

## PETER C. ST. JOHN

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CONTACT INFORMATION Department of Chemical Engineering University of California, Santa Barbara Santa Barbara, CA 93106-5080 *Phone:* (508) 494-2474 *E-mail:* pstjohn@engineering.ucsb.edu *Office:* Engineering II, Rm. 1508

EDUCATION **University of California, Santa Barbara** September 2010 - present  
*Ph.D. Candidate, Department of Chemical Engineering*  
Santa Barbara, California  
Advisor: Francis J. Doyle III  
GPA: 3.68

**Tufts University** September 2006 - May 2010  
*BS, Chemical and Biological Engineering*  
Medford, Massachusetts  
Summa Cum Laude, Thesis Honors, Dean's List every semester  
GPA: 3.79

HONORS AND AWARDS CAST Student Travel Grant September 2014  
Society for Research on Biological Rhythms (SRBR) Research Merit Award June 2014  
Best Poster, Center for Chronobiology Symposium, UCSD February 2014  
1<sup>st</sup> Place, Society for Research on Biological Rhythms Logo Competition January 2014  
Mitsubishi Chemical Fellowship Recipient 2012-2015  
UCSB Scienceline 2011-2012 Life Science Outstanding Answerer June 2012  
National Science Foundation GRFP Honorable Mention April 2011  
Class of 1947 Victor Prather Prize May 2010  
Max Tischler Prize Scholarship May 2009  
Elected to Tau Beta Pi September 2008

PUBLICATIONS **St. John, P.C.**, Taylor, S.R., Abel, J.H., and F.J. Doyle III. Amplitude metrics for cellular circadian bioluminescence reporters (2014) *Biophysical Journal*, 107 (11) pp. 2712-2722

**St. John, P.C.**, Hirota, T., Kay, S.A. and F.J. Doyle III. Spatiotemporal separation of PER and CRY posttranslational regulation in the mammalian circadian clock (2014) *PNAS*, 111 (5) pp. 2040-2045.

Yang, R., Rodriguez-Fernandez, M., **St. John, P.C.**, and F.J. Doyle III. Chapter 8 – Systems Biology (2014) In E. Carson and C. Cobelli (Eds.) *Modelling Methodology for Physiology and Medicine, 2nd Edition*, pp. 159-187.

**St. John, P.C.**, and F.J. Doyle III. Estimating confidence intervals in predicted responses for oscillatory biological models (2013) *BMC Systems Biology* 7:71.

Hirota, T., Lee, J.W., **St. John, P.C.**, Sawa, M., Iwaisako, K., Noguchi, T., Pongsawakul, P.Y., Sonntag, T., Welsh, D.K., Brenner, D.A., Doyle, F.J. III, Schultz, P.G., Kay, S.A., Identification of small molecule activators of cryptochrome (2012) *Science*, 337 (6098) pp. 1094-1097.

Murphy A.R., **St. John P.C.**, Kaplan D.L. Modification of silk fibroin using diazonium coupling chemistry and the effects on hMSC proliferation and differentiation (2008) *Biomaterials*, 29 (19), pp. 2829-2838.

CONTRIBUTED TALKS **St. John, P.C.**, and F.J. Doyle III. November 2014. Development of Amplitude Response Curves for Single-Cell and Population-Level Circadian Systems. Presented at the 2014 AIChE Annual Meeting, Atlanta, GA

**St. John, P.C.**, and F.J. Doyle III. June 2014. Amplitude metrics for uncoupled cellular circadian bioluminescence reporters. Presented at the Society for Research on Biological Rhythms Meeting, Big Sky, MT.

**St. John, P.C.,** and F.J. Doyle III. October 2012. Cryptochrome balancing for period control: mathematical insights into circadian clock design. Presented at the Model-based Analysis and Control of Cellular Processes Workshop, Purdue University, West Lafayette, IN.

POSTER  
PRESENTATIONS

**St. John, P.C.,** and F.J. Doyle III. February 2014. Spatiotemporal separation of PER and CRY post-translation regulation. Presented at the UCSD Center for Chronobiology Symposium, La Jolla, CA.

**St. John, P.C.,** T. Hirota, S.A. Kay, and F.J. Doyle III. July 2013. Estimating confidence intervals in model predictions to determine plausible mechanisms for small molecule modifiers. Presented at the Chronobiology Gordon Research Conference, Newport, RI.

**St. John, P.C.,** and F.J. Doyle III. February 2013. Predictive confidence intervals from mathematical circadian models. Presented at the UCSD Center for Chronobiology Symposium, La Jolla, CA.

**St. John, P.C.,** T. Hirota, S. Kay, and F.J. Doyle III. May 2012. Cryptochrome balancing for period control. Presented at the Meeting of the Society for Research on Biological Rhythms, Destin, FL.

**St. John, P.C.,** and F.J. Doyle III. February 2012. Perturbation analysis of circadian clock degradation. Presented at the UCSD Center for Chronobiology Symposium, La Jolla, CA.

RESEARCH  
EXPERIENCE

**University of California, Santa Barbara** **September 2010 - present**  
*Ph.D. Candidate* Santa Barbara, California  
Computational analysis of the mammalian circadian clock, with a focus on elucidating the functional design consequences of the underlying genetic regulatory network.  
Advisor: Francis J. Doyle III  
Department: Chemical Engineering

**Tufts University** **September 2009 - May 2010**  
*Senior Honors Thesis* Medford, Massachusetts  
Catalytic Hydrodechlorination of 2-Chlorophenol using Viral-templated Palladium Nanoparticles  
Advisor: Hyunmin Yi  
Department: Chemical and Biological Engineering

**University of California, Los Angeles** **June 2009 - August 2009**  
*UCLA NanoCER Program (NSF REU)* Los Angeles, California  
Encapsulation Efficiencies and Release Rates from Water-in-Oil-in-Water Nanoemulsions  
Advisor: Timothy Deming  
Department: Bioengineering

**Tufts University** **June 2008 - August 2008**  
*Tufts Summer Scholars* Medford, Massachusetts  
Hydrodechlorination of 2-Chlorophenol with Palladium Nanoparticles on Genetically Modified Tobacco Mosaic Virus Scaffolds  
Advisor: Hyunmin Yi  
Department: Chemical and Biological Engineering

**Tufts University** **October 2007 - May 2008**  
*Undergraduate Research Credit* Medford, Massachusetts  
Chemically Modified Silk Fibroin Based Scaffolds for Bone Tissue Engineering  
Advisor: David Kaplan  
Department: Biomedical Engineering

RELEVANT SKILLS	<p><b>Research Areas</b></p> <ul style="list-style-type: none"> <li>• Nonlinear differential equations; sensitivity analysis</li> <li>• Stochastic systems</li> <li>• Uncertainty analysis; model selection</li> </ul> <p><b>Software</b></p> <ul style="list-style-type: none"> <li>• Python; including numpy, scipy, and matplotlib</li> <li>• Experience with relational databases (pandas) machine learning (scikit-learn) Bayesian methods (pymc); and parallel processing (scoop)</li> <li>• C/C++; SUNDIALS solvers, SWIG integration with python</li> </ul>	<ul style="list-style-type: none"> <li>• Optimization: nonlinear programming, randomized search methods</li> <li>• Parallel processing and cluster environments</li> </ul> <ul style="list-style-type: none"> <li>• git; (github account: pstjohn) have submitted pull requests to large open-source projects</li> <li>• Matlab</li> <li>• L<sup>A</sup>T<sub>E</sub>X; beamer</li> <li>• UNIX environment and bash scripting</li> <li>• HTML and CSS</li> </ul>
PROFESSIONAL MEMBERSHIPS	<p><b>AIChE</b> American Institute for Chemical Engineers; CAST (Computing and Systems Technology) division member</p> <p><b>SIAM</b> Society for Industrial and Applied Mathematics</p> <p><b>SRBR</b> Society for Research on Biological Rhythms</p>	
TEACHING EXPERIENCE	<p><b>University of California, Santa Barbara</b> <i>Teaching Assistant, ChE132c</i></p> <p>Helped teach undergraduate statistics for two subsequent years: gave three lectures, held office hours and review sessions, and graded homeworks.</p> <p><b>University of California, Santa Barbara</b> <i>Teaching Assistant, ChE180a</i></p> <p>Designed and ran experiments for the junior laboratory course. Also helped in grading student reports.</p>	<p><b>January 2013 - December 2013</b> Santa Barbara, California</p> <p><b>March 2012 - June 2012</b> Santa Barbara, California</p>
COMMUNITY INVOLVEMENT	<p><b>Peer Review</b></p> <p>Reviewer for Biophysical Journal; IEEE Control Systems Society Conference; 21st International Symposium on Mathematical Theory of Networks and Systems</p> <p><b>Scienceline "Ask A Scientist"</b></p> <p>Answers science and engineering questions posed by students and teachers from local K-12 schools. <b>Website:</b> <a href="http://www.scienceline.ucsb.edu">www.scienceline.ucsb.edu</a></p> <p><b>UCSB Discover Engineering Weekend</b></p> <p>Helped organize and run a weekend for local high school students to learn basic engineering principles and apply their knowledge to build miniature alternative energy cars.</p>	<p><b>January 2014-present</b></p> <p><b>December 2010 - present</b></p> <p><b>May 2011</b></p>
MENTORING EXPERIENCE	<p>Amanda Luan, Undergraduate Student, ICB SSB URAP</p> <p>Lukas Widmer, Masters Student, ETH Zurich</p> <p>Andrew Barisser, Rotation Student, BMSE UCSB</p>	<p><b>June 2014 - December 2014</b></p> <p><b>April 2012 - February 2013</b></p> <p><b>September 2012 - December 2012</b></p>