

CURRICULUM VITA

Daniel B. Forger III, Ph.D.

Department of Mathematics

University of Michigan

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EDUCATION

- 1999 B.A., Harvard College
Cambridge, MA 02138
Applied Mathematics (Medical Sciences)
Undergraduate Thesis Title: "The Modeling of Circadian Oscillators"
- 1999 M.S. Harvard Graduate School of Arts and Sciences (GSAS)
Cambridge, MA 02138-3654
Applied Mathematics (Medical Sciences)
- 2003 Ph.D., New York University
New York, NY 10012
Mathematics
Dissertation Title: "Deterministic and Stochastic Mathematical Modeling and Computer Simulation of the Mammalian Intracellular Circadian Clock"

TRAINING

Postdoctoral

- 2003-2005 Sloan Post-Doctoral Fellow, Blau Lab, Biology Department
New York University, New York, NY

Pre-doctoral

- 1999-2000 Pre-doctoral Trainee in Sleep, Circadian and Respiratory Neurobiology,
Brigham and Women's Hospital, Harvard Medical School (NRSA T32)

Fellowships

- 2000-2003 National Science Foundation Graduate Research Fellowship
- 2003-2005 Sloan Foundation Fellowship in Computational Molecular Biology

ACADEMIC APPOINTMENTS

- 1997-1999(summers) Research Assistant, Division of Engineering and Applied Sciences,
Harvard University

- 2000-2001(summers) Research Associate, Paydarfar and Clay Labs,

Marine Biological Laboratories, Woods Hole, MA

2003 (fall)	Research Consultant, Paydarfar Lab, Department of Neurology, University of Massachusetts Medical School
2005-2009	Assistant Professor of Mathematics, University of Michigan
2009-2013	Associate Professor of Mathematics and Assistant Research Professor of Computational Medicine and Bioinformatics, University of Michigan
2013-current	Professor of Mathematics and Research Professor of Computational Medicine and Bioinformatics, University of Michigan

GRANT SUPPORT

Pending

7/1/2017 – 6/30/2021	NIH R01 “Characterization of Affective Instability: Mapping Symptoms to Biomarkers” (Forger PI, Cochran and McInnis, co-PI) \$2,529,047 This proposal was submitted last year to the CRCNS program where it was recommended for funding by the panel. However, there were not enough funds for CRCNS from the NIMH to support it so they recommended resubmission as a regular R01.
4/1/2017 – 3/31/2020	NSF/NIH Quantitative approaches to biomedical big data “Modeling and testing real world circadian rhythms with wearable and genetic big data” (Forger PI, Arnedt and Sen, co-PI) \$900,000
1/1/2017 – 12/31/2019	Michigan Institute for Data Science “Identifying Real-time Data Predictors of Stress and Depression Using Mobile Technology “ (Sen PI, Forger and others co-PI) \$1,250,000 (Forger budget of \$125,000 direct costs), This proposal was submitted after selection of our white paper.

Current

10/1/2015 – 4/29/2017	MCubed “Analyzing light, human sleep and circadian rhythms 60K direct costs (Forger PI, Goldstein and Wong, co-PI)
1/1/2016 – current	Gilmore Fund for Sleep Research \$14983 direct costs (Forger PI)
9/1/2015-8/31/2017	Collaboration between University of Michigan and Shanghai JiaoTong University (Forger and Cai PIs) \$200K direct costs

12/1/2013-11/30/2016	Army Research Office W911NF-13-1-0449 \$360,000 Modeling Subconscious Vision Forger (PI)
9/1/2012-8/31/2016	Human Frontiers of Science Project Grant RPG0024/2012 \$1,050,000 Networks, Genetics, Clocks and Psychosis, A Multi- Disciplinary and Multi-scale Approach Forger (PI), Piggins (Co-PI), Takumi (Co-PI)
<i>Previous</i>	
6/01/2014-5/31/2015	Air Force Office of Scientific Research (AFOSR) FA9550-11-1-0165 \$196,530 Understanding Synchrony and Stochasticity in Coupled Neuronal and Genetic Oscillators Forger (PI)
7/15/2011-12/31/2013	Air Force Office of Scientific Research (AFOSR) FA9550-11-1-0165 \$395,586 Information Processing and Collective Behavior in a Neuronal Model System Forger (PI)
2010-2013	U Michigan Cardiac Center \$50,000 Forger (Co-PI)
2010- 2013	National Science Foundation (NSF) SCREMS: Scientific Computing and Mathematics at the University of Michigan \$175,000.00 Forger (Co-PI)
2009-2011	Pfizer Modeling CKI Inhibition \$120,000
2008-2011	Air Force Young Investigator \$357,389 Modeling the Physiology of Circadian Timekeeping
2006-2011	NIH R01 GM063642, \$1,343,964 (total) Forger (Co-PI) Genetic Systems Bioengineering for Escherichia coli

- 2007-2011 NIH R01 GM060387, \$1,231,055, (total)
 Forger (Co-PI)
 Casein Kinase I and the Regulation of Circadian Rhythm
- 2008-2011 Air Force Office of Scientific Research (AFOSR) FA9550-08-1-0111, \$408,253
 Forger (Co-PI)
 Mathematical Modeling of Circadian and Homeostatic Interaction

COMMITTEES AND MEMBERSHIPS

External Advisory Board for the Center for Research on Biological Clocks

Society for Research on Biological Rhythms

Air Force PRET External Review (2004)

Advisory Board for 2010-2011 Theme Year Mathematical Biosciences Institute

AWARDS AND HONORS

- 1999 Richard Kronauer Travel Award for Excellence in Biological Modeling
- 1999 David McCord Prize, Harvard College
- 2000, 2002 Travel Award, Society for Research on Biological Rhythms
- 2003 Stuyvesant High School Mentor Award
- 2004 Wilhelm Magnus Memorial Prize for Significant Contributions to the Mathematical Sciences
- 2004 Dean's Outstanding Dissertation Award in the Natural Sciences
- 2004 Burroughs Wellcome Fund Career Award at the Scientific Interface (Finalist)
- 2007 Air Force Office of Scientific Research Young Investigator
- 2012-current PI Human Frontiers of Science Program Grant (< 5% success rate)

EDITORIAL POSITIONS

- June 2007 issue Guest Editor for the Journal of Biological Rhythms
- Editorial Board Journal of Biological Rhythms
- Editorial Board Journal of Theoretical Biology
- Editorial Board Current Opinion in Systems Biology

Ad Hoc Reviewer

National Science Foundation, Science, Proceedings of the National Academy of Sciences, CNS Journal, PLOS Computational Biology, Biophysical Journal, The Journal of Biological Rhythms, The Journal of Theoretical Biology, Physics Letters A, Journal of Neuroscience, ComPlexUs, Molecular Systems Biology, Cell, Cell Reports, PLoS One

TEACHING ACTIVITIES

Course Assistant, Harvard University

1998(fall) Nonlinear Dynamics and Chaos

Course Instructor, University of Michigan

2006(winter) Math 563 Advanced Mathematical Biology: Analyzing Biological Rhythms

2006(fall) Math 463 Mathematical Modeling in Biology

2007(winter) Math 563 Advanced Mathematical Biology: PDE modeling in Biology

2007(fall) Math 571 Numerical Scientific Computing

2008(winter) Math 564 Topics in Mathematical Biology: Analyzing Biological Rhythms

2009(winter) Math 471 Introduction to Numerical Methods

2010(winter) Math 564 Topics in Mathematical Biology: Scientific Computing in Medicine

2011(winter) Math 571 Numerical Scientific Computing

2012(winter) Math 564 Topics in Mathematical Biology: Analyzing Biological Rhythms

2012(fall) Math 463 Mathematical Modeling in Biology

2013(winter) Math 563 Advanced Mathematical Biology: Modeling Vision

2013(fall) Math 463 Mathematical Modeling in Biology

2014(fall) Math 463 Mathematical Modeling in Biology

2015(winter) Math 564 Topics in Mathematical Biology: Analyzing Biological Rhythms

2015(fall) Math 463 Mathematical Modeling in Biology

2016(winter) Math 563 Math, Music and the Brain

2016(fall) Math 463 Mathematical Modeling in Biology

Teaching of Modules in University of Michigan Courses:
Bioinformatics 525 (Winter 2007), Neuroscience 616 (Winter 2008, Winter 2010, Winter 2012, Winter 2015), UC 415 (Fall 2011, Winter 2012, Fall 2012).

Teaching Independent Study Courses, Research Experiences for Undergraduates and Formal Research Mentoring:

REU: Melinda Kleczynski (2006), Hasan Cheema (2008), Michelle Fleschner (2009, with Cecilia Diniz-Behn), Andre Schultz (2010), Samuel Faught (2010, 2011), Panigiotis Fotiadis (2011), Kirill Serkh (2011), Alexander Verros (2012, 2013) Christopher Bate (2013), Marc Nemeth (2013), Jonathan Timkovich (2013) Sam Christensen (2015)

Math 499: Andre Schultz (Winter 2010), Samuel Faught (Winter 2011), Panagiotis Fotiadis (Fall 2011), Christopher Bate (Winter 2013), Marc Nemeth (Winter 2013), Sam Christensen (2015)

Biophysics 399: Samuel Christensen (Winter 2016)

Physics 498: Choon Kiat Sim (Winter 2007)

Math 700: Kirill Serkh (Fall 2011), Daniel DeWoskin (Winter 2012), Olivia Walsh (Fall 2012), Kevin Hannay (Fall 2014), Yining Lu (Fall 2015, Winter 2016)

Summer Biomedical Research Proposal: Amrit Misra (Summer 2010)

University Research Opportunity Program: Alexander Verros (2012-2013)

COMMITTEE AND ORGANIZATIONAL SERVICE

Chair of organizing committee: Workshop on Modeling Circadian Rhythmicity, Sleep Regulation and Neurobehavioral Function, held concurrently with the annual meetings of the Society for Mathematical Biology and the SIAM Life Sciences Meeting funded by AFOSR

Organizer, Workshop on Circadian Rhythms in Plants and Fungi (MBI)

Program Committee, Biannual Meeting of the Society for Research on Biological Rhythms (2012)

Organizer MBI/NIMBIOS/CAMBAM Summer Graduate Program 2014

Organizer, Lorentz Center Workshop on Human Circadian Rhythms 2015

University of Michigan Committee Service:

Mathematics Department Committees and Service

Personnel (2012-current), Executive (2007-2008), Undergraduate Advising (2008-2012), Research Experiences for Undergraduates (2009-2010, 2010-2011, 2015-2016, member 2012-2013 chair), Computer (2007-2011, 2013, 2015-2016), Applied Analysis Exam (2009-2011), Teaching in Department Ethics Course (Fall 2011, Winter 2012, Fall 2012, Fall 2013, Fall 2014,

Fall 2015), Undergraduate Mathematical Modeling (2015, 2016), Department Liaison (2015, 2016)

Department of Computational Medicine and Bioinformatics Committees and Service:
Bioinformatics/CCMB seminar committee, (2010-2012, chair 2010-2011) CCMB Pilot grant review panel (2012).

Graduate Student PhD Thesis Committees (at the University of Michigan, unless otherwise stated): Harsh Jain (2008), Megan Hagenauer (2010), Samantha Zhang (2011), Erin Shellman (2012), Zepeng Yao (current). Andre Souza (current), Caroline Adams (Current), Scott Rich (Current), Amiya Patanaik (external reviewer, Nanyang Technological University, Singapore, 2014)

Selected Talks

2016 Boeing Distinguished Lecture, University of Washington

2016 Duke University “From a network of 10,000 neurons to a smartphone app with 125,000 users: linking scales in biological rhythms”

2016 Summer School of Mathematical Modeling in Biological Systems (Institute of Natural Sciences, Shanghai Jiao Tong University) 10 hours of lectures

2016 Society for Research on Biological Rhythms Biannual Meeting, talk in neuronal networks symposium, talk at Trainee day and participation in Meet the Professor event

2016 SIAM Life Sciences/Annual Meeting talk in Minisymposium in honor of Charles Peskin

2016 SLEEP 2016 talk in Session “Novel approaches for Circadian Entrainment”

2016 Texas A&M conference on “Contemporary Mathematical Challenges in the Life Sciences”

2016 Georgia State University “From a network of 10,000 neurons to a smartphone app with 125,000 users: linking scales in biological rhythms”

2016 ARO “Mathematical approaches to study circadian rhythms”

2016 Virginia Commonwealth University Mathematics Colloquium “From a network of 10,000 neurons to a smartphone app with 125,000 users: linking scales in biological rhythms”

2015 Walter Reed “From a network of 10,000 neurons to a smartphone app with 125,000 users: linking scales in biological rhythms”

2015 University of Michigan Conference on Computational Discovery in Complex Systems Biology “From a network of 10,000 neurons to a smartphone app with 125,000 users: linking scales in biological rhythms”

2015 World Congress of Chronobiology “Multiple Roles of GABA in Circadian Timekeeping”

2015 MIPPKS “Principles from Circadian Timekeeping”

2015 SJTU Institute for Natural Sciences “Networks of Clocks”

2015 HFSP PI meeting “Clocks and Mood”

2015 Lorentz Center “A Global Assessment of Sleep Schedules using Smartphone Data”

2015 University of Chicago “From the nonstandard kinetics of a single PER2 molecule to iPhone app with 100,000 users: linking scales in biological rhythms”

2015 University of Alabama Medical School “From a network of 10,000 neurons to an

iPhone app with 100,000 users: linking scales in biological rhythms”

2015 University of Michigan Computational Medicine and Bioinformatics Seminar
 “A global assessment of sleep schedules using smartphone data”

2014 University of Surrey “From a Single Molecule to an iPhone app with > 100,000 users:
 Linking scales in Biological Rhythms”

2014 UCSD “From a Single PER2 Molecule to an iPhone app with 100,000 users: Linking scales
 in Biological Rhythms”

2014 McGill University “Using Mathematical Modeling to Understand Daily Timekeeping”

2014 Mathematical Biosciences Institute: Series of 10 Lectures on Biological Clocks

2014 Virginia Tech Seminar Series (Blacksburg VA) “Using Mathematical Modeling to
 Understand Daily Timekeeping”

2013 University of Michigan Depression Center Colloquium “Circadian Regulation and Mood
 Disorders”

2013 Distinguished Interdisciplinary Speaker, Howard Hughes Medical Institute Seminar Series.
 Gettysburg College, Gettysburg, PA 3 Talks: “A Mechanism for Robust Daily
 Timekeeping,” “How to Avoid Jetlag,” and “The Mathematics of Biological Clocks”

2013 Gordon Chronobiology Conference (Newport RI) “Supermodels see the light of day: How
 high performance computing can help the next generation of circadian research.”

2013 NCTS Conference on Mathematical Physiology (Taiwan) “Using Mathematical Modeling
 to Understand Biological Timekeeping”

2013 RIKEN Brain Sciences Institute (Japan) “Using Mathematical Modeling to Understand
 Biological Timekeeping”

2012 International Conference on Applied Mathematics, City University of Hong Kong, "A
 Mechanism for Robust Daily Timekeeping"

2012 Institute for Natural Sciences, Shanghai Jiao Tong University "Using Mathematics to
 Understand Biological Timekeeping"

2012 711th Human Performance Wing, Wright-Patterson Air Force Base "Jetlag: Optimal Light
 Treatments for Reentrainment in Minimal Time"

2012 Northwestern University "Jetlag: Optimal Light Treatments for Reentrainment in Minimal
 Time"

2012 Duke University "A Mechanism for Robust Circadian Timekeeping"

2012 University of Cincinnati "Jetlag: Optimal Light Treatments for Reentrainment in Minimal
 Time”

2011 Radcliffe Institute "Multiscale Modeling"

2011 University of Pennsylvania "The Surprising Complexity of Daily Timekeeping"

2011 Gordon Chronobiology Conference (Italy), "Multiscale Predictions within the SCN"

2011 Society for Mathematical Biology/European Society for Mathematical and Theoretical
 Biology "The Surprising Complexity of Signal Processing in Clock Neurons"

2011 University of Massachusetts (Amherst) "Multiscale Predictions within the SCN"

2010 Mathematical Biosciences Institute, Ohio State University "Timekeeping in Cells vs. Timekeeping in Networks"

2010 RIKEN conference on Mathematical Sciences and their Application (Kamisuwa) "The Mathematics of Biological Time"

2010 Hiroshima University Medical School "Using Mathematical Modeling to Understand Mammalian Timekeeping"

2010 Lorenz Center, University of Leiden (Holland) "Computational Neuroscience of Circadian Rhythms"

2010 University of Warwick (England), "Understanding Mammalian Circadian Timekeeping Through Mathematical Modeling"

2010 Math Department Colloquium (Michigan), "The Mathematics of Biological Time"

2010 Society for Industrial and Applied Mathematics Conference on the Life Sciences, "The Geometry of BioChemical Time"

2009 South Eastern and Central Texas Center for Clocks annual meeting, Keynote address, "Using Models to Make Unexpected Predictions about Biological Rhythms"

2009 Ohio American Physical Society Keynote Address "Coordinating Biological Timekeeping in Mammals: Noise and Silence Prevail"

2009 Michigan Systems Biology Conference "Coordinating Mammalian Timekeeping"

2009 Max Planck Institute for the Physics of Complex Systems (Dresden), "Coordinating Biological Timekeeping in mammals: Noise and Silence Prevail"

2009 University Manchester, "Modeling Circadian Rhythms"

2009 University of Texas Southwestern, "Using Models to Make Unexpected Predictions about Biological Rhythms"

2008 University of North Carolina, "Voter Fraud in the SCN: Detecting the Crimes of Biological Timekeeping"

2008 University of Wisconsin, "Voter Fraud in the SCN: Detecting the Crimes of Biological Timekeeping"

2008 Pfizer, "Modeling Mammalian Timekeeping"

2008 Rensselaer Polytechnic Institute "Coordinating Biological Timekeeping in mammals: Noise and Silence Prevail"

2008 Cold Spring Harbor Meeting (Hinxton, England), "Modeling Mammalian Circadian Timekeeping"

2008 Institute for Mathematics, University of Minnesota (3 talks), "Stochastic Modeling of Molecular Reaction Networks" "Type I Type II PERCs and Coupling" "Applications to Circadian Rhythms"

2008 Society for Industrial and Applied Mathematics Conference on the Life Sciences "Clustering, Multistability and the Complex Neuronal Coding of Daily Timekeeping"

2008 Harvard Conference to award the Farrell Prize, "BMAL1 and Noise-Induced Rhythms"

2008 Society for Mathematical Biology "BMAL1 and Noise-Induced Rhythms"

2007 National University of Singapore, "Modeling Mammalian Circadian Rhythms"

2007 RIKEN Center for Developmental Biology (Kobe) "Modeling Mammalian Circadian Timekeeping"
2007 Harvard Systems Biology Theory Lunch, "What makes a Genetic Network a Clock?"
2007 Indiana University/Purdue University Indianapolis, "What makes a Genetic Network a Clock?"
2007 Kavli Institute for Theoretical Physics, UC Santa Barbara "Discovering the Molecular basis of biological oscillations"
2007 Duke Conference in Honor of Michael Reed, "What makes a genetic network a clock?"
2007 Mathematical Association of America Indiana Section, "What makes a genetic network a clock?"

PUBLICATIONS

Book

Biological Clocks, Rhythms and Oscillations: The Theory of Biological Timekeeping,
MIT Press In Press

Journal Articles

Cochran AL, Schultz A, McInnis M, **Forger DB** Affective instability as a quantitative phenotype of mood course in bipolar disorder *Biological Psychiatry* Submitted

Stinchcombe AR, Moulard JW, Wong KY, Lucas RJ and **Forger DB** The SCN wired for vision *Neuron* Submitted

Moulard JW, Stinchcombe AR, **Forger DB**, Brown TM and Lucas RJ Representations of spatial patterns in the mouse SCN *Neuron* Submitted

Paul JR, DeWoskin DA, **Forger DB**, Gamble KL GSK3 regulation of persistent Na⁺ current encodes daily rhythms of excitability *Nature Communications* In Press.

Stinchcombe A, **Forger DB** An efficient method for simulation of noisy coupled multi-dimensional oscillators *Journal of Computational Physics* 321 (2016) 932.

Cochran AL, McInnis M, **Forger DB** Data-driven classification of bipolar I disorder from longitudinal course of mood *Translational Psychiatry* 6 (2016) e912.

Walch OJ, Cochran A and **Forger DB** A global quantification of “normal” sleep schedules using smartphone data *Science Advances* 2 (2016) e1501705.

Shlizerman E, Phillips-Portillo J, **Forger DB** and Reppert SM Neural integration underlying a time-compensated sun compass in the migratory monarch butterfly *Cell Reports* 15 (2016) 683.

Zhou M, Kim JK, Eng GWL, **Forger DB** and Virshup DM A Period2 phosphoswitch regulates and temperature compensates circadian Period *Molecular Cell* 60 (2015) 77.

Walch OJ, Zhang LS, Reifler AN, Dolikian ME, **Forger DB** and Wong KY Characterizing and modeling the intrinsic light response of rat ganglion cell photoreceptors. *Journal of Neurophysiology* 114 (2015) 2955.

Hannay KM, Booth V and **Forger DB** Collective phase response curves for heterogeneous coupled oscillators. *Phys Rev E* 92 (2015) 022923.

DeWoskin D, Myung J, Belle MD, Piggins HD, Takumi T and **Forger DB** Distinct roles for GABA across multiple timescales in mammalian circadian timekeeping *PNAS* 112 (2015) E2911.

Myung J, Hong S, DeWoskin D, De Schutter E, **Forger DB** and Takumi T GABA-mediated repulsive coupling between circadian clock neurons encodes seasonal time. *PNAS* 112 (2015) E2920.

Bodova K, Paydarfar D, **Forger DB** Characterizing Spiking in Noisy Type II Neurons *Journal of Theoretical Biology*, 365 (2015) 40.

Serh K, **Forger DB** Optimal Schedules of Light Exposure for Minimum-time Reentrainment of the Human Circadian System *PLoS Computational Biology*, 10 (2014) e1003523.

Goriki A, Hatanaka F, Myung J, Kim JK, Yoritaka T, Tanoue S, Abe T, Kiyonari H, Fujimoto K, Kato Y, Todo T, Matsubara A, **Forger DB** and Takumi T A novel protein, CHRONO, functions as a core component of the mammalian circadian clock *PLoS Biology* 15 (2014) e1001839.

Dewoskin D, Geng W, Stinchcombe A, and **Forger DB** It's not the parts, but how they interact that determines the behavior of circadian rhythms across scales and organisms *Royal Society Interface Focus* 4 (2014) 20130076.

Diekman CO, Belle MD, Irwin RP, Allen CN, Piggins HD and **Forger DB** Causes and Consequences of Hyperexcitation in Central Clock Neurons *PLoS Computational Biology* 9 (2013) e1003196

Kim JK, **Forger DB**, Marconi M, Wood D, Doran A Wager T, Chang C, Walton KM Modeling and validating chronic pharmacological manipulation of circadian rhythms *CPT Pharmacometrics and Systems Pharmacology* 17 (2013) e57

Fotiadis P, **Forger DB** Modeling the Effects of the Circadian Clock on Cardiac Electrophysiology *J. Biol. Rhythms* 28 (2013) 69.

Kim JK, **Forger DB** On the Existence and Uniqueness of Biological Clock Models Matching Experimental Data *SIAM J. Appl. Math.* 72 (2012) 1842.

Kim JK, **Forger DB** A Mechanism for Robust Circadian Timekeeping *Molecular Systems Biology* (2012) 8:630.

Clay J, **Forger DB**, Paydarfar D Ionic Mechanism Underlying Optimal Stimuli for Neuronal Excitation, *PLoS One* (2012) 7(9):e45983.

Forger DB Paydarfar D, Clay JR Optimal Stimulus Shapes for Neuronal Excitation *PLoS Computational Biology* 7 (2011) e1002089.

Forger DB Signal Processing in Cellular Clocks *PNAS* (2011), 108 (2011) 4281-5.

Fleshner M, Booth V, **Forger DB** Diniz Behn CG Multiple Signals from the suprachiasmatic nucleus are required for circadian regulation of sleep-wake behavior in the nocturnal rat, *Philosophical Transactions of the Royal Society A* 369 (2011) 3855.

Yamada YR, **Forger DB** Multiscale Complexity in the Mammalian Circadian Clock *Curr. Opinion Genes Dev* 20 (2010) 626. (Review).

Ko CH, Yamada YR, Welsh DK, Buhr ED, Liu AC, Zhang EE, Ralph MR, Kay SA, **Forger DB**, Takahashi JS, Emergence of noise-induced oscillations in the central circadian pacemaker *PLoS Biology* 8 (2010) e1000513.

Chang DE, Leung S, Atkinson MR, Reifler A **Forger DB**, Ninfa AJ Building Biological Memory by Linking Positive Feedback Loops *PNAS*, 107 (2010) 175-180.

Belle M.D.C., Diekman C.O., **Forger D.B.** and Piggins H.D., Temporal Electrical Silencing in the Mammalian Circadian Clock *Science* 326 (2009) 281-4.

Diekman CO, **Forger DB** Clustering Predicted by an Electrophysiological Model of the Suprachiasmatic Nucleus, *Journal of Biological Rhythms*, 24 (2009) 322-33.

Dean DA, **Forger DB** and Klerman EB Taking the Lag out of Jet Lag through Model Based Schedule Design. *PLoS Computational Biology* (2009) 5(6).

Virshup DM, **Forger DB** Keeping the Beat in the Rising Heat *Cell* (2009) 137 602-4 (Preview).

Clay JR, Paydarfar D and **Forger DB** A Simple Modification of the Hodgkin & Huxley Equations explains Type 3 Excitability in Squid Giant Axons, *J Royal Society Interface* 5 (2008) 1421-8.

Conrad E, Mayo AE, Ninfa AJ and **Forger DB** Rate constants rather than biochemical mechanism determine behavior of genetic clocks *J Royal Society Interface* 5 (2008) S9-15.

Virshup DM, Eide EJ, **Forger DB**, Gallego M, and Harnish EV Reversible protein phosphorylation regulates circadian rhythms *Cold Spring Harbor Symposium on Quantitative Biology* 72 (2007) 413-20.

Sim CK and **Forger DB** Modeling the Electrophysiology of Suprachiasmatic Nucleus Neurons, *J. Biol. Rhythms* 22 (2007) 445-453.

Virshup, DM and **Forger DB** After hours keeps clock researchers CRYing Overtime. *Cell*

129 (2007) 857-859 (Preview).

Forger DB, Gonze D, Virshup DM and Welsh DK Beyond Intuitive Modeling: Combining Biophysical Models with Innovative Experiments to Move the Circadian Clock Field, *Journal of Biological Rhythms* 22 (2007) 200-210 (Review).

Paydarfar D, **Forger DB**, and Clay JR Noisy Inputs and the Induction of On-Off Switching Behavior in a Neuronal Pacemaker. *J Neurophysiol.*, 96 (2006) 3338-3348.

Gallego M, Eide EJ, Woolf MF, Virshup DM and **Forger DB**. An opposite role for tau in circadian rhythms revealed by mathematical modeling, *PNAS* 103 (2006) 10618-23.

Forger DB, Drapeau M, Collins B, and Blau J, A new model for circadian clock research? *Molecular Systems Biology* (News and Views) msb4100019-E1 (2005)

Indic P, **Forger DB**, Dean DA, Brown EN, Kronauer RE and Jewett ME Comparison of the Amplitude Recovery Dynamics of Two Limit Cycle Oscillator Models of the Human Circadian Pacemaker. *Chronobiology International*, 22 (2005) 613-629.

Forger DB and Peskin CS, Stochastic Simulation of the Mammalian Circadian Clock, *PNAS*, 102 (2005) 321-324.

Forger DB and Paydarfar D, Starting, Stopping and Resetting Biological Oscillators: In Search of Optimum Perturbations, *Journal of Theoretical Biology*, 230 (2004) 521-532.

Forger DB and Peskin CS, Model Based Conjectures on Mammalian Clock Controversies, *Journal of Theoretical Biology*, 230 (2004) 533-539.

Forger DB and Peskin CS, A Detailed Predictive Model of the Mammalian Circadian Clock, *PNAS*, 100 (2003) 14806-14811.

Forger DB, Dean DA, Gurdziel K, Leloup J-C, Lee C, von Gall C, Etchegaray J-P, Kronauer RE, Goldbeter A, Peskin CS, Jewett ME and Weaver DR, Development and Validation of Computational Models for Mammalian Circadian Oscillators, *Omicron*, 7 (2003) 387-400.

Forger DB and Kronauer RE, Reconciling Mathematical Models of Biological Clocks by Averaging on Approximate Manifolds, *SIAM J. Appl. Math.* 62 (2002) 1281-1296.

Forger DB, Jewett ME and Kronauer RE A Simpler Model of the Human Circadian Pacemaker, *J. Biol. Rhythms* 14 (1999) 532-537.

Kronauer RE, **Forger DB** and Jewett ME Quantifying Human Circadian Pacemaker Response to Brief, Extended and repeated Light Stimuli over the Phototopic Range, *J. Biol. Rhythms* 14 (1999) 500-515.

Jewett ME, **Forger DB** and Kronauer RE Revised Limit Cycle Oscillator Model of Human Circadian Pacemaker, *J. Biol. Rhythms* 14 (1999) 493-499.

Book chapter

Ninfa AJ, Atkinson MR, **Forger DB**, Atkins S, Arps D, Selinsky S, Court D, Perry N and Mayo AE A Synthetic Biology Approach to Understanding Biological Oscillations: Developing a Genetic Clock for Escherichia coli in Bacterial Circadian Programs, Ditty et al. (2009)

Meeting abstract (most not listed)

Paydarfar, D; **Forger, DB**; Clay, JR. Control of transitions between repetitive firing and quiescence by stochastic stimulation of squid axons with membrane bistability
Conference: Scientific Meeting of the Physiological-Society Location: UNIV BRISTOL, BRISTOL, ENGLAND Date: SEP 05-07, 2001 Sponsor(s): Physiolog Soc
Source: JOURNAL OF PHYSIOLOGY-LONDON Volume: 536 Supplement: S Pages: 120P-120P Published: NOV 2001

PHD STUDENT AND POSTDOCTORAL MENTORING

Term Assistant Professors/Post-Doctoral Fellows and their following job placement:

Emery Conrad Manager and Research Scientist, Quantlab Financial
Richard Yamada American Mathematical Society Public Policy Fellowship
Cecilia Diniz-Behn (Co-Mentor Booth) Tenure Track Assistant Professor, Mathematics Department, Colorado School of Mines
Weihua Geng (Co-Mentor Krasny) Tenure Track Assistant Professor, Mathematics Department, Southern Methodist University
Adam Stinchcombe (Current)
Amy Cochran (Current)

PhD Students and their following job placement:

Casey Diekman 2010 (Co-advisors Vijay Nair and KP Unnikrishnan) Tenure Track Assistant Professor, New Jersey Institute of Technology
Nicholas Perry 2011 (Co-advisor Ninfa) Post-doctoral Fellowship, Timp Lab, Notre Dame
Jae Kyoung Kim 2013 (Co-advisor Booth) Post-doctoral Fellowship, Mathematical Bioscience Institute, Currently Tenure Track Assistant Professor at KAIST (winner of the Sumner Myers Award and the Outstanding Teaching Award)
Daniel DeWoskin 2015 (Co-advisor Schnell) Arthur J. Krener Assistant Professor of Mathematics, UC Davis (inaugural winner of the Peter Smereka Prize and winner of the Golden Stapler Prize)
Olivia Walch 2016 (expected) (Co-advisor Wong)
Kevin Hannay 2017 (expected) (Co-advisor Booth)