

Arthur Prindle

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Education

9/2009 – 4/2014 Ph.D., Bioengineering, University of California, San Diego, CA
9/2005 – 6/2009 B.S., Chemical Engineering, *with honors*, California Institute of Technology, Pasadena, CA

Research Positions & Training

Starting Fall 2017 Assistant Professor, Department of Biochemistry and Molecular Genetics
Feinberg School of Medicine, Northwestern University
Member, Center for Synthetic Biology

9/2014 – current Postdoctoral Fellow, University of California, San Diego
Advisor: Prof. Gürol Süel (Molecular Biology)
Topic: The Bacterial Brain: Electrical principles of collective organization

9/2009 – 4/2014 Graduate Student, University of California, San Diego
Advisor: Prof. Jeff Hasty (Bioengineering)
Thesis: Designer gene circuits for basic science, engineering and medicine

6/2008 – 6/2009 Undergraduate Student, California Institute of Technology
Advisor: Prof. Richard Murray (Bioengineering)
Thesis: Optimization of a gene oscillator using transcriptional time delay

Publications

17. Lee D, **Prindle A**, Liu J, Süel G. Electrochemical communication in biofilms. *Cell* (2017).
16. Larkin J, Zhai X, Kikuchi K, Redford S, **Prindle A**, Liu J, Walczak A, Garcia-Ojalvo J, Mugler A, Süel G. Percolation-mediated robust signal transmission within a biofilm. (in review).
15. Liu J, Martinez-Corral R, **Prindle A**, Lee D, Larkin J, Gabalda-Sagarra M, Garcia-Ojalvo J, Süel G. Coupling between distant biofilms and emergence of nutrient time-sharing. *Science* (2017).
 - Commentary: Gordon V. Coupling and sharing when life is hard. *Science* (2017).
 - Commentary: Starling S. Communities in sync. *Nature Reviews Microbiology* (2017).
 - Commentary: Libby EA, Dworkin J. Habits of highly effective biofilms: Ion signaling. *Molecular Cell* (2017).
14. Humphries, J, Xiong L, Liu J, **Prindle A**, Yuan F, Arjes HA, Tsimring L, Süel G. Species-independent attraction to biofilms through electrical signals. *Cell* (2017).
 - Commentary: Huang KC. Staying in touch while on the go. *Cell* (2017).
 - Commentary: York A. Shocking biofilms. *Nature Reviews Microbiology* (2017).
13. Din MO, Danino T, **Prindle A**, Skalak M, Selimkhanov J, Allen K, Julio E, Atolia E, Tsimring L, Bhatia SN, Hasty J. Synchronized cycles of bacterial lysis for in vivo delivery. *Nature* (2016).
 - Commentary: Zhou S. Bacteria synchronized for drug delivery. *Nature* (2016).
12. **Prindle A**, Liu J, Asally M, Ly S, Garcia-Ojalvo J, Süel G. Ion channels enable electrical communication in bacterial communities. *Nature* (2015).
 - Commentary: Beagle SD, Lockless SW. Electrical signalling goes bacterial. *Nature* (2015).

- Commentary: Nunes-Alves C. Electrifying long-range signalling. *Nature Reviews Microbiology* (2015).
 - Commentary: Chang S. An eye on bacterial communication. *Physics Today* (2015).
11. Liu J, **Prindle A**, Humphries J, Gabalda-Sagarra M, Asally M, Lee D, Ly S, Garcia-Ojalvo J, Süel G. Metabolic co-dependence gives rise to collective oscillations within biofilms. *Nature* (2015).
 - Commentary: Tan J. Rhythm of prosperity. *Cell* (2015).
 - Commentary: Attar N. Oscillations relieve the siege. *Nature Reviews Microbiology* (2015).
 10. Danino T, **Prindle A**, Kwong G, Skalak M, Li H, Allen K, Hasty J, Bhatia SN. Programmable probiotics for detection of cancer in urine. *Science Translational Medicine* (2015).
 - Commentary: Ray K. Programmed probiotics light up liver cancer in urine. *Nature Reviews Gastroenterology & Hepatology* (2015).
 - Recommended by F1000
 9. **Prindle A**, Selimkhanov J, Li H, Razinkov I, Tsimring L, Hasty J. Rapid and tunable post-translational coupling of genetic circuits. *Nature* (2014).
 - Commentary: Solé R, Macía J. Biocircuits in synchrony. *Nature* (2014).
 - Commentary: Burgess DJ. Cut up to bring together. *Nature Reviews Genetics* (2014).
 8. Danino T, **Prindle A**, Hasty J, Bhatia SN. Measuring growth and gene expression dynamics of tumor-targeted *S. typhimurium* bacteria. *JoVE* (2013).
 7. **Prindle A**. Synthetic biology at all scales. *Trends in Biotechnology* (2013).
 6. **Prindle A**, Stanton B. The First Annual Winter q-bio Meeting: Quantitative biology on the Hawaiian Islands. *ACS Synthetic Biology* (2013).
 5. **Prindle A**, Hasty J. Making gene circuits sing. *PNAS* (2012).
 4. **Prindle A**, Selimkhanov J, Danino T, Samayoa P, Goldberg A, Bhatia SN, Hasty J. Genetic circuits in *Salmonella typhimurium*. *ACS Synthetic Biology* (2012).
 3. Danino T, Lo J, **Prindle A**, Hasty J, Bhatia SN. In vivo gene expression dynamics of tumor-targeted bacteria. *ACS Synthetic Biology* (2012).
 2. **Prindle A**, Samayoa P, Razinkov I, Danino T, Tsimring L, Hasty J. A sensing array of radically coupled genetic ‘biopixels’. *Nature* (2012).
 - Commentary: Voigt CA. Bacteria collaborate to sense arsenic. *Nature* (2012).
 - Recommended by F1000
 1. **Prindle A**, Hasty J. Stochastic emergence of groupthink. *Science* (2010).

Awards

2016 – 2021	CASI Fellow, Burroughs Wellcome Fund
2015	Aspen Center for Physics Travel Award
2014 – 2017	Simons Foundation Fellow, Helen Hay Whitney Foundation
2014	Damon Runyon Postdoctoral Fellowship (declined)
2014	Best Graduate Research Talk, UCSD Bioengineering Day
2013	SB6.0 Young Researcher Travel Award
2012	Dynamics Days 2012 Travel Award
2011	SB5.0 Young Researcher Travel Award
2010 – 2013	NDSEG Graduate Research Fellowship
2010	Finalist, DOE OSGF Graduate Research Fellowship
2009	Amgen Scholar, Amgen, Inc.
2008	Ernest R. Roberts SURF Fellowship, California Institute of Technology

Talks & Seminars

03/2017 Northwestern University, Biochemistry and Molecular Genetics Dept, Chicago, IL

02/2017 UIUC, Bioengineering Dept, Urbana, IL
01/2017 Yale University, MCDB Dept, New Haven, CT
12/2016 Rice University, Bioengineering Dept, Houston, TX
11/2016 Caltech, Bioengineering Dept, Pasadena, CA
01/2016 UC Irvine, Biomedical Engineering Dept, Irvine, CA
01/2016 Populations, Evolution & Physics, Aspen Center for Physics, CO
11/2015 Fall Workshop on Biological Timing, Center for Circadian Biology, La Jolla, CA
10/2015 Quarterly Systems-to-Synthesis Meeting, San Diego Center for Systems Biology, La Jolla, CA
09/2015 UCSD-Salk Biology Fall Retreat, Lake Arrowhead, CA
07/2014 Synthetic Biology: Engineering, Evolution & Design, Manhattan Beach, CA
05/2014 UCSD Industrial Advisory Board Meeting, La Jolla, CA
04/2014 UCSD Bioengineering Day, La Jolla, CA
02/2014 The Second Annual Winter q-bio Meeting, Waikoloa Village, HI
07/2013 SB6.0: The Sixth International Meeting on Synthetic Biology, London, UK
02/2013 The First Annual Winter q-bio Meeting, Waikiki, HI
11/2012 Fall Workshop on Biological Timing, Center for Circadian Biology, La Jolla, CA
04/2012 UCSD Jacobs Research Expo, La Jolla, CA
01/2012 Dynamics Days 2012, Baltimore, MD
06/2011 SB5.0: The Fifth International Meeting on Synthetic Biology, Stanford, CA
04/2011 UCSD Jacobs Research Expo, La Jolla, CA

Teaching Experience

SP 2011 Biotechnology Laboratory (teaching assistant, BENG162, UCSD)
WI 2011 Biosystems and Control (teaching assistant, BENG122, UCSD)
SP 2010 Modeling and Computation in Bioengineering (teaching assistant, BENG125, UCSD)