

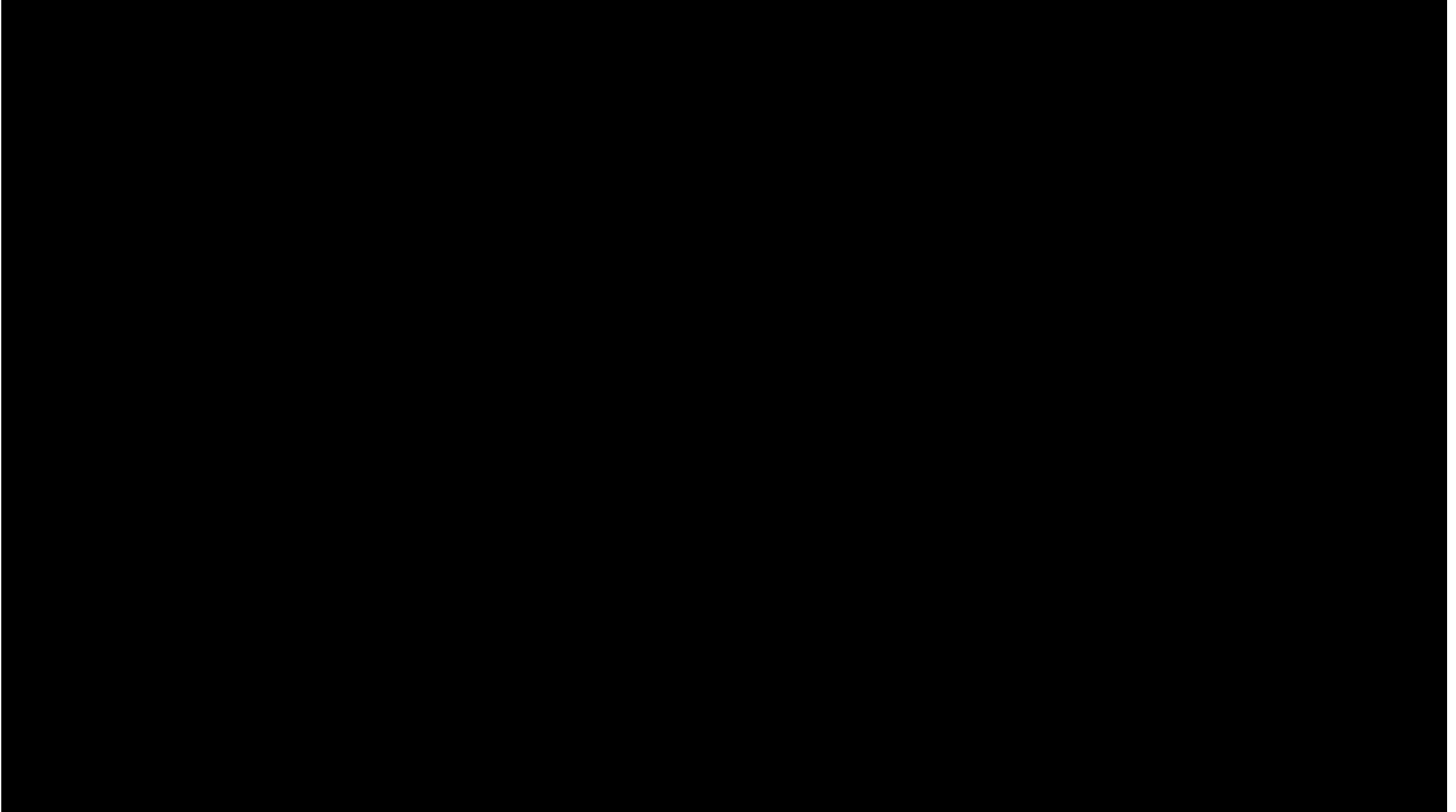


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Rutgers PhD Programs

Janet Alder, PhD - Assistant Dean (janet.alder@rutgers.edu)
School of Graduate Studies – New Brunswick/Piscataway

October 6, 2022

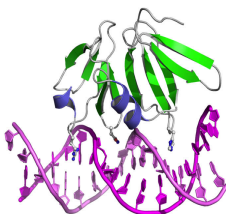


Biomedical Science Programs in New Brunswick/Piscataway

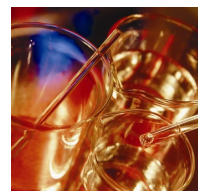
Molecular Biosciences Umbrella Program



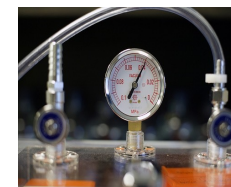
Cell and Developmental Biology



Biochemistry and Molecular Biology



Cellular and Molecular Pharmacology



Physiology and Integrative Biology



Molecular Genetics and Microbiology

Individual Graduate Programs



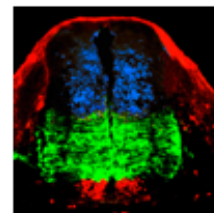
Biomedical Engineering



Exposure Science and Assessment



Toxicology



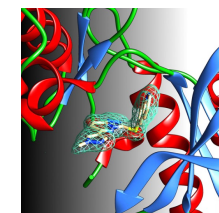
Neuroscience



Public Health



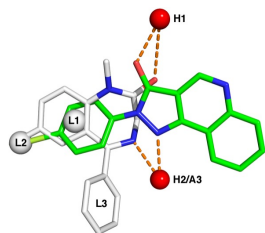
Nursing



Quantitative Biomedicine



Pharmaceutical Sciences



Medicinal Chemistry



Microbial Biology



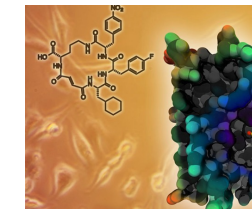
Endocrinology and Animal Biosciences



Nutritional Sciences



Chemical Biochemical Engineering



Chemistry and Chemical Biology

Where are we?



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

University of Illinois

Indiana University

University of Iowa

University of Maryland

University of Michigan

Michigan State University

University of Minnesota

University of Nebraska-Lincoln

Northwestern University

Ohio State University

Pennsylvania State University

Purdue University

Rutgers University

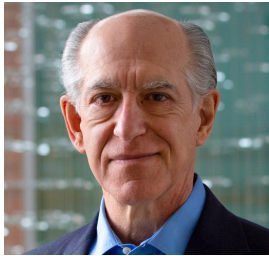
University of Wisconsin-Madison



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



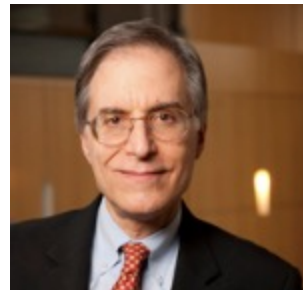
Ken Irvine



Masayori Inouye



Arnold Rabson



Suzie Chen



Charles Dismukes



Tony Kong



Peter Lobel



Pal Maliga



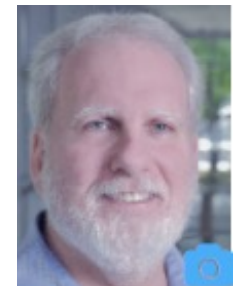
Chris Molloy



Monica Roth



Martin Yarmush



Rutgers houses world-renowned resources



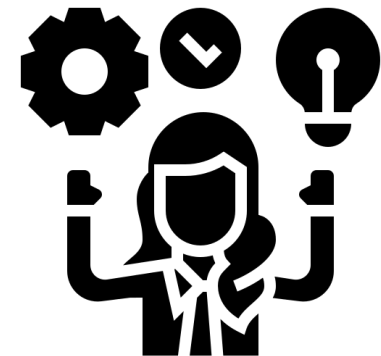
- Largest DNA and cell repository in the world for the study of genetics and autism, mental health, drug abuse, alcoholism, diabetes, and digestive and kidney disease.



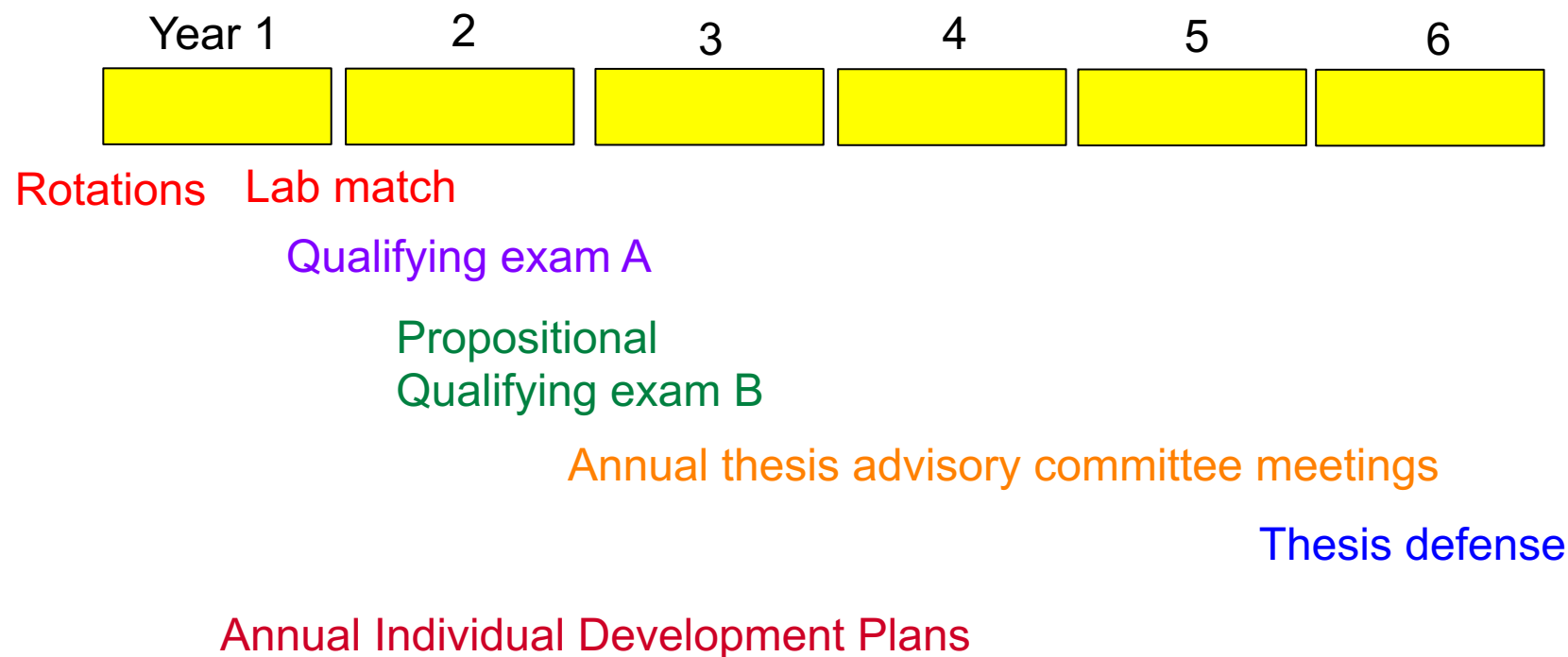
- Host to the Protein Data Bank, the single worldwide repository for 3D protein structures.

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



Statistics:

Time to defense: ~5.7 years

of publications: ~3 papers, ~1.4 first author

Financial Support and Predoctoral Fellowships

- All accepted students receive full coverage of tuition, health insurance and fees plus stipend of \$33,999/year
- After first year, you can be covered by PI's grant, training grant (e.g IMSD, Biotech), Teaching Assistants, or your own external fellowship
- ~17% of current biomedical students have external fellowships
 - Application workshop every Fall
 - Specific Aims workshop every Spring
 - Courses on grant applications
 - Lots of templates and support materials
- GradFund also helps with fellowship applications
 - \$100 million in external fellowships and awards in the last 20 years
 - Help identifying funding sources
 - Virtual Office on Sakai
 - Help with application logistics
 - Feedback, editing, and revising



GradFund

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/>) 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)

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



What is a MD/PhD program?

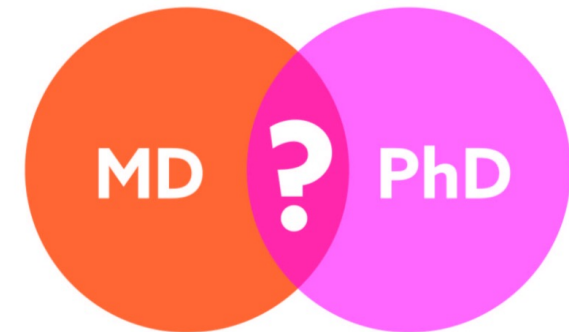
Students receive both a MD and PhD degree - Treat and Cure

Structured program that reduces time for both degrees

First 1.5 years of medical school

Followed by 3-4 years for PhD (multiple disciplines)

Ends with last 2.5 years of medical school



All medical school expenses are paid and the student also receives a stipend

Educational benefit: trained as a physician-scientist bringing medicine to science and science to medicine but only for students who are equally excited about medicine and research

MD/PhD Rutgers and Princeton Joint Program

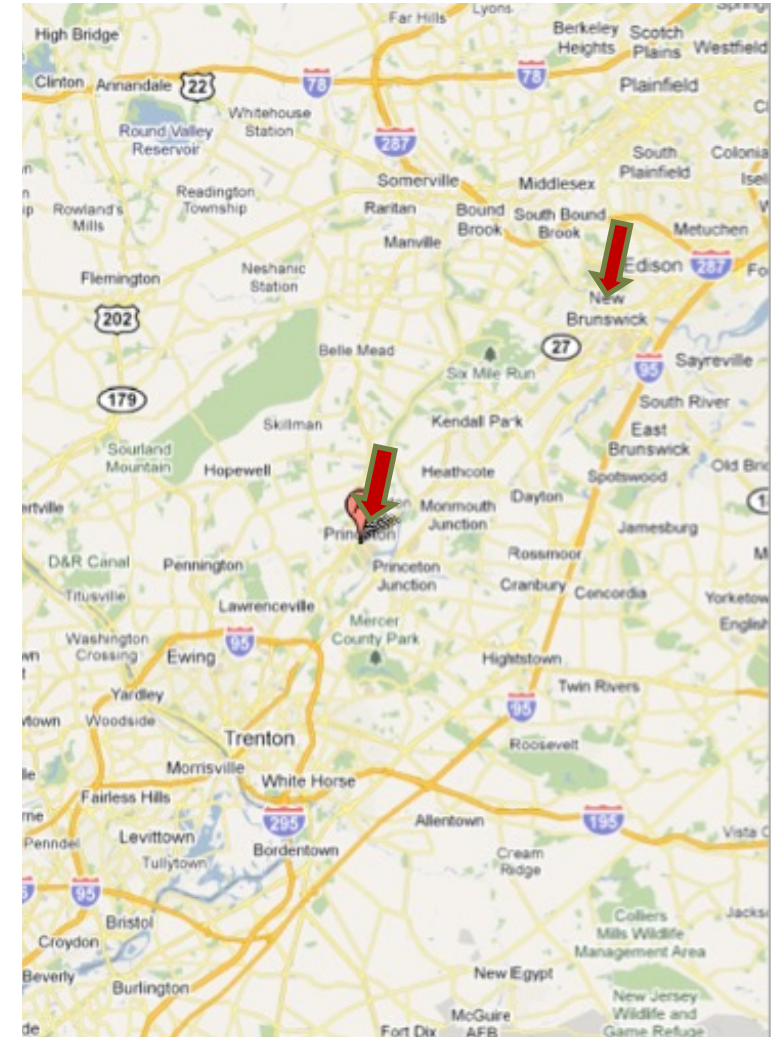
Unique collaborative environment between a state university and an Ivy League institution

Rutgers: >65,000 students. Joined Big 10 and also part of educational CIC. Leverage many resources of a large state university >450 faculty to choose from

Princeton: one of the most prestigious schools in the world
Smaller without the post-graduate schools

Diversity (~50% women; 20% URM students)

~70% enter research track or research intensive residencies (UPenn, Columbia, Mt Sinai)



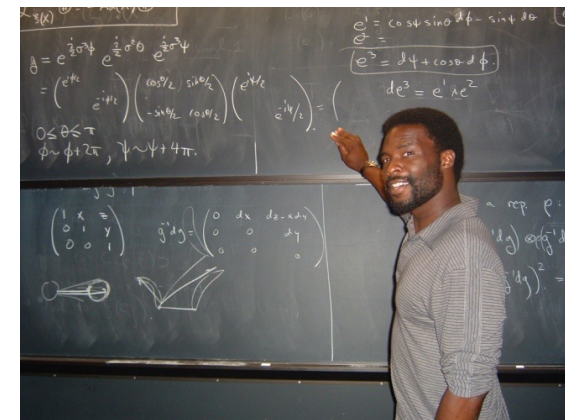
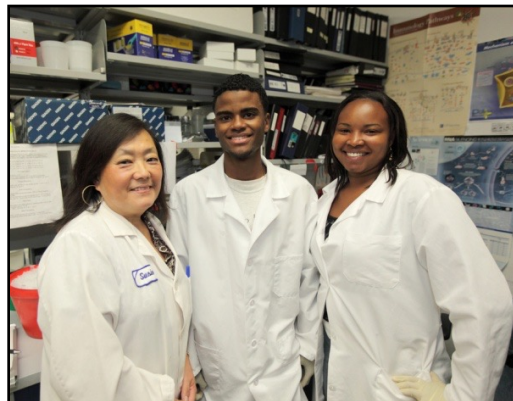
Commitment to Diversity and Inclusion

- Training grants (e.g. IMSD) and pipeline programs (e.g. RiSE) focused on graduate diversity
- Leadership at Rutgers are diverse and have created Division of Diversity Inclusion and Community Engagement
- Grad school strategic plan to enhance support for student from underrepresented groups
- Membership in organizations such as ABRCMS and SACNAS
- Inclusive teaching and mentoring
- Multicultural local and regional population

~22% of applicants get offered admission and 40% of those matriculate

~14% Black, Hispanic, and Puerto Rican

~51% Female



Mental Health Resources

Counseling and Psychiatric Services (CAPS)

“Let’s Talk” drop-in every Thursday from 10am-12pm

Graduate Student Specific Workshops:

- Time Management and Life Balance
- Stress and Anxiety Reduction
- Building Resilience and Managing Expectations
- Health Communication and Assertiveness
- Mindfulness Meditation
- Yoga
- Cultivating Calm



Drop-in hours with Dana Simons every **Thursday from 10am-12pm in-person** in Center for Advanced Biotechnology & Medicine (CABM) Room 240, 679 Hoes Lane West, Piscataway. No appointment needed! If you prefer by phone, call 848-932-7884 and press #2 to leave a message with your name, RUID, and phone number and Dana Simons will call you back.



“Let’s Talk” is a **FREE CAPS counseling service**. Conversations with experienced CAPS counselors are **private and confidential**.



No problem or stress is too small to share at a “Let’s Talk” Session

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)
- Black Graduate Student Organization
- Nutritional Sciences GSO
- Endocrinology and Animal Biosciences GSO
- Microbial Biology
- Quantitative Biology
- iJOBS blog
- Rutgers GSA – events for everyone



Rutgers - iJOBS

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



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

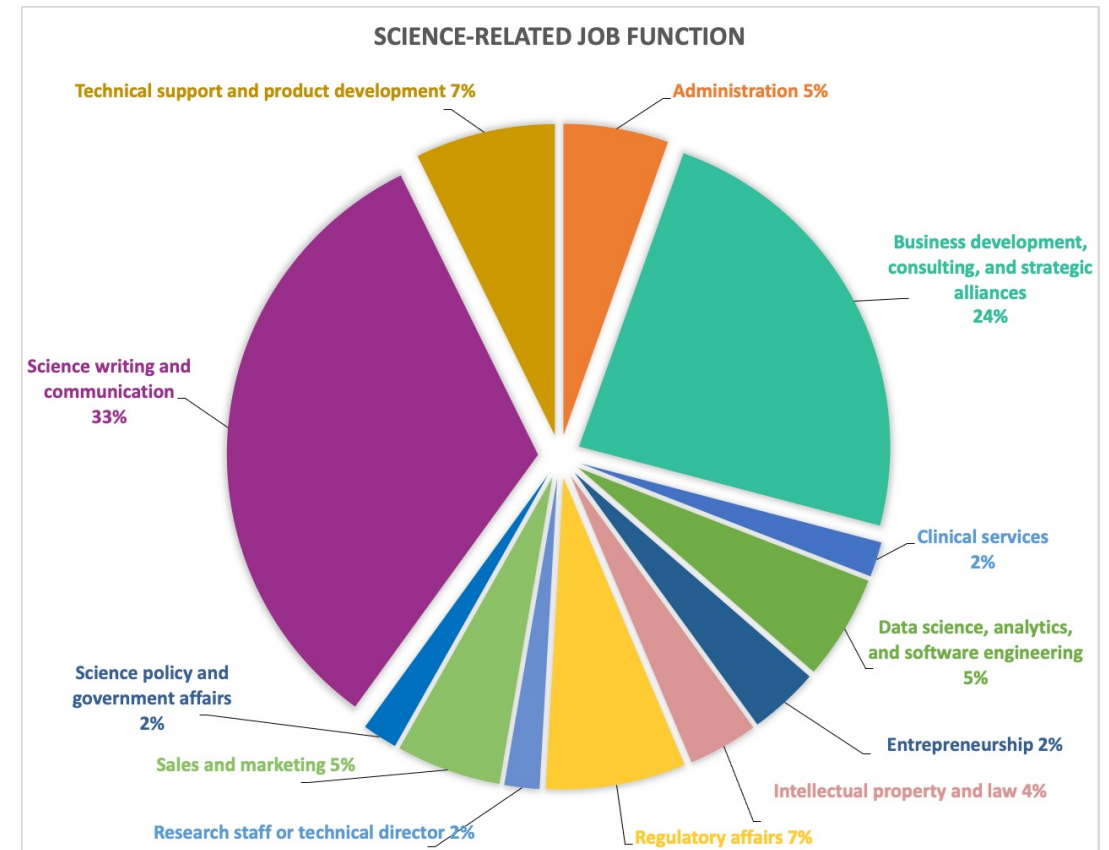
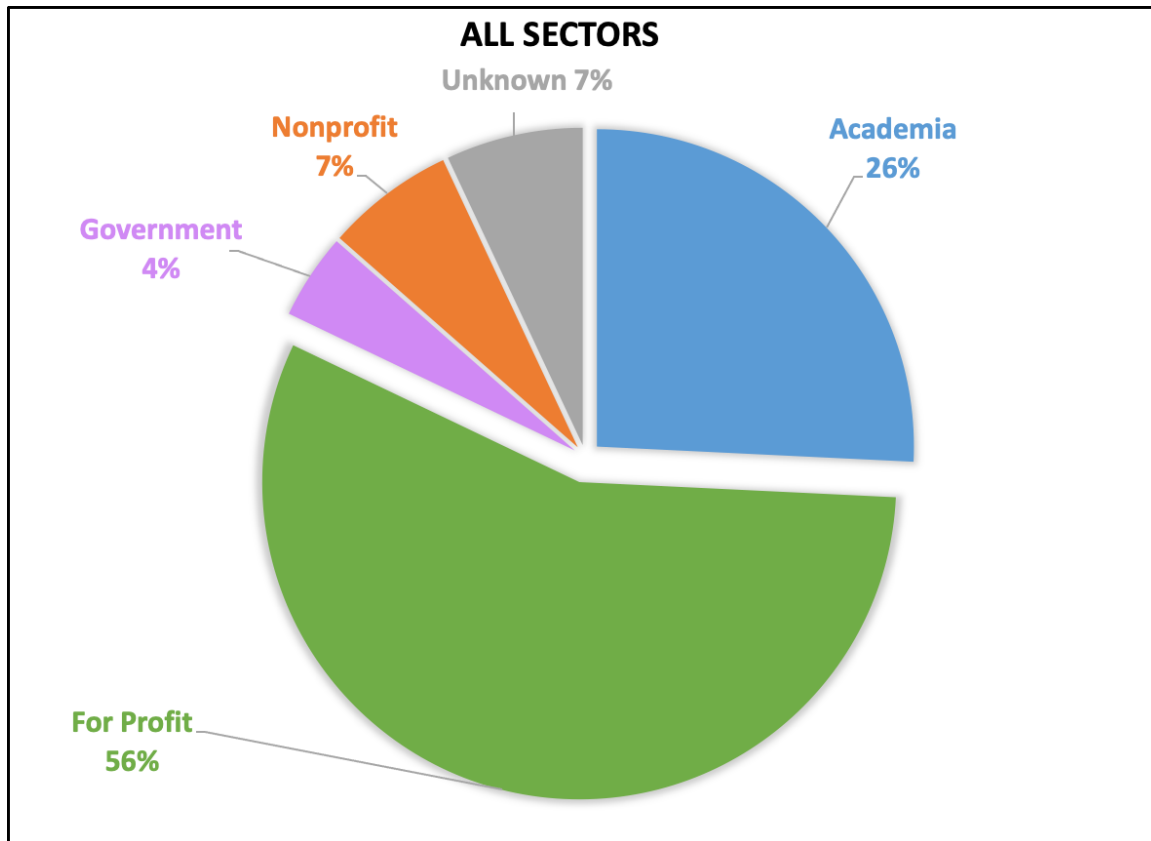


iJOBS Phased Programming



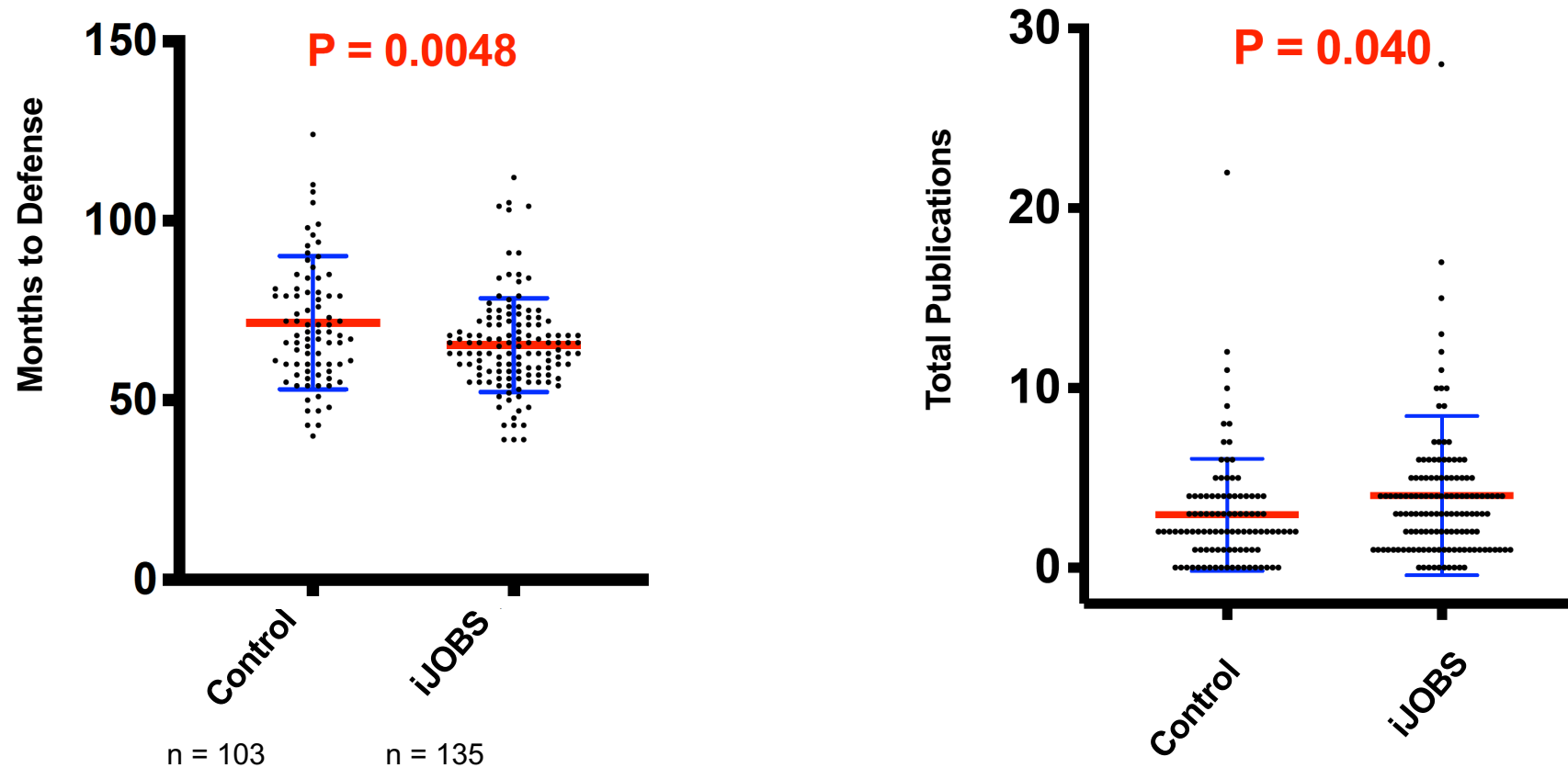
First Position of SciPhD Participants (n = 229)

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



Data analyzed by Tracy Scott

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

Ready to Apply? Components of the Application

<https://gradstudy.rutgers.edu/apply/apply-now>



- Most PhD programs have deadline of December 1
- Application form including contact information
- Personal Statement
- Recommendations
- Curriculum Vitae (CV)
- Transcripts - If your school does not have a GPA system that was 4.0 scale, please enter 0.00 on the electronic application. GPA information is used for statistical purposes and your transcripts will clarify your academic achievement.
- GREs – not required
- TOEFL and IELTS – You are exempt from submitting TOEFL or IELTS scores if you are a Permanent Resident, US citizen, or an international applicant with a minimum of three years undergraduate studies or a masters degree with the mode of instruction being English.
- Application fee (\$70)
 - ★ Waived for McNair, Project 1000, GEM scholars, RiSE alumni
 - ★ We normally do not waive fees for others, but we may defer a fee under extraordinary circumstances. You can request a fee deferral by mailing us a statement of need and supporting evidence of need, such as tax returns or a letter from a financial aid officer from your school. Send to Linda Costa smeds@ues.rutgers.edu

Personal Statement

- What I have done in *proposed field of study*
 - ★ What got you interested in this field?
 - ★ Discuss *your* research project(s) to date
 - What were *your* most important contributions? Why are they important?
 - Talk about your hypothesis and big picture
 - ★ Details of *your* service or volunteer work, leadership only if relevant
- What I want to do and why
 - ★ Continue to study in-depth and *specify the topic*
 - ★ Become a researcher or scholar in *this field*
- Why Rutgers (or this school) and why this program?
 - ★ The strengths of the program in (*specify*) areas
 - ★ *Specific* faculty doing research that fits with your interests – WHY that faculty?
- Show ability to work independently but also on a team
- Stand out and use your own voice but be wary of humor and quotes
- Be clear and explain what you want to do, why you want to do it, how you are going to be successful, what you want to do after degree



Personal Statement Do's and Don'ts

- Do be authentic – don't use quotes if that is not your style
- Do brag a little – don't forget everything you have done
- Do make sure the statement gets reviewed by several people to check for language

- Don't use flowery language or unnecessary adjectives
- Don't embellish
- Don't underestimate yourself



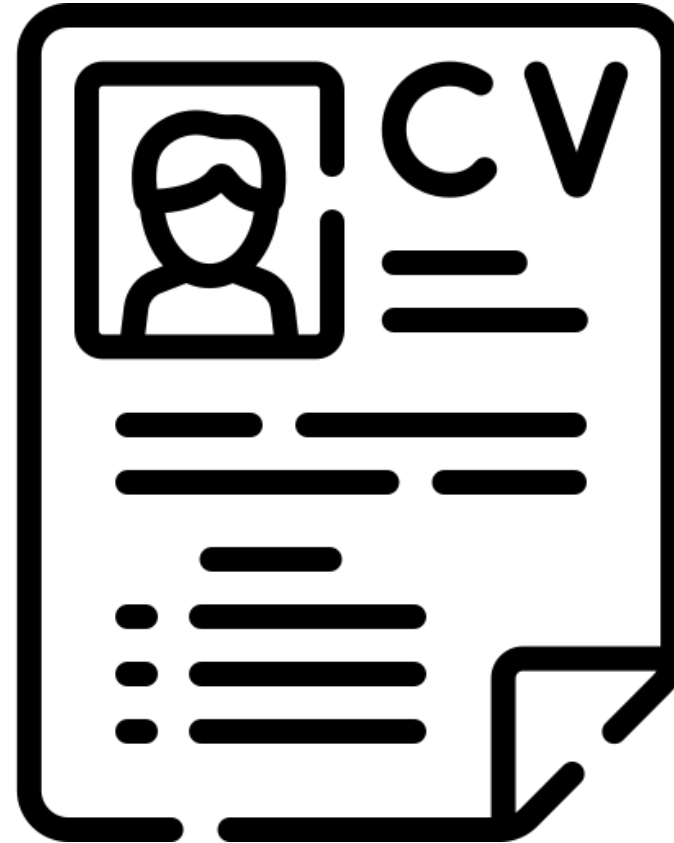
Recommendations

- Usually 3
- People who know you well from
 - ★ Your research
 - ★ Advanced, inquiry-based courses
 - ★ Service or volunteer work (only if relevant)
- Examples of Someone who will be able to say more than “Susie got an A”
 - ★ Supervisor of summer research project(s)
 - ★ Professor in an upper level class where you participated actively and did independent work
 - ★ Should be high ranked person AND someone who knows you well
- Set up appointment
- Ask “*Are you comfortable writing a STRONG letter?*”
- Give writer info on both school and program
- Provide copies of statements and CV
- Explain anything you want writer to cover or emphasize
- Give ample lead time
- Have a back-up (4th) person



Curriculum Vitae (CV)

- Contact information
- Education
- Relevant experience
- Publications
- Presentations (oral and poster)
- Honors and awards
- Qualifications and awards
- Grants received
- Institutional service
- Certifications
- Professional associations



Interview days

- First one may be virtual
- If in person you will get your transportation and hotel covered
 - Be able to speak about your research
 - Be ready to ask the faculty and current students questions



Summer Research if You are Not a Senior

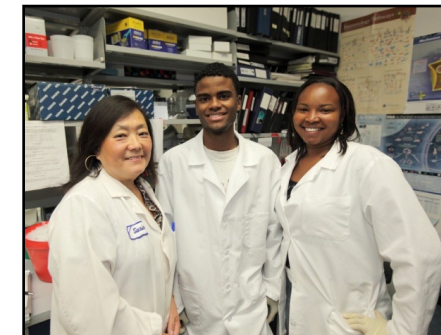
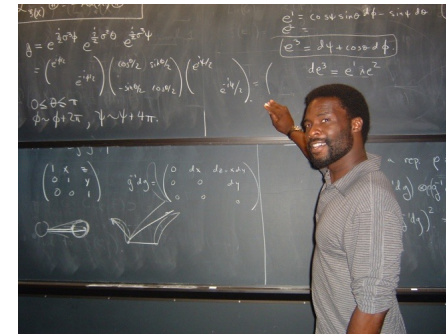
- Programs at Rutgers
- Programs at other universities
- Government labs
- Corporate internships and summer jobs

Typical summer program financial benefits

- Stipend
- Free housing (if in-person)
- Travel funding

Caution: a job may give experience but may or may not be a true research opportunity.

Also consider taking a gap year and working as a research tech or doing a postbac program (e.g. NIH)



QUESTIONS?

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