Where should I go and how to I get there?

Intro to STEM career exploration

University of Missouri Show Me Research Week Professional Development Session

April 20, 2023

Mike Tessel, PhD
Senior Director of Professional Development
Office of the Provost | UChicagoGRAD
The University of Chicago
About Me

Michael A. Tessel, PhD

- Northwestern PhD - Cancer Biology
- Postdoc - University of Illinois at Chicago
- UChicago Staff: 2014-Present

UChicagoGRAD

- Sr. Director, Professional Development
- Career advisor for PhD Scientists
- Manage team of graduate career advisors
- Lead employer relations
About You...
Agenda

1. PhD Outcomes
2. Career Pathways
3. Job Search & Networking
4. Next Steps
Agenda

1. PhD Outcomes
2. Career Pathways
3. Job Search & Networking
4. Next Steps
National Trends

Figure 23
U.S. postdoctorate rate for doctorate recipients, by broad field: 2001 and 2021

Source: NSF Survey of Earned Doctorates
Mizzou STEM PhD Graduates - 10 Years
College of Arts and Sciences 2021 PhDs

https://gradschool.missouri.edu/graduate-career-outcomes-survey/
Agenda

1. PhD Outcomes
2. Career Pathways
3. Job Search & Networking
4. Next Steps
Common Paths for STEM Graduates

• Academic research
• Industrial research
• Data science
• Scientific communication
• Consulting
• Finance
• And many more...
Industrial Research

Scientist/Researcher positions

• Sometimes prefer postdoc experience, strong publication record, specific technical abilities
• Career progression can include managing a team or transition to business roles

Postdoctoral Positions

• Industrial postdoc programs less common but can be another way to transition into industry

Sectors

• Pharmaceutical
• Biotech
• Materials
• Quantum
• Semiconductor
• Energy
• Agriculture
• Medical Device
Data Science

Data Scientists
• Apply data analysis to a variety of industries that use large data sets: hospitals, insurance companies, tech companies, financial firms, governments, educational institutes, etc.
• May utilize ML/AI or advanced statistical tools

Computational Biology/Chemistry
• Apply computational and statistical training to scientific research topics
• Often at small biotech or large pharma
• Some may also have title of “data scientist”

Jialu Yan
MS Physics 2015
Data Scientist
Cargill

Jhuma Das
PhD Physics 2010
Associate Director, Computational Chemistry
Design Therapeutics
Scientific Communication

Medical Science Liaisons
• Communicate scientific information about a product to physicians and KOL; travel frequently

Medical Writers
• Manage medical communications about a product; work for biotech, pharma, device company, or “MedComm” agency

Journalists
• Communicate scientific topics to public

Editors
• Edit journal articles and books

Education Outreach
• Represent nonprofit organizations and communicate science related topics

Jessica Hiemstra-Hargrove
PhD Biomedical Sciences 2015
Medical Science Liaison
Mallinckrodt Pharmaceuticals

Stephen Shannon
PhD Immunology
Senior Medical Writer
Abbott
Consulting

Life Science Consultants
• Use scientific knowledge to analyze technologies and inform business decisions
• Work at boutique healthcare/life science firms or life science divisions of large firms

Data Analytics Consulting
• Data science division of large consulting companies
• Boutique consulting firms that provide data analytics services to clients

Generalist Management Consultants
• Apply general scientific logic and problem solving for large, global strategy firms

Anna Roberts-Pilgrim
PhD Biochemistry 2009
Scientific Research Analyst/Writer
Scientific Consulting Group

Xiaohua (Shawn) Hu
Postdoc Chemistry 2006
Expert Associate Partner
McKinsey & Company
Finance

**Equity Research Analysts**
- Analyze stock value of public companies in a specific sector (ex: biotech) with scientific insight
- Entry point into finance for bioscience and chemistry PhDs

**Quantitative Analysts**
- Apply mathematical and statistical methods to financial and risk management problems
- Entry point for PhDs from mathematics, physics, statistics, computer science, or economics

**Venture Capital**
- Analyzing technology value of startups
- Less common for first job out of university

---

Paul Skudlarski
PhD Physics 1993
Quantitative Analyst
U.S. Bank

Gang Li
PhD Chemistry 2011
Research Analyst
Point72
Additional Paths

- Nonprofit Research Institutes
  - Postdoctoral fellow
  - Research scientist

- Government & Policy
  - National lab research
  - Science policy
  - Think tanks

- Entrepreneurship
  - Working at startups
  - Founding a new company

- Technology
  - Software engineer
  - User experience researcher

- Scientific Industrial Products
  - Field application scientists
  - Technical sales rep

- Intellectual Property
  - Tech. specialist/patent agent
  - Patent attorney
  - University technology transfer

- Teaching
  - College teaching
  - K-12 teaching

- Administration
  - Research administration
  - Education administration
Agenda

1. PhD Outcomes
2. Career Pathways
3. Job Search & Networking
4. Next Steps
What the Job Search generally Is not

Application ➔ Interview ➔ Job Offer
What it Tends to Be

Apply and Learn
Assess and Explore
Active Research
The Timeline

12+ Months Out
Assess and Explore

12-6 Months Out
Gather Information

3-6 Months Out
Leverage and Apply

Start of Job

* Exceptions to timeline: management consulting (9-12 months before start) and some industry R&D (fall recruiting)
The Job Search Process

• Gather information
  • Read job postings
  • Research specific organizations
  • Speak with professionals to gain info and build network (NETWORKING!)

• Leverage and apply
  • Optimize your personal narrative and prepare for interviews
  • Seek out internal referrals when possible
  • Tailor job application materials and apply

• Interview and negotiate
  • Interview for select jobs
  • Evaluate and negotiate offers
Strategies to Identify Contacts

- **Draw on existing connections**
  - Do you know people who work in your fields of interest? Can they introduce you to others?

- **Develop new connections**
  - Attend campus and local events to connect with professionals
  - Utilize the True Tiger Network to find Mizzou alumni
  - Use LinkedIn to find alumni in fields of interest
Informational Interviews

• Many networking exchanges happen in informational interview contexts

• Informational interviews are informal conversations with professionals who are working in fields that interest you

• Professionals share their stories and can give advice, perspective, and additional connections
LinkedIn for Identifying Contacts

- Utilize research tools
  - The University of Missouri LinkedIn page alumni tool
  - LinkedIn employer pages
- Consider searching for professionals by field and employer
- Look at profiles to see who is most relevant
  - Shared experiences (degree, field, school)
  - Seniority (1-5 years ahead of you)
Advanced Search

Search: Company = Bayer, School = University of Missouri, Keyword = Scientist

75 results

Camila Hofman, Ph.D. • 2nd
Senior Scientist at Bayer Crop Sciences
St. Louis, MO
Current: Senior Scientist at Bayer
Jennifer Polk, Ph.D. is a mutual connection

Ying Guo • 3rd+
Scientist in the In Vitro Systems Team at Bayer
Columbia, MO
Current: Scientist II in the in vitro systems team at Bayer at Bayer

David Korasick • 2nd
Scientist II at Bayer Crop Science
St. Louis, MO
Current: Scientist II at Bayer
Wenguang (Winson) Liang is a mutual connection

Adam Boyher • 3rd+
Computational and Data Scientist at Bayer
Greater St. Louis
Current: Computational Scientist at Bayer Crop Science

Your invitation is almost on its way

You can add a note to personalize your invitation to Camila Hofman, Ph.D.

Add a note to your invitation

LinkedIn members are more likely to accept invitations that include a personal note.
Ex: We know each other from...

Add a note ▼ Send
Connecting on LinkedIn

Tips

• Use connection requests selectively
• Always customize the message (never use the default “I’d like to add you to my network on LinkedIn” message)
• Look at profile and activity for things in common
• 300 characters to demonstrate sincere interest

Examples

• Hi Stella- I noticed you also studied cancer biology at University of Missouri. I’d love to chat sometime and learn about your work! –Mike
• Hi Nicole, I’m a Mizzou postdoc looking to make a transition into data science. Your work in machine learning at Amazon sounds fascinating. I’d love to learn more about it! – Mike
Following up by InMail/Email

Reaching out... again

- Often you will need to follow up even after the person accepts your connection request
- Two options
  1. InMail
  2. Email
Subject: Mizzou Student Interested in Cyberdyne

Dear Miles,

Thank you for accepting my LinkedIn connection request. I am a bioengineering graduate student from Mizzou. I noticed on LinkedIn that you work for Cyberdyne Systems Corporation. The Skynet initiative at CDI is fascinating and I would like to learn more about Cyberdyne as well as your personal career path. Would you be willing to speak with me by Zoom or phone sometime in the next two weeks? I look forward to speaking with you soon!

Sincerely,

John Connor

www.linkedin.com/in/johnconnor
Planning for an Informational Interview

- Make the experience as convenient as possible for the interviewee
  - Time
  - Location
- Research the person and their organization
- Practice introducing yourself
  - Elevator pitch
Conducting an Informational Interview

• Begin the conversation by centering the interviewee and their experience; ask for tips in the second half of the chat

• Sample open-ended questions
  • What do you like about your work? What is most challenging?
  • What skills did you gain from your MS/PhD/postdoc that have helped you in your career?
  • Would you mind telling me about your career path and how you got to your current position?
  • What advice do you have for someone with my background who wants to enter this field/company?
  • Is there someone here or elsewhere that you’d recommend I speak with?
Following Up

- Send an email to thank them for their time
- Highlight one or two take-aways from the conversation
- Circle back to any offers they made
- Express interest in staying in touch and connect on LinkedIn
- If there are ways you can help them, (offer to) do so
Agenda

1. PhD Outcomes
2. Career Pathways
3. Job Search & Networking
4. Next steps
Career Exploration

Step 1 – Gather information
- Reading about careers
- Informational interviews
- Job postings

Step 2 – Analyze information
- Do these options fit your skills, interests, and values?
- Are there any skills gaps for the paths that interest you?

Tip: Spend at least as much time searching for and talking to people as you spend searching for and applying to jobs
Make a plan!

What should you do when?

Think about your timeline backwards:

- When do you expect to graduate/leave?
- When do you need a position?
- How much time to job search?
- How much time for self assessment?
- Time to gain additional skills or experiences?
Considering Internships

• **If you have more time** before graduating, an internship can be helpful, but it is usually not necessary.

• **Understand norms** of what is possible for graduate students in your desired industry/sector.

• If you are unable to take a whole summer off, consider **part-time, remote, on-campus**, or **volunteer** opportunities.

• **Speak with your PI** about your plans.
Speaking With Your PI About Internships

• **Understand their perspective**
  • Do they need your data for upcoming grant applications or manuscript submissions?
  • Do they have tenure clock considerations?
  • Are there funding/budget considerations?

• **Present your rationale**
  • How will this help with your career goals?
  • How will you ensure progress with your research responsibilities?

• **If possible, explain how it helps the lab**
  • Will you be gaining skills or insights that will advance the research or make you more productive when you return?
Job Boards
Additional Resources

Online Resources

- Professional Society Websites
  - ACS, APS, ASBMB, ASCB, SFN
- Science Careers myIDP
- Versatile*, Beyond*, Cheeky*
- Biospace, DOC, Ed’s Job List
- University Career Websites

*some content restricted to subscribers

Books

- Next Gen PhD
- Leaving Academia
- So What Are You Going to Do With That?
Questions?

Mike Tessel
tessel@uchicago.edu

Add me on LinkedIn!
https://www.linkedin.com/in/tessel/