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PROFESSIONAL PREPARATION

Chengdu University of Science and Technology. **Chemical Engineering** B.E. 1994.

University of Science and Technology of China (USTC). **Molecular Biology**. M.S. 1997.

University of Wisconsin-Madison. **Chemical Engineering**. Ph.D. 2002.

California Institute of Technology, Postdoctoral research in **Biochemistry**, 2002-2004

APPOINTMENTS

Assistant Professor. Department of Biomedical Engineering, Duke University. 2005-

Assistant Professor. Institute for Genome Sciences & Policy, Duke University. 2005-

Assistant Professor. Center for Biomolecular and Tissue Engineering, Duke University. 2005

Assistant Professor. University Program in Genetics and Genomics, Duke University. 2005-

Assistant Research Professor. Department of Biomedical Engineering, Duke University, 2004

Post-doctoral Scholar. Division of Chemistry and Chemical Engineering, Caltech. 2002-2004

Research Assistant. Department of Chemical Engineering, University of Wisconsin-Madison. 1997-2002.

Teaching Assistant. Department of Chemical Engineering, University of Wisconsin-Madison. Spring 1998 & Fall 2000.

Research Assistant. Department of Biology, University of Science and Technology of China. 1994-1997.

SELECTED AWARDS AND HONORS

- David and Lucile Packard Fellowship. 2006-2011.
- University of Wisconsin Alumnae speaker. Computational and Informatics in Biology and Medicine Program Annual Retreat. Madison, WI, October 2006
- Invited speaker. *Life Engineering Symposium* (Sponsored by National Academies, California Institute of Quantitative Biomedical Research, LBNL, and University of Oxford). August 2005, SF, CA.
- Marie Christine Kohler Knapp Fellow. University of Wisconsin-Madison. 2001–2002.
- NIH/NLM (National Library of Medicine) Travel Grant for the Pacific Symposium on Biocomputing. 2001.

- Nomination for Ragatz Award (Best discussion section TA). Chemical Engineering Department, University of Wisconsin-Madison. 2000.
- Vilas Travel Award. University of Wisconsin-Madison. 1999.
- Guanghua Scholarship. Guanghua Foundation, China. 1995.
- Sichuan Province Honor Student. Sichuan province, China. 1994.
- Dow Chemical Scholarship. Dow Chemical (China). 1993.
- Promotion of Chemical Industry Scholarship. Chinese Ministry of Chemical Industry. 1992.
- The 2nd Prize for Mathematical Contest in Modeling. Chinese Society of Industrial and Applied Mathematics. 1992.
- The Top Prize for the Contest in Advanced Mathematics. CUST. 1991.
- The Top Prize for the Contest in Physics. CUST. 1991.
- Huaxing Scholarship. Huaxing Foundation, China. 1991.
- CUST Honor Student. CUST. 1990 – 1994.

CURRENT FUNDING

Coordinating cell killing by communication: Biological control and cancer therapy
(L. You, PI)
Funding Agency: NIH/NCI

Modeling, predicting and reprogramming dynamic cellular networks
(L. You, PI)
Funding Agency: NSF

Fidelity and Speed of Cellular Information Processing and Computing
(L. You, PI)
Funding Agency: David and Lucile Packard Foundation

Duke Center for Systems Biology
(L. You, PI for project 2 (Modeling and engineering mammalian cell cycle entry regulation))
(P. Benfey, PD)
Funding Agency: NIH/NIGMS

SYNERGISTIC ACTIVITIES

1. Co-chair. *Mathematical approaches to systems biology*. AIChE Annual meeting. November 2007. Salt Lake City. Utah
2. Co-chair. *Synthetic Biology*. BMES Annual meeting. September 2007. Los Angeles, CA
3. Co-chair. *Cellular systems biology and bioengineering*. BMES Annual meeting. October 2006, Chicago, USA.
4. Co-organizer and speaker. The first Duke University Systems Biology Symposium. September 2006, Durham, NC
5. Proposal review committee member (2005 - present) The Center for Nanophase Materials Sciences. The Oak Ridge National Laboratory, TN
6. Review Panel, National Science Foundation

7. Co-organizer. *Dynamics of Gene Networks* Workshop. The 20th IUBMB International Congress of Biochemistry and Molecular Biology. June 2006, Kyoto. Japan.
8. Invited participant of the CDC-organized “Chronic Fatigue Syndrome Computation Challenge” (March-September, 2005).
9. Invited participant of the 1st National Academies KECK Futures Initiative Conference, on “*Signaling, Decisions and Meaning in Biology, Physics, and Engineering*”, Nov 2003, at Irvine, CA.
10. Invited participant of the DARPA-organized “Synthetic Biology Workshop”, May 2003, Pasadena, CA
11. President of UW-Madison Chinese Student and Scholar Association. 1999-2000.
12. Editorial board member:
Systems and Synthetic Biology
13. Reviewers for following journals (since 2004):
Nature Biotechnology, Molecular Systems Biology, Molecular Biosystems, PLoS Computational Biology, PNAS, Bulletin of Mathematical Biology, Biotechnology & Bioengineering, IET Systems Biology, J. Royal Society Interface, Physical Biology, Journal of Theoretical Biology, Expert Opinion on Drug Discovery, Drug Discovery Today, Theoretical Biology and Medical Modelling

TEACHING EXPERIENCE

Instructor:

- BME265: *Modeling and engineering gene circuits*, Duke University, Spring 2005; Fall 2006
- BME100L: *Modeling cellular and molecular systems*. Duke University, Spring 2006; Spring 2007

Teaching Assistant: *Thermodynamics of Mixtures*, University of Wisconsin-Madison. Fall, 2000.

Teaching Assistant: *Biochemical Engineering*, University of Wisconsin-Madison. Spring, 1998.

SUPERVISING EXPERIENCE

- Advised three undergraduate students (UW-Madison), 2000-2002.
- Advised two graduate students, two undergraduate students, a technician (Caltech). 2002-2004
- Advised a post-doctoral scholar (Jun Ozaki), one Masters Thesis student (Dennis Tu), five rotation students (Alan Boyle, Xianrui Cheng, Terry Jackson, Taylan Ozdere, and Faisal Reza), four undergraduate student (Jiwon Lee, Austen Heinz, Serge Reshetnikov, Peter Blais), and two high school students (Yan Yan & Christina Jozefiak) (Duke). 2004-2006.
- Advising five graduate students (Tae Jun Lee, Anand Pai, Philippe Marguet, Chee Meng Tan, and Yu Tanouchi), and five undergraduate students (Meagan Gray, Maher Salahi, Cameron Smith, and Eric Spitz, David Wang)
- Committee member for: Jarad Niemi – Statistics PhD candidate (Advisor, Mike West); Marius Kluenger – BME Masters student.
- Co-advising a team of Duke undergraduate students and high school students in participating MIT-organized annual IGEM competition in synthetic biology. Two high-school advisees won 3rd prize in the National Siemens Competition in Science and Math.

SOFTWARE

DYNETICA: a generic, biologist-friendly software package for constructing, visualizing and analyzing models of biological networks.

T7v2.5: a simulation package of the intracellular growth cycle of bacteriophage T7.

PUBLICATIONS

Peer reviewed articles

1. C. Tan, F. Reza, and L. You (2007). Noise-limited frequency signal transmission in gene circuits. ***Biophysical J.*** Published online.
1. C. Tan, H. Song, J. Niemi, and L. You (2007). A synthetic biology challenge: making cells compute. ***Molecular BioSystems.*** **3**, 343 – 353.
2. P. Marguet, F. Balagadde, C. Tan, and L. You (2007). Biology by design: reduction and synthesis of cellular components and behavior. ***J. Royal Society Interface.*** **4**, 607–623
3. L. You and J. Yin. (2006). Evolutionary design on a budget: robustness and optimality of bacteriophage T7. ***IEE. Systems Biology*** 153:46-52.
4. F. K. Balagadde *, L. You*, C. Hansen, F. H. Arnold, and S. Quake. (2005). Long-term monitoring of bacteria undergoing programmed population control in a microchemostat, ***Science.*** 309: 137-140. (* contributed equally).
5. L. You, R. S. Cox III, R. Weiss, and F. H. Arnold. (2004). Programmed population control by cell-cell communication and regulated killing. ***Nature*** 428: 868-871. Featured in *ScienceNow* (405:3).
6. L. You, (2004) Towards computational systems biology. ***Cell Biochemistry and Biophysics.*** **40**: 167-184.
7. L. You, A. Hoonlor, and J. Yin. (2003) Modeling biological systems using *Dynetica* – a simulator of dynamic networks. ***Bioinformatics.*** **19**: 435-436.
8. R. Srivastava, L. You, J. Summers, and J. Yin. (2002) Stochastic versus deterministic modeling of intracellular viral kinetics. ***J. Theor. Biol.*** **218**: 309-321.
9. L. You and J. Yin (2002). Dependence of epistasis on environment and mutation severity as revealed by *in silico* mutagenesis of phage T7. ***Genetics.*** **160**: 1273-1281
10. L. You, P. F. Suthers, and J. Yin (2002). Effects of *E. coli* physiology on growth of phage T7 *in vivo* and *in silico*. ***J. Bacteriology.*** **184**: 1888-1894. (Highlighted in *Editors' Choice of Science* (2002), 296: 219)
11. L. You and J. Yin (2001). Simulating the growth of viruses. ***Proceedings of the Pacific Symposium on Biocomputing.*** 532-543.
12. L. You and J. Yin (2000). Patterns of regulation from mRNA and protein time-series ***Metabolic Engineering.*** **2**: 210-217.
13. D. Endy, L. You, J. Yin, and I. J. Molineux (2000). Computation, prediction, and experimental tests of fitness for bacteriophage T7 mutants with permuted genomes. ***Proc. Nat. Acad. Sci. USA.*** **97**: 5375-5380.
14. L. You and J. Yin (1999). Amplification and spread of viruses in a growing plaque. ***J. Theor. Biol.*** **200**(4): 365-373.

15. L. You, Q. Liu, Y. Shi, C. X. Wang, M. Lahaye, and V. Tran (1997). The conformational study of β -D-GlcA-(1,4)-L-Rha in solution by NMR and molecular dynamics simulations. *Chemical Physics*. 224: 81-94.

Book chapters (invited contributions)

1. D. Tu, J. Lee, T. Ozdere, T. Lee, and L. You. (2007) Engineering gene circuits: foundations and applications. In “*Nanotechnology in Biology and Medicine: Methods, Devices and Applications*,” Ed. T. Vo-Dinh. CRC Press. Chapter 20. Page 363-380
2. T. Lee, D. Tu, C. M. Tan, and L. You. (2007) Modeling cellular networks. In “*Systems Bioinformatics: An Engineering Case-Based Approach*,” Eds. G. Alterovitz & M. Ramoni. Chapter 6. Page 151-178. (Peer reviewed)

Perspectives

1. H. Song and L. You. Evolving sensitivity (Point of View) (2006). *ACS Chemical Biology*. 1:681
2. H. Song, C. Tan, and L. You. Living computers (Perspective) (2007). *Chemical Biology*.

Manuscripts in review

1. T. Lee, G. Yao, J. R. Nevins, and L. You. Sensing and integration of Erk and PI3K signals by Myc.
2. G. Yao, T. Lee, S. Mori, J. R. Nevins[#], and L. You[#]. A bistable Myc/Rb/E2F circuit: a model for the restriction point. ([#]corresponding authors)
3. F. Balagadde, H. Song, J. Ozaki, C. Collins, M. Barnet, F. H. Arnold, S. Quake, and L. You. A synthetic *E. coli* predator-prey system.

Ph.D. Thesis (Advisor: John Yin)

The extension, application, and generalization of a phage T7 intracellular growth model.
Department of Chemical Engineering. University of Wisconsin-Madison, WI. May 2002.

RECENT AND UPCOMING TALKS (2004-PRESENT)

1. *Modeling, measuring, and mimicking a bistable Rb/E2F circuit*. University of Virginia Biomedical Engineering Department. Nov 2007
2. *Modeling, measuring, and mimicking a bistable Rb/E2F circuit*. Mathematical Systems Biology or Cancer. Mathematical Sciences Research Institute. Berkeley, CA. Oct 2007
3. *Modeling, measuring, and mimicking a bistable Rb/E2F circuit*. UNC-Chapel Hill Systems Biology group. Sept 2007
4. *Sensing and communication in natural and engineered bacteria*. Packard Annual Meeting. Monterey, CA. September 2007
5. *Sensing and communication in natural and engineered bacteria*. Workshop on Systems Biology of Microbes. Computational and Systems Biology Symposium 2007. San Diego. August 2007

6. *Engineering synthetic killer circuits in bacteria*. Synthetic Biology Workshop*. The 44th Design Automation Conference. San Diego. June 2007. (* this is the first time DAC conference hosts such as special session).
7. *Engineering synthetic killer circuits in bacteria*. Computational Cell Biology Workshop. Cold Spring Harbor Laboratory. March 2007
8. *Fidelity and speed of signal transmission limited by noise*. Biology-Inspired Modeling, IBE Annual Meeting. March 2007
9. *Modeling, measuring, and mimicking a bistable Myc/Rb/E2F circuit*. NCI Workshop on "The Science of Cancer Modeling", Bethesda, MD, December 2006
10. *Biology by design: reduction and synthesis of cellular networks*, Computation and Informatics in Biology and Medicine Program Annual Retreat. (UW-Madison Alumnae speaker), Madison, WI, October 2006
11. *Programming bacterial dynamics by synthetic killer circuits*. The First Duke Systems Biology Symposium, Durham, NC, September 2006.
12. *Modeling complex dynamic cellular networks*. SAMSI workshop on "Development, Assessment, and Utilization of Complex Computer Models", Durham, NC, September 2006
13. *Control of the mammalian cell cycle entry by a bistable switch*. Workshop on "Exploring the Mechanisms and Landscapes of Cellular Networks". Telluride Science Research Center, CO, August 2006.
14. *Control of the mammalian cell cycle entry by a bistable switch*. SIAM Life Sciences Symposium. Raleigh, NC. August 2006.
15. *Programming bacterial dynamics by synthetic killer circuits*. American Physical Society Annual Meeting. Baltimore, MD. March 2006.
16. *Synthetic Biology: Rewiring a bug's life*. Center for Nonlinear and Complex Systems seminar series. Duke University, NC. November 2005.
17. *Designer cells: "what I cannot create, I do not understand"*. IGSP Computation Biology and Bioinformatics seminar series. Duke University. September 2005.
18. *Biology by design: reduction and synthesis of cellular networks*. IGSP Genomes@4 seminar series, Duke University. NC. March 2005.
19. *Synthetic gene circuits for decoding life*. UPGG/IGSP seminar series. Duke University, NC February 2005.
20. *Homeostasis, oscillations, and ecological interactions in reprogrammed bacterial populations*. Workshop on Regulatory Networks. Mathematical Biosciences Institute, The Ohio State University, Columbus, Ohio. November 2004
21. *Synthetic gene circuits for decoding and controlling cellular behavior*. Duke Bioengineering Initiative Forum. Duke University, Durham, NC. October, 2004
22. *Beyond single cells: programming population dynamics by cell-cell communication*. Computational Bioengineering -- Synthetic Cell Communication Systems. BMES Annual Meeting. Philadelphia, PA. October, 2004.
23. *Homeostasis, oscillations, and ecological interactions in reprogrammed bacterial populations*. Center for Biological Circuit Design. California Institute of Technology, CA. October, 2004.

24. *Integrated understanding of biological networks by modeling*. Integrating Disparate Data to Simulate Lymphocyte Function. The Banbury Center, Cold Spring Harbor Laboratory, NY. September, 2004.
25. *Beyond single cells: Programming population dynamics by engineered cell-cell communication*. SIAM Life Sciences Symposium. Portland, OR. July 2004.
26. *Beyond single cells: Programming population dynamics by engineered cell-cell communication*. UCSD, CA. June 2004.
27. *Beyond single cells: Programming population dynamics by engineered cell-cell communication*. Harvard Medical School, MA. May 2004.
28. *Beyond single cells: Programming population dynamics by engineered cell-cell communication*. UCSF, CA. April 2004.
29. *Beyond single cells: Programming population dynamics by engineered cell-cell communication*. Duke University, NC. March 2004.
30. *Beyond single cells: Programming population dynamics by engineered cell-cell communication*. Lehigh University, PA. January 2004.

PAST INVITED TALKS

From bacteriophage T7 to "PhenoBank": Mathematical modeling for integrated understanding of biological systems, Texas A&M University, University of Houston, Eli Lilly & Company, University of Massachusetts at Amherst, University of Norte Dame, Johns Hopkins University, Purdue University, University of Pennsylvania, Lehigh University, UCSD, and Duke University (Jan-Apr 2002).

CONTRIBUTED CONFERENCE PRESENTATIONS (INCLUDING POSTERS)

1. A. Pai and L. You (2007). *Bacterial sensing potential*. Cold Spring Harbor Laboratory Workshop on Computational Cell Biology.
2. G. Yao, T. Lee, J. R. Nevins, and L. You (2007). *A bistable Myc/Rb/E2F circuit: a model for the restriction point*. Cold Spring Harbor Laboratory Workshop on Computational Cell Biology.
3. P. Marguet, E. Spitz, and L. You (2007). *Suicide Design, Oscillations, and Host Interactions in a Synthetic Gene Circuit*. SBE International Conference on Biomolecular Engineering. January, San Diego, CA
4. D. Tu, J. Lee, and L. You (2007). *Noise regulation by quorum sensing*. SBE International Conference on Biomolecular Engineering. January, San Diego, CA
5. C. Tan, F. Reza, and L. You (2006). *Fidelity and speed of signal transmission limited by cellular noise*. SBE International Conference on Biomolecular Engineering. January, San Diego, CA
6. F. Balagaddé, J. Ozaki, C. H. Collins, M. Barnet, P. Blais, F. H. Arnold, S. Quake and L. You (2007) *A Synthetic Escherichia Coli Predator-Prey System*. SBE International Conference on Biomolecular Engineering. January, San Diego, CA
7. T. Lee, G. Yao, J. Nevins, and L. You (2006). *Signal patterns of Ras effector pathways that yield precise modulation of Myc expression*. BMES Annual Meeting, October. Chicago, IL
8. I-C. Liao, M. Kluenger, L. You, K. Leong (2006). *Micro/nano fibers embedded with live cell and viral vectors*. BMES Annual Meeting, October, Chicago, IL
9. C. M. Tan, F. Reza, and L. You (2006). *Fidelity and speed of signal transmission limited by cellular noise*. BMES Annual meeting, October. Chicago, IL

10. C.M. Tan, M. Salahi, and L. You (2006). *Bistability in an integrated gene and protein regulatory network*. BMES Annual meeting, October. Chicago, IL
11. J. Niemi, L. You, and M. West (2006). *Bayesian parameter estimation for systems biological models of dynamic cellular networks*. Valencia International Meeting on Bayesian Statistics. June. Universitat de València, Spain
12. T. Lee, G. Yao, J. Nevins, and L. You (2006). *Signal patterns of Ras effector pathways that yield precise modulation of Myc expression*. Dynamics Days 2006. Bethesda, MD
13. G. Yao, T. Lee, S. Mori, J. Nevins, and L. You (2005). *Control of cell cycle entry by a Myc/Rb/E2F bistable switch*. NIH/NCI ICBP Workshop. Washington, DC.
14. J. Ozaki (speaker), M. Barnet, C. Collins, F. H. Arnold, and L. You (2005). *A Synthetic E. coli predator-prey system*. Synthetic Systems Biology. AIChE Annual Meeting (November), Cincinnati, OH
15. F.K. Balagadde, L. You, C. Hansen, F.H. Arnold and S.R. Quake (2005). *Programmed Population Control by Cell-Cell Communication in a Microfluidic Chemostat*. NSTI Nanotechnology conference and trade show. Anaheim, CA
16. L. You, R. S. Cox III, R. Weiss and F. H. Arnold (2004). *Programmed population control by engineered cell-cell communication* (poster). The 1st International Conference of Synthetic Biology (June). MIT, MA.
17. L. You and F. H. Arnold (2003). *Design and construction of a synthetic population control circuit*. Advances in Biotechnology Genomics I. AIChE Annual Meeting (November), San Francisco, CA.
18. L. You, R. S. Cox III, and F. H. Arnold (2003). *Computational design of a synthetic E. coli predator-prey ecosystem*. Advances in Metabolic Engineering and Bioinformatics I. AIChE Annual Meeting (November), San Francisco, CA.
19. L. You and J. Yin (2002). *Environmental constraints on genomic design: insights from in silico mutagenesis of virus-host interactions* (oral presentation). Advances in Bioinformatics: Networks and Pathways. AIChE Annual Meeting (November), Indianapolis, IN.
20. L. You and J. Yin (2001). *Quantifying genetic interactions using in silico mutagenesis* (oral presentation). Food, Pharmaceutical, Bioengineering & Fundamentals in Life Science. AIChE Annual Meeting (November), Reno, NV.
21. L. You, A. Hoonlor, Y.-F. Chen, and J. Yin (2001). *Modeling biological systems using Dynetica – a simulator of dynamic networks*. Bioinformatics and Genomics, AIChE Annual Meeting (November), Reno, NV.
22. L. You and J. Yin (2001). *From Genome to Organism: Computing the Dynamics of Phage T7 Growth and Exploring the Interactions Among Deleterious Mutations* (poster). Pacific Symposium on Biocomputing (January). The Big Island, Hawaii.
23. L. You, P. Suthers, and J. Yin (2000). *Effects of E. coli physiology on bacteriophage T7 growth* (oral presentation). Advances in Bioinformatics. AIChE Annual Meeting (November), Los Angeles, CA.
24. R. Srivastava, L. You, J. Summers and J. Yin (2000). *Stochastic versus deterministic modeling of hepatitis B virus intracellular kinetics* (poster). Food, Pharmaceutical and Bioengineering, AIChE Annual Meeting (November), Los Angeles, CA.

25. L. You, D. Endy, and J. Yin (2000). *Functional genomics of bacteriophage T7 (poster)*. Quantitative Challenges in the Post-Genomic Sequence Era: A Workshop and Symposium (January). San Diego, CA.
26. L. You and J. Yin (1999). *Discovering patterns of biochemical function from mRNA and protein time-series (poster)*. AIChE Annual Meeting (November), Dallas, TX.
27. D. Endy, L. You, I. J. Molineux, and J. Yin (1999). Prediction, design, and characterization of alternative genetic element orders for bacteriophage T7 (oral presentation). ACS National Meeting (March), Anaheim, CA.