Lulu Qian

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Academic Positions

Assistant Professor of Bioengineering
California Institute of Technology, Pasadena — July, 2013 – present

Visiting Fellow at the Wyss Institute — Host: *Peng Yin*
Harvard Medical School, Boston — February, 2012 – November, 2012

Senior Postdoctoral Scholar in Bioengineering — Advisor: *Jehoshua Bruck*
California Institute of Technology, Pasadena — January, 2011 – June, 2013

Postdoctoral Scholar in Bioengineering — Advisors: *Erik Winfree and Jehoshua Bruck*
California Institute of Technology, Pasadena — January, 2008 – December, 2010

Education

Ph.D. in Biochemistry and Molecular Biology — Advisor: *Lin He*
Shanghai Jiao Tong University, Shanghai — September, 2004 – November, 2007

B.Eng. in Biomedical Engineering
Southeast University, Nanjing — September, 1998 – June, 2002

Honors

1. National Science Foundation Faculty Early Career Development Award, 2013
2. Okawa Foundation Research Award, 2013
3. Burroughs Wellcome Fund Career Award at the Scientific Interface, 2012

Refereed Publications

1. A. J. Thubagere, C. Thachuk, J. Berleant, R. F. Johnson, D. A. Ardelean, K. M. Cherry, and L. Qian. Compiler-aided systematic construction of large-scale DNA strand displacement circuits using unpurified components. ***Nature Communications***, 10.1038/ncomms14373, 2017.
2. G. Tikhomirov, P. Petersen, and L. Qian. Programmable disorder in random DNA tilings. ***Nature Nanotechnology***, 10.1038/nnano.2016.256, 2016.
   News and Views: "DNA origami tiles: Nanoscale mazes" by Fei Zhang, Fan Hong and Hao Yan, *Nature Nanotechnology*, 10.1038/nnano.2016.263.
3. L. Qian and E. Winfree. Parallel and scalable computation and spatial dynamics with DNA-based chemical reaction networks on a surface. ***DNA Computing and Molecular Programming***, LNCS 8727:114-131, 2014.
4. L. Qian, E. Winfree, and J. Bruck. Neural network computation with DNA strand displacement cascades. ***Nature***, 475:368-372, 2011.
   News and Views: "DNA and the brain" by Anne Condon, *Nature*, 475:304-305.
5. L. Qian and E. Winfree. Scaling up digital circuit computation with DNA strand displacement cascades. ***Science***, 332:1196-1201, 2011.
   Perspective: "Scaling up DNA computation" by John Reif, *Science*, 332:1156-1167.
   News and Views: "DNA computes a square root" by Yaakov Benenson, *Nature Nanotechnology*, 6:465-467.
6. L. Qian and E. Winfree. A simple DNA gate motif for synthesizing large-scale circuits. ***Journal of the Royal Society Interface***, 8:1281-1297, 2011. Conference version appeared in A. Goel, F. C. Simmel and P. Sosik, editors, ***DNA Computing and Molecular Programming***, LNCS, volume 5347, pages 70-89, Springer, 2009.
7. L. Qian, D. Soloveichik, and E. Winfree. Efficient Turing-universal computation with DNA polymers. In Y. Sakakibara and Y. Mi, editors, ***DNA Computing and Molecular Programming***, LNCS, volume 6518, pages 123-140, Springer, 2011.
8. Z. Zhang, Y. Wang, C. Fan, C. Li, Y. Li, L. Qian, Y. Fu, Y. Shi, J. Hu, and L. He. Asymmetric DNA origami for spatially addressable and index-free solution-phase DNA chips. ***Advanced Materials***, 22:2672-2675, 2010.
9. L. Qian*, J. Zhao*, Y. Shi, X. Zhao, G. Feng, F. Xu, S. Zhu, and L. He. Brain-derived neurotrophic factor and risk of schizophrenia: an association study and meta-analysis. ***Biochemical and biophysical research communications***, 353:738-743, 2007.
10. J. Zhao*, L. Qian*, Q. Liu, Z. Zhang, and L. He. DNA addition using linear self-assembly. ***Chinese Science Bulletin***, 52:1462-1467, 2007.
11. L. Qian, Y. Wang, Z. Zhang, J. Zhao, D. Pan, Y. Zhang, Q. Liu, C. Fan, J. Hu, and L. He. Analogic China map constructed by DNA. ***Chinese Science Bulletin***, 51:2973-2976, 2006.
12. J. Xie, Y. Bai, L. Qian, L. Cui, X. Sun, and Z. Lu. A computer simulation system of DNA-binding protein experiment based on dsDNA microarray. ***Acta Biophysica Sinica***, 19:156-160, 2003.

Google Scholar citation

Academic Talks

1. Molecular Programming Project Workshop (Boston, MA, December 2016)
2. Pasadena City College she.codes Conference (Pasadena, CA, November 2016)
3. Alumni College: Caltech Computes (Pasadena, CA, November 2016)
4. Biology & Biological Engineering Annual Retreat, Caltech (Pasadena, CA, September 2016)
5. Information Science and Technology Lunch Bunch, Caltech (Pasadena, CA, April 2016)
6. Ten Years of DNA Origami Workshop (Pasadena, CA, March 2016)
7. Biophysical Society Annual Meeting (Los Angeles, CA, February 2016)
8. Southern California Systems Biology Conference (Irvine, CA, January 2016)
9. Workshop on Communications, Inference, and Computing in Molecular and Biological Systems (Los Angeles, CA, December 2015)
10. Frontiers in Bioinformatics and Systems Biology Seminar Series, UCSD (San Diego, November 2015)
11. Biology & Biological Engineering Annual Retreat, Caltech (Dana Point, CA, September 2015)
12. 21st Conference on DNA Computing and Molecular Programming (Boston, MA, August 2015)
13. Albany 2015: The 19th Conversation (Albany, NY, June 2015)
14. Burroughs Wellcome Fund Scientific Interfaces Symposium (La Jolla, CA, September 2014)
15. Biology & Biological Engineering Annual Retreat, Caltech (Dana Point, CA, September 2014)
16. Verification of Engineered Molecular Devices and Programs Workshop (Vienna, Austria, July 2014)
17. Programming with Chemical Reaction Networks Workshop (Banff, Canada, June 2014)
18. Information Science and Technology Lunch Bunch, Caltech (Pasadena, CA, January 2014)
19. 5th Molecular Programming Project Workshop (Oxnard, CA, December 2013).
20. Biology & Biological Engineering Annual Retreat, Caltech (Lake Arrowhead, CA, September 2013)
21. 19th Conference on DNA Computing and Molecular Programming (Tempe, AZ, September 2013).
22. UC Riverside, Bioengineering (Riverside, CA, April 2013)
23. Frontiers of Information Science and Technology Workshop (Shanghai, China, December 2012)
24. 4th Molecular Programming Project Workshop (Oxnard, CA, August 2012).
25. MIT, Mechanical Engineering (Cambridge, MA, March 2012)
26. UCSF, Cellular and Molecular Pharmacology (San Francisco, CA, February 2012)
27. UT Austin, Chemistry and Biochemistry (Austin, TX, February 2012)
28. University of Oxford, Physics (Oxford, UK, July 2011).
29. 3rd Molecular Programming Project Workshop (Friday Harbor, WA, June 2011).
30. International Conference on the Statistical Mechanics and Computation of DNA Self-Assembly (Mariehamn, Finland, May 2011).
31. 8th Conference on the Foundations of Nanoscience (Snowbird, UT, April 2011).
32. 9th International Conference on Unconventional Computation (Tokyo, Japan, June 2010).
33. 16th Conference on DNA Computing and Molecular Programming (Hong Kong, June 2010).
34. 7th Conference on the Foundations of Nanoscience (Snowbird, UT, April 2010).
35. Institute of Biological Engineering Annual Conference (Cambridge, MA, March 2010).
36. University of Minnesota, Electrical & Computer Engineering (Minneapolis, MN, January 2010).
37. 2nd Molecular Programming Project Workshop (Oxnard, CA, January 2010).

38. University of British Columbia, Computer Science (Vancouver, Canada, December 2009).
39. Boise State University, Materials Science & Engineering (Boise, ID, September 2009).
40. 15th Conference on DNA Computing and Molecular Programming (Fayetteville, AR, June 2009).
41. 6th Conference on the Foundations of Nanoscience (Snowbird, UT, April 2009).
42. National Center for Nanoscience and Technology (Beijing, China, April 2009).
43. 1st Molecular Programming Project Workshop (Oxnard, CA, January 2009).
44. University of Science and Technology of China, Chemistry (Hefei, China, October 2008).
45. Shanghai Jiao Tong University, Bio-X Center (Shanghai, China, October 2008).
46. 17th International Workshop on Logic & Synthesis (Lake Tahoe, CA, January 2008).

Academic Service

1. Program Committee Co-Chair for the 23rd International Conference on DNA Computing and Molecular Programming (DNA 23).
2. Program Committee for the International Conference on DNA Computing and Molecular Programming (DNA), since 2015.
3. Secretary of the International Society of Nanoscale Science, Computation and Engineering (ISNSCE), since 2015.
4. Reviewer and panelist for the National Science Foundation (NSF).
5. Referee for *Nature*, *Nature Nanotechnology*, *Nature Biotechnology*, *Nature Chemistry*, *Nature Communications, Proceedings of the National Academy of Sciences*, *Angewandte Chemie*, *Nucleic Acids Research*, *Journal of the American Chemical Society*, *Chemical Science*, *Neural Computation*, *Theoretical Computer Science*, *Scientific Reports*, and *Journal of Visualized Experiments*.