

**Cheemeng Tan**

Assistant Professor  
 Department of Biomedical Engineering  
 University of California Davis  
 Tel: +1-530-752-7849 (office)  
 Email: [cmtan@ucdavis.edu](mailto:cmtan@ucdavis.edu)  
 Website: [www.bme.ucdavis.edu/tanlab](http://www.bme.ucdavis.edu/tanlab)

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**EDUCATION**

- 2010 Ph.D. Biomedical Engineering (Advisor: Prof. Lingchong You)  
*Duke University*
- 2002 M.S. High Performance Computation for Engineered Systems  
*Singapore-MIT Alliance*
- 2001 B.Eng. Engineering (First class honors)  
*National University of Singapore*

**APPOINTMENTS**

- 08/2013-now Assistant Professor, Department of Biomedical Engineering, University of California Davis
- 2014-now Member/Trainer, University of California Davis  
 Chemical Engineering and Materials Science (CHMS)  
 Integrative Genetics and Genomics (IGG)  
 Biochemistry, Molecular, Cellular and Developmental Biology (BMCDDB)  
 Designated Emphasis in Biotechnology (DEB)  
 T32 Training Program in Molecular and Cellular Biology (MCB)
- 2010-2013 Lane Postdoctoral Fellow, Lane Center for Computational Biology, Carnegie Mellon University (Advisors: Prof. Philip LeDuc and Prof. Russell Schwartz)
- 2002-2004 Research Associate, Bioinformatics Institute, Singapore.
- 2002 Research Intern, Temasek Laboratories, Singapore
- 2000 Engineer Intern, Sinotech Engineering Consultants Inc., Taiwan.

**AWARDS**

- 2015-2018 Young Investigator Grant, Human Frontier Science Program (10 out of 1011 applications)
- 2012-2017 Branco Weiss Fellowship, Society in Science, ETH Zurich (10 out of >400 applications)
- 2011,2009 q-bio Travel Awards
- 2010-2013 Lane Postdoctoral Fellowship
- 2009 Medtronic Fellowship
- 2008 BioBricks Foundation Synthetic Biology 4.0 Travel Award
- 2001-2002 Singapore-MIT Alliance Graduate Fellowship
- 1997-2001 Kuok Foundation Award, Malaysia

**PUBLICATIONS (H-INDEX = 14)**

- 2017 1. S. McCutcheon, K. Chiu, D. Lewis, and C. Tan. CRISPR-Cas expands dynamic range of gene expression from T7RNAP promoters, *Biotechnology Journal*, in press, 2017.
2. D. Lewis, M. Chavez, K. Chiu, and C. Tan. Reconfigurable analog signal processing in living cells. *ACS Synthetic Biology*, in press, 2017.
3. C. Tan. What Is the Role of Circuit Design in the Advancement of Synthetic Biology? Part 3, *Cell Systems*, 4 (6), 579–580, 2017.

4. F. Villarreal, M. Chavez, Y. Ding, J. Fan, T. Pan, and C. Tan. Synthetic microbial consortia enable rapid assembly of multi-protein complexes. *Nature Chemical Biology*, 10.1038/nchembio.2514, 2017.
5. J. Fan, F. Villarreal, B. Weyers, Y. Ding, K. Tseng, J. Li, B. Li\*, C. Tan\*, and T. Pan\*. Multi-dimensional studies of synthetic genetic promoters enabled by microfluidic impact printing. *Lab-on-a-chip*, 17, 2198-2207, 2017. (\*Co-corresponding)
6. C. Tan. Special collection of synthetic biology, aiming for quantitative control of cellular systems. *Quantitative Biology*, 1-2, 2017.
- 2016 7. F. Villarreal and C. Tan. Cell-free systems in the new age of synthetic biology. *Frontier Chem. Sci. Eng.*, DOI 10.1007/s11705-017-1610-x, 2016.
8. M. Chavez, J. Ho, and C. Tan. Reproducibility of high-throughput plate-reader experiments in synthetic biology. *ACS Synthetic Biology*, DOI: 10.1021/acssynbio.6b00198, 2016.
9. F. Wu, C. Ma, and C. Tan. Network motifs modulate druggability of cellular targets. *Scientific Reports*, 6: 36626, 2016.
10. E. Morris, M. Chavez, and C. Tan. Dynamic Biomaterials: Toward Engineering Autonomous Feedback. *Current Opinion in Biotechnology*, 39, 97-104, 2016.
- 2015 11. R. Steward, C. Tan, C-M Cheng, and P. LeDuc. Cellular force signal integration through vector logic gates. *Journal of Biomechanics*, 48 (4), 613-620, 2015.
- 2014 12. D. Lewis, F. Villarreal, F. Wu, and C. Tan. Synthetic biology outside the cell: linking computational tools to cell-free systems. *Frontiers in Bioengineering and Biotechnology*, 2, 2014.
13. Y. Ding, F. Wu, and C. Tan. Synthetic biology: the bridge between artificial and natural cells. *Life*, 4 (4), 1092-1116, 2014.
14. C. Tan, R. Smith, M-C. Tsai, R. Schwartz, and L. You. Phenotypic signatures arising from unbalanced bacterial growth. *PLoS Comp. Bio.*, 10 (8), e1003751, 2014.
15. F. Wu and C. Tan. The engineering of artificial cellular nanosystems using synthetic biology approaches. *Wiley Interdisciplinary Reviews: Nanomedicine and Nanobiotechnology*, 6 (4), 369-383, 2014.
16. R. Smith, C. Tan, K. Riccione, A. Pai, H. Song, and L. You. Programmed Allee effect in bacteria causes a tradeoff between population spread and survival. *PNAS*, 111 (5), 1969-1974, 2014.  
Selected for Faculty Prime 1000.
- 2013 17. C. Tan, S. Saurabh, M. Bruchez, R. Schwartz, and P. LeDuc. Shaping gene expression in artificial cellular systems by cell-inspired molecular crowding. *Nature Nanotechnology*, 8 (8), 602-608, 2013.  
Highlighted in cover article and “News and Views”: Gene in a crowd, *Nature Nanotechnology*, 2013.
- 2004 18. C. Tan\*, R. Smith\*, J. Srimani, K. Riccione, S. Prasada, M. Kuehn, and L. You. The to inoculum effect and band-pass bacterial response to periodic antibiotic treatment. 2012 *Molecular Systems Biology*, 8:617, 2012. (\*Equal contribution)  
Highlighted in “Editors’ Choice”: Microbiology - Hit 'Em Quick, Hit 'Em Strong, *Science*, 338, 6104, 2012.
19. C. Tan, S. Lo, P. LeDuc, and CM. Cheng. Frontiers of optofluidics in synthetic biology. *Lab on a Chip*, 12(19), 3654-65, 2012.  
Highlighted in “Editorial”: Themed issue: Optofluidics, *Lab on a Chip*, 12, 3539–3539, 2012.
20. G. H. Zan, C. Tan, M. Deserno, F. Lanni, and M. Lösche. Fusion of giant unilamellar vesicles with planar hydrophobic surfaces: A fluorescence microscopy study. *Soft Matter*, 8 (42), 10877-10886, 2012.

21. M. Hallen, B. Li, Y. Tanouchi, C. Tan, M. West, and L. You. Computation of Steady-State Probability Distributions in Stochastic Models of Cellular Networks. *PLoS Comp. Bio.*, 7 (10), 2011.
22. G. Yao, C. Tan, M. West, J. R. Nevins, and L. You. Origin of bistability underlying mammalian cell cycle entry. *Molecular Systems Biology*, 7:485, 2011.
23. H. Song, S. Payne, C. Tan, and L. You. Programming microbial population dynamics by engineered cell–cell communication. *Biotechnology Journal*, 6 (7), 837-849, 2011.
24. C. Tan, P. Marguet, and L. You. Emergent bistability by a growth-modulating positive feedback circuit. *Nature Chemical Biology*, 5, 842-848, 2009.  
Highlighted in “News and Views”: Slow growth leads to a switch, *Nature Chemical Biology*, 5, 784-785, 2009.
25. Q. Wang, J. Niemi, C. Tan, L. You and M. West. Image segmentation and dynamic lineage analysis in single-cell fluorescent microscopy. *Cytometry A*, 77(1), 101-110, 2009.
26. C. Tan, F. Reza, and L. You. Noise-limited frequency signal transmission in gene circuits. *Biophysical Journal*, 93, 3753-3761, 2007.
27. C. Tan, H. Song, J. Niemi, and L. You. A synthetic biology challenge: making cells compute. *Molecular BioSystem*, 3, 343-353, 2007.  
Highlighted in “Perspective”: Living computers. *Chemical Biology*, 2007.
28. P. Marguet, F. Balagadde, C. Tan, and L. You. Biology by design: reduction and synthesis of cellular components and behaviour. *J. Royal Society Interface*, 4(15), 607-623, 2007.
29. K.-H. Chiam\*, C. Tan\*, V. Bhargava, and G. Rajagopal. Hybrid simulations of stochastic reaction-diffusion processes for modeling intracellular signaling pathways. *Phys. Rev. E*, 74, 051910, 2006 (\*Equal contribution).
30. P. Dhar, C. Tan, S. Somani, Y. Li, K. Sakharkar, A. Krishnan, A. Ridwan, M. Chitre, and H. Zhu. Grid Cellware: The first Grid-enabled tool for modeling and simulating cellular processes. *Bioinformatics*, 21(7), 1284-1287, 2005.
31. C. Tan, S. Somani, and P. Dhar. Modeling and simulation of biological systems with stochasticity. *In-Silico Biology*, 4, 0024, 2004.
32. P. Dhar, C. Tan, S. Somani, Y. Li, A. Sairam, M. Chitre, H. Zhu, and K. Sakharkar. Cellware: a multi-algorithmic software for computational systems biology. *Bioinformatics*, 20(8), 1319-1321, 2004.

#### Conference Papers (Refereed)

33. T. Ray, H. Tsai, and C. Tan. Effects of Solver Fidelity on a Parallel Search Algorithm's Performance for Airfoil Shape Optimization Problems. 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization Conference, Atlanta, Georgia, 2002.
34. C. Tan, T. Ray, and H. Tsai. Effects of Adaptive Search Space Operator on Performance of SWARM Algorithm for Airfoil Design Optimization. 41st Aerospace Sciences Meeting and Exhibit, Reno, Nevada, 2003
35. C. Tan, T. Ray, and H. Tsai. A Comparative Analysis of Evolutionary Algorithm and Swarm Algorithm for Airfoil Design Problems. 41st Aerospace Sciences Meeting and Exhibit, Reno, Nevada, 2003

#### Book Chapters

1. T. Lee, C. Tan, D. Tu, and L. You. Systems Bioinformatics: An Engineering Case-Based Approach. G. Alterovitz (Editor), M. F. Ramoni. Artech House Publishers, 2007.

#### Selected Contributed Talks at National Conferences

1. Shaping gene expression in artificial cellular systems by cell-inspired molecular crowding. Winter q-bio, Honolulu, 2013.
2. Shaping gene expression in artificial cellular systems by cell-inspired molecular crowding. Biophysical Society Annual Meeting, Philadelphia, 2013.

3. Shaping gene expression in artificial cellular systems by cell-inspired molecular crowding. American Institute of Chemical Engineers Annual Meeting, Pittsburgh, 2012.
4. The inoculum effect and band-pass bacterial response to periodic antibiotic treatment. Biomedical Engineering Society Meeting, Hartford, 2011.
5. The inoculum effect and band-pass bacterial response to periodic antibiotic treatment. Q-bio 5, Santa Fe, 2011.
6. Growth modulation turns a noncooperative positive feedback bistable. Institute of Biological Engineering Annual Meeting, Chapel Hill, 2008.
7. Bistability in an integrated protein and gene regulatory network. Biomedical Engineering Society Annual Fall Meeting, Chicago, 2006.

***INVITED TALKS***

09/2017	Seminar Speaker, University of Minnesota Twin Cities
03/2017	International Biological Engineering Meeting, New Delhi, India
12/2016	Cold Spring Harbor Asia Synthetic Biology meeting, Shanghai, China
08/2016	Seminar Speaker, Lawrence Livermore National Lab
07/2016	Summer Course in Synthetic Biology, National Chung-Hsing University, Taiwan
07/2016	Seminar Speaker, Academia Sinica, Taiwan
06/2016	Late-breaking Talk, 2016 Biointerface Science - Gordon Research Conference, Switzerland
02/2016	Keynote Presentation, NanoEngineering for Medicine and Biology Conference (ASME), Houston
02/2015	Workshop Proposer and Speaker, Annual Biophysical Society Meeting, Baltimore
01/2015	Conference Speaker, PepTalk 2015, San Diego
07/2014	Workshop Speaker, EITA Conference, MIT
06/2014	Conference Speaker, Peking University, China
06/2014	Seminar Speaker, Ludwig-Maximilians Universitat Munchen, Germany
05/2014	Seminar Speaker, Medical Microbiology and Immunology, UC Davis
03/2014	Seminar Speaker, BME and CHMS recruitment events, UC Davis
02/2014	Seminar Speaker, Chemical Engineering and Materials Science, UC Davis
10/2013	Seminar Speaker, Biomedical Engineering, UC Davis
05/2013	Seminar Speaker, Purdue University
05/2013	Seminar Speaker, University of Warwick, UK
05/2013	Seminar Speaker, North Carolina State University
03/2013	Seminar Speaker, University of California Davis
03/2013	Seminar Speaker, University of California Berkeley
02/2013	Seminar Speaker, University of California Irvine
02/2013	Seminar Speaker, Arizona State University
01/2013	Seminar Speaker, Stony Brook University
01/2013	Seminar Speaker, Texas A&M University College Station

***SERVICES***

2017	Ad-hoc Reviewer, The Leverhulme Trust (UK)
2016-2017	Guest editor, Special Issue on "Synthetic Biology" in Quantitative Biology
2015, 2016	Ad-hoc Reviewer, NSF
10/2015	Platform Session Chair, BMES Annual Meeting, Tampa
04/2015	Ad-hoc Reviewer for ETH Postdoctoral Fellowship, ETH Zurich, Switzerland
01/2015	Ad-hoc Reviewer for David Philips Fellowship, BBSRC, UK
2014-2016	Undergraduate Affairs Committee, BME, UC Davis
10/2014	Poster & Platform Session Chair, BMES Annual Meeting, Texas

**TEACHING**

**University of California Davis**

Spring 2017 Lecturer, BIM167 Biofluid Mechanics (eval=4.7/5)  
Winter 2017 Lecturer, BIM106 Biotransport Phenomenon (eval=4.4/5)  
Spring 2016 Lecturer, BIM167 Biofluid Mechanics (eval=4.7/5)  
Winter 2016 Lecturer, BIM106 Biotransport Phenomenon (eval=4.5/5)  
Fall 2015 Lecturer, BIM161 Molecular Biotechnology (eval=4.3/5)  
Spring 2015 Lecturer, BIM167 Biofluid Mechanics (eval=4.5/5)  
Winter 2015 Lecturer, BIM289A Systems & Synthetic Eng. of Cells  
Spring 2014 Lecturer, BIM167 Biofluid Mechanics (eval=4.89/5)  
Spring 2014 Guest lecturer, BIM209 Scientific Ethics and Integrity  
Fall 2014 Guest lecturer, BIM01 Introduction to Biomedical Engineering

**Carnegie Mellon University**

Spring 2013 Guest lecturer, Applied Cell and Molecular Biology  
Fall 2012 Guest lecturer, Computing and biology  
Fall 2011 Guest lecturer, Biological modeling and simulation

**Duke University**

Fall 2006 Teaching assistant, Modeling cellular and molecular systems  
Fall 2007 Teaching assistant, Bio-transport phenomena

**GRANTS**

2015-2018 PI, Young Investigator Grant, Human Frontier Science Program (Co-PI Nash)  
2012-2017 PI, Branco-Weiss Fellowship, Society-in-Science

**JOURNAL REVIEWER**

PLoS Computational Biology, PLoS One, Journal of the Royal Society Interface, Biotechnology Journal, Micro and Nano Letters, Journal of Systems and Synthetic Biology, Journal of Cellular and Molecular Medicine, Nature Protocols, Nature Communications, Scientific Reports, ACS Synthetic Biology, Nature Biomedical Engineering, Science Translational Medicine.