Biomedical Sciences
PhD and MS Orientation

Jim Millonig, PhD - Senior Associate Dean
Janet Alder, PhD - Assistant Dean
School of Graduate Studies – New Brunswick/Piscataway

August 25, 2021
Agenda for today

- 9:15-10:30 – Overview of resources and opportunities for biomedical graduate students (Jim Millonig and Janet Alder)
- 10:30-10:45 Graduate Student Organizations
- 10:45-11:00 Ice Breaker and Group Picture
- 11:00-12:00 Other resources
  - Libraries (Yingting Zhang)
  - Scientific Integrity (Janet Alder)
  - Office of Disability Services (Brian Maher)
  - Office of Employment Equity (Carolyn Dellatore)
  - VPVA (Kerry Camerer)
  - Career Exploration and Success (Tamara Peters by Zoom)
  - Student Health (Marc Cruz)
  - Recreation (Heather Hommel)
  - Transportation/Parking/Public Safety (Jack Molenaar, Patty Highland, Maureen Yewaisis)
- 12:00-1:00 Pizza lunch and Q&A tables
- 1:00-2:00 Tour of Busch Campus
Staff of the School of Graduate Studies – Biomedical and Health Sciences in 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

Tracy Scott, PhD, Special Projects Coordinator
  tracy.e.scott@rutgers.edu

Tina Marottoli – Registration, graduation
  tina.marottoli@rutgers.edu

Johanna Sierra – Masters programs
  sierrajo@rutgers.edu
Starting Graduate School in the Era of Covid-19

Rutgers at the forefront of science

New Rutgers Saliva Test for Coronavirus Gets FDA Approval

Emergency use authorization granted for new biomaterial collection approach

We can do this together if we stay safe!
New Website for Biomedical Sciences
grad.rutgers.edu/biomedical/nbpisc
Biomedical Science Programs in New Brunswick/Piscataway

**Molecular Biosciences Umbrella Program**
- Cell and Developmental Biology
- Biochemistry and Molecular Biology
- Cellular and Molecular Pharmacology
- Physiology and Integrative Biology
- Molecular Genetics and Microbiology

**Individual Graduate Programs**
- Biomedical Engineering
- Exposure Science and Assessment
- Toxicology
- Neuroscience
- Public Health
- Nursing
- Microbial Biology
- Endocrinology and Animal Biosciences
- Nutritional Sciences
Rutgers Facts

- Member of Association of American Universities and Big10 Academic Alliance
- Ranked 50th of 2000 to world universities 2021-22 by the Center for World University Rankings
- $658 million annually in research R&D expenditures, among the top 20 public universities in the nation
- 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.
Our faculty hold prestigious positions

Rutgers has 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.

In last 2 years, 11 biomedical faculty selected to AAAS and 1 to National Academy

Martin Yarmush  Masayori Inouye  Arnold Rabson  Suzie Chen  Charles Dismukes

Tony Kong  Peter Lobel  Pal Maliga  Chris Molloy  Monica Roth
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 and Academic Resources
Competencies learned in graduate school – transferrable skills

- **Broad conceptual knowledge** - core courses
- **Deep knowledge of a specific field** - upper level courses, thesis work, and journal clubs
- **Critical thinking** - reading papers, planning experiments, reviewing grants and manuscripts
- **Experimental skills** - rotations and thesis lab, collaborations
- **Responsible conduct of research** – Ethical Scientific Conduct initial and refresher
- **Rigor and reproducibility** - biostatistics classes
- **Computational skills** – computer programming class in R and Python
- **Collaboration/Teamwork** – working with other labs and within lab, student organizations
- **Management and emotional intelligence skills** - manage your own project, supervise undergraduates, interact with faculty and peers
- **Leadership and professionalism** – join student organizations, volunteer for events, iJOBS
- **Communication skills** - presentations in lab, university, and national meetings, writing manuscripts and fellowships, 3 Minute Thesis Competition, Communicating Science class
Typical timeline of Graduate School

Year 1 2 3 4 5 6

- Rotations
- 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
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 requires 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 Canvas by Aug 31, 2022.

• Second and fourth year graduate students will complete Rutgers IDP modeled from the ones at Scripps and UCSF and meet with an professional in potential career area
Some recent manuscripts by grad students

**Samantha Gokhale** is the first author on a paper in Pharmaceutics, June 2021. “ChoK-Full of Potential: Choline Kinase in B Cell and T Cell Malignancies.”

**Blessy George** is the first author on a paper in the International Journal of Molecular Sciences, June 2021. “In Vitro Inhibition of Renal OCT2 and MATE1 Secretion by Antiemetic Drugs.”

**Adrienne Viola** is the first author on a paper in Pediatric Blood & Cancer, May 2021. “A scoping review of transition interventions for young adults with sickle cell disease.”

**Carolyn W. Kinkade** is the first author on a paper in Toxins, May 2021. “Impact of Fusarium-Derived Mycoestrogens on Female Reproduction: A Systematic Review.”

**Matthew Putnins** is the first author on a paper in Heliyon, May 2021. “Self-selection of evolutionary strategies: adaptive versus non-adaptive forces.”

**Emann M. Rabie** is the first author on a paper in Molecular Biology of the Cell, May 2021. “Substratum stiffness signals through integrin-linked kinase and β1-integrin to regulate midbody proteins and abscission during EMT.”

**Bitha Narayanan** is the first author of a paper in the Journal of Immunology, May 2021. “A Posttranscriptional Pathway of CD40 Ligand mRNA Stability Is Required for the Development of an Optimal Humoral Immune Response.”

**Edgar Ferrer-González** is the first author on a paper in the Journal of Bacteriology, May 2021. “Impact of FtsZ Inhibition on the Localization of the Penicillin Binding Proteins in Methicillin-Resistant *Staphylococcus aureus*.”
Recent pre-doctoral fellowship awardees

Branden Sanabria was awarded an NIH F31 pre-doctoral fellowship "The Role of Corticostriatal Microcircuitry in Sensorimotor Integration”, July 2021.

Nimit Shah was awarded an NIH F31 pre-doctoral fellowship “Barriers and predictors of physical fitness among volunteer firefighters”, July 2021.

Emily DiMartini was awarded an NJCCR pre-doctoral fellowship “A clickable drug targeting system for ovarian cancer”, July 2021.

Iva Salamon was awarded an NJ Governor’s Council on Autism pre-doctoral fellowship “The role of the autism risk gene Celf4 in the specification of the first synapses during early neocortical development”, June 2021.

Courtney McDermott was awarded an NJ Governor’s Council on Autism pre-doctoral fellowship “Early life microbiota dysbiosis and autism: effects on neurodevelopment and behavioral outcomes”, June 2021.

Agata Krzyzanowska was awarded an AAI Careers in Immunology Fellowship. "Identification, function and transcriptional control of innate-like Tregs”, June 2021.

Stephania Guzman was awarded the Bevier Fellowship for 2021-2022.

Liana Schwartz-Orbach was awarded an NIH F30 pre-doctoral fellowship “The function of H3K23me3, a transgenerationally inherited heterochromatin mark”, June 2021.

Svetlana Bagdasarov was awarded an NJCCR pre-doctoral fellowship “Ligand-directed alpha-galactosyltransferase gene therapy using hybrid AAV phage vector for antitumor immune response”, June 2021.

Paul Kraycer was awarded an NJCCR pre-doctoral fellowship "The Role of Sliding in Cohesin Accumulation and Function on Chromosomes”, June 2021.

Rukia Henry was awarded an NJCCR pre-doctoral fellowship “Elucidating the Role of LYN Src Kinase in DNA Repair”, June 2021.

Thushara Nethramangalath was awarded an AHA pre-doctoral fellowship "Role of the TRPM7-CNNM Complex in Regulating Neuronal I(OGD) Activity During Ischemia”, March 2021.

Mikayla Voglewede was awarded a National Institute of Health Predoctoral Fellowship for "Mechanism of Par3-Mediated Regulation of Dendritic Spine Plasticity" in March 2021.

Alex Yonk was awarded a National Institutes of Health Predoctoral Fellowship for "POm and Its Role In Striatal Circuitry Modulation" in December 2020.

Vrushank Bhatt was awarded a Mistletoe Research Fellowship in October 2020.

Sierra Swords was awarded a National Institutes of Health Predoctoral Fellowship for "The Role of RME-8 In Neuronal Health And Parkinson's Disease” in June 2020.

Mai-uyen Nguyen was awarded a National Institutes of Health Predoctoral Fellowship for “Functions of KAT2A And KAT2B In Intestinal Homeostasis And Colon Cancer” in June 2020.
Courses for writing

**Rutgers English Language Institute (RELI) - https://reli.rutgers.edu/**
Supports multilingual English language learners

**Grant writing classes**

16:681:601 Grant Writing Basics spring course
Guidance and practice in writing a biological research grant proposal focusing on Specific Aims.

16:830:504 Advanced Studies in Neuroscience or Psychology to write an NRSA F31 Grant Proposal
The purpose of the course is to facilitate each student’s submission of an F31 application for the December deadline.

**Graduate Writing Program - https://wp.rutgers.edu/gwp/gwp-home**

16:355:506 Writing for Publication
Focuses on overall organization of published work as well as writing and editing at the level appropriate for a journal submission in the student’s graduate field.

16:355:508 Writing the Dissertation
Focuses on writing at the level appropriate for a dissertation in the student’s respective field.

16:355:502 Graduate Writing
Focuses on writing for abstracts, reviews, conferences
SGS resources for fellowship writing

- ~17% of current students have external fellowships

- Meeting every September with students and mentors who have been successful obtaining funding and faculty from study section

- Boiler plate paragraphs for various sections
  
  [https://grad.rutgers.edu/academics/graduate-programs/biomedical-and-health-sciences-all-degree-programs/predoctoral-fellowships-training-grant-resources](https://grad.rutgers.edu/academics/graduate-programs/biomedical-and-health-sciences-all-degree-programs/predoctoral-fellowships-training-grant-resources)

See below for some materials and please contact Janet Alder (janet.alder@rutgers.edu) for additional help if needed.

- RCR training
- Rigor and Reproducibility training
- iJOBS career development program
- Individual Development Plans
- Description of Institutional Environment and Commitment to Training and Additional Educational Information
- Sample successful NIH F applications, NSF, EPA, AHA, NJ state fellowships as well as diversity supplements upon request.
GradFund

- $100 million in external fellowships and awards in the last 20 years
- Help identifying funding sources
- Virtual Office hours
- Help with application logistics
- Feedback, editing, and revising

http://gradfund.rutgers.edu/

Fellowship Application Workshop for Biomedical PhD Students

Friday September 17, 2021
2:00 – 4:00pm

Register via EventBrite
https://fellowshipapplicationworkshop.eventbrite.com

Join Via Zoom
https://rutgers.zoom.us/my/alderja Passcode: Janet

This workshop will include presentations by:
1) GradFund on how to use their resources at Rutgers for identifying fellowship opportunities and applying for them.
2) A faculty member who serves on NIH study section and reviews fellowship applications with pointers on what reviewers are looking for.
3) A panel of graduate students and their mentors who have successfully obtained funding in the past few years from various organizations.

For more information contact Dr. Janet Alder  janet.alder@rutgers.edu
Clinical and Translational Opportunities

NIH Clinical and Translational Award (CTSA)

NJ Alliance for Clinical and Translational Science (NJ ACTS) (PI: Rey Panettieri MD)

Goal: $25M award to improve clinical and translational research across NJ

Institutions: Rutgers, Princeton and NJIT

Training Grant support: Kathy Scotto PhD

Educational Goal: to provide the curriculum and the resources so teams of researchers (PhD students, post-docs), physician scientists (MD-PhD students) and clinicians (MD students and clinical fellows) can tackle large medical issues

New educational initiatives (Clinical and Translational Certificate):
  Grant writing, Computational courses, Biostatistics, Communication, Team Science, Human Body 101, Clinical shadowing opportunities, Capstone Project
Cognitive Skills

http://rwjms.rutgers.edu/education/medical_education/student_support/cognitive.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.
Teaching, Mentoring and Leadership Opportunities

**TAPrject**

[https://tap.rutgers.edu/](https://tap.rutgers.edu/)

**BIO Links**

[https://grad.rutgers.edu/diversity-and-outreach/community-outreach/biolinks](https://grad.rutgers.edu/diversity-and-outreach/community-outreach/biolinks)

**Rutgers Academy for the Scholarship of Teaching and Learning**


**Mentoring Resources & Training**

[https://grad.rutgers.edu/professional-development/leadership-and-mentoring-skills](https://grad.rutgers.edu/professional-development/leadership-and-mentoring-skills)

**PreDoctoral Leadership Development Academy**

[https://ol.rutgers.edu/programs/plda/](https://ol.rutgers.edu/programs/plda/)
Aaron Shatkin Award 2020

Daniel Rizzolo, Jui Wan Loh, Meghan Arnold and Edgar Ferrer-Gonzalez

Awarded to 3 or 4 graduate students annually for distinguished research work over the applicant's tenure at Rutgers University
Harvey Waterman Medal of Excellence - Anthony Omelchenko
Stanley S. Bergen Medal of Excellence – Valdir Cristovao Barth Junior
Outstanding Doctoral Student Award - Vrushank Bhatt
Excellence in Leadership and Teaching – Alexa Murray
Your career
Rutgers - iJOBS

NIH Broadening Experiences in Scientific Training (BEST) Awards
$2 million for 5 years to create infrastructure (2014-2019)

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

New York U
U North Carolina
U Rochester
Vanderbilt
Virginia Polytech
Wayne State
iJOBS Participation

Rutgers Graduate Students
- SGS (New Brunswick/Piscataway/Newark)
- GSN (Newark)
- GSC (Camden)

Rutgers Postdocs
- RWJMS
- NJMS
- SAS New Brunswick
- SoE
- SoP
- SEBS
- SAS Newark
- SAS Camden
Examples of Career Tracks

- Principal investigator
- Bench Research in Government, Pharma or Biotech
- Teaching-intensive careers in academia
- Science and Health Policy
- Patent Law
- Tech Transfer and Business Development
- Clinical Research
- Regulatory Affairs
- Health and Science Data Analysis
- Business Consulting
- Scientific Writing and Medical Communications
- Medical Affairs
- Non-profit and Foundations
- Finance and Equity Research
- Publishing
- Food safety
- Journalism
- Teaching Education Outreach
- Entrepreneur
iJOBS Phased Programming

Phase 1: iNQUIRE
- SciPhD Leadership and Business Training
  - Site visits
  - Networking sessions
  - Career panels
  - Case studies
  - Primers
  - Workshops
  - Career fair
  - Web portal access

Phase 2: iNITIATE
- Individual development planning & mentorship
- Career-specific courses
- Professional shadowing

Phase 3: iMPLEMENT
- Resume development
- Interview preparation
- Job placement and tracking

Phase 4: iNSTRUCT
- Continued participation
- Support and mentoring

SciPhD Leadership and Business Training
- Site visits
- Networking sessions
- Career panels
- Case studies
- Primers
- Workshops
- Career fair
- Web portal access
Phase 1
iNQUIRE
SciPhD: Leadership and Business Skills for Scientists

Provided by Human Workflows, LLC
Every Jan/Feb since 2015 - 35 hours

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

- McCann Health
- Wiley Publishing
- Merck (5)
- Genewiz (3)
- Bristol-Myers Squibb (4)
- Novartis (3)
- GlaxoSmithKline (2)
- Regeneron (2)
- Eli Lilly (3)
- Celgene (2)
- Janssen (2)
- Commercial Center for Innnv Tech (2)
- Inst for Life Sci Entrepreneurship (2)
- Enterprise Development Center
- Sanofi Aventis
- Covance
- Kashiv
- Ferring Pharmaceutical
- NJ Dept. of Health (3)
- Stryker
- Colgate-Palmolive (2)
- Envigo
- Ethicon
- McCann Health
- Bayer (2)
- PTC Therapeutics
- Nanion Technologies
- Hovione
- J&J Consumer
Representative Job Simulations

- Health Economics and Outcomes Research – analyze a drug
- Technology Transfer – how to commercialize an invention
- Equity Research – decide if you should invest
- Project management – determine timeline and deliverables
- Entrepreneur – what is involved in starting a biotech
- Science Policy – write a policy memo
- Business Development – decide whether to acquire a new company
- Pharma R&D - design preclinical trial to optimize clinical success
- Publishing – decide whether to accept a manuscript
- Pharma Market Research Analysis – report on whether drug is worth pursuing
- Medical Affairs – Medical Informaticist vs MSL role play
- Consulting – recommend approach to launch new clinical trial
- Regulatory Writing – prepare an Investigative Brochure
- Medical Communications – create slide deck for physician
- Patent Law – rewrite patent to demonstrate originality
- Mergers and Acquisitions – decide how much to bid on a new company
Representative Workshops

• Targeted resumes
• LinkedIn profiles with photo shoot
• Networking skills
• Transferrable skills
• Interviewing skills
• Informational interviews
• Job search using staffing agencies
• Finding and applying for an internship
• Goal setting and time management
• How to prepare for job fairs
• International students seeking employment in USA
• Self assessments (StrengthsFinder, Birkman)
• Emotional Intelligence and influencing others
Career Track Example Skill Classes

One 40-Hour Class

Drug Development from Concept to Market
Principles of Communication and Leadership
Principles of Finance and Accounting
Clinical Research Informatics
Python Methodologies
Clinical Trials Overview: Methods and Practices
Fundamentals of Regulatory Affairs

Perspectives in Translational Pharmacology
Clinical Trials Overview: Methods and Practices
Fundamentals of Regulatory Affairs
Project Management
Pharma Product Management
Organizational Behavior
Innovation and Entrepreneurship
Professional Shadowing and Mentoring

- Each trainee is matched to a professional for a shadowing opportunity relevant to their chosen track with industrial, institutional or governmental partners. 72 hours over a whole semester or over 2 weeks.

- Each trainee is assigned a professional mentor and uses the Individual Development Plan (IDP) as a framework for growth.
Communication Platforms

Email listserve: 1500 members

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

Website: ijobs.rutgers.edu

iJOBS Past Events with Recordings
iJOBS 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.

Phase 2
• Graduate students should 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.
• Applications open every April and program starts in September for 1 year
First Position of SciPhD Participants (n = 189)

First Position For-Profit Non-Research Positions (n – 189)
iJOBS Participants Have Decreased Time to Defense and Increased Total Publications

Measuring Effects of Trainee Professional Development on Research Productivity: A Cross-institutional Meta-analysis, Brandt et al., PLOS Biology, 2021
Non-Academic Resources
Join our groups and also email us your news to post!

https://calendar.google.com/calendar/u/0?cid=Z3Nic3Bpc2NAZ21haWwuY29t

- Seminars
- Career development events
- Thesis defenses
- Workshops
- Can link to your calendar

https://www.linkedin.com/groups/3679494/

- LinkedIn has alumni contacts – important for career development
Have Fun!

New Brunswick/Piscataway
Rutgers is less than an hour to NYC and Philadelphia by train
Reach Out if You Need Help - CAPS

Counseling and Psychiatric Services (CAPS)
Monday-Friday 9am-4pm: 848-932-7884 Evenings and weekends: 1-855-654-6735

Let’s Talk drop every Thursday from 11am-1pm with Dana Simons

- CAPS Website - [http://health.rutgers.edu/medical-counseling-services/counseling/](http://health.rutgers.edu/medical-counseling-services/counseling/)
- The Trevor Project (crisis hotline for LGBTQ Youth): 866-488-7386
- Crisis Text Line (CTL): Text KNIGHTS to 741741 & include "STEVE" for People of Color on any smart phone (available 24/7)
- Acute Psychiatric Services (APS: available 24/7) Dial 1-855-515-5700. If you are out of the New Brunswick/Piscataway area, call 911
- NJ Hopeline, 24 hour crisis phone line: 855-654-6735 (Available within NJ 365/24/7)
- Rutgers Hopeline: 855-654-6735
- RUPD: 848-932-7211
- National Suicide Prevention Lifeline: 1-800-273-TALK (8255)
Workshops via WebEx for Biomedical Graduate Students by Dana Simons and CAPS

**Staying Connected in a Virtual World**
Wednesday, September 8th, 1:00PM-2:00PM

**Stigma Reduction: Myths and Facts about Mental Health**
Thursday, September 23rd, 2:00PM-3:00PM

**Building Resilience, Failing Forward, and Learning to Manage Expectations**
Tuesday, October 5th, 4:00PM-5:00PM

**Time Management and Life Balance Workshop**
Friday, October 22nd, 11:00AM-12:00PM

**Stress and Anxiety Reduction “Say Yes to No Stress” Workshop**
Monday, November 8th, 1:00PM-2:00PM

**Working through Anger, Resentment, and Conflict**
Friday, November 19th, 10:00AM-11:00AM

**Self-Acceptance: Learning to Love Yourself**
Wednesday, December 1st, 1:00PM-2:00PM

**Mindfulness Meditation Workshop**
Friday, December 10th, 2:00PM-3:00PM
Dana Simons - Community Based Counselor
RU HERE

ACTION REQUIRED

You are required to take action on the following item(s) before you can proceed to any services that require your Rutgers credentials.

RU HERE: COURSE ATTENDANCE

You are registered for the fall 2018 semester. Please confirm your enrollment below.

I confirm my attendance for the fall 2018 semester.

[Yes, I am attending]

I will not attend the fall 2018 semester and understand that I must complete the formal withdrawal process.

[No, I am not attending]
We Are Here for You

Jim Millonig: millonig@cabm.rutgers.edu

Janet Alder: janet.alder@rutgers.edu
Graduate Student Organizations

- Molecular Biosciences GSO
- NeuroConnections
- Rutgers Association of Toxicology Students
- Biomedical Engineering Student Society
- Rutgers Exposure Science Student Association
- NJ Seeding Labs
- Society for Advancing Chicanos/Hispanics and Native Americans in Science (SACNAS)
- Nutritional Sciences GSO
- Endocrinology and Animal Biosciences GSO
- Microbial Biology
- Quantitative Biology
- iJOBS blog
- Rutgers GSA – events for everyone