Biomedical Sciences
PhD and MS Orientation

Jim Millonig, PhD - Senior Associate Dean
Janet Alder, PhD - Assistant Dean

Graduate School of Biomedical Sciences – New Brunswick/ Piscataway

August 31, 2016

rwjms.rutgers.edu/education/gsbs/
Staff of the Graduate School of Biomedical Sciences – New Brunswick/Piscataway

RWJMS Research Tower R-102

James Millonig, PhD, Senior Associate Dean

Janet Alder, PhD, Assistant Dean of Graduate Academic and Student Affairs

Smita Thakker-Varia, PhD, Assistant Dean of Graduate Academic and Student Affairs

Perry Dominquez - MD/PhD Program, finance and fee information
domingpr@gsbs.rutgers.edu

Tina Cicollela – Registration, graduation
cicoletm@gsbs.rutgers.edu

Johanna Sierra – Masters programs
sierrajo@gsbs.rutgers.edu
Rutgers Facts

- Member of Association of American Universities and Big10 Academic Alliance

- Ranked 50th worldwide of 1000 top universities, 33rd of all US universities and 17th among US public universities by the Center for World University Rankings (2015)

- More faculty in the National Academy of Sciences and the American Academy of Arts and Sciences than any other public peer school in the Northeast.

- Among the top 3 public universities in the Northeast in receipt of Sloan Research Fellowships and National Science Foundation Faculty Early CAREER development awards.

- Top 10% of American universities in science and engineering research and development expenditures.

- Top 3 nationally in National Science Foundation Integrative Graduate Education and Research Traineeship funding.
Dr. Ken Irvine has been a member of Howard Hughes Medical Institute since 2000. His lab studies how cells communicate with each other during animal development to regulate organ size and shape.

Dr. Federico Sesti was awarded a Fulbright Grant in 2015 to travel to Bangalore, India where he studied the role of an oxidized potassium channel in controlling aging and cognitive decline.
Our faculty have won prestigious awards

Dr. Evelyn Witkin was selected for the Lasker Award in 2015 for her discoveries concerning the DNA-damage response. The Lasker Award given annually since 1945 to living persons who have made major contributions to medical sciences. The awards are sometimes referred to as "America's Nobels". Eighty-six Lasker laureates have gone on to receive the Nobel Prize.

Dr. Joachim Messing was selected for the Wolf Prize in Agriculture in 2013 for his research efforts and innovations in recombinant DNA cloning and for deciphering the genetic codes of crop plants. Because there is no Nobel Prize in this category, the Wolf Prize in Agriculture is also regarded on par with the Nobel Prize.
Rutgers houses world-renowned resources

- Largest DNA and cell repository in the world for the study of genetics and autism, mental health, drug abuse, alcoholism, diabetes, and digestive and kidney disease.

- Host to the Protein Data Bank, the single worldwide repository for 3D protein structures.
Your education
Typical timeline

Year 1
Lab match
Qualifying exam A
Propositional
Qualifying exam B
Annual thesis advisory committee meetings
Thesis defense

Statistics:
Time to defense: ~5.7 years
# of publications: ~3 papers, ~1.4 first author
Some recent manuscripts


Przemyslaw Swiatkowski “Activation of microglial P2Y12 receptor is required for outward potassium currents in response to neuronal injury.” Neuroscience, January 2016.

Swapnil Devarkar “Structural basis for m7G recognition and 2′-O-methyl discrimination in capped RNAs by the innate immune receptor RIG-I.” PNAS, January 2016.


Jeffrey Overton “Hepatocystin is Essential for TRPM7 Function During Early Embryogenesis.” Scientific Reports, December 2015.

Ashley Pettit Disrupted Nitric Oxide Metabolism from Type II Diabetes and Acute Exposure to Particulate Air Pollution. PLoS One, December 2015.

Aaron Shatkin Scholarship 2016

Awarded to 3 graduate students annually for distinguished research work over the applicant's tenure at Rutgers University

Each awardee receives $1500 to supplement graduate stipend and $1500 for educational purposes
Jonathan Cruz, PhD

Published 5 papers, 4 of which he is first author or co-first author


Graduation Awards

**PhD Dissertation Excellence 2016**

Leonardo Valdivieso-Torres

- Bridges to the Doctorate from University of Puerto Rico Mayaguez
- 3 manuscripts
- Victor Stollar Virology Fellowship
- BioLinks and Upward Bound programs
- American Society for Biochemistry and Molecular Biology’s Hill Day
- Awarded fellowship to attend the Biotech Literacy Project Boot Camp in California, exploring fields related to communication of science to the general public and has opinion pieces published in ASBMB Today and SACNAS News.
- Postdoc at University of Tennessee, Knoxville

**Teaching and Service Award 2016**

Eva Rubio-Marrero

- Bridges to the Doctorate from University of Puerto Rico Mayaguez
- First author Journal of Biological Chemistry paper
- Awarded best poster at the First Annual Rutgers Brain Health Institute Symposium
- BioLinks and Rutgers Science Bus
- NeuroConnections Club secretary and Co-Fundraising chair for Seeing Labs
- Scientist position at Celgene
Individual Development Plans (IDP)

• Educational research has shown that IDPs increase productivity (e.g. [http://postdoc.sigmaxi.org/results/](http://postdoc.sigmaxi.org/results/))

• NIH is now requiring IDPs for all training grants and NIH Office of Management and Budget sent notice that grad students have dual roles and must engage in both training and career development.

• **First** and third year graduate students will do the AAAS online IDP ([http://myidp.sciencecareers.org/](http://myidp.sciencecareers.org/)) and upload to Sakai by Aug 31, 2017.

• Second and fourth year graduate students will complete Rutgers IDP modeled from the ones at Scripps and UCSF and meet with an IDP committee (outside member in potential career area)
New Courses

Communicating Science
• Response to input from industry and academia
• Grant from Burroughs Wellcome Fund (Ponzio PI)
• Only one in the country with communications as its goal
• Techniques from Alan Alda Center
• Spring 2017 for post qualifying students

Experimental Design and Statistical Analysis
• As per NIH requirement to increase training for rigor and reproducibility of science
• New sections of NIH grants
• 1 of 3 schools to participate in pilot program of webinars funded by NIH R25 grant (DiCicco-Bloom PI) in 2016
• Fall 2016 and Spring 2017
Recent pre-doctoral fellowship awardees


Urmimala Basu - American Heart Association Fellowship in May 2016.

Vince Mirabella - NIH F30 award in February 2016.

Olufunmilola (Funmi) Ibironke - a United States Environmental Protection Agency Science to Achieve Results (STAR) Fellowship for Graduate Environmental Study in February 2016.


Evelyn Okeke - National Science Foundation Graduate Research Fellowship in April 2015.
• Help identifying funding sources

• Virtual Office on Sakai

• Help with application logistics

• Feedback, editing, and revising

• ~17% of current students have external fellowships

• Meeting on Sept 13 at 3pm in V10
Cognitive Skills

rwjms.rutgers.edu/education/current_students/student_support/csp/index.html

Individual Consultation
• Confidential individual consultation regarding learning, time management and job performance.
• Diagnostic evaluation of study practices and their effectiveness.
• Structured intervention to increase learning productivity and efficiency.
• Individual preparation programs for course, board, and licensure examinations.
• Learning disabilities.

Seminars
• Effective study strategies, test taking and time management.
Designed to promote excellence in undergraduate and graduate education at Rutgers through the professional development of the graduate student teaching staff:

- annual orientation
- certificate programs
- special issues seminars
- web-based publications
- discipline-specific training

tap.rutgers.edu/
A teaching K-12 outreach program which allows graduate students and postdocs the opportunity to volunteer in local public schools.

BIO Links volunteers are paired with a science teacher from a local school and make a commitment to visit one class per week for nine weeks.

rwjms.rutgers.edu/research/postdoc/biolinks/index.html
The Graduate Mentoring Fellows Program is a year-long program to allow participants to study the functions involved in serving as a good mentor and to work with undergraduates as a mentor for one academic year.
Advanced graduate students who join can meet monthly with faculty and administrators to discuss issues related to undergraduate instruction and contemporary higher education.

rastl.rutgers.edu/
Rutgers Pre-doc Leadership Development Institute (PLDI)

Two-year program to prepare for academic and administrative leadership roles in academia.

Students will learn the challenges universities face, and will gain the interpersonal and organizational knowledge, competencies and aspirations to provide effective and ethical leadership in addressing the critical issues confronting higher education.

www.odl.rutgers.edu/pldi/
GSBS Website: your resource for everything

http://rwjms.rutgers.edu/education/gsbs/

Join our groups and also email us your news to post!

LinkedIn has alumni contacts – important for career development.
Initiatives: create alumni networks to facilitate career development and placement
Advice to a first year from a graduating student

Aditi Dubey’s Graduation Speech
Your career
What can you do with a PhD in Biological Sciences?

- Principal investigator in a research-intensive institution
- Teaching-intensive careers in academia
- Research in industry
- Business consulting
- Clinical and regulatory
- Science policy
- Science writing
- Non profit
- Patent law
- Big data analysis
- Entrepreneurship
- and many more
NIH Broadening Experiences in Scientific Training (BEST) Awards
$2 million for 5 years to create infrastructure

Rutgers

Boston U
UC Davis
UC Irvine
UC San Francisco
U Chicago
U Colorado Denver
Cornell
Emory/Georgia Tech

U Mass Worcester
Michigan State
New York U
U North Carolina
U Rochester
Vanderbilt
Virginia Polytech
Wayne State
Rutgers iJOBS
Interdisciplinary Job Opportunities for Biomedical Scientists

will empower our PhD students and postdocs to take action toward career development and build the knowledge, professional network, and experience needed to reach their career objectives.

Grant awarded Sept 2014
Program launch Jan 2015
Program Leadership

Martin Yarmush
Distinguished Professor of Biomedical Engineering
School of Engineering

James Millonig
Senior Associate Dean
Graduate School of Biomedical Sciences

Janet Alder
Assistant Dean for Academic & Student Affairs
GSBS

Susan Engelhardt
Executive Director
Center for Innovative Ventures of Emerging Technologies

Carol Lutz
Assistant Dean of Curriculum
GSBS

Co-PI
Co-PI
Co-PD
Co-PD
Co-PD
iJOBS Participation

Rutgers Graduate Students
- GSNB (New Brunswick)
- GSBS (Piscataway)
- GSBS (Newark)
- GSN (Newark)
- GSN (Camden)

Rutgers Postdocs
- RWJMS
- NJMS
- SAS New Brunswick
- SoE
- SoP
- SEBS
- SAS Newark
- SAS Camden

Free shuttle transportation provided
Phased Programming

SciPhD Leadership and Business Training
Professional site visits
Professional networking sessions
Informative seminars
Web portal access

Graduate School of Biomedical Sciences

Phase 1
iNQUIRE

Phase 2
iINITIATE

Phase 3
iIMPLEMENT

Phase 4
iINSTRUCT

Individual development planning & mentorship
Career-specific courses
Professional shadowing

Resume development
Interview preparation
Career fair
Job placement and tracking

Continued participation
Support and mentoring
SciPhD: Leadership and Business Skills for Scientists

*Provided by Human Workflows, LLC*

January - February, 2016/40 hours

- The Business of Science
- Successful Communications as a Scientist
- Developing Your People
- Networking and the Interview Process
- Negotiations
- Team Performance Tools
- Major Leadership Styles
- Financial Literacy
- Strategic Project Management for Scientists
Site Visits

Past

- CCIT
- DoH
- Merck

Upcoming

- Celgene

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<td>Enterprise Development Center</td>
<td>Novartis</td>
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<tr>
<td>NJ Dept. of Health</td>
<td>Institute for Life Science Entrepreneurship</td>
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<td>Eli Lilly/ImClone</td>
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<td>Career Panels</td>
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<td><strong>Pharmaceutical Medical Information</strong></td>
<td>Janssen Bristol-Myers Squibb</td>
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<td><strong>Clinical Diagnostics</strong></td>
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<td><strong>Non-Profit Organizations</strong></td>
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<td><strong>Intellectual Property Law</strong></td>
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<td><strong>Science Writing and Journalism</strong></td>
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<td><strong>Research Positions at the FDA</strong></td>
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<td><strong>Contract Research</strong></td>
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<tr>
<td><strong>Pharma Medical Education and CRO Clinical Research</strong></td>
<td>Grey Healthcare Group AlcheraBio</td>
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<tr>
<td><strong>Clinical and Regulatory Science</strong></td>
<td>Janssen, Merck</td>
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<td><strong>Bench Research in Pharma and Biotech</strong></td>
<td>Celgene, Merck, Enzo</td>
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<td>Wuxi Pharma Tech</td>
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<td><strong>Science Publishing Careers</strong></td>
<td>Nature, Elsevier, Wiley</td>
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<td><strong>Finance and Equity Research</strong></td>
<td>Bloomberg, Bank of America/ Merrill Contract Lynch, Cornerstone Macro</td>
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Workshops: Job Search

- Resume/CV Development for Graduate Students*
- Networking On & Off-Line for Graduate Students*
- How to Prepare for Job Fairs & Networking &
- Interviewing Skills for Graduate Students*
- How to Prepare for an Informal Interview
- Find and Apply for an Internship

Offered in partnership with: * Rutgers Career Services & BioNJ
Workshops: Career Focus

- Patent Law Case Study
- Researcher Plan for Success
- Biological Data and Python
- How to Break Into Biotech and Science Writing
- Communicating Science
- Science Storytelling
- Scientific Analysis in Policy Making *
- How Science Affects Political Decisions *
- Business Consulting Case Study
- Transferrable PhD Skills

* Offered in partnership with The Eagleton Institute
BioNJ/iJOBS Career Fair
April 21, 2015 and April 14, 2016
42 companies
Career Track Example
Skill Classes
One 40-Hour Class

- Programming Methodologies for Numerical Computing
- Drug Discovery through Preclinical Development
- Introduction to Public Administration; Public Policy Formation
- Practical Aspects of Clinical Trial Design
- Bioengineering in Biotech and Pharma Industries
- Pharma Project Management
- Fundamentals of Regulatory Affairs
- Project Management; Perspectives in Drug Development
- US Healthcare System ad Pharma Managed Markets
- Drug Development: From Concept to Market
- Project Management
- Clinical Trials, Adverse Event Reporting, Post-Marketing
- Innovation and Entrepreneurship
- Accounting and Finance
Industrial, institutional and governmental partners host externships at their places of business and within applicable organizations and serve as trainee mentors.

Each trainee is matched to a mentor and a shadowing opportunity relevant to their chosen track.

Shadowing experiences can be singular, cross-firm, and/or span tracks.

Mentoring experiences span the iJOBS Trainee cycle and use the Individual Development Plan (IDP) as a framework for growth.
Professional and Trade Support Abounds

Commercialization Center for Innovative Technologies

Visgo Therapeutics, Inc.

National Institutes of Health
Turning Discovery Into Health

Cymreg Consulting, LLC

Research America
An Alliance for Discoveries in Health
Communication Platforms

Email listserve: 1300 members

Trainee run blog: ijobs.rutgers.edu/blog.php

Website: ijobs.rutgers.edu
Program Registration

Phase 1
- iJOBS programming open to all pre and post-doctorates as well as recent alumni.
- Some events have limited capacity; participants register on a first come, first served basis.
- PI approval required for participation in first Rutgers iJOBS event. We will contact PI.

Phase 2
- Graduate students must be in 3rd year or above and have completed propositional qualifying exam. Postdocs are eligible at any time.
- Trainee application approval based upon Phase 1 participation (12 hours), letter of intent, letter of recommendation. PI approval for participation is required with application.
Program Registration Details

- Registration links for all events will be listed on the iJOBS web site, posted on the iJOBS web calendar and open to registration 4 weeks prior to the event date at 12:00 PM.
- For example, an event will take place on Tuesday February 10, 2016. Registration opens Tuesday January 13, 2016 at 12:00 PM.
- If registration is limited, confirmation will be sent to those that are successfully enrolled in the event.

iJOBS Success

- Over 433 PhD students and postdocs have participated in Phase 1 of iJOBS
- 30 trainees are now participating in Phases 2 and 3
- A number of trainees have gotten job positions already!
Workshop: Job Search Using Staffing Agencies - September 7 from 4:30-6pm

Networking Event: Students, Postdocs and Alumni - September 15 from 5-8pm

Workshop: Politics of Climate Change - September 23 from 8:30am-1pm

Case Study: Pharma Market Research - September 26 from 4:30-6pm

Career Panel: Science Communications - October 5 from 4:30-6pm

Networking Event: American Association of Pharmaceutical Scientists - October 10 from 4:30-6pm

Workshop: Drug Development in Biotechnology - October 21 from 9:30-4pm

Workshop: Science Business Writing - October 28 from 1-4:30pm

Career Panel: Non-Faculty Jobs for PhDs at Universities - November 9 from 4:30-6pm

Site visits to Colgate, Envigo, Bristol Myers Squibb
Laboratory Research

is

#1 Priority

More information: ijobs.rutgers.edu

Email: Millonig@cabm.rutgers.edu
janet.alder@rutgers.edu
PhD Student Outcomes

First position after graduate (from exit survey n = 121)
• 68% postdoc (Yale, NYU, Caltech, Rockefeller, Harvard, UC Berkeley, NIH, Columbia)
• 17% research position in pharma/biotech
• 9% research-related career (e.g. consulting, science writing, patent law, non-profit)
• 4% faculty/government position

Current position (from LinkedIn n = 175)
• 41% research in pharma/biotech
• 24% research-related careers (e.g. consulting, science writing, patent law, non-profit)
• 20% current postdocs
• 15% academic faculty positions
Representative Jobs and Internships

GSBS Website: your resource for everything

http://rwjms.rutgers.edu/education/gsbs/

Google calendar!

Seminars
Career development events
Thesis defenses
Workshops

Can link to your calendar
Have fun!
Where are we?

New Brunswick/Piscataway
Rutgers is less than an hour to NYC and Philadelphia by train

Student wellness
Monday-Friday 9am-5pm: 732-235-5930
Evenings and weekends: 1-800-327-3678
Feedback

Jim Millonig: Millonig@cabm.rutgers.edu
Janet Alder: janet.alder@rutgers.edu