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

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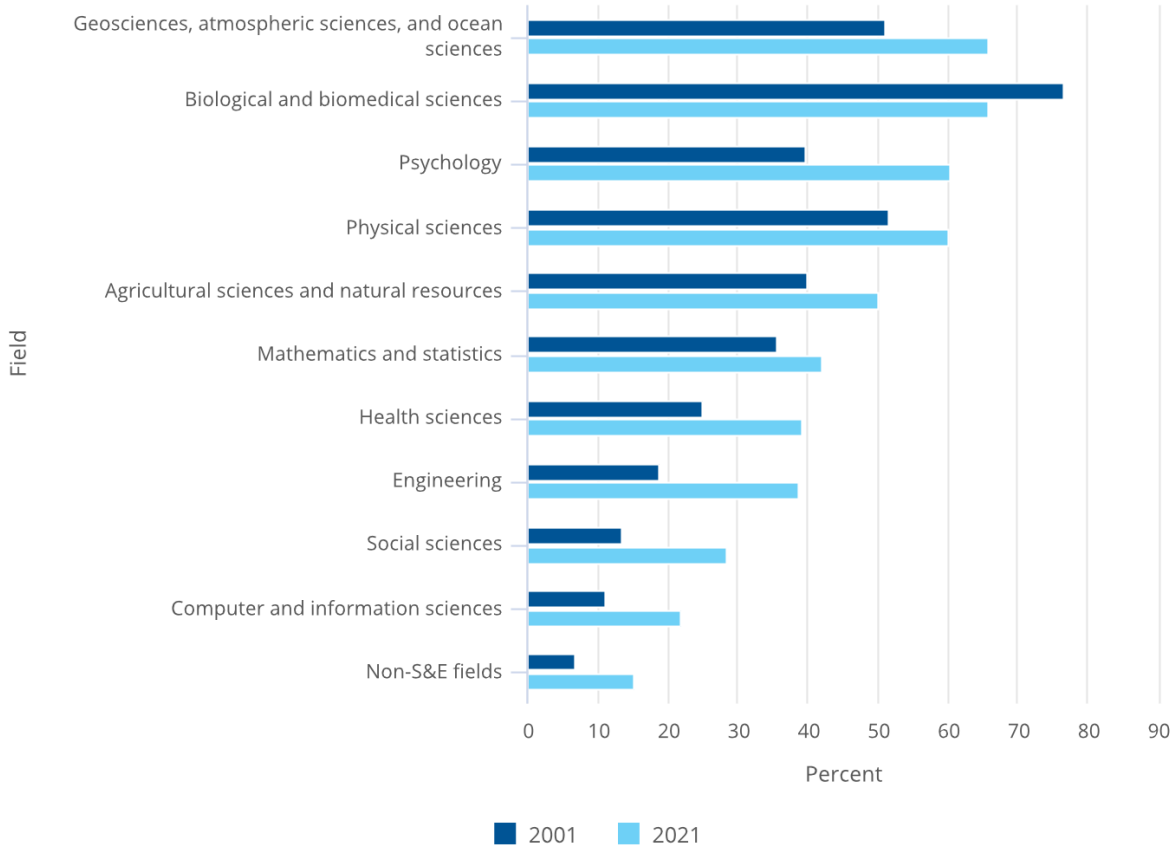
National Trends

Figure 23

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



Source: NSF Survey of Earned Doctorates

https://ncses.nsf.gov/pubs/nsf23300/report/postgraduation-trends#first-postgraduate-position

National Trends

PhD Career Pathways
A PROJECT OF THE COUNCIL OF GRADUATE SCHOOLS

RESCUING BIOMEDICAL RESEARCH

AAMC

COALITION FOR NEXT GENERATION LIFE SCIENCE

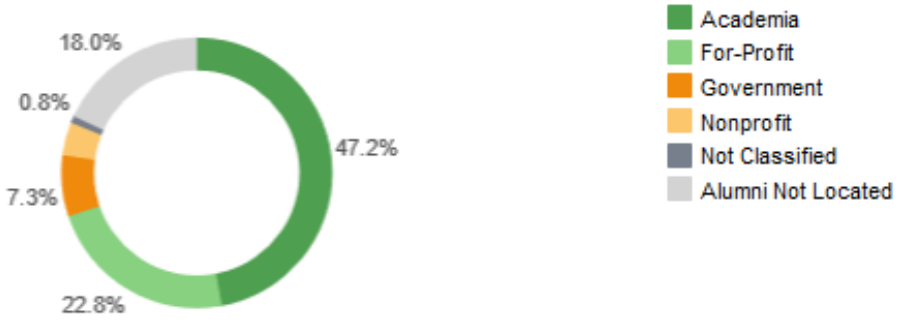
Future of Research

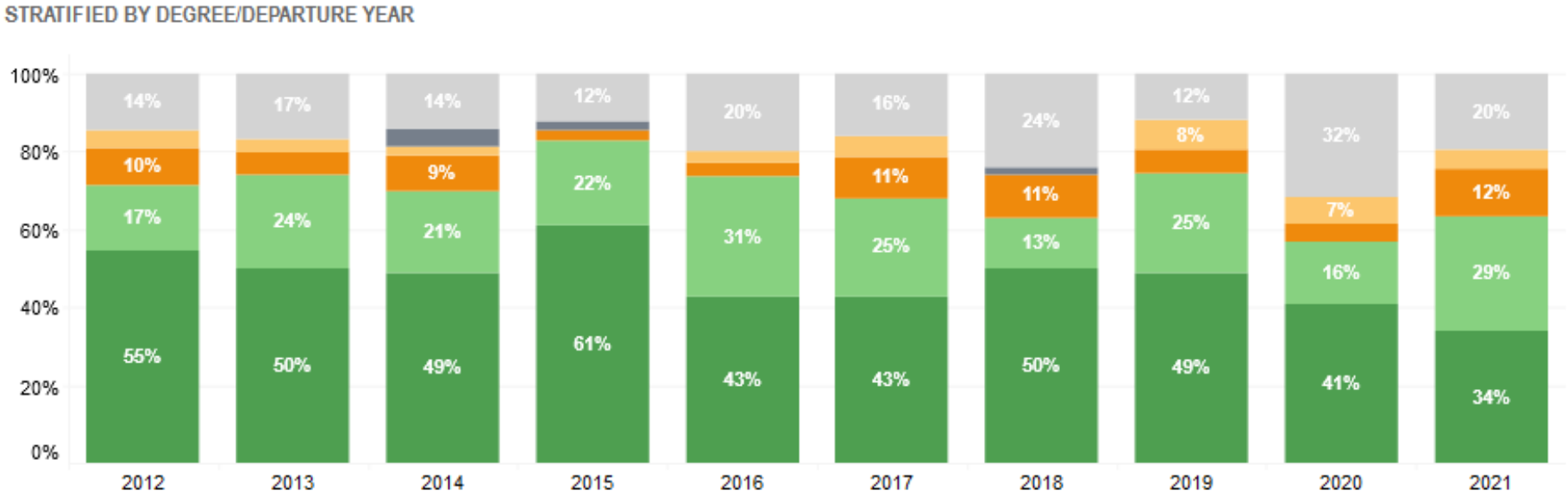
NIH BEST CONSORTIUM

GCC
– GRADUATE CAREER CONSORTIUM –

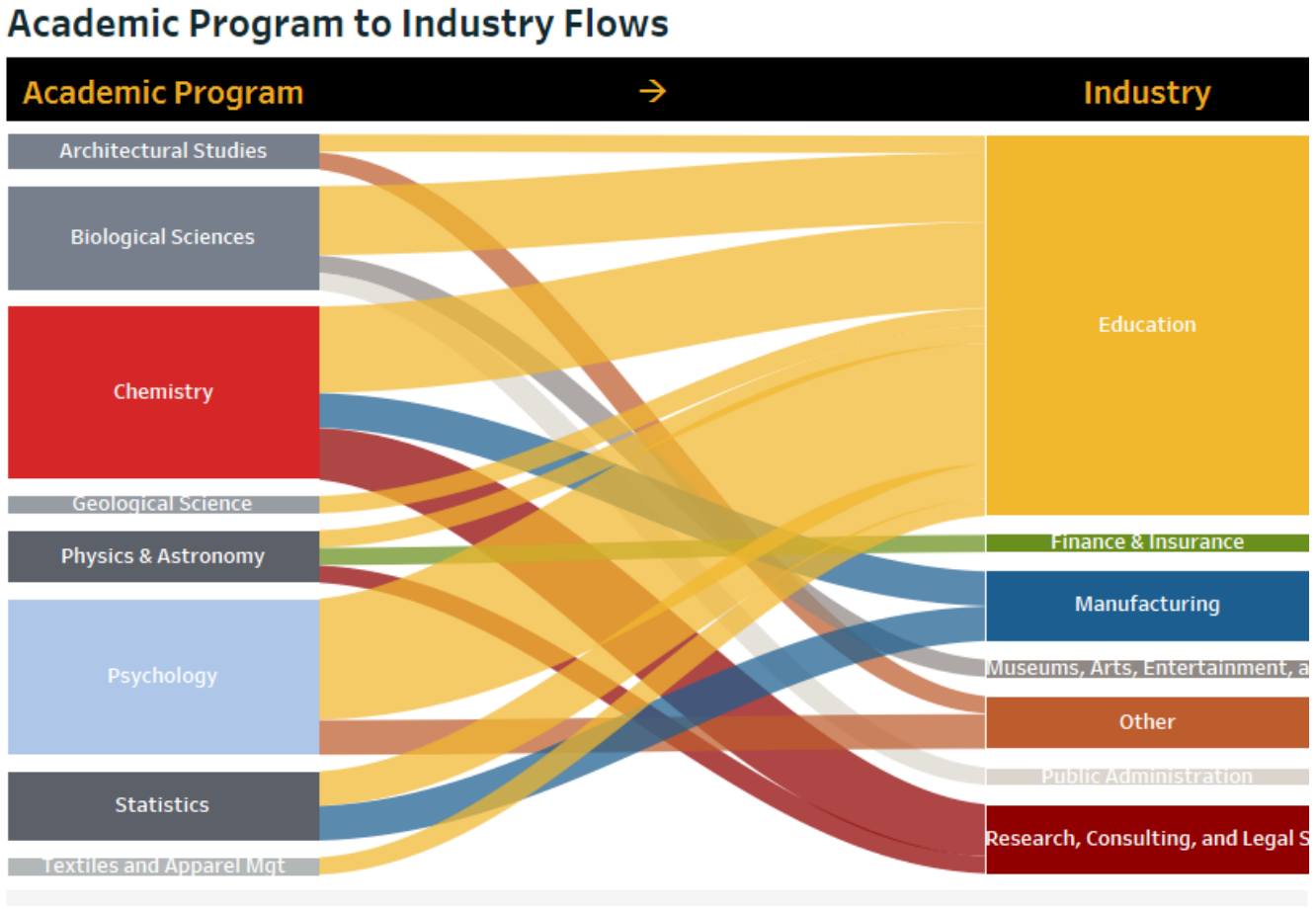
Association of American Universities

Mizzou STEM PhD Graduates- 10 Years





College of Arts and Sciences 2021 PhDs



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

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Common Paths for STEM Graduates

- Academic research
- **Industrial research**
- **Data science**
- **Scientific communication**
- **Consulting**
- **Finance**
- **And many more…**

Industrial Research

Scientist/Researcher positions

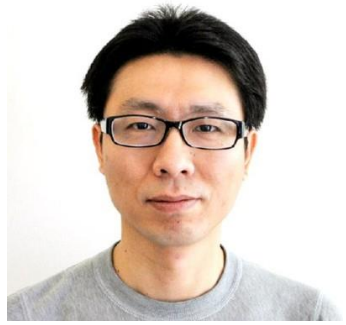
- Sometimes prefer postdoc experience, strong publication record, specific technical abilities
- Career progression can include managing a team or transition to business roles

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



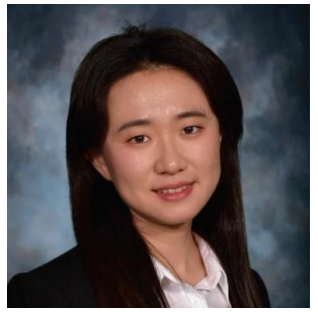
Kuo-Hsien Fan
PhD Chemistry 2010
Senior Scientist II
AbbVie

Michelle (Folta) Valentine
PhD Plant Insect Microbial Science 2016
Scientist
Bayer Crop Science

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



Jialu Yan
MS Physics 2015
Data Scientist
Cargill

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”

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

Mallinckrodt

Stephen Shannon
PhD Immunology
Senior Medical Writer
Abbott

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

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

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

McKinsey & Company

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

Gang Li
PhD Chemistry 2011
Research Analyst
Point72

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

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

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What the Job Search generally Is not

Application

↓

Interview

↓

Job Offer

What it Tends to Be

The Timeline

12+ Months Out

Assess and Explore

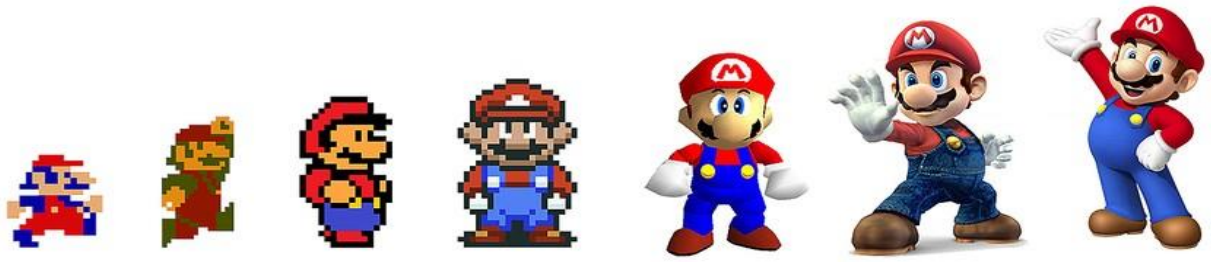
12-6 Months Out

Gather Information

3-6 Months Out

Leverage and Apply

Start of Job



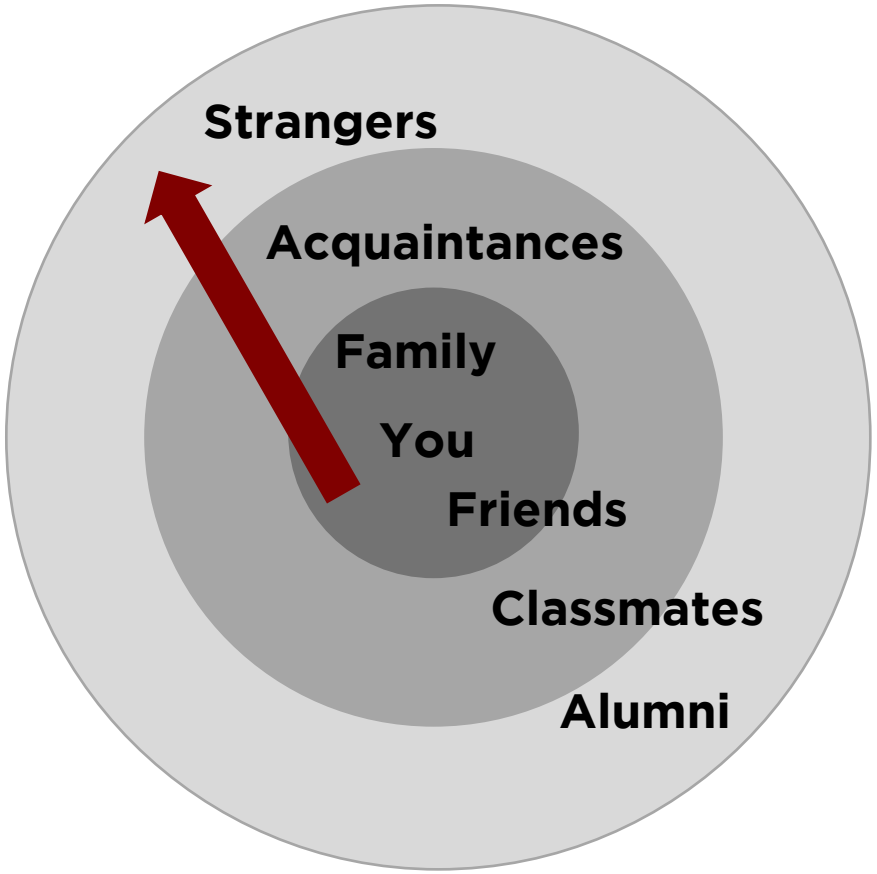
* Exceptions to timeline: management consulting (9-12 months before start) and some industry R&D (fall recruiting)

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

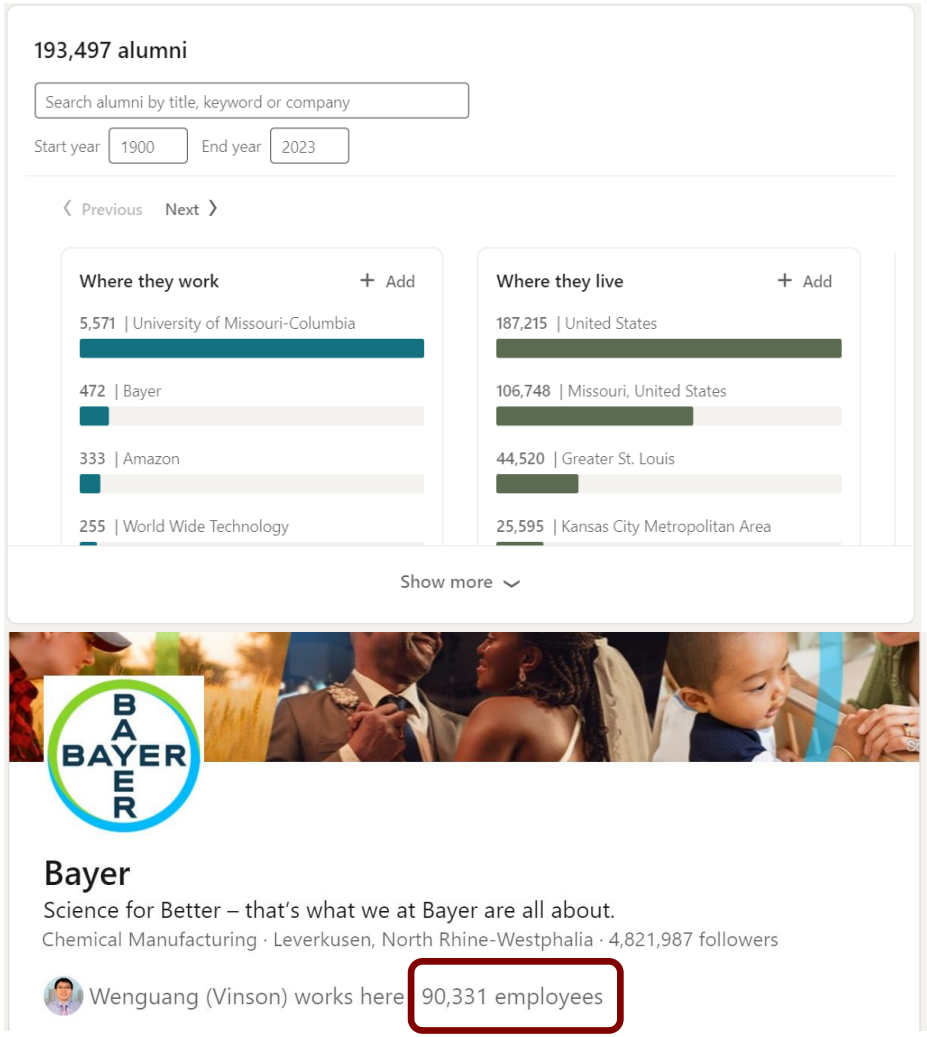


Informational Interviews

- 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**

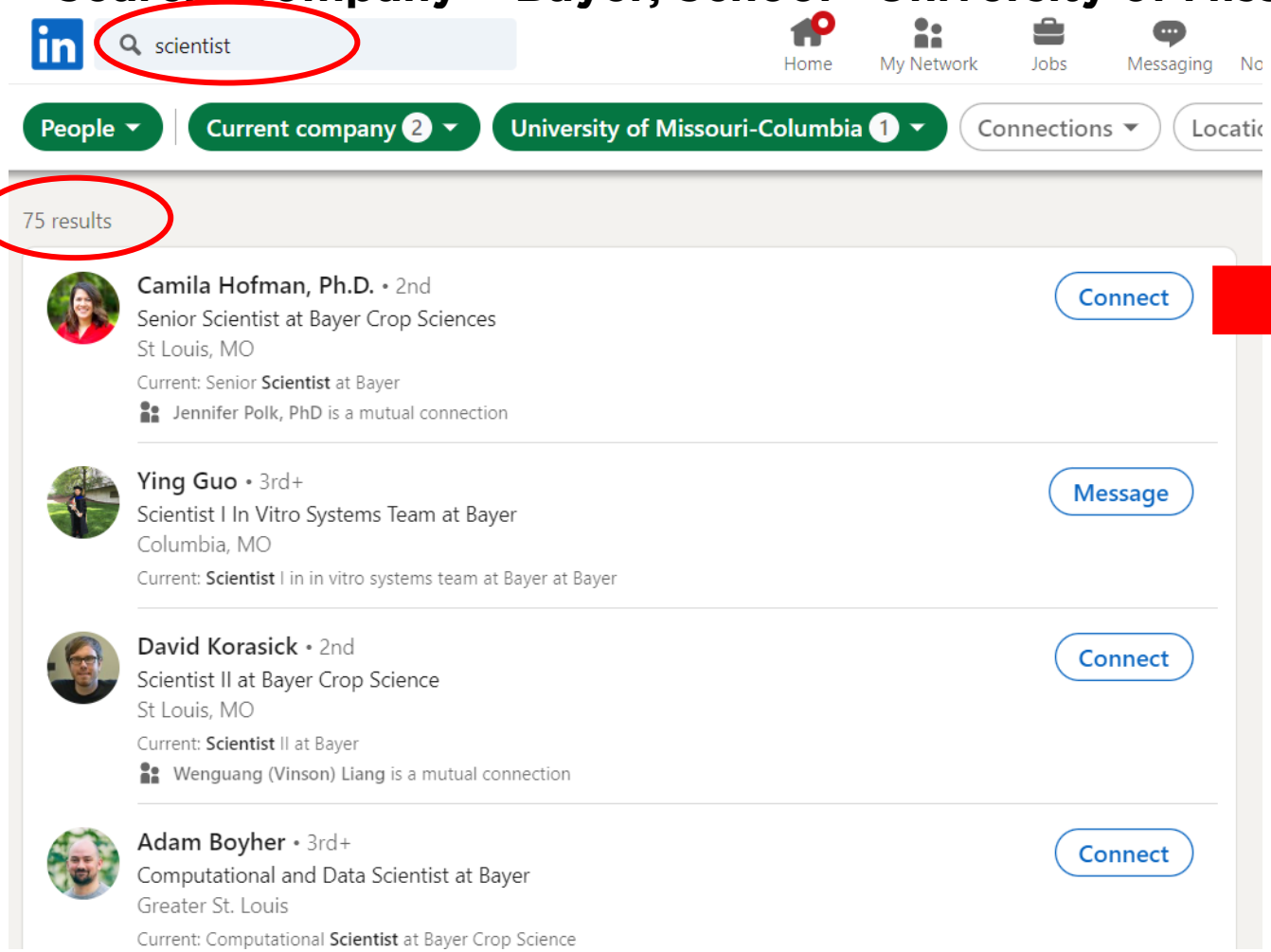
LinkedIn for Identifying Contacts

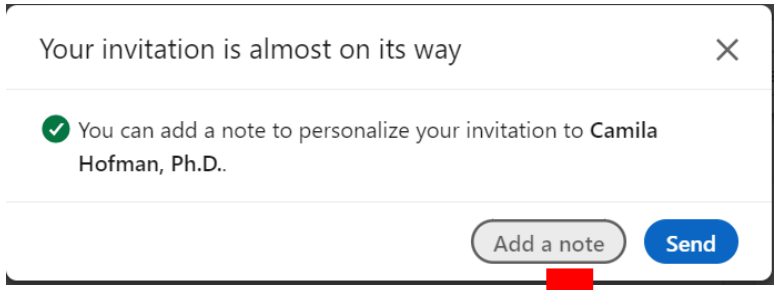
- Utilize **research tools**
  - The University of Missouri LinkedIn page alumni tool
  - LinkedIn employer pages
- Consider searching for professionals by **field** and **employer**
- Look at **profiles** to see who is most relevant
  - Shared experiences (degree, field, school)
  - Seniority (1-5 years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

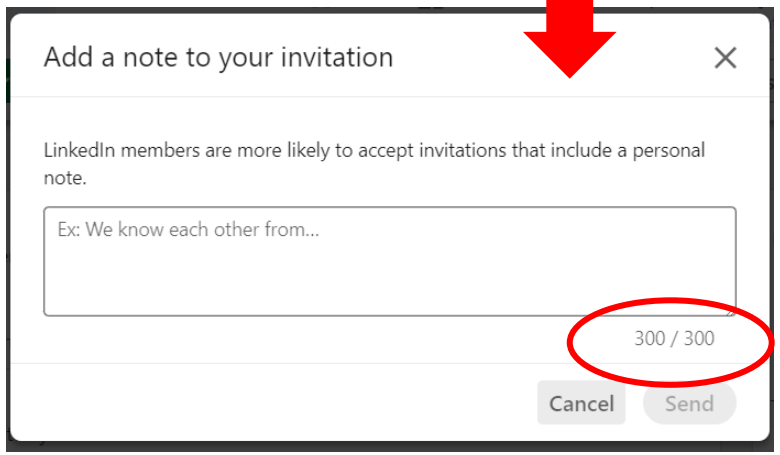


Advanced Search

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







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

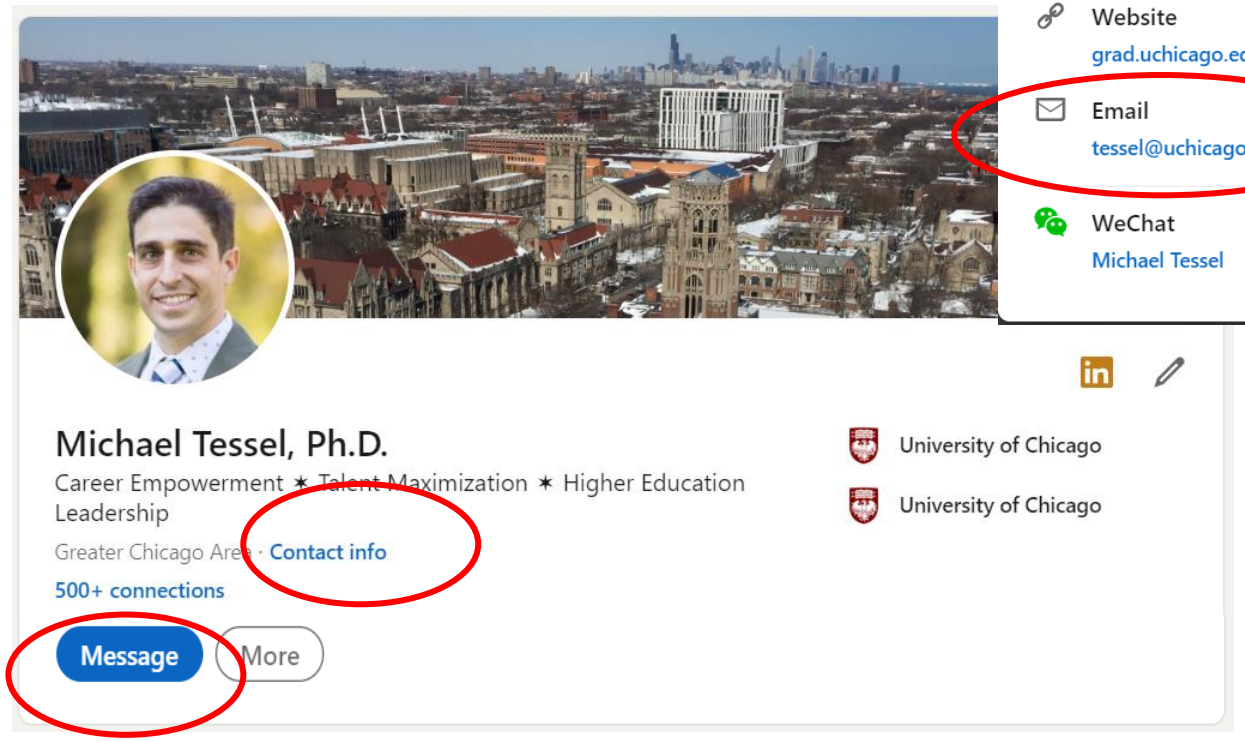
Examples

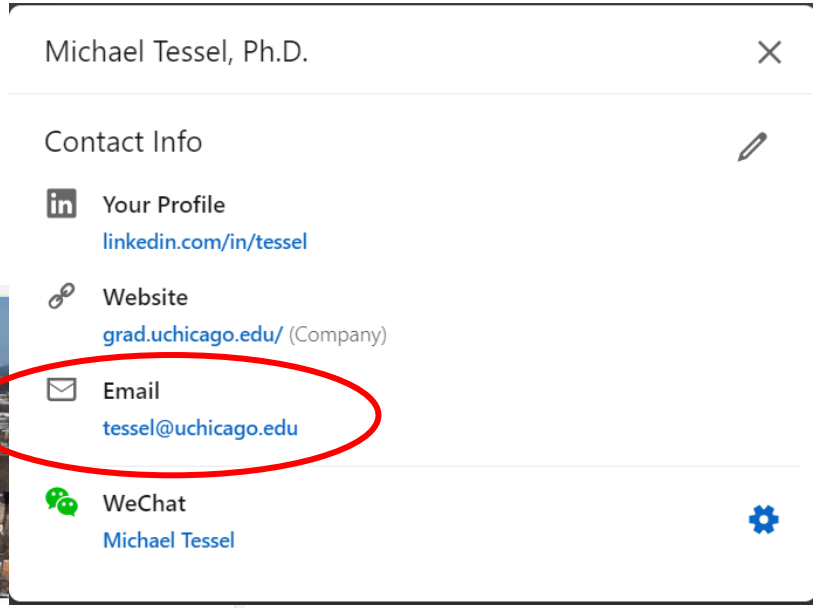
- *Hi Stella- I noticed you also studied cancer biology at University of Missouri. I’d love to chat sometime and learn about your work! –Mike*
- *Hi Nicole, I’m a Mizzou postdoc looking to make a transition into data science. Your work in machine learning at Amazon sounds fascinating. I’d love to learn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





Example Email

Subject: Mizzou Student Interested in Cyberdyne

Dear Miles,

First name usually appropriate

Identify things in common or person who referred you to them

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!

In-person even better when possible

Sincerely,

John Connor

www.linkedin.com/in/johnconnor

Customized LinkedIn url in signature

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

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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

LinkedIn

glassdoor

indeed

Google

USAJOBS

HigherEdJobs

built in

idealist

GLOBAL JOBS
WWW.GLOBALJOBS.ORG

Additional Resources

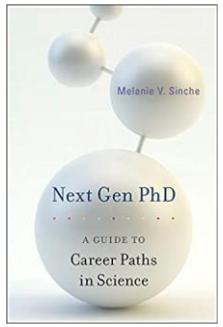
Online Resources

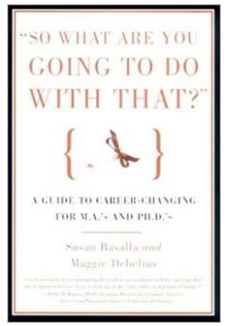
- **Professional Society Websites**
  - ACS, APS, ASBMB, ASCB, SFN
- **Science Careers myIDP**
- **Versatile*, Beyond*, Cheeky***
- **Biospace, DOC, Ed's Job List**
- **University Career Websites**

*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/