

Roshan A. Jain, Ph.D.

Department of Biology
Haverford College
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EDUCATION

- 2007 Ph.D., Princeton University, Dept of Molecular Biology
Graduate Thesis: "A Characterization of the *Cis*-acting Signals and *Trans*-acting Factors Regulating *nanos* mRNA Localization"
- 2000 B.S., *summa cum laude*, Cornell University, College of Agriculture and Life Sciences
Honors Thesis: "Characterization of *nirV* and a gene encoding a novel pseudoazurin in *Rhodobacter sphaeroides* 2.4.3"

RESEARCH EXPERIENCE

- 2015-Now Assistant Professor
Dept of Biology, Haverford College
- 2008-2015 Postdoctoral Fellow, Advisor: Dr. Michael Granato
Dept of Cell and Developmental Biology, University of Pennsylvania
- 2001-2007 Graduate Research, Advisor: Dr. Elizabeth R. Gavis
Dept of Molecular Biology, Princeton University
- 1998-2000 Undergraduate Honors Research, Advisor: Dr. James P. Shapleigh
Dept of Microbiology, Cornell University
- 1998 Summer Research Internship, Advisor: Dr. Richard Almon
Dept of Biological Sciences, SUNY Buffalo

RESEARCH INTERESTS

Behavioral Genetics: Uncovering the genes and molecular pathways regulating *behavioral choice and learning* through genetic, cellular, and pharmacological methods

Neural Development: Understanding the formation, wiring, and function of neural circuits controlling motor behavior

TEACHING & MENTORING EXPERIENCE

Haverford College

- 2015-Now **Instructor** for Undergraduate Laboratory & Lecture Courses
- Cell Structure and Function [BIOL 200]
 - Unlocking Key Concepts in Biology [BIOL 220]
 - Molecular Neuroscience [BIOL 309]
 - Senior Research Tutorial in Molecular Neurobiology [BIOL 409]

University of Pennsylvania

- 2008-2015 **Research supervisor and mentor** for graduate rotation students (1), post-bac technicians (4), undergraduate students (6), and high school students (1)
- Designed and supervised genetic, cell biology, and behavioral experiments with zebrafish for female and under-represented minority students from the

University of Pennsylvania, Lincoln College, Bates College, and Technische Universität München

2010-2014 **Instructor** for The Philadelphia School's K-12 Science Outreach Program

- Presented hands-on neuroscience demonstrations using zebrafish

Woods Hole Marine Biology Laboratory

2010-2015 **Faculty**, Zebrafish Development & Genetics course

- Designed and instructed zebrafish neurobiology & behavior lab modules

iPRAXIS (Philadelphia, PA)

2010-2015 **Science Fair Mentor** at Belmont Charter School, Philadelphia PA

- Guided small groups of 7th & 8th grade minority students through designing, executing, and presenting science fair projects in weekly sessions across 3-month periods

Princeton University

2015 **Guest Lecturer**, *Genetics of Eukaryotic Organisms [MOL 516]*

- Taught guest lecture on forward genetics in vertebrate organisms

2004-2005 **Research supervisor** for graduate rotation students (2)

- Designed and supervised molecular biology experiments using *Drosophila*

2005 **Teaching Assistant & Lecturer**, *Developmental Biology [MOL 507]*

- Taught several course lectures, designed and evaluated exams

2003 **Teaching Assistant**, *Cell and Developmental Biology [MOL 348]*

- Taught weekly discussion sections on lecture-related primary literature

2001 **Lab Instructor**, *Introduction to Cellular and Molecular Biology [MOL 214]*

- Taught weekly lab sessions

Cornell University

1998-2000 **Biological Sciences Tutor**, Ho-Nun-De-Kah Honor & Service Society

1999 **Undergraduate Teaching Assistant**, *Genetics [BioGD 281]*

- Taught weekly problem-solving sessions in genetics

1998 **Biology Instructor**, Joseph C. Wilson Magnet High School, Rochester NY

- Co-taught high school science students for 1 week with curriculum I designed in *Teaching Contemporary Biology [BioG 410]*

HONORS/AWARDS

2010-2012 NIH Kirschstein-NRSA Fellowship (Individual fellowship)

2008-2009 NIH Kirschstein-NRSA Fellowship (Institutional Training Grant)

2008 DeLill Nasser Award for Professional Development in Genetics, Genetics Society of America

2006 Dean's Fund for Scholarly Travel Award Recipient, Princeton University

2001-2004 NSF Graduate Research Fellowship

2001 Graduate Excellence in Teaching Award, Princeton University Dept of Molecular Biology

2000 Summa cum laude, Cornell University

2000 High Honors in Research for Undergraduate Thesis, Cornell University

1999 Howard Hughes Undergraduate Research Scholar, Cornell University

1998-2000 Ho-Nun-De-Kah Honor & Service Society, Cornell University

1996-2000 Meinig Family Cornell National Scholar

1996-2000 Dean's List, Cornell University
 1996 Valedictorian, Williamsville South High School

SCIENCE OUTREACH & SERVICE

2016 Co-organizer, Mid-Atlantic Regional Zebrafish Meeting, Philadelphia PA
 2012-2014 Science Fair Judge, Belmont Charter School, Philadelphia PA
 2012-2016 Cornell Alumni Admissions Ambassador Network Volunteer
 2011-2013 Science Fair Judge, Penn Alexander Elementary School, Philadelphia PA
 2013 Science & Life storyteller, First Person Arts, Philadelphia PA
 2012 Ad hoc peer reviewer, Trends in Biotechnology
 2011 Science Fair Judge (5th grade), Lea Elementary School, Philadelphia PA
 2007 Event Coordinator (Heredity), New Jersey Jr. High Regional Science Olympiads Competition
 2004 Scholars in the Schools presenter, Princeton NJ

PUBLICATIONS

(* denotes undergraduate or post-bac co-author)

2016 Hoffman EJ, Turner KJ, Fernandez JM, Cifuentes D, Ghosh M, Ijaz S, **Jain RA**, Kubo F, Bill BR, Baier H, Granato M, Barresi MJF, Wilson SW, Rihel J, State MW, Giraldez AJ. Estrogens Suppress a Behavioral Phenotype in Zebrafish Mutants of the Autism Risk Gene, *CNTNAP2*. *Neuron*, in press.

2015 Wolman MA, **Jain RA**, Marsden K, Bell H*, Skinner J*, Hayer K*, Hogenesch J, Granato M. A genome wide screen identifies PAPP-AA-mediated IGFR signaling as a novel regulator of habituation learning. *Neuron* 85:1-12.

2014 **Jain RA**, Bell H*, Lim A, Chien CB, Granato M. Mirror movement-like defects in startle behavior of zebrafish *dcc* mutants are caused by aberrant midline guidance of identified descending hindbrain neurons. *J Neuroscience* 34(8):2898-909.

2012 Lakhina V, Marcaccio C, Shao X, Lush M, **Jain RA**, Fujimoto E, Bonkowsky J, Granato M, Raper J. Netrin/DCC signaling guides olfactory sensory axons to their correct location in the olfactory bulb. *J Neuroscience* 32(13):4440-56.

2011 **Jain RA**, Wolman MA, Schmidt LA*, Burgess HA, Granato M. Molecular-genetic mapping of zebrafish mutants with variable phenotypic penetrance. *PLoS One* 6(10):e26510.

2011 Wolman MA, **Jain RA**, Liss LE*, Granato M. Chemical modulation of memory formation in larval zebrafish. *PNAS* 108(37):15468-73.

2011 Sinsimer K, **Jain RA**, Chatterjee S, Gavis ER. A late phase of germ plasm accumulation during *Drosophila* oogenesis requires Lost and Rumpelstiltskin. *Development* 138(16):3431-40.

2008 **Jain RA**, Gavis ER. The *Drosophila* hnRNP M homolog, Rumpelstiltskin, regulates *nanos* mRNA localization. *Development* 135(5):973-982.

2004 Forrest KM, Clark IE, **Jain RA**, Gavis ER. Temporal complexity within a translational control element in the *nanos* mRNA. *Development* 131:5849-57.

- 2001 **Jain R**, Shapleigh JP. Characterization of *nirV* and a gene encoding a novel pseudoazurin in *Rhodobacter sphaeroides* 2.4.3. *Microbiology* 147, 2505-2515.

INVITED TALKS

- 2016 Villanova University, Department of Biology
 2015 Mid-Atlantic Regional Zebrafish Meeting, Platform Session
 2014 Developmental Biology Symposium, Princeton University
 2012 Cold Spring Harbor Laboratory Meeting: Axon Guidance, Synapse Formation and Regeneration, Platform Session
 2011 Mid-Atlantic Regional Zebrafish Meeting, Platform Session
 2010 Gordon Research Conference: Genes & Behavior, "Data Blitz" Presentation
 2007 48th Annual Drosophila Research Conference, Platform Session
 2006 47th Annual Drosophila Research Conference, RNA Biology Workshop

CONFERENCE PRESENTATIONS

- 2014 **Jain RA**, Wolman MA, Marsden K, Bell H, Hayer K, Hogenesch J, Granato M. "Genetics and pharmacogenetics of simple vertebrate decision-making." 44th Annual Society for Neuroscience Conference. Washington, DC.
- 2014 **Jain RA**, Wolman MA, Marsden K, Bell H, Hayer K, Hogenesch J, Granato M. "Genetics and pharmacogenetics of reflexive decision-making." 11th International Zebrafish Development and Genetics Conference. Madison, WI.
- 2012 **Jain RA**, Granato M. "The Deleted in Colorectal Cancer (DCC) guidance receptor coordinates hindbrain and spinal cord circuitry underlying left-right coordinated motor behaviors." Axon Guidance, Synapse Formation and Regeneration Meeting. CSHL, NY.
- 2012 **Jain RA**, Wolman MA, Marsden K, Bell H, Granato M. "Forward genetic dissection of acoustic startle behavioral performance and plasticity." 10th International Zebrafish Development and Genetics Conference. Madison, WI.
- 2012 **Jain RA**, Wolman MA, Marsden K, Bell H, Schmidt L, Granato M. "Genetic analysis of simple learning behavior in vertebrates." Neuronal Circuits Meeting. CSHL, NY.
- 2011 **Jain RA**, Granato M. "The role of *spaced out/DCC* in regulating zebrafish behavioral circuitry." Mid-Atlantic Regional Zebrafish Meeting. Baltimore MD.
- 2010 **Jain RA**, Granato M. "The Deleted in Colorectal Cancer (DCC) guidance receptor coordinates fast turning behaviors." Axon Guidance, Synapse Formation and Regeneration Meeting. CSHL, NY.
- 2010 **Jain RA**, Granato M. "The role of the *spaced out* gene in modulating larval startle behavior." 9th International Zebrafish Development and Genetics Conference. Madison, WI.
- 2010 **Jain RA**, Wolman MA, Liss LE, Clark KJ, Ekker SC, Granato M. "Genetic analysis of simple learning behavior in vertebrates." Gordon Research Conference: Genes & Behavior. Ventura, CA.
- 2007 **Jain RA**, Gavis ER. "Regulation of *nanos* mRNA by *Drosophila* hnRNP M." 48th Annual Drosophila Research Conference. Philadelphia, PA.
- 2006 **Jain RA**, Gavis ER. "hnRNP M: A Regulator of *nanos* mRNA in *Drosophila*." 47th Annual Drosophila Research Conference. Houston, TX.

- 2005 **Jain RA**, Gavis ER. "Finding *neverland*: Identifying requirements for *nanos* mRNA localization." *46th Annual Drosophila Research Conference*. San Diego, CA.
- 2004 **Jain RA**, Gavis ER. "Identifying requirements for *nanos* mRNA localization in *Drosophila*." *45th Annual Drosophila Research Conference*. Washington, DC.
- 2003 **Jain RA**, Gavis ER. "Identifying requirements for *nanos* mRNA localization in *Drosophila*." *44th Annual Drosophila Research Conference*. Chicago, IL.
- 2002 **Jain RA**, Gavis ER. "Identifying *cis* signals for *nanos* localization in *Drosophila*." *43rd Annual Drosophila Research Conference*. San Diego, CA.