Biomedical Sciences
PhD and MS Orientation

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

August 31, 2022
Agenda for today

- 9:15-10:30 – Overview of resources and opportunities for biomedical graduate students (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 and Oath (Janet Alder)
  - Office of Disability Services (Brian Maher)
  - Office of Employment Equity (Lisa Grosskreutz)
  - VPVA (Kerry Camerer)
  - Career Exploration and Success (Tamara Peters)
  - Wellness Services (Victoria Miller-Butcher)
  - Student Health (Marc Cruz)
  - Recreation (Heather Hommel)
  - Transportation/Parking (videos)
- 12:00-1:00 Pizza lunch and Q&A tables
- 1:00-2:00 Scavenger Hunt 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
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Tina Marottoli – Registration, graduation
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Welcome to the Biomedical and Health Sciences Graduate Programs

Preparing You For Success

The Rutgers University Biomedical and Health Sciences graduate programs in New
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
- Quantitative Biomedicine
- Pharmaceutical Sciences
- Medicinal Chemistry
- Microbial Biology
- Endocrinology and Animal Biosciences
- Nutritional Sciences
- Chemical Biochemical Engineering
- Chemistry and Chemical Biology
Rutgers Facts

• Member of Association of American Universities and Big10 Academic Alliance

• Ranked 57th of 2000 to world universities 2022-23 by the Center for World University Rankings

• Rutgers brings more federal research dollars to New Jersey than all other New Jersey colleges and universities combined

• Top 6% of American universities in science and engineering research and development expenditures

• $907.9 million in research grants and sponsored programs

• 470 clinical trials supported at any given time
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.

Manny DiCicco-Bloom  Tara Matise  Renping Zhou  Richard Ebright  Andy Singson

Ken Irvine  Masayori Inouye  Arnold Rabson  Suzie Chen  Charles Dismukes

Tony Kong  Peter Lobel  Pal Maliga  Chris Molloy  Monica Roth  Martin Yarmush
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. *Manuscript and grant writing workshops*
• **Experimental skills**  - rotations and thesis lab, collaborations
• **Responsible conduct of research**  – *Ethical Scientific Conduct initial and refresher*
• **Rigor and reproducibility**  - *Biostatistics classes*
• **Computational skills**  – *Computational classes and Certificate*
• **Collaboration/Teamwork**  – working with other labs and within lab, *join student organizations*
• **Management and emotional intelligence skills**  - manage your own project, *supervise undergraduates*, interact with faculty and peers
• **Leadership and professionalism**  – *volunteer for events and organizations, iJOBS*
• **Communication skills**  - presentations in lab, university, and national meetings, writing manuscripts and fellowships, *3 Minute Thesis Competition, Communicating science class*
Typical timeline

Year 1
- Rotations
- Lab match
- Qualifying exam A
  - Propositional
  - Qualifying exam B
- Annual thesis advisory committee meetings

Year 2
- Thesis defense

Year 3

Year 4

Year 5

Year 6

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

- 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, 2023.

- Second and fourth year graduate students will complete Rutgers IDP and meet with an professional in potential career area.
  - Milestones and expectations for each year of grad school
  - SMART goals (Specific, Measurable, Achievable, Relevant, Time-Bound)
Some recent manuscripts by grad students

- **Gina M. Castellano** in Molecular Cancer Therapeutics, June 2022. “Inhibition of mTORC1/2 and DNA-PK via CC-115 Synergizes with Carboplatin and Paclitaxel in Lung Squamous Cell Carcinoma”.

- **Natalie Burchat** in Biochimica et Biophysica Acta Molecular and Cell Biology of Lipids, June 2022. “SCD1 is nutritionally and spatially regulated in the intestine and influences systemic postprandial lipid homeostasis and gut-liver crosstalk”.

- **Robert Connacher** in Stem Cell Reports, May 2022. “Autism NPCs from both idiopathic and CNV 16p11.2 deletion patients exhibit dysregulation of proliferation and mitogenic responses.”

- **Agata Krzyzankowska** in Science Immunology “Zbtb20 identifies and controls a thymus-derived population of regulatory T-cells that play a role in intestinal homeostasis.

- **Brandon D. Schweibenz** in The EMBO Journal, April 2022. “The intrinsically disordered CARDs-Helicase linker in RIG-I is a molecular gate for RNA proofreading.”

- **Elena Forzisi** in FASEB journal, March 2022. “Antagonistic roles of Ras-MAPK and Akt signaling in integrin-K + channel complex-mediated cellular apoptosis.”

- **Stephania Guzman** in The Journal of Clinical Investigation, March 2022. “Targeting hepatic kisspeptin receptor ameliorates non-alcoholic fatty liver disease in a mouse model.”


Recent pre-doctoral fellowship awardees – Summer 2022

- Gregory Marshall NJ Commission on Cancer Research
- Michael Rallo NJ Commission on Spinal Cord Injury
- Agata Krzyzanowska NJ Commission on Cancer Research
- Vaidhyanathan Mahaganapathy $10K Collaborative Project grant from the Cancer Genomics Cloud at Seven Bridges Institute
- Nydia Chang NIH F31 predoctoral fellowship
- Jake Lessing NIH F30 predoctoral fellowship
- Leela Biswas NIH F30 predoctoral fellowship
- Denise Robles NJ Governor’s Council for Medical Research and Treatment of Autism
  Jake Siebert NJ Commission on Cancer Research
- Robert Rosen NJ Commission on Cancer Research
- Alessandro Bortolami NJ Governor’s Council on Autism pre-doctoral fellowship
- Kevinn Eddy Bevier Fellowship
Courses for writing

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

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

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.

NIH fellowship Writing Group every Fall by Dr. Lauren Aleksunes
Trainees preparing NIH NRSA fellowship applications meet weekly to peer review sections of application
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

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.
$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

Tuesday September 13, 2022
3:00 – 5:00pm

Register via EventBrite
https://fellowshipapplication2022.eventbrite.com

Join Via Zoom
https://rutgers.zoom.us/my/ajlerjja 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, Organ Physiology, Clinical shadowing opportunities, Capstone Project

**THE HUB:** a 550,000-square-foot, $665 million project to bring scientists, doctors and patients together
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://grad.rutgers.edu/professional-development/teaching-skills/ta-project

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

https://grad.rutgers.edu/professional-development/rutgers-academy-scholarship-teaching-and-learning

**STEM GRADS GIVING BACK**

*Upward Bound Math-Science*

Rutgers graduate students - you can be the person who inspires a high school student to pursue college and the study of science!

SGS is partnering with Rutgers Upward Bound Math-Science a pre-college program designed to assist and motivate first generation and low-income students to successfully graduate from high school, prepare for college admission, and complete their baccalaureate degree in STEM.

https://grad.rutgers.edu/academics/graduate-programs/career-development-academic-services/biomedical-professional-development-and-workshops

**Mentoring Resources & Training**

**EXCELLENCE IN MENTORSHIP FELLOWS PROGRAM**

https://grad.rutgers.edu/professional-development/leadership-and-mentoring-skills

**PreDoctoral Leadership Development Academy**

https://ol.rutgers.edu/programs/plda/

https://grad.rutgers.edu/professional-development/leadership-and-mentoring-skills
Aaron Shatkin Award 2021

Jay Shah from Dr. Prabhas Moghe’s lab
Agata Krzyżanowska from Dr. Derek Sant’Angelo’s lab
Josh Leipheimer from Dr. Maish Yarmush’s lab

Awarded to 3 or 4 graduate students annually for distinguished research work over the applicant’s tenure at Rutgers University
Graduation Awards 2022

Ileana Fuentes Hernandez – Outstanding Doctoral Student
Madalynn Marshall – Outstanding Doctoral Student
Robert Young – Excellence in Leadership and Teaching
Your career
NIH Broadening Experiences in Scientific Training (BEST) Awards
$2 million for 5 years to create infrastructure (2014-2019)

Rutgers U
Boston U
UC Davis
UC Irvine
UC San Francisco
U Chicago
U Colorado Denver
Cornell
U Mass Worcester

Michigan State
New York U
U North Carolina
U Rochester
Vanderbilt
Virginia Polytech
Wayne State
Emory/Georgia Tech
Rutgers

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 and faculty at R1 university
- Faculty at Primarily Undergraduate Institutions
- Bench research Pharma or Biotech
- Government positions, (FDA, CDC, NIH)
- Entrepreneur
- 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
iJOBS Phased Programming

**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
- LinkedIn profile review
- 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
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

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

Rutgers Programs

Business

Science

Health Related Professions

Public Health

Engineering

Business and Science

Medicine

Rutgers Programs
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.

- 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
Phase 1

• iJOBS programming open to all pre and post-doctorates as well as recent alumni.
• Some events have limited capacity and open 4 weeks prior to event at 12pm.

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 = 229)

- For Profit 56%
- Nonprofit 26%
- Government 4%
- Unknown 7%

Current For-Profit Non-Research Positions (n = 229)

- Technical support and product development 7%
- Administration 5%
- Business development, consulting, and strategic alliances 24%
- Clinical services 2%
- Data science, analytics, and software engineering 5%
- Entrepreneurship 2%
- Intellectual property and law 4%
- Research staff or technical director 2%
- Regulatory affairs 7%
- Science policy and government affairs 2%
- Sales and marketing 5%
- Science writing and communication 33%
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!
Rutgers is less than an hour to NYC and Philadelphia by train
Delaware and Raritan Canal

Poconos Mountains

Jersey Shore
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 10am-12pm with Dana Simons or Victoria Miller-Butcher

-CAPS Website - http://health.rutgers.edu/medical-counseling-services/counseling/
- http://health.rutgers.edu/education/self-help/virtual-workshops-resources/
-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)
Virtual Workshops for Biomedical Graduate Students by Dana Simons and CAPS

- Staying Connected in a Virtual World
- Stigma Reduction: Myths and Facts about Mental Health
- Building Resilience: Falling Forward and Learning to Manage Expectations
- Time Management and Life Balance Workshops
- Stress and Anxiety Reduction “Say Yes to No Stress” Workshops
- Working through Anger, Resentment and Conflict
- Self-Acceptance: Learning to Love Yourself
- Mindfulness Meditation Workshop
DO SOMETHING TO HELP website for concerns about mental health, discrimination and harassment Issues

http://health.rutgers.edu/do-something-to-help/

If this is an emergency, call 9-1-1 immediately! From a University phone, obtain an outside line and dial 9-1-1.

Rutgers is a community that cares. We DO SOMETHING when we are concerned about one of our community members. When you click on one of the areas below you will find a form or additional contact information where you can share your concern.

- Click here to share a concern regarding any of the following:
  1. A student who may be using dangerous drugs (heroin, prescription drugs)
  2. A student representing a threat to themselves or others
  3. A student’s emotional state and well-being
  4. Disruptive or aggressive behaviors in a classroom or on campus

- Click here to share a concern regarding a bias incident
- Click HERE to share a concern regarding SEXUAL ASSAULT, DATING VIOLENCE, STALKING OR SEXUAL HARASSMENT
- Click here to share a concern regarding a violation of the Code of Student Conduct
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

Janet Alder: janet.alder@rutgers.edu

Jim Millonig: millonig@cabm.rutgers.edu
Graduate Student Organizations

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

https://ipo.rutgers.edu/dots
Transportation

https://ipo.rutgers.edu/dots/transit-buses