

PUBLICATIONS (JOURNAL AND BOOK)

Representative Publications

- P. Shi[#], N. Zhao[#], J. Coyne, **Y. Wang***
DNA-templated synthesis of biomimetic cell wall for nanoencapsulation and protection of mammalian cells.
Nature Communications 10: 2223 (2019)
- J. Lai, N. Zhao, L. Abune, **Y. Wang***
Programmed degradation of hydrogels with a double-locked domain.
Angewandte Chemie International Edition. 2019, 58, 2820-2825.
- N. Zhao, J. Coyne, A. Suzuki, M. Xu, X. Zhang, P. Shi, J. Lai, N. Xiong, G.H., Fong, **Y. Wang***
Assembly of Bifunctional Aptamer-Fibrinogen Macromer for VEGF Delivery and Skin Wound Healing.
Chemistry of Materials. 2019, 31(3), 1006-1015.
- **Wang, Y.***
Programmable hydrogels (*invited review*).
Biomaterials. 178 (2018) 663-680.
- Shi, P., Zhao, N., Lai, J., Coyne, J., Gaddes, E.R., **Wang, Y.***
Polyvalent display of biomolecules on the live cells. (*Inside Cover*).
Angewandte Chemie International Edition. 2018, 57 (23), 6800-6804.
- Chen, N., Shi, X., **Wang Y.***
Molecularly regulated reversible DNA polymerization (**Hot Paper**)
Angewandte Chemie International Edition. 2016, 55 (23) 6657-6661
- Li S, Gaddes ER, Chen N, **Wang Y.***
Molecular encryption and reconfiguration for remodeling of dynamic hydrogels.
Angewandte Chemie International Edition. 2015, 54(20), 5957-5961.
- Zhang, Z, Chen, N., Li, S., Battig, M.R., **Wang Y.***
Programmable hydrogels for controlled cell catch and release using hybridized aptamers and complementary sequences.
Journal of the American Chemical Society. 2012, 134, 15716-15719.
- Battig, M.R., Soontornworajit, B., **Wang Y.***
Programmable release of multiple protein drugs from aptamer-functionalized hydrogels via nucleic acid hybridization.
Journal of the American Chemical Society. 2012, 134, 12410-12413.
- McNamara, II J.O.[#], Andrechek, E.R.[#], **Wang, Y.**, Viles, K.D., Rempel, R.E., Gilboa, E., Sullenger, B.A., Giangrande, P.H.
Cell-type specific delivery of siRNA with aptamer-siRNA chimeras.
Nature Biotechnology. 2006; 24(8) 1005-1015. ([#] equally contributed)
- **Wang, Y.**, Liu, S., Li, C.Y., Yuan, F.
A novel method for viral gene delivery into solid tumors.
Cancer Research. 2005; 39(6): 834-838.

07/2016-present (Full Professor)

<u>As corresponding author *</u>		
Journal	Impact factor	Number of papers
Angewandte Chemie International Edition	12.257	2
Nature Communications	11.878	1
Chemistry of Materials	10.159	2

Biomaterials	10.273	1
Chemical Science	9.556	1
ACS Applied Materials & Interfaces	8.456	2
ACS Biomaterials Science & Engineering	4.511	2
Macromolecular Bioscience	2.895	1
<i>As co-author</i>		
Journal	Impact factor	Number of papers
Journal of Biomedical Nanotechnology	5.068	1

Note: 2018 impact factor is shown.

2019

1. P. Shi, N. Zhao, J. Coyne, **Y. Wang***
DNA-templated synthesis of biomimetic cell wall for nanoencapsulation and protection of mammalian cells.
Nature Communications. 10: 2223 (2019)
2. L. Abune, N. Zhao, J. Lai, B. Peterson, S. Szczesny, **Y. Wang***.
Macroporous hydrogels for stable sequestration and sustained release of VEGF and bFGF using nucleic acid aptamers.
ACS Biomaterials Science & Engineering. 2019, 5(5), 2382-2390.
3. N. Zhao, A. Suzuki, X. Zhang, P. Shi, L. Abune, J. Coyne, H. Jia, N. Xiong, G. Zhang, **Y. Wang***.
Dual Aptamer-functionalized *In Situ* Injectable Fibrin Hydrogel for Promotion of Angiogenesis via Co-delivery of VEGF and PDGF-BB
ACS Applied Materials & Interfaces. 2019, 11, 20, 18123-18132
4. N. Zhao, J. Coyne, A. Suzuki, M. Xu, X. Zhang, P. Shi, J. Lai, N. Xiong, G.H., Fong, **Y. Wang***
Assembly of Bifunctional Aptamer-Fibrinogen Macromer for VEGF Delivery and Skin Wound Healing.
Chemistry of Materials. 2019, 31(3), 1006-1015.
5. J. Lai, N. Zhao, L. Abune, **Y. Wang***
Programmed degradation of hydrogels with a double-locked domain.
Angewandte Chemie International Edition. 2019, 58, 2820-2825

2018

6. **Wang, Y.***
Programmable Hydrogels (*Invited review*).
Biomaterials. 2018, 178, 663-680.
7. Shi, P., Zhao, N., Lai, J., Coyne, J., Gaddes, E.R., **Wang, Y.***
Polyvalent display of biomolecules on live cells (*Inside Cover*).
Angewandte Chemie International Edition. 2018, 57 (23), 6800-6804.

2017

8. Coyne, J., Davis, B., Kauffman, D., Zhao, D., **Wang, Y.***
Polymer microneedle mediated local aptamer delivery for blocking the function of VEGF
ACS Biomaterials Science & Engineering. 2017, 3(12), 3395-3403.
9. Lai, J., Li, S., Shi, X., Coyne, J., Zhao, N., Dong, F., Mao, Y., **Wang, Y.***
Displacement and hybridization reactions in aptamer-functionalized hydrogels for biomimetic protein release and signal transduction (*Inside Cover*).
Chemical Science. 2017, 8 (11), 7306-7311.
Highlighted: Science 360 (NSF), Science Daily, Penn State News, etc.

10. Zhao, N., Battig, M.R., Xu, M., Wang, X., Xiong, N., **Wang, Y.***
Development of a dual-functional hydrogel using RGD and anti-VEGF aptamer.
Macromolecular Bioscience. 2017, 17, 1700201
11. Lai, J., Jiang, P., Gaddes, E.R., Zhao, N., Abune, L., **Wang, Y.***
Aptamer-functionalized hydrogel for self-programmed protein release via sequential photoreaction and hybridization.
Chemistry of Materials. 2017, 29(14), 5850-5857.
12. Jiang, P., Li, S., Lai, J., Zheng, H., Lin, C., Shi, P., **Wang, Y.***
Nanoparticle-programmed surface for drug release and cell regulation via reversible hybridization reaction.
ACS Applied Materials & Interfaces. 2017, 9(5), 4467-4474.

2016

13. Aresh, W., Liu, Y., Sine, J., Thayer, D., Puri, A., Huang, Y., **Wang, Y., Nieh, M.***
Morphological dependence of lipid-based nanoparticles in cancer cellular uptake: preferential internalization of nanodiscs over vesicles
Journal of Biomedical Nanotechnology. 2016,12, 1852-1863. **Journal of Biomedical Nanotechnology**. 2016,12, 1852-1863.

09/2011-06/2016 (Tenured Associate Professor)

<i>As corresponding author *</i>		
Journal	Impact factor	Number of papers
Journal of the American Chemical Society	14.357	2
Angewandte Chemie International Edition	12.102	2
Small	9.598	1
Biomaterials	8.806	5
Chemical Communications	6.290	1
Biomacromolecules	5.738	5
Scientific Reports	4.122	1
Number of book chapters		5
<i>As co-author</i>		
Journal	Impact factor	Number of papers
Langmuir	3.789	1
Experimental Cell Research	3.309	1
Cellular and Molecular Bioengineering	2.435	1
Journal of Biotechnology and Biomaterials	n/a	1

Note: 2017 Impact factor is shown

2016

14. Chen, N., Shi, X., **Wang Y.***
Molecularly regulated reversible DNA polymerization (**Hot Paper**)
Angewandte Chemie International Edition. 2016, 55 (23) 6657-6661
15. Zhang, X., Battig, M.R., Chen, N., Gaddes, E.R., Duncan, K.L., **Wang Y.***
Chimeric aptamer-gelatin hydrogels as an extracellular matrix mimic for loading cells and growth factors
Biomacromolecules. 2016, 17(3), 778-787

2015

16. Li S, Chen, N., Gaddes E.R., Zhang, X., Dong, C., Chen N, **Wang Y.***

- A Drosera-bioinspired hydrogel for catching and killing cancer cells
Scientific Reports. 2015, 5, 14297.
17. Li S, Gaddes ER, Chen N, **Wang Y.***
Molecular encryption and reconfiguration for remodeling of dynamic hydrogels
Angewandte Chemie International Edition. 2015, 54(20), 5957-5961.
 18. Gaddes ER, Gydush G, Li S, Chen N, Dong C, **Wang Y.***
Aptamer-based polyvalent ligands for regulated cell attachment on the hydrogel surface.
Biomacromolecules 2015, 16 (4), 1382-1389.
 19. Gaddes ER, Lee D, Gydush G, **Wang Y, Dong C***
Regulation of Fibrin-Mediated Tumor Cell Adhesion to the Endothelium using Anti-Thrombin Aptamer
Experimental Cell Research. 2015, 339(2), 417-426.
 20. Ozdemir T. Richards E, **Wang Y, Dong C***
Perspectives: Interplay between melanoma regulated fibrin and receptor mediated adhesion under shear flow.
Cellular and Molecular Bioengineering. 2015, 8(1), 86-95.
 21. Battig, M., Zhou, J. **Wang, Y.*** Nucleic Acid Aptamers in Drug Delivery. In J. Bronzino & D. Peterson (Eds.), **Handbook of Biomedical Engineering, Fourth Edition** (pp.TBD). Novato: CRC Press. 2015

2014

22. Richards E., Li S, Battig MR, **Wang Y.***
Polymerization of affinity ligands on a surface for enhanced ligand display and cell binding
Biomacromolecules 2014, 15, 4561-4569
23. Chen N, Huang Y, **Wang Y.***
Bioinspired affinity DNA polymers on nanoparticles for drug sequestration and detoxification
Biomaterials. 2014, 35(36), 9709-9718.
24. Battig MR, Huang Y, Chen N, **Wang Y.***
Aptamer-functionalized superporous hydrogels for sequestration and release of growth factors regulated via molecular recognition
Biomaterials. 2014, 35, 8040-8048.
25. Huang, Y., **Wang, Y.*** Aptamer-functionalized nanomaterials for biological and biomedical applications. In B Bhushan, D. Luo, S.R. Schrick, W. Sigmund, S. Zauscher (Eds), **Handbook of Nanomaterials Properties** (pp 1159-1176). Springer. 2014
26. Battig, M.R., **Wang, Y.*** Nucleic acid aptamers for biomaterials development. In S. Kumbhar, C.T. Laurencin, and D. Meng (Eds), **Natural and Synthetic Biomedical Polymers** (pp 287-299). Elsevier. 2014

2013

27. Chen, N., Li, S., Battig, M.R., **Wang Y.***
Programmable imaging amplification via nanoparticle-initiated DNA polymerization
Small. 2013, 9(23): 3944-3949.
28. Zhang, X., Battig, M.R., **Wang Y.***
Programmable hydrogels for the controlled release of therapeutic nucleic acid aptamers via reversible DNA hybridization

- Chemical Communications.** 2013, 49(83), 9600-9602.
29. Zhang, Z., Li, S., Chen, N., Yang, C. **Wang Y.***
Programmable display DNA-protein chimeras for controlling cell-hydrogel interactions via reversible intermolecular hybridization
Biomacromolecules. 2013, 14 (4), 1174-1180.
 30. Li, S., # Chen, N., # Zhang, Z, **Wang Y.***
Endonuclease-responsive aptamer-functionalized hydrogel coating for sequential catch and release of cancer cells.
Biomaterials. 2013, 34, 460-469.
 31. Fu K, Li S., **Wang Y., Willis BG***
DNA gold nanoparticle nanocomposites film for chemiresistive vapor sensing
Langmuir. 2013, 29 (46) 14335-14343.
 32. Zhou, J., **Wang, Y.*** Aptamer-functionalized nanomaterials for cell recognition. In Y. Xie (Ed), **The Nanobiotechnology Handbook** (pp 31-41). Novato: CRC Press. 2013
 33. **Wang, Y.*** In Vitro Assessment of Cell-Biomaterial Interactions. In C. Laurencin & Y. Khan (Eds.), **Regenerative Engineering** (pp. 151-163). Novato: CRC Press. 2013

2012

34. Zhang, Z, Chen, N., # Li, S., # Battig, M.R., # **Wang Y.***
Programmable hydrogels for controlled cell catch and release using hybridized aptamers and complementary sequences
Journal of the American Chemical Society. 2012, 134, 15716-15719.
35. Battig, M.R., # Soontornworajit, B., # **Wang Y.***
Programmable release of multiple protein drugs from aptamer-functionalized hydrogels via nucleic acid hybridization.
Journal of the American Chemical Society. 2012, 134, 12410-12413.
Highlighted: C&EN and the RSC's Chemistry World Magazine.
36. Chen, N. #, Zhang, Z., Soontornworajit, B. #, Zhou, J. #, **Wang, Y.***
Cell adhesion on an artificial extracellular matrix using aptamer-functionalized PEG hydrogels.
Biomaterials. 2012, 33: 1353-1362.
37. Zhang, X. # Soontornworajit, B., # Zhang, Z., Chen, N., # **Wang Y.***
Enhanced loading and controlled release of antibiotics using nucleic acids as an antibiotic-binding effector in hydrogels.
Biomacromolecules. 2012, 13 (7): 2202-2210.
38. Li L., Crosby K., Sawicki M., **Shaw LL,* Wang Y.**
Effects of surface roughness of hydroxyapatite on cell attachment and proliferation.
Journal of Biotechnology and Biomaterials. 2012, 2 (150), 2.

2011

39. Soontornworajit, B. , Zhou, J. , Snipes M., Battig, M. , **Wang, Y.***
Affinity hydrogels for controlled protein release using nucleic acid aptamers and complementary oligonucleotides.
Biomaterials. 2011, 32: 6839-6849.

Before 09/2011 (Tenure-Track Assistant Professor/Postdoc/Graduate Student)

<i>As first or corresponding author</i> *		
Journal	Impact factor	Number of papers
Cancer Research	9.130	1
Biomaterials	8.806	1
Chemical Communications	6.290	1
British Journal of Cancer	5.922	1
Molecular Cancer Therapeutics	5.365	2
Biomacromolecules	5.738	4
Soft Matter	3.709	2
Analytical and Bioanalytical Chemistry	3.431	2
Macromolecular Bioscience	3.238	1
Annals of Biomedical Engineering	3.405	1
IEEE Engineering in Medicine and Biology	3.05	1
Biotechniques	2.098	1
Biochemical and Biophysical Research Communications	2.559	1
Journal of Molecular Recognition	1.868	1
International Journal of Functional Informatics and Personalized Medicine	n/a	1
Chemical Journal on Internet (Chinese)	n/a	2
Progress in Biotechnology (Chinese)	n/a	1
Number of book chapters		1
<i>As co-author</i>		
Journal	Impact factor	Number of papers
Nature Biotechnology	35.724	1
Molecular Vision	2.219	1
Chemical Research in Chinese Universities	1.248	1

Note: 2017 Impact factor is shown

40. Fan, T.H.*, Soontornworajit, B., Karzar-Jeddi, M., **Wang, Y.***
An Aptamer-functionalized hydrogel for controlled protein release: a modeling study. ***Soft Matter***. 2011,7:9326-9334.
41. Cao, W., Zhou, J., Mann, A., **Wang, Y.***, Lei Zhu.*
Folate-functionalized unimolecular micelles based on a biodegradable amphiphilic dendrimer-like star polymer for cancer cell-targeted drug delivery. ***Biomacromolecules***. 2011, 12 (7): 2697-2707.
42. Soontornworajit, B., **Wang, Y.***
Nucleic acid aptamers for clinical diagnosis: cell detection and molecular imaging. ***Analytical and Bioanalytical Chemistry***. 2011, 399:1591-1599. (*Invited review*)
43. Zhou, J., Soontornworajit, B., Snipes, M., **Wang, Y.***
Structural prediction and binding analysis of hybridized Aptamers. ***Journal of Molecular Recognition***. 2011, 24:119-126.
44. Cao, W., Zhou, J., **Wang, Y.***, Lei Zhu.*
Synthesis and in vitro cancer cell targeting of folate-functionalized biodegradable amphiphilic dendrimer-like star polymers. ***Biomacromolecules***. 2010, 11, 3680-3687.
45. Soontornworajit, B., Zhou, J., Zhang, Z., **Wang, Y.***
Aptamer-functionalized *in situ* injectable hydrogel for controlled protein release. ***Biomacromolecules***. 2010, 11, 2724-2730.
46. Zhou, J., Battig, M., **Wang, Y.***
Aptamer-based molecular recognition for biosensor development. ***Analytical and Bioanalytical Chemistry***. 2010. 398:2471-2480. (*Invited review*)

47. Soontornworajit, B. , Zhou, J. , **Wang, Y.***
A hybrid particle-hydrogel composite for oligonucleotide-mediated pulsatile protein release.
Soft Matter. 2010, 6, 4255–4261.
48. Zhou, J. , Soontornworajit, B. , **Wang, Y.***
A temperature-responsive antibody-like nanostructure.
Biomacromolecules. 2010. 11: 2087–2093.
49. Soontornworajit, B. , Zhou, J. , Shaw, M.T., Fan, T.H., **Wang, Y.***
Hydrogel functionalization with DNA aptamers for sustained PDGF-BB release.
Chemical Communications. 2010; 46: 1857–1859.
50. Zhou, J. , Soontornworajit, B. , Martin, J. , Sullenger, B.A., Gilboa, E., **Wang, Y.***
A hybrid DNA aptamer-dendrimer nanomaterial for targeted cell labeling.
Macromolecular Bioscience. 2009; 9: 831-835.
51. Zhou, J. , Soontornworajit, B. , Snipes, M. , **Wang, Y.***
Development of a novel pretargeting system with bifunctional nucleic acid molecules. ***Biochemical and Biophysical Research Communications***. 2009; 386: 521-525]
52. Zhou, J. , Xu, R.H., **Wang, Y.***
Nanoporous membrane-encapsulated feeder cells for culture of human embryonic stem cells.
International Journal of Functional Informatics and Personalized Medicine. 2009; 2(1): 77-88.
53. **Wang, Y.***
Engineering strategies for drug delivery.
IEEE Engineering in Medicine and Biology Magazine. 2009; 28(1): 10-11. (Editorial)
54. Lin, C.W., Wang, Y., Challa, P., Epstein, D.L. Yuan, F.
Transscleral diffusion of ethacrynic acid and sodium fluorescein.
Molecular Vision. 2007; 13: 243-251.
55. McNamara, II J.O., Andrechek, E.R., Wang, Y., Viles, K.D., Rempel, R.E., Gilboa, E., Sullenger, B.A., Giangrande, P.H.
Cell-type specific delivery of siRNA with aptamer-siRNA chimeras.
Nature Biotechnology. 2006; 24(8) 1005-1015. (equally contributed)
56. Wang, Y., Yuan, F.
Delivery of viral vectors to tumor cells: Extracellular transport, systemic distribution, and strategies for improvement.
Annals of Biomedical Engineering. 2006; 34(1): 114-127]
57. Wang, Y., Wang, H., Li, C.Y., Yuan, F.
Effects of rate, volume, and dose of intratumoral infusion on virus dissemination in local gene delivery.
Molecular Cancer Therapeutics. 2006; 5(2):362-366.
58. Wang, Y. , Chen, Q. , Yuan, F.
Alginate encapsulation is a highly reproducible method for tumor cell implantation in dorsal skinfold chamber.
Biotechniques. 2005; 39(6): 834-838. (equally contributed)
59. Wang, Y., Liu, S., Li, C.Y., Yuan, F.
A novel method for viral gene delivery in solid tumors.
Cancer Research. 2005; 65(17):7541-7545]
60. Wang. Y., Yang, Z., Liu, S., Kon, T., Li, C.Y., Yuan, F.

- Characterization of systemic dissemination of non-replicating adenoviral vectors from tumors in gene delivery.
British Journal of Cancer. 2005; 92 (8): 1414-142]
61. Wang, Y., Challa, P., Epstein, D.L., Yuan, F.
Controlled release of ethacrynic acid from poly (lactide-co-glycolide) films for glaucoma treatment.
Biomaterials. 2004; 25(18): 4279-85.
 62. Wang, Y., Hu, J.K., Krol, A., Li, Y.P., Li, C.Y., Yuan, F.
Systemic dissemination of viral vectors during intratumoral injection.
Molecular Cancer Therapeutics. 2003; 2: 1233-1242]
 63. Ma, X.J. *, Xie, Y.B., Wang, Y. Controlled Release and Microcapsule Membranes. In J. Shi, Q. Yuan, & C. Gao (Eds), **Handbook of Membrane Science & Technology** (pp. 807-827). Beijing: Chemical Industry Press. 2001
 64. He, Y., Xie, Y.B., Wang, Y., Liu, Q., Ma, X.J.
Improved Mathematical Model of APA Microcapsules.
Chemical Research in Chinese Universities. 2000; 21(2): 278-28]
 65. Wang, Y., He, Y., Liu, Q., Li, J., Ma, X.J.
Deacetylation of chitosan films.
Chemical Journal on Internet. [2000/02b051ne](#) (Chinese journal)
 66. Wang, Y., Li, M., Ma, X.J.
Influence of reaction time on the preparation of alginate/chitosan microcapsule.
Chemical Journal on Internet. [1999/c99060](#) (Chinese journal)
 67. Wang, Y., Xie, Y.B., Ma, X.J.
Progress in studying alginate/chitosan microcapsules.
Progress in Biotechnology. 1999; 19 (2), 13-20. (Chinese journal)