SIDDHARTHA G. JENA

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DESCRIPTION AND CAREER GOALS

I am a college senior with a broad range of interests in structural biochemistry, physical and mathematical modeling and computation, and molecular pathophysiology. My career aspirations are to conduct research in cellular and molecular biophysics in an academic institution, and to teach and train students.

EDUCATION

Princeton University *starting July 2016*
Ph.D. in Molecular Biology with a focus on Biophysics and Developmental Biology.

Harvard College *expected May 2016*
Joint A.B. with Honors in Chemistry and Physics and Mathematics, Secondary field in Molecular and Cellular Biology.
Also completed graduation requirements for Molecular and Cellular Biology, Chemical and Physical Biology.

Undergraduate Coursework: Physics: Mechanics, Electricity and Magnetism, Optics and Laser Physics, Quantum Mechanics, Statistical Mechanics and Thermodynamics. **Mathematics:** Linear Algebra, Multivariable Calculus, Complex Analysis, Group Theory/Algebra, Representation Theory, Topology, Mathematical Biology. **Chemistry:** Organic Chemistry, Biochemistry, Physical Chemistry, Quantum Chemistry, Inorganic Chemistry **Biology:** Cell Biology, Molecular Biology, Immunology, Neurobiology **Graduate Coursework:** Mathematical Biology (MATH 243), Quantum Chemistry (CHEM 242), Chemical Kinetics (ENGS 268), Synthetic Biology (SYSBIO 204), Cancer Biology (CB 212), Cellular Engineering (BE 222), Genomics (BIOPHYS 205).

RESEARCH EXPERIENCE

Center for Computational & Integrative Biology, Massachusetts General Hospital September 2015-Present
Research Assistant, Professor Jack Szostak's Research Group *Cambridge, MA*

· Experimental studies on the role of membrane composition on vesicle stability and permeability

Harvard University Department of Chemistry September 2013-Present
Research Assistant, Professor Martin Karplus's Research Group *Cambridge, MA*

· *In silico* studies on the role of cholesterol on Aquaporin-1 (AQP1)-mediated water transport

Harvard University Department of Mathematics and Department of Molecular and Cellular Biology May 2014-April 2015
Research Assistant *Cambridge, MA*

· Creating graph theoretical models for bacterial growth dynamics based on concepts of random graphs and fault tolerance

Wayne State University Department of Physiology, College of Medicine Dec 2014-January 2015
Collaborator *Detroit, MI*

· Collaborated on project entitled "Quantum Dots in Intracellular pH & Temperature Detection".

Radcliffe Institute for Advanced Studies May 2014-August 2014
Research Fellow *Cambridge, MA*

· Worked on creating a database of address information for geotagging of census information for the Boston Area Research Initiative (BARI)

Harvard University Department of Stem Cell Biology May 2013- February 2014
Research Assistant *Cambridge, MA*

· Investigated the molecular mechanism of limb and digit regeneration in axolotl (*Ambystoma mexicanum*)

Wayne State University Department of Chemical Engineering May 2012-August 2012
Research Assistant *Detroit, MI*

· Investigated Aquaporin-1 water transport dynamics using molecular dynamics (MD) simulations

Beth Israel Deaconess Medical Center June 2011-July 2011
Research Assistant *Cambridge, MA*

· Worked with a mouse model for gastric cancer to identify factors associated with *H. pylori*-induced gastric cancer

Wayne State University Department of Physiology, College of Medicine June 2008-September 2012
Research Assistant *Detroit, MI*

· Studied the effect of elevated plasma membrane cholesterol on water and gas transport in red blood cells

SCIENTIFIC PUBLICATIONS

1. Jena, S.G. A Random Graph Model of Density Thresholds in Swarming Cells. *Journal of Cellular and Molecular Medicine* (in-press)
2. Jena, S.G. (2013) Involvement of potassium channel in AQP1-mediated water and gas transport in erythrocytes. *Journal of Biological Physics and Chemistry* 13: 12-17.
3. Jena, S.G., Lee, J-S. (2010) High Cholesterol Impairs Water and Gas Transport in Red Blood Cells and is Ameliorated by the PLA2 Inhibitor ONO-RS-082. *Journal of Biological Physics and Chemistry* 10: 127-134.
4. Jena, S.G. Molecular Biology and Medicine. $E = mc^2$, University of Chicago, 2012. Online Publication: $http://mazziotti.uchicago.edu/journal/jenas.pdf$
5. Jena, P. K., Jena, S.G. (2007) Fresh water scarcity-A major global issue. National Symposium on Harvesting, Power Generation and Industrial Recycling of Water, IATES, Bhubaneswar, Orissa, India; pg. 158-170.

OTHER PUBLICATIONS

1. 50 Successful Harvard Application Essays, 2014 Edition. [ISBN 978-1-250-04805-9]
2. Jena, S. G. (2002) My Books. Anthology of Poetry by Young Americans ISBN: 1-883931; p39.

SELECTED TALKS AND CONFERENCES

1. 2016 Origins of Life Poster Session, Harvard University. Jena, S.G., Jin, L., Kamat, N., Szostak, J. Cation Stability of Blended Phospholipid/Fatty Acid Vesicles.
2. 2015 World Science Conference, Tel Aviv, Israel (invited)
3. 2015 Gordon Research Conference on Red Blood Cells, Holderness, NH. Jena, S.G., Ovchinnikov, V., Karplus, M. Elevated Cholesterol Impairs Aquaporin-1 Function in Red Blood Cells.

4. 2015 Invited Lecture, India Institute of Technology Bhubaneswar, Orissa, India. Lecture topic: Studying Water Transport Through AQP1 Using MD Simulation.
5. 2014 Harvard Alumni Association Fundraising Event. Lecture title: Mathematical Biology.
6. 2014 American Association for the Advancement of Science (AAAS) Student Poster Conference, Chicago, IL (presented poster) Project title: Involvement of potassium channel in AQP1-mediated water and gas transport in erythrocytes.
7. 2013 National Collegiate Research Conference, Harvard University (presented poster) Project title: Involvement of potassium channel in AQP1-mediated water and gas transport in erythrocytes.
8. 2012 Intel Science Talent Search Finalist (presented poster) Project title: High Cholesterol Impairs Water and Gas Transport in Red Blood Cells.
9. 2011 Intel International Science and Engineering Fair: Medicine & Health Sciences (presented poster) Project title: Erythrocyte Dysfunction and Amelioration in Hypercholesterolemic Conditions.
10. 2010 Intel International Science and Engineering Fair: Medicine & Health Sciences (presented poster) Project title: High Cholesterol Impairs Water and Gas Transport in Red Blood Cells and is Ameliorated by the PLA2 Inhibitor ONO-RS-082.

SELECTED HONORS AND AWARDS

1. 2012 United States Presidential Scholar
2. 2012 Bio Genius National Finalist
3. 2012 National Merit Scholar
4. 2012 Intel Science Talent Search (STS) Finalist
5. 2012 National Finalist, US Chemistry Olympaid
6. 2011 Siemens Competition Semifinalist
7. 2011 Edison Innovation Award, National Museum of Education Gallery of Young Inventors.
8. 2011 Davidson Fellow
9. 2011 Research Science Institute Scholar, MIT, Boston, MA (June 19-July 30, 2011)
10. 2011 Fourth Place in Medicine & Health Sciences, Intel Science & Engineering Fair, Los Angeles, CA (May 2011)
11. 2010 First Place in Medicine & Health Sciences, Intel Science & Engineering Fair, San Jose, CA (May 2010)
12. 2010 Minor Planet Named in Honor, Lincoln Laboratory, MIT, Boston, MA [26665 Sidjena]
13. 2010 State Finalist, Sanofi-Aventis BioGENEius Challenge

UNDERGRADUATE RESEARCH FUNDING

1. Harvard College Research Program (2013). Amount Awarded: $3,300. Project: Investigating the molecular mechanism of limb regeneration in *Ambystoma mexicanum*.
2. Harvard Origins of Life Initiative Summer Research Fund (2014). Amount Awarded: $4,000. Project: A Random Graph Model of Density Thresholds in Cellular Assemblies.
3. Harvard College Research Program (2015) Amount Awarded: $4,000. Project: Investigating the effect of cholesterol on AQP1-facilitated water transport using molecular dynamics simulation.

TEACHING

1. Grader, Physics 15b: Electricity and Magnetism, Harvard College Fall 2014
2. Mentor to Tony Ding, Research Science Institute 2015. Project title: A Model for the Evolution of QTL and Epistatic Interactions and their Effects on Phenotype.

EXTRACURRICULARS

- Harvard Undergraduate Council Student Advisory Board for Science (SABS), Member (Fall 2014-Spring 2015)
- Journal for Young Investigators (JYI), Associate Editor, Physical and Mathematical Sciences (Jan 2014-Apr 2014), Research Editor, Physical and Mathematical Sciences (Apr 2014-Dec 2014), Senior Research Editor (Dec 2014-Present). Responsibilities include editing and proofreading manuscripts written by undergraduate researchers around the world, submitting manuscripts for copy editing and publication, and managing the JYI Research Department as SRE.
- Student Board Member, Harvard Art Museums. Responsibilities include offering input and feedback on events and policies of the newly inaugurated Harvard Art Museums. (Aug 2014-Present)
- Dancer, Musician, and Choreographer, Harvard South Asian Dance Company (SADC), Harvard Expressions, Harvard Ghungroo (February 2013- Present)
- Events Chair, Harvard Biotechnology Association. Organized dinners, coffee chats, and conversations with leaders in biotechnology and bioengineering (August 2014 - May 2015)
- Executive Director of Science Policy, The Triple Helix International, and President, Harvard Triple Helix. Responsibilities include preparing podcasts and overseeing the preparation of publications to educate and inform a wide range of college students about topical developments in science and science policy (August 2013-Dec 2014)
- Academic and Political Chair, Harvard South Asian Association. Organized dinners, coffee chats, and laid the framework for a conference to stimulate dialogue on South Asian politics and South Asian identity in the United States (August 2013 - May 2014)
- Founder, Harvard Sustainable Science Initiative: Creating curricula for implementation of experimental science programs in rural areas of Africa and India to accompany technological advances such as solar cells and irrigation systems (2013-2014)