

Yizhi Patrick CAI

CAREER

- AUG 2017-Current Chair Professor of Synthetic Genomics
Manchester Institute of Biotechnology, University of Manchester, UK
- JUN 2017-Current Visiting Professor
Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, China
- NOV 2016-Current Founding co-Chair
International Synthetic Genome Centre, National Gene Bank and BGI, China
- JUL 2013-Current International Coordinator
International Synthetic Yeast Consortium
- AUG 2011-Current Senior Scientific Consultant
Beijing Genomics Institute, Shenzhen, China
- MAR 2017-Jul, 2017 Reader
School of Biological Sciences, University of Edinburgh, UK
- DEC 2016-Jul, 2017 Full Member
Wellcome Trust Centre for Cell Biology, University of Edinburgh, UK
- FEB 2014-Oct, 2016 Founding co-Director
Edinburgh Genome Foundry, University of Edinburgh, UK
- JUL 2013-Jul, 2017 Chancellor's Fellow and Principal Investigator
School of Biological Sciences, University of Edinburgh, UK
- DEC 2014-Jul, 2017 Innogen Associate Member
Innogen Institute, University of Edinburgh, UK
- MAY 2014-Nov 2016 Associate Member
Wellcome Trust Centre for Cell Biology, University of Edinburgh, UK
- JUN 2010-Jun 2013 Postdoc Research Fellow with Autodesk Distinguished Scholarship
Johns Hopkins University, Baltimore, USA | Advisor: Prof. Jef Boeke

DEGREES AWARDED

- JAN 2007-May 2010 Ph.D in Genetics, Bioinformatics and Computational Biology
Virginia Tech, Virginia, USA | Advisor: Prof. Jean Peccoud
- SEP 2005-Nov 2006 Master of Sciences, majored in Bioinformatics
University of Edinburgh, Edinburgh, UK | Advisor: Prof. Gordon Plotkin
- SEP 2001-Jun 2005 Bachelor of Engineering in Computer Sciences, Talented Student Program
Central South University, Changsha, China | Advisor: Prof. Sanding Luo

CURRENT GRANTS

8. **Oct 2017 - Sep 2020**, BBSRC, “From genetic parts to neochromosome in yeast” (£549,000), Role: PI
7. **Jul 2017 - Jun 2018**, EPSRC, “An engineering platform for rapid prototyping synthetic genetic networks” (£125,000), Role: PI
6. **Apr 2017 - Mar 2019**, IBIOIC, “Accelerating industrial metabolic engineering using Yeast-FAB” (£500,000), Role: PI
5. **Jan 2016 - Jun 2018**, Bill & Melinda Gates Foundation, “A synthetic biology platform for rapid generation of highly diverse natural product-like compounds active against *Mycobacterium tuberculosis*” (\$2M), Role: UK-PI
4. **Apr 2015 - Dec 2018**, EPSRC, “Engineering synthetic chromosomes from array based oligo pools to study chromosome segregation mechanisms” (£66K), Role: PI
3. **Feb 2015 - Feb 2020**, BBSRC, MRC, EPSRC, “Edinburgh Mammalian Synthetic Biology Research Centre” (£14M), Role: co-PI
2. **Jan 2015 - Dec 2017**, EraSynbio, “Inducible Evolution of Synthetic Genomes” (€3.2M), Role: UK PI
1. **Aug 2014 - Feb 2018**, EPSRC, “Business modeling for DNA synthesis” (£66K), Role: PI

COMPLETED GRANTS

10. **Sep 2016 - Mar 2017**, BBSRC, “Activity to support identification and prioritisation of challenges around environmental sustainability in China and other DAC countries in the Southeast Asia region’ (£20,000), Role: PI
9. **Sep 2016 - Mar 2017**, EPSRC, “CRISPR up in the cloud – an exploratory collaboration between Edinburgh Genome Foundry and Desktop Genetics” (£51,846), Role: PI
8. **Jan 2016 - Dec 2016**, EPSRC IAA with Autodesk, “Collaborative software engineering for genome synthesis” (£90,703), Role: PI
7. **Jan 2016 - Dec 2016**, EPSRC IAA with GSK, “Synthetic biology route for the sustainable production of a key antibiotic/industrial related molecule” (£27,347), Role: PI
6. **Sep 2013 - Aug 2016**, Autodesk, “Engineering Neochromosomes” (£44K), Role: PI
5. **Feb 2015 - 2016**, BBSRC, “Phenotypical Assay Development Platforms” (£2.4M), Role: co-PI
4. **Feb 2015 - Feb 2016**, BBSRC, “Building national hardware and software infrastructure for UK DNA Foundries” (£1.99M), Role: PI
3. **Apr 2015 - Apr 2016**, IBioIC, “A synthetic metabolon for D-hydroxy phenylglycine methyl ester production” (£241K), Role: co-PI
2. **Sep 2014 - Sep 2015**, BBSRC, “Edinburgh Genome Foundry” (£2M), Role: co-PI
1. **Apr 2014 - 2015**, Wellcome Trust, “Edinburgh Repository of Genetic Parts” (£57K), Role: PI

EDITORIAL AND REFEREE SERVICE

Journals Nature Chemical Biology; ACS Synthetic Biology (Editorial Board); Bioinformatics; Nucleic Acids Research; PLoS ONE; Journal of Biological Engineering; Synthetic and Systems Biotechnology (Editorial Board); Microbial Biotechnology (Editorial Board)

Grants BBSRC (Committee D); ERC; NSF, NTU;

PUBLICATIONS

48. Luo Z, Wang L, Wang Y, Zhang W, Guo Yakun, Shen Y, Jiang L, Wu Q, Zhang C, Cai Y, Dai J (2017). Identifying and characterizing SCRaMbLEd synthetic yeast using ReSCuES. **Nature Communications**. 2017, doi: 10.1038/s41467-017-00806-y. [In press]. (Corresponding author).
47. Xie ZX., Liu D., Li BZ., Zhao M., Zeng BX., Wu Y., Shen Y., Lin T., Yang P., Dai J., Cai Y., Yang H., Yuan YJ (2017). Design and chemical synthesis of eukaryotic chromosomes. **Chemical Society Reviews**. 2017 Nov 2. doi: 10.1039/c7cs00208d. [Epub ahead of print]. PMID: 29094136.
46. Craig T, Holland R, D'Amore R, Johnson JR, McCue HV, West A, Zulkower V, Tekotte H, Cai Y, Swan D, Davey RP, Hertz-Fowler C, Hall A, Caddick M (2017). Leaf LIMS: A Flexible Laboratory Information Management System with a Synthetic Biology Focus. **ACS Synth Biol**. 2017 Sep 13. doi: 10.1021/acssynbio.7b00212. [Epub ahead of print]. PMID: 28877583.
45. Dai J., Cai Y., Yuan Y, Yang H, Boeke J. (2017), Whole genome synthesis: from poliovirus to synthetic yeast. **Quantitative Biology**. 2017, 5(1): 105–109. doi 10.1007/s40484-017-0101-x.
44. Liu W, Tuck LR, Wright JM, Cai Y (2017). Using purified tyrosine site-specific recombinases in vitro to rapidly construct and diversify metabolic pathways. **Methods Mol Biol**. 2017, 1642:285-302. doi: 10.1007/978-1-4939-7169-5_18. (Corresponding author). PMID: 28815507.
43. Jia B, Qi H, Li BZ, Pan S, Liu D, Liu H, Cai Y, Yuan YJ (2017). Orthogonal ribosome bio-firewall. **ACS Synth Biol**. 2017 Aug 7. doi: 10.1021/acssynbio.7b00148. [Epub ahead of print]. PMID: 28783349
42. Ting Yuan, Yakun Guo, Junkai Dong, Tianyi Li, Tong Zhou, Kaiwen Sun, Mei Zhang, Qingyu Wu, Zhen Xie, Yizhi Cai, Limin Cao, Junbiao Dai. (2017), Construction, characterization and application of a genome-wide promoter library in *Saccharomyces cerevisiae*. **Frontiers of Chemical Science and Engineering**. doi: 10.1007/s11705-017-1621-7.
41. Zahn, et al. (2017), Building on nature's design. **Science**. 2017 Mar 10; 355 (6329): 1038-1039. doi: 10.1126/science.355.6329.1038. PMID: 28280198.
40. Martella, A, Matjusaitis, M, Auxillos, J, Pollard, S, Cai, Y. (2017), EMMA: an Extensible Mammalian Modular Assembly toolkit for the rapid design and production of diverse expression vectors. **ACS Synthetic Biology**. (Corresponding author). PMID: 28418644.
39. Shen et al. (2017), A 770kb fully synthetic yeast chromosome II reveals genomic plasticity and robustness through deep functional profiling. **Science** Mar 10;355(6329). pii: eaaf4791. doi: 10.1126/science.aaf4791. (Corresponding author). PMID: 28280153.
38. Richardson, et al. (2017), Design of a synthetic yeast genome. **Science**. 2017 Mar 10;355(6329):1040-1044. doi: 10.1126/science.aaf4557. PMID: 28280199.
37. Guillaume et al. (2017), 3D organization of synthetic and scrambled chromosomes. **Science**. 2017 Mar 10;355(6329). pii: eaaf4597. doi: 10.1126/science.aaf4597. PMID: 28280150.
36. Xie, et al. (2017), Synthetic chromosome V: Behavior of ring derivatives and approaching a variant-free designer chromosome. **Science**. 2017 Mar 10;355(6329). pii: eaaf4704. doi: 10.1126/science.aaf4704. PMID: 28280151.
35. Mitchell, et al. (2017), Synthesis, debugging and consolidation of synthetic chromosomes in yeast: synVI and beyond. **Science**. 2017 Mar 10;355(6329). pii: eaaf4831. doi: 10.1126/science.aaf4831. PMID: 28280154.
34. Zhang, et al. (2017), Synthetic yeast chromosome XII: morphing species identity. **Science**. 2017 Mar 10;355(6329). pii: eaaf3981. doi: 10.1126/science.aaf3981. PMID: 28280149.

33. Wu, et al. (2017), Bug-mapping and fitness testing of chemically synthesized chromosome X in Yeast. **Science**. 2017 Mar 10;355(6329). pii: eaaf4791. doi: 10.1126/science.aaf4791. PMID: 28280153.
32. Cai Y, Dai J. (2017), Methods to Synthesize Large DNA Fragments for a Synthetic Yeast Genome. **Cold Spring Harb Protoc**. 2017 Mar 1;2017(3):pdb.prot080978. doi: 10.1101/pdb.prot080978 (Corresponding author). PMID: 28250211
31. Agmon, et al. (2017), Low escape-rate genome safeguards with minimal molecular perturbation of *Saccharomyces cerevisiae*. **Proc Natl Acad Sci U S A**. 2017 Feb 21;114(8):E1470-E1479. doi: 10.1073/pnas.1621250114. PMID: 28174266
30. Walker RS, Cai Y (2016). The Fifth Annual Sc2.0 and Synthetic Genomes Conference: Synthetic Genomes in High Gear. **ACS Synthetic Biology** (Corresponding Author). PMID: 27633830
29. Ellis T, Cai Y (2016). Synthetic Biology in Europe Special Issue Editorial. **ACS Synthetic Biology** (Corresponding Author). PMID: 27764945
28. Qin, Y, Tan, C., Lin, J., Qin, Q., He, J., Wu, Q., Cai, Y., et al. (2016) EcoExpress-Highly Efficient Construction and Expression of Multicomponent Protein Complexes in *Escherichia coli*. **ACS Synthetic Biology**. PMID: 27345099.
27. Martella A, Pollard SM, Dai J, Cai Y (2016). Mammalian Synthetic Biology: Time for Big MACs. **ACS Synthetic Biology**. 21;5(10):1040-1049. PMID: 27076218
26. Boeke, J., Church, G., Hessel, A., Kelley NJ., Arkin, A., Cai, Y., et al. (2016) GENOME ENGINEERING. The Genome Project-Write. **Science**. PMID: 27256881.
25. Quinn J.Y., Cox, R.S., Adler, A., Beal, J., Bhatia, S., Cai, Y., Chen, J., Clancy, K., Galdzicki, M., Hillson, N.J., et al. (2015) SBOL Visual: A Graphical Language for Genetic Designs. **PLoS Biology**, 13, e1002310.
24. Shen, Y., Stracquadanio, G., Wang, Y., Yang, K., Mitchell, L.A., Xue, Y., Cai, Y., Chen, T., Dymond, J.S., Kang, K., et al. (2015) SCRaMble generates designed combinatorial stochastic diversity in synthetic chromosomes. **Genome Research**, 10.1101/gr.193433.115
23. Kanigowska P, Shen Y, Zheng Y, Rosser S, Cai Y (2015) Smart DNA Fabrication Using Sound Waves: Applying Acoustic Dispensing Technologies to Synthetic Biology. **Journal of the Association for Laboratory Automation**. (Corresponding Author)
22. Guo Y, Dong J, Zhou T, Auxillos J, Li T, et al. (2015) YeastFab: the design and construction of standard biological parts for metabolic engineering in *Saccharomyces cerevisiae*. **Nucleic Acids Res**. (Corresponding Author)
21. Mitchell LA, Chuang J, Agmon N, Khunsriraksakul C, Phillips NA, et al. (2015) Versatile genetic assembly system (VEGAS) to assemble pathways for expression in *S. cerevisiae*. **Nucleic Acids Res**.
20. Agmon N, Mitchell LA, Cai Y, Ikushima S, Chuang J, et al. (2015) Yeast Golden Gate (yGG) for efficient assembly of *S. cerevisiae* transcription units. **ACS Synth Biol**
19. Cai Y, Agmon N, Choi WJ, Ubide A, Stracquadanio G, et al. (2015) Intrinsic biocontainment: Multiplex genome safeguards combine transcriptional and recombinational control of essential yeast genes. **Proceedings of the National Academy of Sciences (PNAS)**. (Corresponding Author)
18. Trubitsyna M, Michlewski G, Cai Y, Elfick A, French CE (2014) PaperClip: rapid multi-part DNA assembly from existing libraries. **Nucleic acids research**.
17. Scher E, Luo Y, Berliner A, Olguin C, Cai Y (2014) GenomeCarver: harvesting genetic parts from genomes to support biological design automation. **6th International Workshop on Bio-Design Automation**. (Corresponding Author)

16. Liao C, Cai Y (2014) Towards Modeling Automation for Synthetic Biology. **A Systems Theoretic Approach to Systems and Synthetic Biology II: Analysis and Design of Cellular Systems**: Springer Netherlands. pp. 201-217. (Corresponding Author)
15. Cai Y, Ellis T (2014) The Sixth International Meeting on Synthetic Biology (SB6. 0) Special Issue Editorial. **ACS Synthetic Biology** 3: 107-107. (Corresponding Author)
14. Annaluru N, Muller H, Mitchell LA, Ramalingam S, Stracquadanio G, et al. (2014) Total synthesis of a functional designer eukaryotic chromosome. **Science** 344: 55-58.
13. Mitchell LA, Cai Y, Taylor M, Noronha AM, Chuang J, et al. (2013) Multichange Isothermal Mutagenesis: a new strategy for multiple site-directed mutations in plasmid DNA. **ACS synthetic biology** 2: 473-477. (co-First author)
12. Wilson ML, Cai Y, Hanlon R, Taylor S, Chevreux B, et al. (2012) Sequence verification of synthetic DNA by assembly of sequencing reads. **Nucleic acids research**. (co-First author)
11. Boeke J, Mitchell L, Cai Y, Stracquadanio G, Chuang J, et al. (2012) Yeast Golden Gate: Standardized Assembly of *S. cerevisiae* Transcriptional Units.
10. Cai Y, Boeke JD (2011) Genome remodeling. **Nature Biotechnology** 29: 807-808.
9. Beal J, Phillips A, Densmore D, Cai Y (2011) High-level programming languages for biomolecular systems. **Design and analysis of biomolecular circuits**: Springer New York. pp. 225-252.
8. Cai Y, Wilson ML, Peccoud J (2010) GenoCAD for iGEM: a grammatical approach to the design of standard-compliant constructs. **Nucleic acids research** 38: 2637-2644.
7. Czar MJ, Cai Y, Peccoud J (2009) Writing DNA with GenoCADTM. **Nucleic acids research** 37: W40-W47.
6. Cai Y, Lux MW, Adam L, Peccoud J (2009) Modeling structure-function relationships in synthetic DNA sequences using attribute grammars. **PLoS computational biology** 5: e1000529.
5. Peccoud J, Blauvelt MF, Cai Y, Cooper KL, Crasta O, et al. (2008) Targeted development of registries of biological parts. **PLoS One** 3: e2671.
4. French C, Nicholson J, Bizzari F, Aleksic J, Cai Y, et al. (2007) Arsenic biosensor: a step further. **BMC Systems Biology** 1: S11.
3. Cai Y, Hartnett B, Gustafsson C, Peccoud J (2007) A syntactic model to design and verify synthetic genetic constructs derived from standard biological parts. **Bioinformatics** 23: 2760-2767.
2. Cai Y, Davidson B, Ma H, French C (2007) Modeling the arsenic biosensor system. **BMC Systems Biology** 1: P83.
1. Aleksic J, Bizzari F, Cai Y, Davidson B, De Mora K, et al. (2007) Development of a novel biosensor for the detection of arsenic in drinking water. **IET Synthetic Biology** 1: 87-90.

RESEARCH PH.D STUDENT SUPERVISION

8. **Nahuel Manzanaro Moreno**, Sep 2016 - Current, Ph.D student in Biological Sciences, University of Edinburgh, second supervisor.
7. **Jamie Auxillos**, Jan 2016 - Current, Ph.D student in Biological Sciences, University of Edinburgh, principal supervisor.
6. **Emily Scher**, Sep 2015 - Jul 2017, Ph.D student in Biological Sciences, University of Edinburgh, principal supervisor.

5. **Katarina Jonsson**, Sep 2015 - Current, Ph.D student in Biological Sciences, University of Edinburgh, second supervisor.
4. **Paulina Kanigowska**, Aug 2014 - Current, Ph.D student in Biological Sciences, University of Edinburgh, principal supervisor.
3. **Chantal Yue Shen**, May 2014 - Current, Ph.D student in Biological Sciences, University of Edinburgh, principal supervisor.
2. **Roy Walker**, Jul 2013 - Oct 2017 (viva passed), Ph.D student in Engineering, University of Edinburgh, principal supervisor.
1. **Wei Liu**, Sep 2013 - Nov 2017 (viva passed), Ph.D student in Biological Sciences, University of Edinburgh, principal supervisor. Now at LMB Cambridge for a postdoc with Prof. Philipp Holliger.

RESEARCH STAFF SUPERVISION

15. **Sally Jones**, Sep 2017 - Current, Technician.
14. **Dr. Daniel Schindler**, Mar 2017 - Current, Postdoc.
13. **Dr. Eva Garcia Ruiz**, Aug 2016 - Current, Postdoc.
12. **Aileen Greig**, Jun 2015 - Oct 2017, Technician.
11. **Dr. Dariusz Abramczk**, May 2015 - Current, Postdoc
10. **Dr. Andrea Martella**, Jan 2015 - Sep 2017, Postdoc
9. **Aitor Bleda**, May 2016 - Nov 2016, Software Engineer.
8. **Dr. Ivan Yuan**, Nov 2015 - Nov 2016, Automation Engineer.
7. **Anais Moisy**, Nov 2015 - Nov 2016, Designer, Design Informatics.
6. **Dr. Valentin Zulkower**, Jun 2015- Nov 2016, Software Developer.
5. **Fraser Morton**, Apr 2015 - Aug 2015, Genome Foundry Software Manager.
4. **Dr. Hille Tekotte**, Jan 2015 - Nov 2016, Genome Foundry Manager.
3. **Isaac Yisha Luo**, Mar 2014 - Nov 2016, Software Developer.
2. **Sarah Yijing Zheng**, Oct 2014 - Nov 2016, Automation Engineer.
1. **Alba Ubide**, Oct 2013 - Sep, 2016, Lab manager.

OTHER SUPERVISION

12. **Tao Lin**, Oct - Current, Visiting Scientist, BGI
11. **Franklin Lo**, Apr - Jul 2017, Undergraduate Research Student, University of Edinburgh
10. **Yifan Wu**, Oct 2016- Current, Undergraduate Honours Student, University of Edinburgh
9. **Fabian Schneider**, Mar - Sep, 2016, Visiting PhD student, University of Munich
8. **Jamie Auxillos**, Sep 2014 - Dec, 2015, Master student in Synthetic Biology, University of Edinburgh
7. **Tianyi Li**, Jul 2015 - Aug 2015, Visiting graduate student, Tsinghua University
6. **Lois Ogunlana**, Jun 2015 - Aug 2015, Undergraduate student in Biotechnology, University of Edinburgh
5. **Claire Chung**, Jun 2014 - Aug 2014, Visiting undergraduate from Chinese University of Hong Kong
4. **Emily Scher**, Sep 2013 - Aug 2014, Visiting undergraduate from Johns Hopkins University

3. **Hugo Vilanueva**, Sep 2013 - Sep 2014, Honors undergraduate student in Biological Sciences, University of Edinburgh
2. **Jackie Yun Wang**, Apr 2013 - Jun 2014, Visiting scholar from BGI
1. **Qi Feng**, Apr 2014 - Aug 2014, Visiting master student from Tianjin University

STUDENT COMMITTEES

5. **James Bryson**, Jan 2016 - Jul 2017, PhD student supervised by Prof. Susan Rosser
4. **Andrea Rizzotto**, Aug 2014 - Jul 2017, PhD student supervised by Drs. Eric Schirmer and Manfred Auers
3. **Mantas Matjusaitis**, Jan 2015 - Jul 2017, PhD student supervised by Dr. Steven Pollard
2. **John Devlin**, Aug 2013 - Jul 2017, PhD student supervised by Prof. Paul Barlow
1. **Didi He**, Aug 2013 - Sep 2016, PhD student supervised by Dr. Jon Marles-Wright

PATENTS

- Cai Y, Agmon A, and Boeke J. Compositions and methods for controlling microbial growth. US Patent App. 2015.
- Mitchell L, Cai Y and Boeke J. Versatile genetic assembly system (vegas) and its use in assembling pathways for expression in *S. cerevisiae*. US Patent App. 2015.
- Peccoud J, Cai Y (2008) Software for Design and Verification of Synthetic Genetic Constructs. US Patent App. 12/058,712.

CONSULTANCY

- Beijing Genomics Institute
- Autodesk Inc.
- UCB

INVITED PRESENTATIONS

80. OCT 2017 The 12th International conference for Genomics, ICG 12, Shenzhen, China.
79. OCT 2017 BBSRC NPRONET Community Meeting, Manchester, UK.
78. JUN 2017 The 7th International conference on synthetic biology (SB7.0), Singapore.
77. MAY 2017 Bristol Centre for Synthetic Biology, Bristol, UK.
76. MAY 2017 International workshop on Genome Project Write (GO-Write), New York Genome Centre, New York, USA.
75. MAY 2017 Seminar at VIB Center for Microbiology, University of Leuven, Belgium.
74. MAY 2017 Seminar at LOEWE-Schwerpunkt CompuGene, Technische Universität Darmstadt, Germany.
73. MAY 2017 Keynote at DECHEMA “ Systems Biology meets Synthetic Biology Programme” conference, Frankfurt, Germany.
72. MAR 2017 Sanger Institute workshop on synthetic biology, Hinxton, UK.
71. MAR 2017 BBSRC funded Global Challenge Research Fund workshop with China (PI and host), Edinburgh, UK.
70. MAR 2017 the 7th UK-Korea symposium on synthetic biology, Yongsei University, Seoul, Korea.

69. FEB 2017 Institute of Integrative Biology, University of Liverpool, Liverpool, UK.
68. JAN 2017 European Bioinformatics Institute, Hinxton, UK.
67. DEC 2016 US Navy Research Global Head Quarter Seminar, London, UK.
66. DEC 2016 Manchester Institute of Biotechnology Seminar, Manchester, UK.
65. DEC 2016 IET Synthetic Biology Meeting, London, UK.
64. DEC 2016 Cold Spring Harbor Asia Meeting for Synthetic Biology, Suzhou, China.
63. NOV 2016 UK-China Synthetic Biology for Global Challenges Symposium, Shenzhen, China.
62. NOV 2016 The 11th International Conference on Genomics (ICG11), Shenzhen, China.
61. SEP 2016 Labcyte-Edinburgh Genomics Symposium , Edinburgh, UK.
60. SEP 2016 The Seventh International Workshop on Static Analysis and Systems Biology (SASB 2016) Keynote, Edinburgh, UK.
59. AUG 2016 Royal Society President Dinner for Synthetic Biology Inquiry (6 invitees), London, UK.
58. JUL 2016 Annual UCL Synthetic Biology Showcase Keynote, London, UK.
57. JUL 2016 The 5th International Synthetic Yeast meeting, Edinburgh, UK.
56. JUL 2016 Edinburgh Genome Foundry Opening, Edinburgh, UK.
55. JUN 2016 UCB Annual Retreat Keynote, Windsor, UK.
54. MAY 2016 Human Genome Write Project Meeting, Harvard University, Boston, USA.
53. MAY 2016 Wellcome Trust Centre Renewal Presentation, Edinburgh, UK.
52. APR 2016 Departmental seminar in the Institute of Systems Biology, University of Chicago, Chicago, USA.
51. MAR 2016 Gates Foundation Project Meeting, Montreal, Canada.
50. FEB 2016 Automation for Synthetic Biology, Manchester, UK.
49. DEC 2015 Royal Society Edinburgh - China Academy of Sciences joint symposium on Synthetic Biology, Edinburgh, UK.
48. NOV 2015 Raymond and Beverly Sackler USA-UK Scientific Forum: Trends in Synthetic Biology and Gain of Function Research, and Regulatory Implications, Chicheley, UK
47. NOV 2015 University of Edinburgh King's Building Campus wide Seminar (Academics Unplugged, 1 of 3 elected faculty members for 2015), Edinburgh, UK
46. OCT 2015 Human Genome Project 2.0 Meeting, New York, USA
45. OCT 2015 The 10th Annual International Conference for Genomics (ICG10), Shenzhen, China
44. OCT 2015 Seminar at Synthetic Biology Research Centre at Warwick University, Coventry, UK
43. OCT 2015 Seminar at Thermo Fisher, Regensburg, Germany
42. SEP 2015 Wellcome Trust Sciences at the Interface meeting, London, UK
41. SEP 2015 UK-USA DNA Foundry meeting, London, UK
40. SEP 2015 UK Synthetic Biology Conference, London, UK
39. AUG 2015 Company Seminar, Autodesk Inc, San Francisco, USA
38. AUG 2015 Company Seminar, Labcyte Inc, Sunnyvale, USA

37. AUG 2015 Departmental Seminar, Department of Chemical and Biomolecular Engineering, University of Illinois at Urbana-Champaign, USA
36. JUL 2015 The 4th International Synthetic Yeast Consortium Meeting. New York Genome Centre, New York, USA
35. JUL 2015 High Value Chemicals from Plants workshop. John Inners Centre, Norwich, UK
34. MAY 2015 Chinese Young Synthetic Biologist Forum, Tsinghua University, Beijing, China
33. APR 2015 BBSRC Synthetic Biology for Growth workshop, Birmingham, UK
32. MAR 2015 Agilent Headquarter, Santa Clara, California, USA
31. NOV 2014 UK-Canada workshop on Synthetic Biology, Montreal, Canada
30. OCT 2014 Synthetic Biology Congress, London, UK
29. OCT 2014 The Genome Analysis Centre (TGAC), Norwich, UK
28. SEP 2014 National Institute of Genetics, Mishima, Japan
27. SEP 2014 The 9th International Conference on Genomics (ICG9), Shenzhen, China
26. AUG 2014 EMBO Synthetic Biology of Antibiotic Production II Conference, Sant Feliu de Guixols, Spain
25. JUL 2014 XIVth International Union of Microbiological Societies, Montreal, Canada
24. JUL 2014 Fab10 Barcelona Conference, Barcelona, Spain
23. JUN 2014 The 3rd International Synthetic Yeast consortium meeting, Sicily, Italy
22. APR 2014 Outlook for Synthetic Biology meeting, Manchester, UK
21. APR 2014 Departmental seminar at the School of Life Sciences, Nottingham, UK
20. FEB 2014 Korea Advanced Institute for Sciences and Technology, Seoul, South Korea
19. JAN 2014 Departmental Seminar, National University of Singapore, Singapore
18. NOV 2013 Life Technologies GeneArt Headquarter, Regensburg, Germany
17. JUL 2013 SB6.0 Conference, London, UK
16. OCT 2012 Plenary Speaker, the BIO Pacific Rim Summit on Industrial Biotechnology and Bioenergy, Vancouver, Canada.
15. SEP 2012 IDEAS: The Innovation + Design Series, Autodesk, San Francisco, USA
14. APR 2012 Synthetic Biology Centre, Imperial College London, London, UK
13. APR 2012 Institute for Systems Biology and Synthetic Biology, University of Edinburgh, UK
12. APR 2012 First International Synthetic Yeast Genome Consortium Meeting, Beijing, China
11. MAR 2012 IDEAS: The Innovation + Design Series, San Francisco, USA
10. NOV 2011 Session Chair, The 7th International Conference on Genomics, Shenzhen, China
9. Nov 2011 Cold Spring Harbor Symposium: Design & Synthesis of Biological Systems, Suzhou, China
8. Nov 2011 Departmental Seminar, Chinese University of Hong Kong, Hong Kong
7. OCT 2011 Six-academy Synthetic Biology Symposium, The enabling technology of synthetic biology, Shanghai, China

6. JUN 2011 Departmental Seminar, Hong Kong University of Science and Technology, Hong Kong
5. OCT 2010 What are the potential roles for Synthetic Biology in NASA's mission? NASA Ames Research Centre, California, USA
4. OCT 2010 Panel discussion, Synthetic Biology: Applications and Implications, Mid-Atlantic Bio Conferences, Bethesda, Maryland, USA
3. APR 2010 Seminar, High Throughput Biology Centre, School of Medicine, Johns Hopkins University
2. MAR 2010 Departmental Seminar, M.D. Anderson Cancer Research Center, Houston, USA
1. Nov 2009 Departmental Seminar, Artificial Intelligence, University of California at San Diego (UCSD)

AWARDS

- **Nov 2016** Raising Star in Science, ICG11
- **Aug 2015** Wellcome Trust Frontier Innovator (9 awardees worldwide)
- **Oct 2012** Gold Medal, Advisor of Johns Hopkins iGEM 2012 Wetware Team, iGEM, MIT, USA
- **Oct 2012** Gold Medal, Advisor of Johns Hopkins iGEM 2012 Software Team, iGEM, MIT, USA
- **Aug 2012** Chancellor's Fellowship, University of Edinburgh, UK
- **Sep 2011** Autodesk Distinguished Scholarship, Autodesk Inc.
- **Jun 2011** Traveling Fellowship, The Fifth International Conference for Synthetic Biology (SB5.0), Stanford University, USA
- **May 2011** The DeLill Nasser Award for Progressional Development, The Genetic Society of America
- **Nov 2010** Gold Medal, Advisor of Johns Hopkins iGEM 2010 Team, iGEM, MIT, USA
- **Mar 2010** Outstanding Interdisciplinary Doctoral Student of the Year (1 student per year), Virginia Tech, USA
- **Nov 2009** Graduate Traveling Fellowship, Graduate School, Virginia Tech, USA
- **Jun 2009** Invitation to the 7th Annual National Academies Keck Futures Initiative (NAKFI) conference, Synthetic Biology: Building on Nature's Inspiration (100 invitees worldwide), jointly organized by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine, Irvine, California, USA
- **Sep 2008** Traveling Fellowship to Hong Kong, The Fourth International conference for Synthetic Biology (SB4.0), Hong Kong University of Science and Technology, Hong Kong
- **Sep 2008** Best poster, Virginia Bioinformatics Institute Annual Research Symposium, Roanoke, USA
- **Apr 2008** Traveling Fellowship, The Third International Conference for Bioinformatics, Systems Biology and Synthetic Biology (BioSysBio2008), Imperial College London, UK
- **Nov 2007** Gold Medal, Advisor of Virginia Tech iGEM 2007 Team, iGEM, MIT, USA
- **Jun 2007** Traveling Fellowship, The Third International Conference for Synthetic Biology (SB3.0), ETH Zurich, Switzerland
- **Jan 2007** Ph.D. fellowship from the Office of Provost, Graduate School, Virginia Tech, USA

- **Nov 2006** First Place, Best Real World Application. iGEM 2006, MIT, USA
- **Nov 2006** First Place, Best Poster. iGEM 2006, MIT, USA
- **Nov 2006** Third Place, Best Device. iGEM 2006, MIT, USA
- **Aug 2006** iGEM Studentship, University of Edinburgh, UK
- **Jun 2005** First Class Award for Excellent Undergraduate Final Dissertation, CSU (top 1%)
- **Jun 2005** Outstanding Undergraduate Students, Central South University, CSU (top 5%)
- **Apr 2004** Torch Scholarship, Central South University (top 1‰), China
- **2002 - 2005** First Class Scholarship, Central South University (academically top 3%)