics, receptors, pharmacokinetics, drug metabolism, and drug discovery.

GRADUATE PHARMACOLOGY 2

Course Type: Other

Department: Pharmacology and Molecular Sciences

Course Director: Dr. James Barrow

Telephone Number: 410-955-0894

Faculty: Dr. Barrow and staff

Availability/Duration: January- April (14 weeks)

Drop Period: 1 month

Description: This course is designed for second year graduate students who have already taken Graduate Pharmacology 1. It covers basic pharmacology concepts and major drug classes related to disease therapies. The course includes lectures on therapeutic agents used in infectious diseases, cancer, cardiovascular diseases, endocrine disorders, inflammation, and nervous system diseases.

ANALYTICAL METHODS OF CLINICAL PHARMACOLOGY

Course Type: Other

Department: Pharmacology and Molecular Sciences

Course Director: Dr. Craig Hendrix

Telephone Number: 410-955-9707

Faculty: Dr. Hendrix

Availability/Duration: Summer; 3 weeks

Prerequisite(s): Permission of instructor

Drop Period: 1 month

Description: This course covers fundamental principles of and necessary quantitative skills required in the analysis of clinical pharmacokinetic and pharmacodynamic data with a focus on analysis of data generated in early clinical studies in humans. Topics include principles of pharmacokinetic and pharmacodynamic data analysis, curve stripping, non-compartmental analysis, compartmental modeling, pharmacodynamic model selection, pharmacokinetic study design using simulation, and introduction to clinical trial simulation. Teaching format is lecture, demonstration, and in-class exercises with Excel and WinNonlin software. Problem sets are used to sharpen the individual skills of the student.

PRINCIPLES OF DRUG DEVELOPMENT

Course Type: Other

Department: Clinical Pharmacology

Course Director: Dr. Charles Flexner

Telephone Number: 410-955-9712

Faculty: Dr. Flexner

Availability/Duration: First term (Q1)

Prerequisite(s): Consent of instructor

Drop Period: 1 month

Description: Presents principles underlying clinical development of new therapeutic drugs, devices, and biologics in all phases of development. Course faculty include former FDA medical staff. Discussion includes ethical and regulatory issues. Class will follow a case-based teaching format. Student evaluation based on group drug development project and take-home final paper.

RESEARCH OPPORTUNITIES

DR. RICHARD AMBINDER

Virology and human cancer; antitumor and antiviral therapy; lymphoma pathogenesis and treatment; immunological approaches to virus-associated malignancies

DR. L. MARIO AMZEL

3-D structure of proteins: immunoglobulins and other binding proteins; ATP synthase; monooxygenases and dioxygenases quinone reductases

DR. NETZ ARROYO

Exploiting biology-inspired electrochemical sensing to study the fate of molecules in the body

DR. JAMES BARROW

Drug discovery for disorders of neurodevelopment

DR. JAMES BERGER

Structural and catalytic mechanisms of nucleic-acid machines and assemblies; control of DNA replications and chromosome superstructure; small-molecule and biological regulatory mechanisms

DR. NAMANDJE BUMPUS

Role of drug metabolism in non-nucleoside reverse transcriptase inhibitor-mediated toxicity

DR. GREGORY CARR

Preclinical models of neurological and psychiatric disorders

DR. TED DAWSON

Molecular and cellular signals controlling neurodegeneration, neuronal survival and cell death

DR. SAMUEL DENMEADE

Targeted therapies for cancer; prodrugs; proteases; peptide libraries

DR. KELLY E. DOOLEY

Clinical pharmacology of anti-infective agents; evaluation of new drug regimens for the treatment of tuberculosis and co-treatment of TB and HIV

DR. LAURA ENSIGN

Nanomedicine for drug delivery

DR. JED FAHEY

Phytochemistry/nutrition-based prevention of chronic disease

DR. CAREN FREEL MEYERS

Organic and medicinal chemistry; chemical biology; drug delivery mechanisms in bacteria; development of antibiotic prodrug strategies; study of bacterial isoprenoid biosynthesis; combinatorial biosynthesis; development of potential therapeutic agents

DR. MARC GREENBERG

Chemical and biochemical approaches to the study of DNA damage and repair, and their applications

DR. JUSTIN HANES

Nanotechnology for drug and nucleic acid delivery

DR. J. MARIE HARDWICK

Molecular mechanisms of programmed cell death

DR. LING HE

Regulations of glucose and lipid metabolism by co-activators and metformin

DR. CRAIG HENDRIX

Anti-infective drugs; chemoprevention of infectious disease

DR. RICHARD HUGANIR

Molecular mechanisms in regulation of synaptic plasticity

DR. TAKANARI INOUE

Synthetic Cell Biology: Total synthesis of cellular functions such as neutrophil chemotaxis and ciliary mechano-sensation

DR. JOHN T. ISAACS

Anti-cancer drug development; Normal and malignant stem cell biology

DR. WILLIAM B. ISAACS

Understanding the molecular genetic events responsible for the initiation and progression of prostate cancer; inherited susceptibility of prostate cancer

DR. DAVID KASS

Molecular physiology of myocardial disease

DR. KENNETH KINZLER

Molecular genetics of cancer; translational cancer research

DR. MARK LEVIS

Targeting the FLT3 signaling pathway as a treatment for acute leukemia

DR. JUN LIU

Chemical biology and molecular biology; use of small molecules as probes to elucidate mechanisms of signal transduction; angiogenesis and cell proliferation

DR. WILLIAM NELSON

Molecular mechanisms of prostatic carcinogenesis; epigenetic alterations in cancer; new approaches to prostate cancer prevention and treatment

DR. SRIDHAR NIMMAGADDA

Chemokine receptor biology and molecular imaging applications in drug development

DR. KENNETH PIENTA

The ecology of cancer, tumor microenvironment, metastasis, biomarker development, novel therapeutic development

DR. MARTIN POMPER

In vivo molecular and cellular imaging; radiopharmaceutical development; targeted cancer imaging and therapy; functional brain imaging

DR. JONATHAN POWELL

Mechanisms of T-cell activation and tolerance

DR. STUART RAY

Computational immunovirology of chronic viral hepatitis

DR. DOUGLAS ROBINSON

Understanding cytokinesis and cell shape control

DR. CHRISTOPHER ROSS

Molecular mechanisms of apoptosis; roles of apoptosis in carcinogenesis and therapeutic resistance; novel therapeutic development in animal models of cancer

DR. RONALD SCHNAAR

Cell interactions in the nervous system

DR. THERESA SHAPIRO

Clinical pharmacology; molecular mechanisms of anti-parasitic drug action; effects of topoisomerase inhibitors on DNA of trypanosomes; structure-activity of antimalarial trioxanes

DR. ROBERT SILICIANO

HIV latency, evolution, and persistence; HIV treatment and drug resistance; pharmacology of HIV drugs

DR. SOLOMON SNYDER

Molecular basis of neural signal transduction

DR. JAMES STIVERS

Structural and chemical biology of uracil metabolism and applications to cancer therapy; innate and adaptive immunity

DR. SARASWATI SUKUMAR

Molecular alterations in breast cancer

DR. SEAN TAVERNA

Histone and chromatin modifications; epigenetics and gene function; identification of histone building modules; small RNA directed gene slicing

DR. CRAIG A. TOWNSEND

Organic and bioorganic chemistry: biosynthesis of natural products and biomimetic synthesis: protein isolation and mechanistic enzymology; molecular biology of secondary metabolism and the applications of biosynthetic systems; study of the role and inhibition of fatty acid synthesis in human cancer and tuberculosis

DR. BERT VOGELSTEIN
Molecular genetics of human cancer

DR. HUIJUN WEI
Identifying and validating drug targets for the treatment of neurodevelopmental disorders

DR. MICHAEL J. WOLFGANG
Cellular and organismal metabolism

DR. SRINIVASAN YEGNASUBRAMANIAN
Understanding and exploiting alterations in the cancer genome and epigenome for development of biomarkers and therapeutics

DR. HENG ZHU
Signal transduction, protein network, host-pathogen interaction, biomarker identification

PHYSICAL MEDICINE AND REHABILITATION

ME:716.699

PHYSICAL MEDICINE AND REHABILITATION

Course Type: Clinical Clerkship

Department/Division: Department of Physical Medicine and Rehabilitation

Course Director: Dr. Tracy Friedlander

Telephone Number: 410-502-2446

Faculty: Dr. Friedlander and staff

Availability/Duration: All year; ½ or full quarter; maximum four students

Prerequisite(s): At least a second-year student beginning the fourth quarter

Drop Period: 1 month

Description: This elective is intended for students considering a career in physical medicine and rehabilitation. Students will care for inpatients on the Good Samaritan Hospital (stroke or spinal cord) or Johns Hopkins Hospital (complex medical) inpatient rehabilitation units. They will also care for outpatients in musculoskeletal medicine, electrodiagnosis, spasticity, prosthetics and pain clinics. There is flexibility in selecting subspecialty interests. Objectives of the course are to increase knowledge and proficiency in the following areas: basic clinical skills, such as history taking, physical examination, and general knowledge pertaining to inpatient care; diagnosis, pathophysiology and treatment of certain conditions in which severe physical disability is a prominent feature; the contributions of non-physician health professions required for the comprehensive care of certain patients; the importance of patient and family education in reducing the cost of disability and preventing recurrent hospitalization for health crisis.

ADVANCED CLINICAL CLERKSHIP IN PEDIATRIC REHABILITATION

Course Type: Clinical Clerkship

Department/Division: Department of Physical Medicine & Rehabilitation

Course Director: Dr. Frank S. Pidcock

Contact: Ms. Dianna Augustyniak, daugust2@jhmi.edu

Telephone Number: 443-923-9187

Faculty: Drs. Frank Pidcock and staff

Availability/Duration: All year; ½ quarter; one student

Prerequisite(s): Core Clerkship in Pediatrics recommended

Drop Period: 1 month

Description: Students will focus on care of children with disabilities at the Kennedy Krieger Institute

CHRONIC DISEASE AND DISABILITY: IMPROVING QUALITY OF LIFE

Course Type: Clinical Clerkship

Department/Division: Department of Physical Medicine and Rehabilitation and Division of Geriatric Medicine

Course Director: Dr. Samuel Mayer

Telephone Number: Carolyn Robinson 410-550-7162, crobin44@jhmi.edu

Faculty: Drs. S. Mayer, T. Finucane, and staff

Availability/Duration: Available all year for ½ quarter

Prerequisite: Medicine Core Clerkship for site placement at JHBMC. No clerkships required for JHH or KKI.

Drop Period: 1 month; contact Registrar's Office

Description: Over 100 million Americans suffer from one or more chronic diseases; over 35 million have severe disability as a result. These will be your patients in the future, irrespective of what specialty you ultimately choose. The goal of this rotation is that all students should possess the knowledge, skills, and attitudes to provide care for persons with chronic diseases and disabilities. The clerkship will focus on issues of chronic disease and disability in a variety of clinical settings, and will have concurrent didactic work, discussion groups, and simulation experiences on an inpatient rehabilitation unit, visits to a sub-acute or chronic care facility, outpatient clinics which

emphasize care of disabled and chronically ill patients, and home visits. Inpatient acute care will be de-emphasized. Students will participate in interdisciplinary team meetings and patient/family conferences. Clinical sites will include Johns Hopkins Hospital (general adult rehabilitation), Johns Hopkins Bayview (geriatrics), and Kennedy Krieger (pediatric disabilities). There will be home visits, discussion groups, and simulation exercises. There are no overnight call duties.

ADVANCED CLERKSHIP IN REHABILITATION RESEARCH

Course Type: Research

Department/Division: Department of Physical Medicine and Rehabilitation

Course Director: Physical Medicine & Rehabilitation Staff

Telephone Number: 410-502-2446

Faculty: PM&R faculty

Availability/Duration: Offered all year; ½ quarter or 3 weeks; maximum three students

Prerequisite(s): None

Drop Period: 1 month

Description: This research elective involves establishing a relationship with a research mentor and working on one of their projects. Topics include:

DR. P. CELNIK

Neuroplasticity, transcranial magnetic stimulation

DR. M. GONZALEZ-FERNANDEZ

Stroke and dysphagia, prosthetics

DR. M. BRODSKY

Physiology of mastication and swallowing; functional anatomy of the upper aerodigestive tract; evaluation and treatment of swallowing disorders, dysphagia in ICU

DR. F. PIDCOCK

Effects of botulism toxin injections on children with spasticity; effects of constraint induced therapy and quantitative measurement of spasticity

DRS. A. RECIO and C. SADOWSY Recovery and regeneration in spinal cord injury

DR. S. WEGENER

Chronic pain related to injury, chronic disease, or disability; cognitive-behavioral and self-management interventions; positive psychological variables (denial, positive coping, hope and spirituality) in health outcomes

PHYSIOLOGY

ME:360.699

RESEARCH OPPORTUNITIES

Primary Faculty

DR. STEVEN CLAYPOOL

Mitochondrial phospholipid metabolism in health and disease.

DR. DAX FU

Zinc transporters: biochemistry, biophysics and cell biology.

DR. WILLIAM GUGGINO

Genetic diseases resulting in defective ion channels.

DR. ANASTASIA KRALLI

Regulatory pathways that control adaptive metabolic responses in adipose and skeletal muscle tissues.

DR. SVETLANA LUTSENKO

Human copper homeostasis: biochemical mechanisms of transport and compartmentalization of metal ions, the role of copper in lipid metabolism and cell differentiation, developing new approaches for treatment of human disorders of copper misbalance.

DR. JENNIFER PLUZNICK

Renal physiology; the role of sensory receptors in regulating renal function; localizing renal olfactory receptors and identifying their ligands in order to understand the role of each receptor in whole-animal physiology.

DR. ZHAOZHU QIU

Mechanisms of osmotic regulation in physiology and disease.

DR. RAJINI RAO

Ion transporters in human health and disease. Calcium signaling in lactation and breast cancer. New roles for endosomal Na⁺/H⁺ exchangers in pH regulation, trafficking, and sodium homeostasis and their contributions to hypertension, autism and glioblastoma.

DR. ROGER REEVES

Down syndrome, animal models to clinical trials.

DR. GUANG WONG

Metabolic physiology of secreted hormones.

DR. THOMAS WOOLF

Molecular dynamics simulations of large conformational changes involved with function; Biophysics of membrane proteins; signaling networks, drug design, and allostery; Relative free energy calculations, estimates of entropy: enthalpy compensation, and insights into structure: function connections.

Secondary Faculty

DR. MARK ANDERSON

Cardiac arrhythmia; CaM kinase II; the role of enzyme CaMKII (Ca²⁺/calmodulin dependent kinase II) in heart failure and cardiac arrhythmias, a cause of sudden cardiac death.

DR. VALINA DAWSON

Molecular mechanisms of neuronal death and survival; cell death and cell survival signaling pathways in models of stroke and Parkinson's disease.

DR. MARK DONOWITZ

Molecular physiology of intestinal NA absorption and its regulation.

DR. DANIEL RABEN

Structure, function, regulation and interfacial enzymology of lipid metabolizing enzymes involved in signal transduction cascades; biochemistry and chemistry of lipids and lipid metabolizing enzymes involved in signaling cascades.

DR. ANDREW WOLFE

Mechanisms underlying the development of infertility associated with obesity; gonadal steroid hormone feedback regulation of neuroendocrine function; development of the hypothalamic GnRH neuron.

DR. SHENG WU

How does androgen and insulin through their receptors induce metabolic dysfunction and infertility?

PREVENTIVE MEDICINE

ME:714.699

PREVENTIVE MEDICINE

Course Type: Other

Department: General Preventive Medicine Residency, Bloomberg School of Public Health

Course Director: Dr. Clarence Lam

Telephone Number: 410-955-3362; SPH Room WB602

Faculty: General Preventive Medicine Chief Resident

Contact: Dottie Becraft, dbecraft@jhu.edu

Availability/Duration: Fall and Spring dates are decided every June/July and posted on the GPMR website.

Prerequisite(s): Successful completion of junior medical student training.

Drop Period: 1 month

Description: This elective introduces students to the specialty of medicine devoted to health promotion and disease prevention as well as public health. Students will learn the theory and practice of the principles required in population-based health. Didactic sessions and self-learning modules will be available on such topics as health promotion, injury control, healthcare delivery, public health surveillance, and outbreak investigation.

During the rotation, students will have the opportunity to interact with program residents and visit many sites in the Baltimore-Washington area where residents rotate during the second year of the program. These sites will include, local, state, federal public health agencies, as well as NGO's and "for profit" health care organizations.

Students will interact on a daily basis with the chief resident of the General Preventive Medicine Residency. They will also meet with Dr. Lam, the training program director. A project and presentation is required.

OCCUPATIONAL AND ENVIRONMENTAL MEDICINE

Course Type: Clinical Clerkship

Department: Bloomberg School of Public Health

Course Director: Dr. Aisha Rivera and Dr. Brian Schwartz

Contact: Dr. Aisha Rivera, ariver28@jhu.edu

Faculty: Dr. Aisha Rivera and Dr. Brian Schwartz

Availability/Duration: Must be arranged and approved on a case by case basis

Prerequisite(s): Internal Medicine Rotation

Drop Period: 1 month

Description: Learn about the specialty of occupational medicine and treat patients in an occupational setting. Work with an interdisciplinary team including, safety and ergonomic professionals, physicians and nurse case managers. Understand type of work injuries, prevention strategies and other types of visits common to occupational medicine, including pre-employment physicals, surveillance physicals and fit for duty physicals.

OCCUPATIONAL AND ENVIRONMENTAL RESEARCH

Course Type: Basic Research

Department: Bloomberg School of Public Health

Course Director: Dr. Brian Schwartz

Contact: Dr. Brian Schwartz; bschwar1@jhu.edu

Faculty: Dr. Brian Schwartz

Availability/Duration: Must be arranged and approved on a case by case basis

Prerequisite(s): Prior research experience preferred

Drop Period: 1 month

Description: Learn about the specialty of occupational medicine.

Engage in a research project related to occupational and environmental medicine.

PSYCHIATRY AND BEHAVIORAL SCIENCES

ME:370.699

NEUROPSYCHIATRY RESEARCH

Course Type: Clinical Research (Parkinson's disease)
Department/Division: Psychiatry and Behavioral Sciences
Course Director: Dr. Greg Pontone
Telephone Number: 410-502-0477
Faculty: Dr. Pontone and departmental faculty
Availability/Duration: See course director; ½ quarter
Prerequisite(s): Core Clerkship in Medicine and Psychiatry
Drop Period: 1 month

Description: Students are exposed to the various ongoing neuropsychiatry research projects of the department. These include studies in neuroimaging, epidemiology, nursing home research, clinical trials and outcome studies. Students may choose and develop one project of their own to complete during the rotation.

RESEARCH IN EATING DISORDERS

Course Type: Basic Research
Department/Division: Psychiatry and Behavioral Sciences
Course Director: Dr. Angela Guarda
Telephone Number: 410-955-3863
Faculty: Drs. Guarda and Redgrave
Availability/Duration: Minimum of 6 weeks or half day/week for a whole semester
Drop Period: 1 month

Description: Opportunity for clinical research on eating disorders, primarily anorexia nervosa and bulimia nervosa. Experience may involve interviewing or outcome studies, chart reviews and work with patients.

CLINICAL RESEARCH ON THE BEHAVIORAL PHARMACOLOGY OF DRUG ABUSE AND DEPENDENCE

Course Type: Clinical Research
Department/Division: Psychiatry and Behavioral Sciences
Course Director: Dr. George Bigelow
Telephone Number: 410-550-0035
Faculty: Drs. Bigelow, R. Griffiths, and M. Stitzer
Availability/Duration: All year; 4½ to 9 weeks or 3 weeks
Drop Period: 1 month

Description: Research experience in human laboratory or treatment clinic concerning human drug abuse and the subjective and behavioral effects of abused drugs, including opioids, cocaine, sedatives, ethanol, tobacco, caffeine, marijuana, hallucinogens, and of medications that modify their effects or use.

MOLECULAR NEUROBIOLOGY AND NEUROPSYCHIATRIC DISORDERS

Course Type: Basic Research
Department/Division: Psychiatry and Behavioral Sciences
Course Director: Dr. Russell Margolis
Telephone Number: 410-614-4262
Faculty: Dr. Margolis and Dr. Li
Availability/Duration: All year; 9 weeks
Drop Period: One month

Description: A variety of efforts are underway in the Laboratory of Genetic Neurobiology to find and study genetic causes of neurological disorders, particularly those involving abnormal movements and neurodegeneration. A major theme of the lab is the role of unstable DNA in human disease. Current projects focus on the role of RNA in neurotoxicity, the impact of bidirectional transcription at disease loci, and a novel approach to discovery of small molecules with the potential of treating Huntington's disease. Students will have the opportunity to apply molecular and biochemical methods to cell and animal models and to participate in the drug discovery process.

GERIATRIC PSYCHIATRY/NEUROPSYCHIATRY

Course Type: Clinical Elective

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Susan Lehmann

Telephone Number: 410-955-5514, Ms. Kelly Weggel

Faculty: Dr. Susan Lehmann

Availability/Duration: Summer Sessions 1,2,3

Prerequisite(s): Core Clerkship in Psychiatry

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Students will have opportunity to evaluate and follow patients on inpatient and outpatient services of the Division of Geriatric Psychiatry and Neuropsychiatry. They will be exposed to patient with broad range of cognitive, affective and behavioral disturbances in context with a variety of psychiatric conditions, including patients with psychiatric disorders related to stroke, Parkinson's disease and dementia.

ASSESSMENT AND TREATMENT OF SEXUAL DISORDERS

Course Type: Clinical Clerkship

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Fred Berlin

Telephone Number: 410-539-1661

Faculty: Dr. Berlin

Availability/Duration: Flexible; also offered for 3 weeks

Prerequisite(s): An interest in clinical psychiatry

Drop Period: 1 month

Description: Students will attend a weekly assessment clinic as well as a weekly teaching session, and can follow the progress of patients in treatment. Many of the patients have sexual disorders such as pedophilia and exhibitionism and may receive weekly injections of antiandrogenic medication.

SUBINTERNSHIP IN PSYCHIATRY

Course Type: Subinternship

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Susan Lehmann

Telephone Number: 410-955-5514; Ms. Kelly Weggel

Faculty: Psychiatry faculty members

Availability/Duration: All year; any length 4 weeks or greater

Prerequisite(s): Core Clerkship in Psychiatry; Core Clerkship in Medicine recommended

Drop Period: 2 months

Description: Sub-internship on any of the Meyer Psychiatry Units: mood disorders, eating disorders, motivated behavior disorders, geriatric, chronic pain, and schizophrenia service. Students will have the opportunity to function in the capacity of a resident, taking primary responsibilities in the evaluation and treatment of patients on an inpatient service under the supervision of the attending psychiatrist. Sub-interns will work directly with patients,

meet with family members, and coordinate care with consultants, other care providers and the team social worker. In addition, sub-interns will play an active role in teaching rounds, perform literature reviews of topics relevant to their patients, and work extensively with the non-physician members of the multi-disciplinary treatment team.

HIV PSYCHIATRY SERVICE

Course Type: Subinternship/Research

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Glenn Treisman

Telephone Number: 410-955-6328

Faculty: Dr. G. Treisman

Availability/Duration: All year; ½ or full quarter

Prerequisite(s): None

Drop Period: 1 month

Description: Outpatient clinic, inpatient consults and evaluation clinic for HIV-infected patients with psychiatric disorders. Clinical research with HIV-infected patients may also be arranged.

FORENSIC PSYCHIATRY

Course Type: Other

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Jeffrey Janofsky

Telephone Number: 410-955-2236

Faculty: Dr. Janofsky

Availability/Duration: All months except July and August; ½ quarter

Prerequisite(s): Complete general psychiatry rotation

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The course consists of experience at the Medical Service of the Circuit Court for Baltimore City. Experience in criminal forensic psychiatry will involve examination of offenders for competency, criminal responsibility and sentencing recommendations. Visits to courtrooms are included along with readings and discussions. Not available for visiting students. Johns Hopkins students who apply need to have completed psychiatry general clerkship.

CHILD AND ADOLESCENT PSYCHIATRY

(Also listed under Pediatrics)

Course Type: Clinical Clerkship

Department/Division: Psychiatry and Behavioral Sciences/ Division of Child & Adolescent Psychiatry

Course Director: Dr. Esther Lee, elee121@jhmi.edu

Telephone Number: 410-955-7858; Denise Jones; djones4@jhmi.edu

Faculty: Students will work with division faculty as they rotate through clinical service

Availability/Duration: 2, 3, 4 or more weeks.

Prerequisite(s): Completion of pediatrics or adult psychiatry rotation is recommended but not necessary

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Students will work with child psychiatry fellows and division faculty across various clinical services at the Johns Hopkins Hospital, Kennedy Krieger Institute and Bayview Medical Center. These services include the inpatient unit, day hospital program and general and specialty outpatient clinics. Students will gain exposure to childhood psychiatric disorders, family and educational systems and community systems of care.

RESEARCH IN NEUROPSYCHIATRIC DISORDERS

Course Type: Basic and Clinical Research

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Christopher Ross

Telephone Number: 410-614-0011

Faculty: Dr. Ross

Availability/Duration: Year round, 4½ weeks or 9 weeks

Prerequisite(s): None

Drop Period: 1 month

Description: The Baltimore Huntington's Disease Center (BHDC) follows a large number of patients with HD on a longitudinal basis and conducts multidisciplinary research into the clinical features, genetic aspects, and neurobiology of HD. Students will have the opportunity to participate in clinical research projects, neuroimaging studies, neuropathological studies, or correlation of the causative mutation (the expanding triplet repeat) with clinical features. We pioneered the study of individuals ("pre-symptomatic") with the HD gene mutation who don't have clinical features of the disease in order to determine when and where brain changes begin in order to design preventive interventions. In parallel basic science investigations, we are studying cell and mouse models of HD and other brain diseases. In collaborative studies, we also are studying brain imaging and clinical features of schizophrenia. Other topics of interest can be arranged individually. The goal is to develop novel therapeutic interventions for brain diseases.

RESEARCH IN MOLECULAR NEUROBIOLOGY

Course Type: Basic and Clinical Research

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Christopher Ross

Telephone Number: 410-614-0011

Faculty: Dr. Ross

Availability/Duration: Year round, 4½ weeks or 9 weeks

Prerequisite(s): None

Drop Period: 1 month

Description: The laboratory studies genes expressed in the brain as a means of better understanding normal brain function and neuropsychiatric disorders. We study the neurodegenerative diseases Huntington's disease and Parkinson's disease by focusing on the relevant gene products such as Huntington, Alpha-Synuclein, and LRRK2, and their interactions. We use biochemical methods, cell culture approaches, and generation of transgenic mouse models in order to better understand the disease and to develop targets for experimental therapeutics. We are also studying the role of candidate genes in schizophrenia. We have developed mouse models and human IPS models of several diseases. We have a new mouse model of bipolar disorders. Clinical studies are done in collaboration with clinical investigators in the Department of Psychiatry. Students can learn the basics of molecular cloning techniques and cell culture and mouse model approaches while studying clinically relevant genes expressed in brain and can participate in the development of experimental therapeutics.

NEUROPSYCHIATRY

Course Type: Advanced Elective

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Greg Pontone

Telephone Number: 410-550-0477

Faculty: Dr. Pontone and departmental faculty.

Availability/Duration: All year; ½ quarter

Prerequisite(s): Core Clerkship in Psychiatry, 4th year student

Drop Period: 1 month

Description: The advanced elective in neuropsychiatry rotates the senior or advanced medical student through the several inpatient, outpatient, and nursing home teaching components of the neuropsychiatry service. The focus is clinical, intended to develop expertise in evaluation, differential diagnosis, workup, and treatment. Patients with the most common neuropsychiatric disorders are seen, including dementia, Alzheimer's, Parkinson's, Huntington's, stroke, MS, PSP, traumatic brain injury, AIDS, and others.

CLINICAL RESEARCH IN SCHIZOPHRENIA

Course Type: Clinical Research

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Russell Margolis

Telephone Number: 410-614-4262

Faculty: Drs. Margolis

Availability/Duration: 3 weeks, 4 ½ weeks

Prerequisite(s): None

Drop Period: 1 month

Description: Schizophrenia is a devastating disorder of the brain characterized by hallucinations, delusions, and disordered thought, affecting 0.5-1% of the world population. Recent developments in epidemiology, phenotypic analysis, neuroimaging, molecular genetics, and neuropathology have, for the first time, provided the tools for understanding the pathobiology of schizophrenia and developing rational therapeutics. Students will have the opportunity to gain experience with one or more of these approaches as applied to schizophrenia. Elective activities will focus on participation in the design and implementation of research projects and direct contact with patients and control populations. Students will also engage in a critical review of the relevant literature, and attend schizophrenia teaching rounds and outpatient clinics focusing on recent onset schizophrenia.

ECT & NOVEL BRAIN STIMULATING THERAPIES

Course Type: Research

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Irving Reti

Telephone Number: 410-955-1484

Faculty: Dr. Reti

Availability/Duration: 4½ or 9 weeks

Prerequisite(s): If interested in bench work, ideally, students should have some experience working with rodents.

Drop Period: 1 month

Description: Electroconvulsive therapy (ECT) is the most effective available therapy for treating depression, however little is known about its mechanism of action. Mice genetically engineered to lack key genes which are inducible by electroconvulsive stimulation and which regulate synaptic plasticity may yield clues to how it works. Although ECT is highly effective, it is not without side-effects and so there has been keen interest in developing alternate forms of therapeutic brain stimulation for depression, such as repetitive transcranial magnetic stimulation (TMS) and deep brain stimulation (DBS), that are more focal and do not involve anesthesia. We are now offering TMS as a clinical service to treat depression and also clinical trials using the technique.

Repetitive self-injurious behaviors are seen in developmental disorders, and in autism as many as a third to one-half display these behaviors such as head-banging, biting and punching themselves. Many respond to pharmacological and behavioral treatments. In those who are unresponsive, ECT has been dramatically effective, reducing episodes by 90+ percent. Typically though, these patients require maintenance ECT, as frequently as once every five days. This situation raises concern because ECT is associated with cognitive side-effects and the long-term consequences of such frequent ECT begun at a young age are unknown. As an alternative, we are exploring the potential of DBS to suppress self-injurious behaviors in autism that is not associated with cognitive and other side effects. We are presently using rodents for this research. The student will have the opportunity to focus on bench work that may yield clues to ECT's mechanism of action and/or to assist in the development of alternate brain

stimulation treatment modalities for repetitive self-injurious behavior. Alternatively, the student may focus on clinical work related to ECT and novel brain stimulation techniques. If students opt to rotate through the lab, ideally, they should have some experience working with rodents.

HUMAN BEHAVIORAL PHARMACOLOGY OF NOVEL SEDATIVES AND HALLUCINOGENS

Course Type: Research

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Roland Griffiths

Telephone Number: 410-550-0034

Faculty: Dr. Griffiths

Availability/Duration: Flexible

Prerequisite(s): None

Drop Period: 1 month

Description: Opportunity to participate in ongoing human research characterizing behavioral, cognitive, subjective, and physiological effects of novel sedative compounds and hallucinogens. Compounds of interest include GHB, ketamine, dextromethorphan, psilocybin, and the classical benzodiazepines. Compounds of interest include psilocybin, ketamine, dextromethorphan, Salvia divinorum, DMT (N,N-dimethyltryptamine and classic sedative hypnotics.)

COMMUNITY PSYCHIATRY

Course Type: Other

Department/Division: Psychiatry and Behavioral Sciences

Course Director: Dr. Bernadette Cullen

Telephone Number: 410-955-5748

Faculty: Dr. Cullen

Availability/Duration: Flexible; 3-4 weeks

Prerequisite(s): Must be comfortable traveling with staff in the East Baltimore area.

Drop Period: 1 month

Description: An opportunity to work with clinicians who are treating patients with chronic mental illness in a variety of out-patient settings. Students rotate through the general out-patient clinic (OMHC), the intensive out-patient program (IOP) and the assertive community treatment (ACT) program. Within the ACT program patients are seen both at the hospital and their homes.

RESEARCH OPPORTUNITIES

DR. ARNOLD BAKER

Memory impairment in aging and disease; Neuroimaging in neurodegenerative disorders, schizophrenia, depression and decision making; Clinical trials in Alzheimer's disease.

DR. PATRICK CARROLL

Opportunities for outcomes research and follow-up studies in patients seeking treatment for addictions

DR. RAYMOND DEPAULO

Depression and Bipolar Disorder: The impact on society, their causes and outcomes and research prospects.

DR. FERNANDO GOES

Bipolar Disorder and Major Depression: Opportunities are available for participant in a number of projects related to gene discovery, gene characterization, and gene-phenotypes studies. We have a number of genome-wide association and whole exome/genome studies that could be part of a potential student led project. Opportunities are also available for more clinically related projects and phenotype based secondary analyses.

DR. MARCO A. GRADOS

Research in genetic-epidemiology and clinical registry in children with obsessive-compulsive disorder (Pediatric OCD), Tourette syndrome and attention deficit hyperactivity disorder (ADHD). Risk genetic, neurocognitive, and clinical factors are examined in these disorders.

DR. ROLAND GRIFFITHS

Human behavioral pharmacology of abused drugs

DR. ANGELA GUARDA

Eating disorders; anorexia nervosa and bulimia nervosa

DR. SHIN-ICHI KANO

Basic science research related to neuropsychiatric disorders: Neuroinflammation, brain-immune interaction, and gene expression control in neurons and glia.

DR. ADAM KAPLIN

Neuropsychiatric aspects of autoimmune CNS diseases; biological basis of immune-mediated depression and cognitive impairment, for example, in Multiple Sclerosis and Transverse Myelitis.

DR. GERALD NESTADT

Obsessive/compulsive disorder: doubt in decision-making.

DR. KARIN NEUFELD

Delirium detection, treatment and prevention strategies; psychiatric illness and symptomatology of the medically ill

DR. JENNIFER PAYNE

Management of mood disorders in women; clinical trials in depression and bipolar disorder

DR. GLENN TREISMAN

Psychopharmacology; HIV; affective disorders

DR. PETER ZANDI

Depression and Bipolar Disorder: The impact on society, their causes and outcomes and research prospects

RADIOLOGY AND RADIOLOGICAL SCIENCES

ME:420.699

DIAGNOSTIC RADIOLOGY TUTORIAL

Course Type: Tutorial

Department/Division: Radiology

Course Director: Dr. Erin Gomez, Director; egomez8@jhmi.edu and Dr. Javad Azadi, Assistant Director; jazadi1@jhmi.edu

Telephone Number: 410-955-2351

Faculty: Drs. Gomez, Azadi and staff

Availability/Duration: Q12H, Q21H, Q32H, Q41H, Summer 3 for AY19-20

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Introduction to the fundamentals of diagnostic and interventional radiology. This course starts with the foundation of how the images are obtained, leading to formulating a differential based on imaging findings and ordering appropriateness. Scanning workshops will be held throughout the course to give medical students hands-on experience in ultrasound, CT, breast imaging and interventional radiology. The course will provide an introduction and overview of the major radiologic subspecialties: body imaging and interventional radiology.

The program includes 3-5 hours per day of lectures and case review for students; use of the American College of Radiology appropriateness criteria; access to multiple online learning files; observation of patient procedures within the department and participation in department didactic and multidisciplinary conferences. A ten minute case presentation is made during the last week of the course. The final exam is based on the ordering and interpretation of imaging studies in typical clinical settings. Free online textbook available.

SPECIAL DIAGNOSTIC RADIOLOGY

Course Type: Tutorial

Department/Division: Radiology

Course Director: Appropriate section head - see below

Telephone Number: 410-955-6500

Faculty: Section Heads or appropriate faculty for Specific Subspecialty Areas

Availability/Duration: All year; 4½ weeks or entire quarter

Prerequisite(s): To be preceded (usually) by Diagnostic Radiology Tutorial.

Drop Period: 1 month

Description: A clinical and research experience in a specific subspecialty area of interest to the student.

Interventional Radiology – Dr. K. Hong, *Director*; Dr. D. Yim; Dr. C. Weiss

Body Magnetic Resonance Imaging – Dr. I. Kamel, *Director*

Ultrasound –Dr. S. Coquia , *Director*; Dr. S, Sheth

Nuclear Medicine: Dr. Steven Roweand Dr. Som Javadi

Musculoskeletal Imaging- Dr. L. Fayad

Pediatric Radiology- Dr. T. Huisman

Chest Radiology- Dr. D. Feigin

GI Radiology- Meg Fynes

PRECEPTORSHIP IN DIAGNOSTIC RADIOLOGY - BAYVIEW MEDICAL CENTER

Course Type: Tutorial

Department/Division: Radiology

Course Director: Dr. Martin Auster

Faculty: Dr. Auster and staff

Contact: Kimberly McCotter; kmccott1@jhmi.edu

Availability/Duration: Offered all year; Contact Dr. Auster to determine availability

Prerequisite(s): Completion of the pre-clinical years. Two month drop required

Drop Period: 2 months

Description: This course is similar to Diagnostic Radiology offered at Johns Hopkins Hospital. During July, and August, special lectures will be given to students when four or more students take the elective. Observation of actual film interpretation, attending daily departmental teaching conferences, and observing x-ray procedures in the clinical setting. The role of imaging in the proper management of patient care will be stressed.

INTERVENTIONAL RADIOLOGY SUBINTERSHIP AND RESEARCH CLERKSHIP

Course Type: Subinternship/Clinical Research

Department/Division: Radiology

Course Director: Dr. Kelvin Hong, khong1@jhmi.edu

Contact: Kimberly McCotter 410-550-0214, kmccott1@jhmi.edu

Telephone Number: 410-614-1047

For Availability: Rocio Friedman, rfied32@jhmi.edu or 410-614-6938

Faculty: Drs. Kelvin Hong, Robert Liddell, Donna Magid, Clifford Weissand faculty.

Availability/Duration: The Clinical Clerkship is offered as a 3, 4½ or 6 week elective; the Subinternship/Research elective is offered for 4½, 5, or 6 weeks (time to be divided equally between Interventional Radiology and the research portion which must be arranged ahead of time) maximum of two students per rotation. Contact Dr. Kelvin Hong at 410-614-2237

Prerequisite(s): It is preferred that the student have completed clinical rotations in surgery or medicine prior to this elective

Drop Period: 2 months

Description: This course allows the student to become familiar with the basic services offered by Interventional Radiology, the risk/benefit ratio of these procedures and an understanding of the diagnostic and therapeutic role of these procedures. The student will learn to conceptualize and problem-solve as it relates to the clinical problems posed by the Interventional Radiology case load. The student should develop fundamental skills in interpreting radiographs, CT scans, ultrasound and MRI. Physical exam skills will be employed and directed at developing a cardiovascular exam and use of Doppler. The student will be responsible for patient evaluations prior to and following procedures and will gain consent from the patient for basic vascular and nonvascular procedures. Attendance at Wednesday morning conferences, daily morning report and research meetings is expected.

PEDIATRIC RADIOLOGY

Course Type: Consultation Service

Department/Division: Radiology

Course Director: Drs. Huisman and Pediatric Radiology faculty.

Telephone Number: 410-955-6141

Faculty: Drs. Huisman

Availability/Duration: All year; 4½ or 3 weeks

Prerequisite(s): Elective in diagnostic radiology

Drop Period: 1 month

Description: Students will attend conferences in pediatric radiology, observe fluoroscopy, ultrasound, CT, and other examinations, and observe film interpretations. They are expected to add new cases to the Teaching File under staff supervision.

INTERVENTIONAL RADIOLOGY SUBINTERNSHIP

Course Type: Consultation Service/Subinternship

Department/Division: Interventional Radiology

Course Director: Dr. K. Hong

Telephone Number: 410-614-2237

Faculty: Drs. C. Weiss and K. Hong

Availability/Duration: ½ quarter or 3 weeks

Prerequisite(s): Third or fourth year students

Drop Period: 2 months

Description: This elective will familiarize the student with techniques of interventional radiology including balloon angioplasty, therapeutic embolization, and drainage procedures. The student will also become familiar with the radiology of vascular and nonvascular disease. Selected patients are admitted to the interventional radiology service for some of these procedures, and the student will participate in their workup and evaluation including clinic follow up.

CHEST IMAGING

Course Type: Tutorial

Department/Division: Radiology

Course Director: Dr. David S. Feigin

Telephone Number: 410-955-5525

Faculty: Dr. Feigin and staff

Availability/Duration: Offered all year; 3 weeks; up to 2 students.

Prerequisite(s): Fourth year students; previous clerkship in pulmonary/critical care medicine highly desirable

Drop Period: 1 month

Description: Intensive clinical and educational experience in the diagnostic radiology subspecialty of chest imaging, emphasizing pulmonary and mediastinal radiology using plain films and chest CT. Participation in daily clinical work and case based teaching sessions, plus attendance at radiology and pulmonary medicine conferences. Individual projects encouraged.

CLINICAL NEURORADIOLOGY

Course Type: Clinical Clerkship

Department/Division: Radiology, Neuroradiology division

Course Director: Drs. D. Yousem, A. Blitz, M. Kraut, N. Aygun, and D. Gandhi

Telephone Number: 410-955-2789, 410-955-2685

Faculty: Dr. Yousem and neuroradiology faculty

Availability/Duration: Year round; ½ quarter

Prerequisite(s): Diagnostic radiology elective; Core Clerkship in Neurology

Drop Period: 1 month

Description: This elective combines didactic lectures, videotapes, case reviews and clinical experience. The didactic portion consists of lectures and daily conferences where clinical topics or problems are discussed. The lectures series concentrates in the following areas: CNS and head and neck anatomy and pathology, especially as evaluated by neuroimaging techniques, and development of neuroimaging techniques.

Students will be expected to make a 15-30 minute case presentation at the end of the course on a topic specific to neuroradiology, or in an area of basic or clinical neurosciences relevant to neuroradiology. To receive Honors, the student must work on a research project with a faculty member.

RESEARCH OPPORTUNITIES

DR. MARTIN AUSTER

Clinical research in diagnostic imaging, focusing on general or interventional radiology imaging or the delivery of imaging services

DR. NAFI AYGUN
Neuroradiology

DR. ARI BLITZ
Neuroradiology

DR. NICHOLAS ELLENS
MRI guided therapeutic ultrasound; thermal ablation and targeted drug delivery

DR. JOHN ENG
Evidence-based radiology; statistical analysis of imaging tests and radiology informatics

Dr. LAURA FAYAD
Anatomic, functional and metabolic imaging of musculoskeletal tumors

DR. ELLIOT FISHMAN
Body CT; web-based education; use of social media for medical education and medical information sharing

DR. MEG FYNES
Swallowing function and esophageal imaging

DR. PHILIPPE GAILLOUD
Neurointerventional radiology

DR. ASSAF GILAD
Development of genetically encoded biosensors for imaging intracellular signal transduction at the cellular level with MRI

DR. ULRIKE HAMPER
Ultrasound research

DR. KELVIN HONG
Value added research in interventional radiology

DR. THIERRY HUISMAN
Advanced MRI imaging in Pediatric Neuroradiology; clinically-oriented

DR. IHAB KAMEL
Magnetic resonance imaging

DR. DARA KRAITCHMAN
Molecular imaging; stem cell tracking; veterinary minimally invasive procedures and image-guided therapy

DR. MICHAEL KRAUT
Functional magnetic resonance imaging

DR. SRIDHAR NIMMAGADDA
Chemokine receptor target imaging, therapy and biology

Dr. HARIS SAIR
Resting state functional MR brain imaging for disease diagnosis and prediction

DR. JEFF SIEWERDSEN
Image quality in low dose CT; 3D printing in medical imaging; quantitative imaging of bone morphology as an image-based biomarker

DR. FRANCO VERDE

Vascular, small bowel, and pancreatic imaging; quality improvement; informatics

DR. PIOTR WALCZAK

Magnetic Resonance Research

DR. CLIFFORD WEISS

Interventional radiology

DR. DAVID YOUSEM

Functional magnetic resonance imaging

DR. YUN ZHOU

Quantitative functional imaging with dynamic PET, CT and MRI and its applications in neurodegenerative disease and oncology

DR. STEFAN ZIMMERMAN

Investigating advanced cardiac MRI techniques for identifying imaging biomarkers in non-ischemic cardiomyopathies arrhythmias and pulmonary hypertension

RADIATION ONCOLOGY

ME:717.699

BASIC RADIOLOGIC PHYSICS

Course Type: Tutorial

Department/Division: Radiation Oncology

Course Director: Dr. John Wong

Telephone Number: 410-502-1458

Faculty: Dr. Wong and staff

Availability/Duration: Q1 & Q3; Mon & Wed 5:00-6:30 p.m.

Prerequisite(s): General physics and mathematics; consent of instructor

Drop Period: 1 month

Description: Radiation physics concepts essential for individuals pursuing careers in radiology, radiotherapy or medical physics. Lecture and laboratory topics include radioactive decay, x-ray production, interaction of ionizing radiation with matter and measurement of radiation.

RADIOBIOLOGY

Course Type: Tutorial

Department/Division: Radiation Oncology

Course Director: Dr. Marikki Laiho

Telephone Number: 410-502-9748

Faculty: Dr. Laiho and Radiation Oncology Faculty

Availability/Duration: Q2; Mon 7:30-9:00 a.m.

Prerequisite(s): General cell and molecular biology; consent of instructor

Drop Period: 1 month

Description: DNA damage and radiobiology concepts essential for individuals pursuing careers in radiation oncology and oncology. Lecture topics include DNA damage response, signaling and repair, cell cycle checkpoints, environmental cues affecting damage response, radiation sensitizers and protectors.

SPECIAL TOPICS IN RADIATION ONCOLOGY PHYSICS

Course Type: Tutorial

Department/Division: Radiation Oncology

Course Director: Dr. John Wong

Telephone Number: 410-502-1458

Faculty: Dr. Wong and staff

Availability/Duration: All year; every other Friday 3:00-4:00 p.m.

Prerequisite(s): Consent of instructor

Drop Period: 1 month

Description: An advanced course dedicated to the discussion of developing technology and special techniques, including Radio-labeled Antibody Dosimetry, Stereotactic Radiosurgery, Total Body Irradiation, 3-Dimensional Treatment Planning, Hyperthermia and Digital Portal Imaging.

RADIOLOGY ONCOLOGY: CONSULT SERVICE

Course Type: Consult Service

Department/Division: Radiation Oncology

Course Director: Dr. Amol Narang

Contact: Ruth Lewis; 410-955-7390; rlewisf@jhmi.edu

Faculty: Drs. Alcorn, Asrari, Croog, Deville, Greco, Hales, Kiess, Kleinberg, Ladra, Meyer, Narang, Page, Redmond, Song, Tran, Viswanathan, Voong, Wright

Availability/Duration: All year; up to 4 weeks

Prerequisite(s): Core Clerkship in Medicine or Surgery preferred

Drop Period: 1 month

Description: This course focuses on the evaluation and management of patients with malignant diseases at various disease sites who are being considered for radiation therapy. Students will have the opportunity to assist faculty with new patient consultations, follow-up evaluations, simulation, treatment planning, and on-treatment patient management. Students will work with a variety of faculty members to assure a broad experience in such areas as Head & Neck, Pediatrics, CNS, GI, GU, Breast, Hematologic and Musculoskeletal Radiation Oncology. This elective opportunity will be particularly valuable to any students considering a career in oncology.

RESEARCH OPPORTUNITIES

As a leader nationally in oncology research, opportunities for students to get involved in research are abundant. Research opportunities can be clinical, basic, physics-related, or health services-related. Please feel free to contact Dr. Amol Narang directly if interested in research opportunities.

DR. F. BUNZ

Responses of cancer cells to DNA damage; human cell genetics

DR. T. DEWEESE

Genitourinary system tumors; gene therapy

DR. R. HALES

Lung cancer and thoracic oncology

DR. R. IVKOV

Nanomaterials in targeting cancers

DR. M. KAI

DNA damage response

DR. A. KIESS

Head and neck cancer

DR. L. KLEINBERG

Diseases of the central nervous system cancer

DR. M. LAIHO

Genetic response to DNA damage; transcription

DR. T. MCNUTT

Radiation Physics

DR. H. QUON

Head and neck cancer

DR. K. REDMOND

Diseases of the central nervous system

DR. D. SONG

Genitourinary tumors; lung and thoracic tumors; prostate brachytherapy

DR. P. TRAN

Genitourinary tumors; oligometastatic disease; molecular biology in cancer

SURGERY AND SURGICAL SCIENCES

ME:380.699

SURGICAL ONCOLOGY - NATIONAL CANCER INSTITUTE, NATIONAL INSTITUTES OF HEALTH, BETHESDA, MD

Course Type: Clinical Clerkship

Department/Division: Surgery

Course Director: Dr. David Danforth

Telephone Number: 410-955-5765

Faculty: Dr. Danforth and Dr. Steven Rosenberg,

Availability/Duration: All year; up to 2 full quarters.

Prerequisite(s): Core Clerkship in Surgery

Drop Period: 1 month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Students will see new out-patients and follow their progress through the initial work-up in the clinic and hospital. Students will assist in the surgical procedures and post-operative care. Attendance at all departmental conferences and meetings, as well as weekly departmental seminars is expected. Students have intensive exposure to this combination of medical endeavors due to the close interrelationship of clinical and research activities in the Surgery Branch of the National Cancer Institute. Clinical work centers around formal research protocol patients. Currently the branch is concentrating its attention on protocols concerned with investigation of melanoma, osteosarcoma, and a variety of soft tissue sarcomas, rectal cancer and breast cancer. The surgery branch also serves as a general surgical consultant for all patients at the National Institutes of Health. In this capacity, a broad range of general surgical problems are also seen.

SUBINTERNSHIP IN SURGERY

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Surgery and Surgical Sciences

Course Director: Dr. Bethany Sacks

Contact: Misty Grimes: 410-502-5062, misty@jhmi.edu

Faculty: Dr. Bethany Sacks and surgical staff

Availability/Duration: All year; 4½ weeks; registration must be at least 8 weeks before this elective as credentialing is required by the Medical Board

Prerequisite(s): Core Clerkship in Surgery

Drop Period: 2 months

VISITING MEDICAL STUDENTS FROM NON-LCME ACCREDITED SCHOOLS CANNOT APPLY FOR THE SUBINTERNSHIP IN QUARTER 4 OR THE SUMMER QUARTER

Description: This course is designed to provide extensive, in-depth experience in the management of the surgical patient. The student will be an integral part of the surgical team and will be assigned specific patients. The activities of the student will be supervised by the attending and house staff. Services available: GI surgery, vascular surgery, Halstead-trauma, and surgical oncology to include breast, endocrine, and melanoma. The subintern will have responsibility for pre and postoperative care of patients and will participate in the operative procedures. Daily rounds with attendings and residents, as well as several special conferences and teaching sessions each week are part of this course.

SUBINTERNSHIP IN GENERAL SURGERY - BAYVIEW MEDICAL CENTER

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Surgery and Surgical Sciences

Course Director: Dr. Bethany Sacks

Contact: Misty Grimes: 410-502-5062, misty@jhmi.edu
Faculty: Bayview surgical staff
Availability/Duration: Available quarters 1-4; 4½ weeks
Prerequisite(s): Core Clerkship in Surgery
Drop Period: 2 months

VISITING MEDICAL STUDENTS FROM NON-LCME ACCREDITED SCHOOLS CANNOT APPLY FOR THE SUBINTERSHIP IN QUARTER 4 OR THE SUMMER QUARTER

Description: This course is designed to provide extensive, in-depth experience in the management of the surgical patient. The student will be an integral part of the surgical team and will be assigned specific patients. The activities of the student will be supervised by the attending and house staff. Services available: vascular, bariatric, GI, and surgical oncology. The subintern will have responsibility for pre and postoperative care of patients and will participate in the operative procedures. Daily rounds with attendings and residents, as well as several special conferences and teaching sessions each week are part of this course.

VASCULAR AND ENDOVASCULAR SURGERY ELECTIVE ROTATION BAYVIEW MEDICAL CENTER

Course Type: Clinical Clerkship
Department/Division: Surgery and Surgical Sciences
Course Director: Dr. Mahmoud B. Malas
Contact: 410-507-2131; bmalas1@jhmi.edu
Faculty: Dr. Mahmoud B. Malas
Availability/Duration: All year long/four to eight week periods
Prerequisite(s): Medical Student-HIPAA Certification prior to the start of the elective
Drop Period: 2 months

Description: Students can join the Johns Hopkins Bayview Vascular and Endovascular Surgery Elective rotation for 4 to 8 week periods. They are expected to participate in patient care, round on patients in the ward with the interns and surgical residents and to participate in a variety of open and endovascular cases in the operative room. They are also expected to attend the vascular clinic at least one day a week and to contribute to a research project at the vascular and endovascular research center at Johns Hopkins Bayview Medical Center.

VISITING MEDICAL STUDENTS FROM NON-LCME ACCREDITED SCHOOLS CANNOT APPLY FOR THE SUBINTERSHIP IN QUARTER 4 OR THE SUMMER QUARTER

Objectives: At the end of the rotation, medical students will have a good understanding of basic vascular pathology, noninvasive vascular testing and angiography. They will learn how to perform a vascular exam and will have adequate knowledge of the diagnosis, prevention and treatment options of major vascular pathologies such as peripheral arterial disease, abdominal and thoracic aortic aneurysms, carotid artery stenosis, dialysis access for end-stage renal disease and diabetic foot infection.

ADVANCED CLERKSHIP IN NONCARDIAC THORACIC SURGERY

APPROVED SUB-I EXPERIENCE

Course Type: Clinical Clerkship
Department/Division: Surgery and Surgical Sciences
Course Director: Dr. Bethany Sacks
Contact: Misty Grimes: 410-502-5062, misty@jhmi.edu
Faculty: Thoracic Surgical staff
Availability/Duration: 4½ weeks
Prerequisite(s): Core Clerkship in Surgery
Drop Period: 2 months

VISITING MEDICAL STUDENTS FROM NON-LCME ACCREDITED SCHOOLS CANNOT APPLY FOR THE SUBINTERSHIP IN QUARTER 4 OR THE SUMMER QUARTER

Description: An advanced experience in thoracic surgery; involves patient care, operating room and clinic experiences. Research projects are also possible. Conferences and teaching sessions included.

ADVANCED CLERKSHIP IN SURGICAL ONCOLOGY

Course Type: Clinical Clerkship

Department/Division: Surgery and Surgical Sciences

Course Director: Dr. Bethany Sacks

Contact: Misty Grimes: 410-502-5062, misty@jhmi.edu

Faculty: Handelsman Surgery staff

Availability/Duration: 4½ weeks

Prerequisite(s): Core Clerkship in Surgery

Drop Period: 2 months

VISITING MEDICAL STUDENTS FROM NON-LCME ACCREDITED SCHOOLS CANNOT APPLY FOR THE SUBINTERSHIP IN QUARTER 4 OR THE SUMMER QUARTER

Description: This elective is designed to provide students with an academic multidisciplinary approach to solid tumors. Both clinical and research experiences are available. The clinical exposure is provided by rotating through the Surgical Oncology service, and the research interests are centered around immunologic manipulations of the host in solid tumor rejection.

ADVANCED CLERKSHIP IN VASCULAR SURGERY

Course Type: Clinical Clerkship

Department/Division: Surgery and Surgical Sciences

Course Director: Dr. Bethany Sacks

Contact: Misty Grimes: 410-502-5062, misty@jhmi.edu

Faculty: Vascular Surgery Staff

Availability/Duration: 4½ weeks

Prerequisite(s): Core Clerkship in Surgery

Drop Period: 2 months

VISITING MEDICAL STUDENTS FROM NON-LCME ACCREDITED SCHOOLS CANNOT APPLY FOR THE SUBINTERSHIP IN QUARTER 4 OR THE SUMMER QUARTER

Description: This elective provides exposure to vascular surgery patients. Students will participate in all aspects of patient care: pre-op evaluation, operative procedures, post-op care.

ADVANCED CLERKSHIP IN ALIMENTARY TRACT SURGERY

Course Type: Clinical Clerkship

Department/Division: Surgery and Surgical Sciences

Course Director: Dr. Bethany Sacks

Contact: Misty Grimes: 410-502-5062, misty@jhmi.edu

Faculty: Drs. Ravich and Surgical staff

Availability/Duration: 4½ weeks

Prerequisite(s): Core Clerkship in Surgery

Drop Period: 2 months

VISITING MEDICAL STUDENTS FROM NON-LCME ACCREDITED SCHOOLS CANNOT APPLY FOR THE SUBINTERSHIP IN QUARTER 4 OR THE SUMMER QUARTER

Description: This elective provides comprehensive exposure to GI surgery patients. Students will participate in all aspects of care: pre-op evaluation, operative procedures, and post-op care.

CARDIAC SURGERY RESEARCH ROTATION

Course Type: Clinical Research/ Basic Research

Department/Division: Cardiac Surgery

Course Director: Dr. William Baumgartner

Telephone Number: 410-955-2411

Faculty: Dr. William Baumgartner and Staff

Availability/Duration: Summer only; not available summer 2017, must be willing to spend at least two months in elective

Prerequisite(s): Completion of first year of medical school

Drop Period: 2 months

Description: Students can expect an excellent exposure to the preoperative, operative, and postoperative care of both large and small animals. Furthermore, students can expect to develop basic and intermediate to advanced surgical skills. Students will also have the opportunity to participate in our prospective and retrospective clinical studies evaluating important issues in both adult and pediatric cardiac surgery.

ADVANCED CLINICAL CLERKSHIP IN GENERAL PEDIATRIC SURGERY

Course Type: Clinical Clerkship

Department/Division: Surgery and Surgical Sciences

Course Director: Dr. Bethany Sacks

Contact: Misty Grimes: 410-502-5062, misty@jhmi.edu

Faculty: Dr. David Hackam and Staff

Availability/Duration: All year; 4½ or 9 weeks

Prerequisite(s): Core Clerkships in Surgery and Pediatrics

Drop Period: 2 months

VISITING MEDICAL STUDENTS FROM NON-LCME ACCREDITED SCHOOLS CANNOT APPLY FOR THE SUBINTERSHIP IN QUARTER 4 OR THE SUMMER QUARTER

Description: This elective is designed to provide clinical experience in the management of children with surgical problems, including trauma. Participation in ward and operating room as a surgical extern. This elective includes Pediatric Surgical Clinic and Pediatric Surgery Teaching Rounds, as well as exposure to a wide variety of pediatric surgical inpatient and outpatient cases.

PEDIATRIC SURGERY AT ALL CHILDREN'S HOSPITAL

Course Type: Other

Department/Division: Pediatric Surgery, All Children's Hospital (ACH), St. Petersburg, FL

Course Director: Dr. Elizabeth Walford

Telephone Number: 727-767-4106, Gwen Harmon, ggharmon2@jhmi.edu, Dawn Jones dawn.jones@jhmi.edu

Faculty: Drs. Nicole Chandler, Paul Colombani, Paul Danielson, David Kays and Elizabeth Walford

Availability/Duration: Rolling availability; duration is flexible and can be adjusted to fit student needs.

Prerequisite(s): Core Clerkship in Pediatrics or Medicine

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: Principles of pediatric surgery will be taught in outpatient and inpatient encounters at ACH-JHM. As a free-standing children's hospital, patient cases will reflect both general pediatric surgical exposure as well as exposure to highly specialized patient cases reflecting ACH-JHM's status as a quaternary care center. Participation in clinical or basic research in pediatric surgery may also be coordinated pending project and faculty availability.

Students will attend daily surgical clinics at ACH and scrub into operative procedures. Emphasis will be placed on the understanding of the pathogenesis, diagnosis, and management of common conditions requiring surgery in the pediatric patient.

Students will gain an appreciation of the effect of anesthetics, surgical procedures and critical illnesses on the pediatric patient. They will become familiar with parenteral fluid management and the philosophy of oral and parenteral nutritional needs for the pediatric surgical patient. Students are expected to participate in weekly conferences including surgical specific conferences as well as resident noon conferences, JHUSOM Pediatric Grand Rounds and ACH-JHM Grand Rounds.

Students will become familiar with the pathogenesis, diagnosis and management of common conditions requiring surgery in pediatric patient, such as inguinal-scrotal conditions, appendicitis, and other gastrointestinal inflammatory and obstructive states, airway problems, and congenital abnormalities amenable to surgical correction. The student will be evaluated on faculty evaluations, attendance and overall performance.

ADVANCED CLERKSHIP IN TRANSPLANTATION SURGERY

Course Type: Clinical Clerkship

Department/Division: Transplantation Surgery

Course Director: Dr. Bethany Sacks

Contact: Misty Grimes: 410-502-5062, misty@jhmi.edu

Faculty: Transplant Surgery faculty

Availability/Duration: All year, 4½ weeks; limited to one student

Prerequisite(s): Core Clerkship in Surgery

Drop Period: 2 months

VISITING MEDICAL STUDENTS FROM NON-LCME ACCREDITED SCHOOLS CANNOT APPLY FOR THE SUBINTERSHIP IN QUARTER 4 OR THE SUMMER QUARTER

Description: Includes participation in management of patients undergoing renal dialysis, renal, pancreas and hepatic transplantation at the Johns Hopkins Hospital. Experience in immunology as it applies to transplantation will be included.

RESEARCH IN NEUROSURGERY

Course Type: Basic Research

Department/Division: Neurosurgery

Course Director: Any of the faculty listed below

Availability/Duration: Full quarter or more

Prerequisite(s): None

Drop Period: 1 month

Telephone Numbers:

Dr. Anderson: 443-287-4561

Dr. Belzberg: 410-955-5810

Dr. Bettgowda: 410-955-8620

Dr. Brem: 410-614-0477

Dr. Bydon: 410-502-2383

Dr. Caplan: 410-955-1506

Dr. Caterina: 410-502-5457

Dr. Cohen: 410-955-7337

Dr. Gallia: 410-614-0585

Dr. Groves: 410-955-7851

Dr. Huang: 410-502-5767

Dr. Jackson: 410-955-7171

Dr. Lim: 410-614-1627

Dr. Lo: 410-955-4424
Dr. Luciano: 410-614-0217
Dr. Mukherjee: 410-550-3273
Dr. Riggins: 410-502-2905
Dr. Robinson: 410-955-7337
Dr. Sciubba: 410-955-4424
Dr. Tamargo: 410-614-1533
Dr. Theodore: 443-287-4934
Dr. Weingart: 410-614-3052
Dr. Witham: 410-955-4424

Description: Students may work in any of the departmental laboratories by arranging with the individual faculty members and laboratory directors. Please refer to departmental "Research Opportunities" for details.

NEUROPHYSIOLOGIC STUDIES OF HUMAN CNS IN PAIN AND MOVEMENT

Course Type: Clinical Research
Department/Division: Neurosurgery
Course Director: Dr. Frederick Lenz
Telephone Number: 410-955-2257
Faculty: Dr. Frederick Lenz
Availability/Duration: By arrangement
Prerequisite(s): Neuroanatomy
Drop Period: 1 month

Description: Single neuron analysis of the human CNS during stereotactic procedures for pain and movement disorders.

CLINICAL CLERKSHIP IN NEUROSURGERY

Course Type: Clinical Clerkship
Department/Division: Neurosurgery
Course Director: Dr. Alan Cohen
Telephone Number: 410-502-5564
Faculty: Neurosurgery Faculty
Availability/Duration: All year; 4½ weeks
Prerequisite(s): Open to 3rd and 4th year medical students
Drop Period: 2 months

Description: This clinical clerkship will provide an introduction to the care of adult and pediatric patients with brain tumors, cerebrovascular diseases, spinal and peripheral nerve disorders, and trauma in both the inpatient and outpatient settings. Students will participate in the operating room, clinics, inpatient wards, and departmental conferences. This clerkship may be performed at either the Johns Hopkins Hospital or the Johns Hopkins Bayview Medical Center campus, or a combination of both sites.

INTRODUCTION TO NEUROSURGERY

Course Type: Clinical Clerkship
Department/Division: Neurosurgery
Course Director: Dr. Tim Witham
Telephone Number: 410-502-5767
Faculty: Neurosurgery faculty
Availability/Duration: All year; 4½ weeks
Prerequisite(s): None
Drop Period: 1 month

Description: This course gives the student an introduction to the field of neurosurgery. The student will learn the fundamentals of performing a neurological exam, as well as a neurosurgery history and physical. The course provides an exposure to the broad spectrum of neurosurgical pathology in the inpatient and outpatient settings. Time is divided between the neurosurgery oncology, spine, vascular, and pediatric services. Students will participate in rounds, inpatient care, in the operating rooms, and the outpatient clinic. Students will also attend departmental didactic teaching conferences, such as Spine Conference, Vascular Conference, Tumor Conference, Peds Conference and Neurosurgery Grand Rounds.

SUBINTERNSHIP IN NEUROSURGERY

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship
Department/Division: Neurosurgery
Course Director: Dr. Timothy Witham
Contact: Jamie Hoffberger; 410-502-6099 or 410-502-2383
Faculty: Neurosurgery Faculty
Availability/Duration: All year; 4 weeks
Prerequisite(s): Core Clerkship in Surgery
Drop Period: 2 months

Visiting Medical Students- Please review additional departmental application requirements at: http://www.hopkinsmedicine.org/neurology_neurosurgery/education/neurosurgery_electives/how_to_apply/US_students.html

Description: Students are given significant responsibilities in patient care and a broad exposure in neurosurgical operating room techniques. Time is divided between the neurosurgical oncology, spine, cerebrovascular, and pediatric services. Students will participate in daily rounds, inpatient care, departmental conferences, operating rooms, and outpatient clinic. Subinterns will participate in overnight call with a supervising resident. Rotations will be at the Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center campuses.

ADVANCED CLERKSHIP IN HAND SURGERY

Course Type: Clinical Clerkship
Department/Division: Orthopaedic Surgery
Course Director: Dr. E. Gene Deune
Telephone Number: Medical Office Coordinator-Deb Wagner 410-955-3885
Faculty: Drs. LaPorte, Brushart, Deune and Ingari
Availability/Duration: One position at a time; 4 weeks
Prerequisite(s): Core Clerkship in Surgery
Drop Period: 2 months

Description: This course is about learning the evaluation, diagnosis, and management of patients with hand and upper extremity injury and pathology. It builds on what you learned in your musculoskeletal unit in Genes to Society as well as on your Surgery clerkship. The Hand Surgery Sub-I builds on earlier learning in anatomy, physiology, microbiology, general ethics, and interpersonal relations. It translates concepts into concrete action with immediate results. What you learn here will prepare you for evaluating patients who present with injuries or complaints regarding the hand, wrist and elbow. This includes young children born with upper extremity abnormalities, all age groups with traumatic injuries, nerve injury or compression, arthritis and other conditions. The course uses a combination of lecture, reading, conferences, and time in the hand clinic and in the operating room to teach important principles. The student learns from a team of residents PGY3+4, fellows, and four attending surgeons. These team members provide continuous teaching and feedback. Collegiality is a hallmark of the service.

ADVANCED CLINICAL CLERKSHIP IN ORTHOPAEDIC FOOT AND ANKLE SURGERY

Course Type: Clinical Clerkship
Department/Division: Orthopaedic Surgery-JHH and Bayview
Course Director: Dr. Casey Humbyrd

Telephone Number: Beth Hall: 443-287-4544

Faculty: Dr. James Ficke and Dr. Casey Humbyrd

Availability/Duration: One position offered at a time; four weeks

Prerequisite(s): Preference is given to second semester third year students and to fourth year students.

Drop Period: 2 months

Description: This elective provides an overview of the evaluation and treatment of patients with foot and ankle pathology. It will include a focus on trauma to the foot and ankle, sports injuries, tendinopathy and reconstruction for deformities and arthritis. The student will participate in clinic and operative settings as well as following the inpatients after surgery. Students must have transportation between JHH, JH Bayview and JH White Marsh. Students must be flexible in their approach as faculty are located at multiple sites.

EXPOSURE TO SPINAL DISEASES

Course Type: Clinical Clerkship

Department/Division: Orthopaedic Surgery

Course Director: Dr. Brian J. Neuman

Telephone Number: Beth Hall: 443-287-4544, bkeefe2@jhmi.edu

Faculty: Drs. Lee Riley, III, Khaled Kebaish, David Cohen and Brian Neuman

Availability/Duration: All year; 1 month duration

Prerequisite(s): Core Clerkship in Surgery

Drop Period: 1 month

Description: This course is offered primarily for the student who thinks that he/she may be interested in orthopaedic surgery as a career. The student can expect to gain knowledge and experience in the preoperative evaluation, spinal surgical procedures and postoperative care of patients with a wide variety of spinal diseases through hands-on participation in outpatient clinics, operating rooms and didactic teaching.

ADVANCED CLINICAL CLERKSHIP IN SPINE SURGERY

Course Type: Clinical Clerkship

Department/Division: Orthopaedic Surgery

Course Director: Dr. Lee Riley, III

Telephone Number: 410-955-6930

Faculty: Drs. Lee Riley, III, Khaled Kebaish, David Cohen and Brian Neuman

Availability/Duration: All year; four weeks; one or two students; preference given to second semester 3rd Year Students and 4th Year Students.

Prerequisite(s): Core Clerkship in Surgery; Core Clerkship in Medicine helpful

Drop Period: 1 month

Description: This elective provides in-depth clinical experience in orthopaedic spine surgery at the Johns Hopkins Hospital. The student is integrated into the orthopaedic residency program. Practical experience is supplemented by formal and informal teaching conferences and patient rounds. One or two positions offered at a time. Preference is given to second semester third year students and to fourth year students. Duration four weeks.

ORTHOPAEDIC SURGERY - BAYVIEW MEDICAL CENTER

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Orthopaedic Surgery

Course Director: Dr. Paul Khanuja

Telephone Number: Beth Hall: 443-287-4544, bkeefe2@jhmi.edu

Faculty: Dr. Paul Khanuja, Dr. Robert Sterling, Dr. Erik Hasenboehler, Dr. Casey Humbyrd, Dr. Ronald Byank

Availability/Duration: All year; one student, full or ½ quarter

Prerequisite(s): 4th year student with prior Orthopaedic rotation experience; Core Clerkship in Surgery

Drop Period: 1 month

Description: This elective is offered to students seeking more extensive knowledge of general orthopaedics than is usually obtained in the required curriculum. Musculo-skeletal trauma, total joint arthroplasty and foot and ankle pathology are emphasized. During this elective, students are actively involved with the resident staff in all aspects of patient care. They are expected to participate in the same educational conferences as the resident staff. They are expected to broaden their knowledge of the physiological basis of orthopaedic practice and to acquire a better understanding of appropriate diagnostic and therapeutic techniques. Students also have the opportunity to learn about the training and development of orthopaedic surgeons, to acquire useful information in making a career choice and to develop reference contacts.

SUBINTERNSHIP IN ORTHOPAEDIC SURGERY

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship
Department/Division: Orthopaedic Surgery
Course Director: Dr. Brian Neuman
Telephone Number: Beth Hall, 443-287-4544, bkeefe2@jhmi.edu
Faculty: Dr. Greg Osgood and Dr. Babar Shafiq
Availability/Duration: All year; 2 students per half quarter
Prerequisite(s): Core Clerkship in Surgery
Drop Period: 2 months

Description: This is a clinical course in adult trauma orthopaedics. The participant is exposed to different aspects of this discipline by attending the adult trauma clinic and by participating in operative procedures in emergent situations and on an elective basis. There is an extensive experience in management of long bone fractures, pelvic fractures and periarticular fractures. Students are given responsibility according to their experience. There are three teaching conferences each day reviewing the previous trauma cases which came in the night before.

ADVANCED CLINICAL CLERKSHIP IN ORTHOPAEDIC ONCOLOGY

Course Type: Clinical Clerkship
Department/Division: Orthopaedic Oncology – JHH
Course Director: Dr. Carol Morris
Telephone Number: Beth Hall, 443-287-4544, bkeefe2@jhmi.edu
Faculty: Dr. Carol Morris and Dr. Adam Levin
Availability/Duration: One position at a time; four weeks
Prerequisite(s): Preference is given to second semester third year students and to fourth year students.
Drop Period: 2 months

Description: This elective provides an overview of the evaluation and treatment of patients with benign and malignant bone and soft tissue tumors. In addition, metastatic disease to the skeleton is addressed. The student will participate in clinic and operative settings as well as following the inpatients after surgery.

PEDIATRIC ORTHOPAEDICS

Course Type: Clinical Clerkship
Department/Division: Orthopaedic Surgery
Course Director: Dr. Paul Sponseller
Telephone Number: Marsha Buie 410-955-3137
Faculty: Drs. Sponseller, Michael Ain, John Tis, Ranjit Varghese and Jay Lee
Availability/Duration: One position at a time; 4 weeks
Prerequisite(s): Core Clerkship in Surgery
Drop Period: 1 month

Description: This is a clinical course in pediatric orthopaedics. The participant is exposed to different aspects of this discipline by attending the General Pediatric Orthopaedic, Birth Defect, Cerebral Palsy, Comprehensive Child Care

and Scoliosis Clinics and by participating in operative procedures on children. There is extensive experience in pediatric sports medicine. Students are given responsibility according to their experience. There are three teaching conferences per week. "Team spirit" pervades. General and case specific reading is guided by the attendings and residents.

POGGI PEDIATRIC ORTHOPAEDIC PROGRAM

Course Type: Research Clerkship

Department/Division: Orthopaedic Surgery

Course Director: Dr. Paul Sponseller,

Telephone Number: 443-287-6015

Faculty: Drs. Paul Sponseller, R. Jay Lee, Ranjit Varghese and John Tis

Availability/Duration: 1 year/ One student is selected yearly to complete the Poggie Pediatric Orthopaedic Program. The student must apply to the program, interview and be selected by the interview committee.

Prerequisite(s): 2-3 year medical school completed in good standing, completion of USMLE Step1

Approval by the course directors is required to enroll in this course.

Drop Period: 2 months

Description: A year long medical student clinical and research preceptorship. Responsibilities included designing and completing medical research, data analysis, writing research manuscripts, seeing patients in the outpatient and inpatient clinical setting as well as in the operating room, submitting manuscripts for publication and presenting research at national meetings.

PEDIATRIC ORTHOPAEDIC SURGERY

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Orthopaedic Surgery

Course Director: Dr. Paul Sponseller

Contact: Beth Hall: 443-287-4544, bkeefe2@jhmi.edu

Faculty: Drs. Sponseller, Michael Ain, John Tis, Ranjit Varghese and Jay Lee

Availability/Duration: All year; 3 weeks or 4½ weeks

Prerequisite(s): Core Clerkships in Surgery and Pediatrics

Drop Period: 1 month

Description: To spend time with a surgeon doing pediatric orthopaedic surgery both in a clinic situation and in the operating room. Each rotation can be tailored to each individual. Some ability to do clinical research can also be entertained.

CLINICAL CLERKSHIP IN SHOULDER SURGERY-GREENSPRING STATION/EAST BALTIMORE

Course Type: Clinical Clerkship

Department/Division: Orthopaedic Surgery/ Shoulder Surgery

Course Director: Dr. Edward McFarland

Telephone Number: Beth Hall: 443-287-4544, bkeefe2@jhmi.edu

Faculty: Dr. McFarland

Availability/Duration: August 15 to May 30, 4-8 weeks

Prerequisite(s): Finished 2nd year

Drop Period: 2 months

Description: This rotation is designed for the student who is considering orthopaedic residency program. The rotation involves observation and participation in the clinic and operating room. The student will be expected to see patients, to scrub in on cases and be part of the orthopaedic team. The student will also attend orthopaedic radiology rounds and hospital rounds once a week. There is opportunity to be involved in trauma call, but is not neces-

sary. We see patients from young to old, including athletes and patients with simple or complex shoulder problems. We also evaluate injuries to other joints such as the knee, including sports injuries. If the rotation is six to eight weeks, we recommend contributing to a case report or other publishable research.

ADULT TRAUMA ORTHOPAEDICS

Course Type: Clinical Clerkship
Department/Division: Orthopaedic Surgery
Course Director: Dr. Greg Osgood
Contact: Beth Hall: 443-287-4544, bkeefe2@jhmi.edu
Faculty: Dr. Gregory Osgood and Dr. Babar Shafiq
Availability/Duration: All year; four weeks, 1 to 2 students
Prerequisite(s): Core Clerkships in Surgery
Drop Period: 1 month

Description: This is a clinical course in adult trauma orthopaedics. The participant is exposed to different aspects of this discipline by attending the adult trauma clinic and by participating in operative procedures in emergent situations and on an elective basis. There is an extensive experience in management of long bone fractures, pelvic fractures and periarticular fractures. Student are given responsibility according to their experience. There are three teaching conferences each day reviewing the previous trauma cases which came in the night before.

WOMEN'S SPORTS MEDICINE

Course Type: Clinical Clerkship
Department/Division: Orthopaedic Surgery, Sports Medicine
Course Director: Dr. Miho J. Tanaka
Contact: Beth Hall: 443-287-4544, bkeefe2@jhmi.edu
Faculty: Dr. Miho J. Tanaka, Dr. Raj Deu, Mandi Davis, PT
Availability/Duration: 1 month duration, offered in June and July
Prerequisite(s): Core Clerkships in Surgery
Drop Period: 1 month, prior to the elective

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This course is offered for the student who is interested in a career in orthopaedic surgery or primary care sports medicine and has specific interest in the new field of Women's Sports Medicine. This program is a multidisciplinary rotation that encompasses the preoperative evaluation, surgical treatment and postoperative care of female athletes, including physical therapy and athletic training room experience. Assistance in the publication of a review paper on the student's chosen topic in the field will be part of the elective rotation. General orthopaedic didactic learning will be incorporated with grand rounds and resident education on Thursdays.

RESEARCH IN OTOLARYNGOLOGY: HEAD & NECK SURGERY

Course Type: Research
Department/Division: Otolaryngology Head & Neck Surgery
Course Director: Drs. Jean Kim and Paul Fuchs
Contact: pfuchs1@jhmi.edu
Faculty: Dr. Paul Fuchs and Otolaryngology staff
Availability/Duration: Year round
Prerequisite(s): Clinical elective in Otolaryngology
Drop Period: 1 month

Description: An advanced research elective in Otolaryngology -Head and Neck Surgery is available to students interested in hearing, balance, olfaction, head and neck cancer, and laryngeal function. Research opportunities exist in pathogenesis of sinus disease, epidemiology, physiology and development of the inner ear, instrumentation and

assessment of cochlear and vestibular implants, laryngeal pathology and reconstruction, oncology and reconstructive surgery of the head and neck.

CLINICAL CLERKSHIP IN GENERAL OTOLARYNGOLOGY- HEAD & NECK SURGERY

Course Type: Clinical Clerkship

Department/Division: Otolaryngology: Head & Neck Surgery

Course Director: Dr. Bryan Ward

Contact: Patti Thornton: pthornta@jhmi.edu

Faculty: Otolaryngology faculty

Availability/Duration: JHSOM medical students: All year; ½ quarter except summer and Qtr.1 when the elective may be 2 weeks in length. Visiting Medical students are not eligible to take this elective in summer or Qtr.1 and must conform to the JHUSOM academic calendar in Qtrs. 2,3, and 4.

Prerequisite(s): Transition to the Wards (TTW)

Drop Period: 1 month

THIS COURSE IS DIRECTED TO 2ND AND 3RD YEAR STUDENTS WHO ARE INTERESTED IN PURSUING A POTENTIAL CAREER IN OTOLARYNGOLOGY-HEAD AND NECK SURGERY. STUDENTS MAY HAVE OR MAY NOT HAVE COMPLETED THE GENERAL SURGERY ROTATION. WE PREFER 4TH YEAR STUDENTS REGISTER FOR THE SUB-INTERN ROTATION.

Description: This course introduces students to the field of otolaryngology-head and neck surgery. The student will learn the skills necessary to take an otolaryngologic history and perform a comprehensive head and neck examination. It provides a broad exposure to otolaryngologic pathology and will familiarize the student with outpatient and in-hospital otolaryngologic care.

Time is divided between the Head & Neck Service, Otology/Neurotology Service, The Facial Plastics Rhinology Service and Pediatric Otolaryngology Service. Students will participate in rounds with the resident team, inpatient care, in the operating room, and the outpatient clinic. Patients are discussed with the attending in order to arrive at an appropriate diagnosis and treatment plan. The student will assist in patient workups and follow them during the hospital stay.

GENERAL OTOLARYNGOLOGY HEAD & NECK SURGERY CLERKSHIP AT GREATER BALTIMORE MEDICAL CENTER

Course Type: Clinical Clerkship

Department/Division: Otolaryngology: Head & Neck Surgery

Course Director: Dr. Mark F. Williams, markwilliamsmd@yahoo.com

Contact: Judy Starling, jstarling@gbmc.org

Faculty: Otolaryngology faculty

Availability/Duration: All year; 3 or 4 weeks.

Prerequisite(s): None

Drop Period: 1 month

Description: This course is designed for both the student who is interested in learning about otolaryngology in general or for those students who are planning on entering the field. GBMC has an extensive history with otolaryngology and close ties with the Johns Hopkins Department of Otolaryngology. Students will work with the Johns Hopkins residents, as well as members of the full-time and part-time faculty. All aspects of otolaryngology are practiced, including head and neck surgery, otology, rhinology/skull base, pediatric, laryngology, and facial plastics. Students will help manage the inpatients with the residents, cover cases, and spend time in the resident clinic. Numerous educational conferences at GBMC and Johns Hopkins will also be attended.

OTOLARYNGOLOGY HEAD & NECK SURGERY CLINICAL ROTATION-NATIONAL CAPITAL REGION

Course Type: Clinical Clerkship

Department/Division: Otolaryngology Head & Neck Surgery

Course Director: Dr. Shaun Desai

Contact: Dr. Shaun Desai sdesai27@jhmi.edu; cell: (845) 787-0781; office: (301) 896-3331

Faculty: Shaun Desai, M.D.(Facial Plastic and Reconstructive Surgery), Wojciech Mydlarz, M.D. and Nikki Schmitt, M.D. (Head and Neck Surgical Oncology), Murugappan Ramanathan, M.D. (Sinus and Skull Base Surgery); Wade Chien, M.D. (Otology and Neurotologic Skull Base Surgery)and Clint Allen, M.D. (Laryngeal and Voice Surgery)

Availability/Duration: Year round; 2 and 4 week rotations available

Prerequisite(s): Third and fourth year medical students

Drop Period: 1 month prior

Description: This rotation is a unique tour of all aspects of Otolaryngology/Head and Neck Surgery including Facial Plastic and Reconstructive Surgery, Head and Neck Cancer, Sinus and Skull Base Surgery, Neurotology/Ear Surgery as well as Laryngeal/Voice Surgery. Students will have the opportunity to have exposure to all sub-specialties of Otolaryngology and have the flexibility to focus on certain aspects depending on level of interest. Benefits include near one on one mentoring opportunities with attending full-time Otolaryngology faculty. Students will have hands-on experience both in the clinic and in the operating room setting. This rotation would take place in the Bethesda/Washington, D.C. site.

ADVANCED CLINICAL ELECTIVE IN GENERAL OTOLARYNGOLOGY- HEAD & NECK SURGERY

APPROVED SUB-I EXPERIENCE

Course Type: Clinical Clerkship

Department/Division: Otolaryngology: Head & Neck Surgery

Course Director: Dr. Bryan Ward

Contact: Patti Thornton: pthornto@jhmi.edu

Faculty: Otolaryngology faculty

Availability/Duration: All year; four weeks. Available at either the Johns Hopkins Hospital or at the Johns Hopkins Bayview Medical Center; visiting students must conform to the JHUSOM academic calendar.

Prerequisite(s): General Surgery rotation

Drop Period: 1 month

Description: Clerkships in general clinical otolaryngology are offered in addition to more specialized clerkships in otology, neuro-otology, clinical audiology and speech pathology, endoscopy, pediatrics, plastic surgery, and the management of head and neck tumors. These clerkships provide experience in the various diagnostic procedures related to the specialty as well as experience in the medical and surgical management of patients. Preference given to senior students who are at the beginning of the year in which they are applying to residency in Otolaryngology-Head & Neck Surgery.

PLASTIC, RECONSTRUCTIVE & MAXILLOFACIAL SURGERY

Course Type: Clinical Clerkship

Department/Division: Plastic, Reconstructive and Maxillofacial Surgery

Course Director: Dr. Justin Sacks

Telephone Number: 410-502-7381

Faculty: Dr. Sacks

Availability/Duration: One week

Prerequisite(s): Core Clerkship in Surgery required

Drop Period: 1 month

Description: Rotations at Hopkins or Bayview units provide in-depth experience with surgery and clinical care of the plastic surgery patient.

SUBINTERNSHIP IN PLASTIC SURGERY

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Plastic, Reconstructive and Maxillofacial Surgery

Course Director: Dr. Justin Sacks

Telephone Number: 410-502-7381

Faculty: Dr. Sacks

Availability/Duration: 4 weeks

Prerequisite(s): Core Clerkship in Surgery

Drop Period: 2 months

Description: This elective provides broad experience in all aspects of plastic surgery, stressing basic techniques and wound care. The student participates in the formal educational activities of the Department of Plastic Surgery.

The elective will provide 2-3 weeks of training at JHH and 1- 2 weeks at Johns Hopkins Bayview.

CLINICAL CLERKSHIP IN THE SURGERY INTENSIVE CARE UNIT

SITE FOR ADVANCED CLERKSHIP IN CRITICAL CARE/ICU

Cross-listed under Anesthesiology

SUBINTERNSHIP IN UROLOGY

APPROVED SUB-I EXPERIENCE

Course Type: Subinternship

Department/Division: Urology

Course Director: Dr. Trinity Bivalacqua

Telephone Number: Laura Ihle, 410-955-4494

Faculty: Dr. Alan Partin and staff

Availability/Duration: All year; ½ quarter; visiting medical students must contact Visiting Medical Student Office for application and follow JHUSOM quarter dates.

Prerequisite(s): Core Clerkship in Surgery

Drop Period: 2 months

Description: This course provides an intense experience in Clinical Urology and Genitourinary Surgery. Working with the team, the student participates in the diagnosis, medical or surgical management and post-operative care. The large number of geriatric and pediatric patients seen on the service will provide exposure to medical problems, including renal physiology, electrolyte balance, urinary infections, urologic oncology, men's health, BPH, lower urinary tract symptoms, infertility, erectile dysfunction, urinary incontinence and urethral stricture disease.

RESEARCH OPPORTUNITIES

DR. FIZAN ABDULLAH

Pulmonary tissue engineering and pediatric surgical outcomes research

DR. NITA AHUJA

Colon and breast cancer carcinogenesis; biomarkers; epigenetics; surgical outcomes; disparity research cancer

DR. RICHARD BATTAFARANO

Clinical studies in lung and esophageal cancer; robotics in thoracic surgery; studies in geriatric thoracic surgery; case reports

DR. WILLIAM BAUMGARTNER

Heart/Lung transplantation and cardiac physiology

DR. MALCOLM BROCK

Translational research in biomarkers for early detection; recurrence and prognosis of thoracic malignancies

DR. ALAN DACKIW

Clinical outcomes in endocrine surgery; endocrine tumor (thyroid, adrenal) carcinogenesis

DR. SUSAN GEARHART

Anorectal cancer outcomes; surgery for IBD +/- dysplasia

DR. JOHN HARMON

Wound healing; esophageal cancer

DR. ELLIOTT HAUT

Clinical predictors of outcomes after trauma; pay for performance as it relates to DVT screening

DR. LISA JACOBS

Breast cancer clinical trials in surgical outcomes and quality of life

DR. HENRY LAU

Genetic engineering approaches to pancreatic islet cell transplantation

DR. PAMELA LIPSETT

Clinical trials in surgical intensive care; surgical infection; education and outcomes

DR. THOMAS MAGNUSEN

Clinical outcomes in bariatric surgery

DR. MARTIN MAKARY

Public health aspects of surgery

DR. MAHMOUD MALAS

Endovascular and minimally invasive vascular outcome analysis and devices development

DR. MICHAEL MAROHN

Surgical robotics; smart instruments; transluminal surgery; telesurgery; laparoscopic foregut; bariatric, colorectal, and solid organ surgery

DR. BRUCE PERLER

Outcomes analysis in vascular disease

DR. MICHAEL SCHWEITZER

Clinical studies in obesity; metabolism and clinical outcomes

DR. DORRY SEGEV

Outcomes research and large-scale data analysis in transplantation

DR. KIMBERLY STEELE

Clinical studies in obesity; metabolism and clinical outcomes

DR. CHRISTOPHER WOLFGANG

Biology of pancreatic cancer

NEUROLOGICAL SURGERY

DR. STAN ANDERSON

Computational modeling and microelectrode recordings for studying seizure dynamics and new techniques in neuromodulation

DR. ALAN BELZBERG

Mechanisms of neuropathic pain; peripheral nerve outcome studies; animal model of neuroma

DR. CHETAN BETTEGOWDA

Microbiology of brain tumors

DR. HENRY BREM

Brain tumor angiogenesis and drug delivery systems: novel therapies for brain tumors and immunological approaches to brain tumors; microchip delivery systems to the brain

DR. ALI BYDON

Spinal biomechanics

DR. JAMES CAMPBELL

Neurophysiological and psycho-physical mechanisms of pain sensation in man and nonhuman primates; studies of neuropathic pain; history of pain-neurosurgery

DR. MICHAEL CATERINA

Molecular and physiological mechanisms of pain in health and disease

DR. GARY GALLIA

Molecular biology of brain tumors

DR. JUDY HUANG

Cerebrovascular diseases; intracerebral hemorrhage

DR. ERIC JACKSON

Pediatric neurosurgery; treatment of infant brain tumors

DR. GEORGE JALLO

Pediatric Neurosurgery and spinal cord tumors

DR. FRED LENZ

Neurophysiology of movement disorders and pain

DR. MICHAEL LIM

Immunobiology of brain tumors

DR. CHANG-CHIA (JEFF) LIU

Brain mechanisms of pain perception and regulation in humans

DR. GREGORY RIGGINS

Brain cancer genomics; molecular biology and drug development

DR. MATTHIAS RINGKAMP

Pain research

DR. DODY ROBINSON

Perinatal brain injury

DR. DANIEL SCIUBBA

Spine tumor animal models; spine tumor outcomes; spinal deformity outcomes

DR. RAFAEL TAMARGO

Post-hemorrhagic vasospasm; immune responses in the brain, stroke; history of neurosurgery

DR. NICHOLAS THEODORE

Spinal cord pathophysiology; genetics of spinal disorders; personalized medicine in spinal surgery; robotics and advanced technologies in spinal surgery.

MS. BETTY TYLER

Brain tumor laboratory research

DR. JON WEINGART
Brain tumor research: clinical and laboratory

DR. TIMOTHY WITHAM
Spinal disorders; outcomes research

OTOLARYNGOLOGY - HEAD & NECK SURGERY

DR. YURI AGRAWAL
Vestibular function and aging; implications for gait and falls; vestibular compensation; vestibular rehabilitation

DR. LEE AKST
Voice and swallowing disorders; dysphonia evaluation in various populations

DR. SIMON BEST
Immunobiology of Recurrent Respiratory Papillomatosis (RRP); Development of novel therapeutic treatments for RRP

DR. NASIR BHATTI
Difficult airways; complementary and alternative medicine

DR. KOFI BOAHENE
Outcomes in facial paralysis restoration; Tissue engineering and wound healing; Minimally invasive approaches to brain and skull base lesions; Outcomes in ethnic facial cosmetic surgery; Facial paralysis; Cleft lip repair; Tissue engineering; Wound healing; Keloids

DR. EMILY BOSS
Patient and family experience of care, provider-family communication, healthcare disparities, and surgical healthcare quality and utilization

DR. MARIANA BRAIT
Cancer Biomarkers; Early Detection of Cancer; Circulating DNA; Head and Neck Cancer; Translational Cancer Research; Epigenetics; Genetics; Salivary Gland Tumors

DR. PATRICK BYRNE
Facial nerve rehabilitation; telemedicine and international cleft palate care; outcomes in reconstructive surgery

DR. WADE CHIEN
Atraumatic methodologies for cochlear implant insertion; Hearing protection/regeneration; Middle ear mechanics; Temporal bone histopathology; Musical perception in cochlear implant users

DR. CHENKAI DAI
Optimize electrical stimulation in vestibular prosthesis; adaptation and interaction of vestibular nerve system to electrical stimulation; develop new rehabilitation paradigm to improve vestibular compensation for patients with vestibular disorder; set up ECAP/VOR measurements for electrode implantation

DR. DAVID EISELE
Surgery for malignant and benign tumors of the head and neck

DR. CAROLE FAKHRY
HPV-associated head and neck squamous cell cancer

DR. GENE FRIDMAN
Applied research toward developing novel methods and devices for neural interfacing and toward developing electronic prostheses for the treatment of central and peripheral neural disorders

DR. DARIA GAYKALOVA

The whole-genome analysis of chromatin structure re-organization in primary head and neck cancer tissues with and without HPV infection and viral genome integration. The role of chromatin in the regulation of gene expression. Adaptation of epigenetic therapy for treatment of HPV+ head and neck cancer.

DR. CHRISTINE GOURIN

Quality of life; Quality of care, safety, and decision making in head and neck cancer; Functional outcomes; Survival following treatment for head and neck cancer.

DR. ALEXANDER HILLEL

Laryngeal tissue engineering; management of the difficult airway; pathogenesis of laryngotracheal fibrosis

DR. EUGENE HUANG

Adhesion Dentistry; Biological considerations of the periodontium in regards to implant and restorative dentistry; Sjogren's Syndrome (currently involved with Sjogren's International Collaborative Clinical Alliance)

DR. LISA ISHII

Evaluation of aesthetic outcomes in facial plastic and reconstructive surgery

DR. MASARU ISHII

Objective assessment of surgical data sciences

DR. MATTHEW KASHIMA

Sleep apnea outcomes research; resident education

DR. JEAN KIM

Clinical, translational, and basic science research in chronic rhinosinusitis and nasal polyposis; immune dysfunction and upper airway epithelial cell biology; clinical, translational, and basic science research in autoimmune sinusitis and salivary gland disease.

DR. WAYNE KOCH

Translational research using molecular biology to study the head and neck neoplasms; markers for early detection, prognostication

DR. ANDREW LANE

Chronic rhinosinusitis with and without nasal polyposis, olfactory loss and transnasal endoscopic surgery. Basic science research lab utilizes molecular biologic and immunologic techniques to study human tissue and mouse models, with a focus on epithelial cell innate immunity, host-microbial interaction, and sinusitis-associated loss of smell and taste. Clinical research involves trials of novel medications and devices, as well as prospective and retrospective analyses of medical and surgical interventions.

DR. FRANK LIN

How hearing loss impacts the health and functioning of older adults and the role of different treatment modalities (hearing aids, cochlear implantation) in mitigating these effects; Examining the potential casual associations between hearing loss and dementia, cognition, functional decline, social isolation, and health economic costs

DR. SANDRA LIN

Outcomes in pediatric and adult sinusitis; outcomes in the treatment of allergies

DR. RAKSHA MIRCHANDANI

Endodontic and oral infections and their link to systemic diseases

DR. WOJCIECH MYDLARZ

Surgical and non-surgical treatment outcomes in head and neck cancer patients; Molecular biology of head and neck cancer, Clinical applications of novel targeted cancer therapies, Robotic and laser surgery and their clinical applications, Minimally invasive surgical approaches for head and neck cancer

DR. ALEXANDER PAZOKI
Oral and dental medicine

DR. MURUGAPPAN RAMANATHAN
Molecular and immunologic (innate and adaptive) mechanisms underlying the pathogenesis of chronic rhinosinusitis with nasal polyps; Role of allergy and environmental pollutants

DR. NICOLE SCHMITT
Biology of head and neck tumors, mechanisms and toxicity profiles of platinum-based chemotherapy drugs

DR. MICHAEL SCHUBERT
Research is focused on examining the oculomotor mechanisms responsible for both behavioral outcomes and physiologic changes associated with vestibular rehabilitation. Developing novel tools to change vestibular motor behavior.

DR. DAVID SIDRANSKY
Molecular genetics of head and neck cancer; novel diagnostic approaches to detect tumors and better choose targeted therapies for cancer

DR. MARGARET SKINNER
Disorders of the pediatric airway and upper aerodigestive tract; Congenital anomalies of the larynx, trachea and esophagus

DR. MATTHEW STEWART
Auditory Processing in Bone Anchored Hearing Aids; Healthcare quality implementation in microsystems

DR. BARRY TRINK
Molecular biology of head and neck cancer

DR. RAPLH TUFANO
Clinical and translational research of thyroid and parathyroid disease process

DR. DAVID TUNKEL
Pediatric airway problems; ear and airway disease in skeletal dysplasia; development and application of clinical practice guidelines in pediatric otolaryngology

ORTHOPAEDIC SURGERY

DR. MICHAEL AIN
Skeletal dysplasia

DR. RONALD BYANK
General Orthopaedic Surgery

DR. DAVID COHEN
Clinical outcomes in spinal surgery; spinal deformities and disorders in adults

DR. RAJ DEU
Sports Medicine

DR. JAMES FICKE
Foot and ankle

DR. ERIK HASENBOEHLER
Trauma

DR. CASEY HUMBYRD
Foot and Ankle

DR. JACK INGARI
Hand Surgery

DR. KHALED KEBASH
Spine deformities

DR. HARPAL KHANUJA
Total Joints

DR. DAWN LAPORTE
Hand Surgery

DR. JAY LEE
Pediatrics

Dr. ADAM LEVIN
Oncology; primary bone tumors

DR. EDWARD MCFARLAND
Sports medicine; shoulder and elbow conditions

DR. CAROL MORRIS
Oncology, primary bone tumors

DR. BRIAN NEUMAN
Spine

DR. JULIUS ONI
Total Joints

DR. GREG OSGOOD
Trauma

DR. LEE RILEY III
Clinical outcomes in spinal surgery; spinal deformities and disorders in adults

DR. BABAR SHAFIQ
Trauma

DR. PAUL SPONSELLER
Spinal deformities; pediatric trauma; myelodysplasia; skeletal aspects of bladder exstrophy

DR. ROBERT STERLING
Total Joints

DR. MIHO TANAKA
Sports medicine

DR. JOHN TIS
Pediatrics

DR. RANJIT VARGHESE
Pediatrics

PLASTIC SURGERY

DR. GERALD BRANDACHER

Reconstructive transplantation; research strategies to induce immune tolerance and enhance nerve regeneration after hand and face transplantation

UROLOGY

DR. MOHAMAD ALLAF

Minimally invasive surgery; robotics; kidney cancer; prostate cancer

DR. TRINITY BIVALACQUA

Gene and stem cell based therapy for post-prostatectomy erectile dysfunction; tissue engineering and regenerative medicine, sexual dysfunction, bladder cancer, prostate cancer, cancer immunology, nanoparticle delivery of chemotherapeutic agents to the bladder

DR. ARTHUR L. BURNETT, II

Pelvic neurophysiology; pelvic anatomy; erectile dysfunction; voiding dysfunction; pelvic reconstructive surgery

DR. HEATHER DICARLO

Bladder exstrophy-epispadias-cloacal exstrophy complex (basic science of detrusor smooth muscle physiology, intra-operative imaging guided surgery of pelvic floor); renal transplantation; GU reconstructive surgery

DR. JENNIFER DODSON

Epidemiology and patient reported outcomes in pediatric urology; health related quality of life; incontinence

DR. JOHN P. GEARHART

Endocrine manifestations of ambiguous genitalia; bladder muscle nerve and collagen function in bladder exstrophy; long-term outcomes in ambiguous genitalia

DR. MICHAEL A. GORIN

Image-guided approaches to urology including the use of novel Pet and SPECT radiotracers to stage and characterize urologic malignancies. Research is performed in collaboration with Dr. Mohamad Allaf (urology) and Dr. Steven Rowe (radiology/nuclear medicine). Both translational and clinical research opportunities are available. No prior research experience is required. Be ready to write.

DR. MISOP HAN

Oncology; outcomes research in prostate cancer; robotics in prostate cancer diagnosis and treatment

DR. PAULA HURLEY

The molecular biology of lethal prostate cancer

DR. JOHN ISAACS

Development of new therapies for prostatic cancer and molecular mechanisms for control of metastasis

DR. WILLIAM ISAACS

Molecular genetics of prostate cancer and benign prostatic hyperplasia; understanding molecular genetics of BRCA2 and ATM inherited prostate cancer.

DR. JUN LUO

High-throughput oriented approaches to study molecular carcinogenesis of human prostate cancer and translational research on novel prostate markers identified using these approaches

DR. SHAWN LUPOLD

Prostate cancer; microRNA biology; experimental therapeutics; high throughput library screens

DR. BRIAN MATLAGA

Kidney stone disease and surgical treatment

DR. DAVID MCCONKEY

Genomic analysis of bladder cancers, bladder cancer experimental therapeutics; molecular mechanisms controlling bladder cancer invasion, migration and metastasis.

DR. JACEK MOSTWIN

Continence; bladder function; pelvic anatomy; medical ethics

DR. ALAN PARTIN

Prostate cancer; prostate cancer biomarker research

DR. CHRISTIAN PAVLOVICH

Minimally invasive urologic oncologic surgery; urinary biomarkers for prostate cancer and prostatic diseases

DR. KENNETH PIENTA

Cancer ecology; understanding prostate cancer metastasis; targeting tumor associated macrophages

DR. PHILLIP PIERORAZIO

Urologic oncology including renal, urothelial, prostate and testicular tumors; specifically, runs the active surveillance program for kidney cancer and director of testicular cancer

DR. ANIRUDHA SINGH

Regenerative urology; translational tissue engineering; stem cells; biomaterials; biofabrication; polymer chemistry

DR. DAN STOIANOVICI

Urology robotics; image-guided interventions; new technologies

DR. BRUCE TROCK

Epidemiology and prevention of prostate cancer; biomarkers for aggressive prostate cancer; risk prediction for active surveillance of prostate cancer; prostate cancer outcomes and clinical trials; biostatistical approaches to prostate cancer

DR. E. JAMES WRIGHT

Male and female voiding dysfunction; neurourology; pelvic reconstructive surgery

OTHER

ELECTIVE IN INTERPROFESSIONAL PRACTICE

Course Type: Clinical Clerkship

Department/Division: JHU Schools of Medicine and Nursing and Notre Dame of Maryland University School of Pharmacy

Course Director: Dr. Jennifer Hayashi

Telephone Number: 410-955-7235; Tracey Adams

Faculty: Drs. Elizabeth Tanner, Brian Roland, Thomas Finucane, and Danelle Cayea

Availability/Duration: 9 months, 12 students per academic year. Enrollment limited to JHUSOM students.

Prerequisite(s): None

Drop Period: 1 month

Description: This is a one-year longitudinal rotation designed to teach students the theory and practice of inter-professional practice competencies as applied to collaborative patient care for older adults. By working in teams of students from the schools of medicine, nursing and pharmacy, students will gain an in-depth understanding of the importance of inter-professional teamwork in providing safe, high-quality patient care.

Time allocation: The successful student will invest an average of four hours per week in the core learning activities described below:

- **Inter-professional Education Seminars (70%):** Each student will attend evening seminars two Wednesdays per month beginning in October. Students will learn about the distinct and complementary roles of physicians, nurses, pharmacists and other health care professionals, and the similarities and differences in their educational programs. Small group discussions led by student teams will cover inter-professional communication and collaboration skills in four simulated patient encounters during these seminar sessions. Each student will complete a final summary of the IPE experience describing four main points learned from the IPE seminar series and reflecting on individual and group professional development attributable to the course.
- **Home Care Practice (30%):** The student will participate in 5-6 visits to older adult clients over the course of the year, working in teams with students from each of the other disciplines as part of an inter-professional student team. Each team will collaborate to write a home visit summary describing the planning, execution and educational outcome of each visit

Assessment: Pass/fail based on seminar attendance, satisfactory participation in team activities and completion of required documentation

AUSTERE MEDICINE

Course Type: Other

Course Directors: Dr. Susan Peterson and Dr. Michael Millin

Faculty: Drs. Susan Peterson and Michael Millin

Availability/Duration: Two weeks; Spring; Open to 2nd, 3rd, and 4th year students, 24 person maximum (plus 4 TA's)

Prerequisite(s): No experience is required; there will be a reasonable course fee associated that will not exceed \$100 that will cover the cost of the lodging, equipment, and site rental for the various locals.

Drop Period: Students may not drop course without permission of Drs. Peterson or Millin after the one month deadline has passed

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: 'Austere Medicine' is the practice of medicine in a resource-constrained environment- In developing countries, in the wilderness and after a disaster.

Medicine practiced in austere environments has become increasing popular and useful but thus far has focused on only individual areas. This course is a multidisciplinary elective that seeks to train medical students for practice in

any low-resource environment- on the wards before the team arrives, on the street, in the woods, in a developing country.

Using a universal emergency management approach (the “ABCs”) students will learn leadership, teamwork, assessment and resuscitation skills useful in international, disaster, and wilderness medicine. A combination of lectures, simulations and complex scenarios are used daily. The classroom teaching by diverse experienced faculty will be reinforced by field time in each of the disciplines through simulation and hands on learning in a multitude of environments.

RESEARCH IN PATIENT SAFETY AND QUALITY

Course Type: Basic Research

Department/Division: Armstrong Institute for Safety and Quality

Course Director: Dr. Hanan Aboumatar

Telephone Number: 410-637-4361

Faculty: Dr. Dr. Hanan Aboumatar and Armstrong Institute faculty and staff.

Availability/Duration: All year; limit one student at a time; 4-8 weeks

Prerequisite(s): N/A

Drop Period: 1 month

Description: This course provides the medical student with a primer on research methodologies and measurement related to patient safety and quality. After an orientation to theory, the student will gain exposure to application by participating in projects at the Armstrong Institute for Safety and Quality. Students will be expected to assist in the preparation of one manuscript.

LATINO HEALTH PATHWAY: CLINICAL EXPERIENCE WITH LATINO HEALTH

Course Type: Other

Course Director: Dr. Rosalyn Stewart

Contact: Dr. Stewart; rstewart@jhmi.edu; 410-955-3613

Faculty: Dr. Kathleen Page

Availability/Duration: Availability based on having completed pre-requisite training. This training is usually done in the month before you begin volunteering in the clinic. 2-3 afternoons over the course of 1 year, plus required training.

Prerequisite(s): Spanish language fluency; Esperanza Center/Cultural Competency Training Workshops.

Drop Period: 1 or 2 months prior to beginning of the elective.

Description of Training, Time Commitment and Minimum Duration of Volunteering:

Following completion of prerequisites, students will join residents and faculty at the Esperanza Center for an afternoon session under the guidance of Hopkins Med-Peds Urban Residents at the Esperanza Center with the following learning objectives in mind:

- To build skill in conducting a Spanish Language history and physical and communicating findings to a team of physicians
- To familiarize oneself with diagnosis and treatment of health issues common to Baltimore Latinos
- To understand the management of a community free clinic
- To appreciate the nuances of delivering culturally sensitive care to a heterogeneous population

Student will obtain a history, do a problem-oriented physical, and present the patient to the preceptor. Therapeutic options will be discussed. The preceptor will then see the patient with the student to verify the diagnosis and treatment.

Student will present 1 patient case at monthly Latino Health Pathway group meetings.

Student will attend special activities such as guest speakers hosted by Center SOL

The training will feature topics relevant to Latino patient care, including community engagement, alternative medicine, translation issues and domestic violence, among others.

Students will be evaluated on participation and fulfillment of listed requirements, professionalism, cultural competence, interpersonal skills and knowledge.

THE HOSPITAL

(also listed under Neurology)

Course Type: Other

Department/Division: Interdepartmental

Course Director: Dr. Rachel Salas

Contact: 410-502-3231

Faculty: Dr. Rachel Salas

Availability/Duration: All year; two weeks. Limited to one student.

Prerequisite(s): None

Drop Period: 1 month

Description: As a physician, and especially an intern, you will depend on a host of providers in order to efficiently care for your patients, from nurses and social workers, to pharmacists and occupational therapists. An understanding of how these staff function in the hospital can help make you a more efficient (and happy) intern. An excellent complement to the Transition to Internship course (TRIPLE), *The Hospital* is a two-week immersion in the world of non-physician patient care. You will spend one day each “walking in the shoes of” various non-physician providers, under the individual guidance of expert preceptors from each field. The disciplines included are nursing, social work; case management; hospital administration; infection control; pharmacy, and rehabilitation (PT, OT, speech pathology), home care, palliative care, respiratory therapy, nutrition, hospital administration, and infection control. A pioneering venture in interdisciplinary learning, *The Hospital* will help you become a better leader and collaborator as an intern, resident, and attending physician. Grading is pass/fail and will be determined by attendance and completion of a short essay.

GLOBAL HEALTH LEADERSHIP PROGRAM (GHLP)

Course Type: Other

Department/Division: Various (international locations)

Course Director: Drs. Grace Chen and Jill Edwardson

Telephone Number: 410-550-2787

Faculty (U.S.): Dr. Panagis Galiatsatos; Dr. Chris Hoffman; Dr. Henry Mosley; and Ms. Maria Truskey

Availability/Duration: Q 1 2, 3 & 4; Summer; Students must commit 4-6 weeks for the International portion of the elective.

Prerequisite(s): Completion of internal medicine clerkship AND either Core Clerkship in Surgery Women’s Health (OB/GYN) or Emergency Medicine.

Drop Period: 2 months

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: The mission of the Johns Hopkins Global Health Leadership Program (GHLP) is to train future global healthcare leaders through an exchange of cultural, clinical and educational knowledge and skills.

The program begins with pre-departure training including didactic global health topic content (mostly on-line with some in-person discussion), research preparation, ethics discussions, leadership training and clinical simulation sessions. Students will then travel abroad for a clinical elective in a supervised International site. Internships with a governmental or non-governmental organization may also be available on a case by case basis. Students will also complete a project while at the International site, working with public health, nursing and other students. This project may focus on quality assurance, development of a clinical and/or educational program or a research project. Upon return to Hopkins, students will participate in a post-departure briefing. Additional information and

applications can be found at: https://www.hopkinsmedicine.org/som/curriculum/genes_to_society/curriculum/year_three/ghlp.html.

PROTECTION OF HEALTH IN CONFLICT

Course Type: Other

Department/Division: Dept. of Epidemiology, Bloomberg School of Public Health, Center for Public Health and Human Rights

Course Director: Leonard Rubenstein

Contact: Kristin Hunt, kshunt@jhu.edu (443-287-4739); Leonard Rubenstein, lrubenstein@jhu.edu (443 287 -8749)

Faculty: Leonard Rubenstein

Availability/Duration: Spring 2015

Drop Period: One month

ENROLLMENT LIMITED TO JHUSOM STUDENTS.

Description: This course involves supervised research and analysis regarding the problem of protection of health in armed conflict. Work includes qualitative research on attacks on health care in Syria, literature review on impacts of attacks on health care, and other related topics.