

# Exploring the Postdoctoral Path

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**CORRESPONDENCE** | 09 April 2024

# Declining postdoc numbers threaten the future of US life science

By [Anastasia Gromova](#) & [Steven F. Grieco](#) 



According to the latest data from the US National Science Foundation's [Survey of Graduate Students and Postdoctorates in Science and Engineering](#), the number of biological and biomedical postdoctoral researchers at US institutions decreased by more than 10% between 2020 and 2022, from 21,902 to 19,585. For the decade up to 2020, despite statistical

# My pathway

1996: BS in Biology from SUNY Geneseo

2000: MS/PhD in Cardiovascular Pharmacology from Albany Medical College

**2000: Postdoctoral Fellow at the Medical College of Georgia**

- **2003: Assistant Research Scientist**
- **2006: Instructor**

2008: Tenure-track Assistant Professor in Pharmacology in 2008



American Heart Association **Scientist Development Grant 0635047N** (2006-2010 )

Title: Role of NO Bioavailability in Sexual Dimorphism in Renal Injury in Male and Female Spontaneously Hypertensive Rats.

Role: Principal Investigator

Direct Costs: \$59,091/yr

Indirect Costs: \$5,909/yr

Total Costs for Award Duration: \$260,000

MCG Intramural Grants Program (Pilot Study Research Program; 2006-2007)

Title: Molecular Mechanisms of Sexual Dimorphism in Renal Injury in Spontaneously Hypertensive Rats (SHR): Involvement of Angiotensin II and the JAK/STAT Pathways

Role: Co-Principal Investigator

Direct Costs: \$18,000

NIH **R03 AG024616** (2004-2006)

Title: Interaction of Age and Gender on NO Bioavailability

Role: Principal Investigator

Direct Costs: \$50,000/yr

Indirect Costs: \$21,500/yr

Total Costs for Award Duration: \$143,000

MCG Children's Medical Center H. Victor Moore Research Grant (2003)

Title: Regulation of vascular nitric oxide synthase I in normotensive and hypertensive arteries.

Role: Principal Investigator

Direct Costs: \$2,500





# Should I do a postdoc?

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# Potential benefits of a postdoc

## Postdoctoral Fellows



FROM **innovative**  
**research**  
TO **transformative**  
**impact**

From the diverse expertise across institutes and centers to the supportive community that values collaboration and innovation, our postdocs thrive in an environment that fuels advanced research,

fosters interdisciplinary connections, and empowers them to make a meaningful impact in their fields and beyond.

***Pathway to academia:*** allows you to build an independent research profile, secure funding, and broaden your experience beyond your PhD

***Skill diversification:*** develop new technical and "soft" skills, expand your expertise in a new area, and diversify your research capabilities

***Build your CV:*** publications, service, grants

***Networking:*** grow your professional network by collaborating and attending conferences

***Transition to industry:*** industry-based postdocs can serve as a stepping-stone to a permanent position

2008-present **Editorial Board Member, American Journal of Physiology: Regulatory, Integrative, and Comparative Physiology**

2005-2007 Vascular Wall 1 **Study Section member**; Southern Research Consortium; American Heart Association

2007-present American Heart Association Council on Hypertension  
**Abstract reviewer**

2008-2010 FASEB Summer Research Conference Renal Hemodynamics: Mechanisms to Understand Disease **Organizing Committee**

2008 Forest Pharmaceuticals New Investigator Travel Award

2007 Water and Electrolyte Homeostasis Section New Investigator Award

2007 Kidney Council New Investigator Travel Award

2006 Merck New Investigator Award

2006 Named a Rippel Scholars Program Finalist

2003 American Physiological Society Research Recognition Award

2001 Stipend recipient to attend Hypertension Summer School

2000 Merck, Sharpe and Dohme New Investigator Travel Award

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3. Elmarakby AE, Katary M, Pollock JS, **Sullivan JC**. Influence of the selective COX-2 inhibitor celecoxib on sex differences in blood pressure and albuminuria in Spontaneously Hypertensive Rats. *Prostaglandins and Other Lipid Mediators*. 135:16-20, 2018.
4. **Sullivan JC** and Pollock JS. Five Years of Data Diuresis: What have WEH learned? *Am J Physiol- Regu*. 309(9):R1060-1; 2015. DOI: 10.1152/ajpregu.00107.2015
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# **TIPS TO MAKE THE MOST OUT OF A POSTDOC**



## Research & Publications

- **Publish high-quality work:** Aim to publish your research in top journals, prioritizing first-author papers to showcase your contributions.
- **Develop your own research line:** Pursue new research ideas or focus on a different area than your Ph.D. to broaden your expertise and independence.
- **Collaborate with others:** Network and collaborate with other researchers to develop new ideas and expand your scientific network.

## Professional Development

- **Secure funding:** Write and submit grant applications, as successful grants are a sign of independence, creativity, and leadership potential.
- **Attend conferences and network:** Present your research at scientific meetings and conferences to meet other scientists and build your network.
- **Hone technical skills:** Master a wide range of technical skills and analytical approaches to become a more versatile and independent researcher.
- **Gain leadership and management skills:** Look for opportunities to manage projects, lead working groups, or mentor others to develop your leadership and project management abilities.

## Career Planning

- **Reflect on career goals:** Consider whether you want a career in academia, industry, or government and tailor your postdoc experience to your chosen path.
- **Develop a clear plan:** Work with your mentor to create a strategy for maximizing your potential and achieving your career goals.
- **Build a strong CV:** Use your postdoc to gain experience in research, teaching, or

# Beyond The Bench: How Postdocs Are Transforming Institutional Culture And Collaboration

Postdocs have long been the backbone of academia, however, their role now extends far beyond research and publishing. They actively engage in committees, mentoring programs, and policy discussions, shaping both educational and administrative aspects of academia. Many also lead efforts to promote diversity and equity initiatives, organize public outreach events, and advocate for improved professional resources and mental health support.



Postdocs develop transferable skills that prepare them for careers in industry, policy, and communication, reflecting the increasingly diverse paths postdocs pursue after their training.

As early-career researchers, they combine scholarly expertise with adaptability, allowing them to identify institutional gaps, propose solutions, and collaborate across diverse stakeholders. This role makes postdocs vital connectors, bringing students, faculty members, and external partners together to foster innovation and drive progress.



# What can you do post-postdoc?



## Academic Career Paths

- **Lecturer or Assistant Professor:** This is a common academic track that allows you to continue research while also teaching and mentoring students. [🔗](#)
- **Research-Focused Roles:** You can find positions as a research scientist or associate without a primary teaching component, particularly at research-intensive institutions. [🔗](#)
- **Stay at Your Current Institution:** If your current university has a pathway for permanent positions, you can aim to secure a faculty role there, though this is not always an option. [🔗](#)

## Industry & Private Sector Paths

- **Research and Development (R&D):** Many postdocs enter industry to work on new drug discovery, process optimization, or technology development. [🔗](#)
- **Scientific Writing and Communication:** Your research skills are highly valuable in roles that require explaining complex scientific concepts to different audiences. [🔗](#)
- **Project and Product Management:** You can transition into managing scientific projects or the development of new products and technologies. [🔗](#)

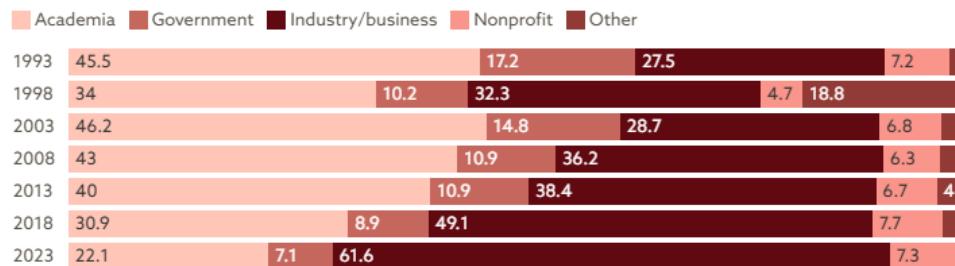
## Government & Public Sector Paths

- **Science Policy:** You can work in policy-making, whether for government agencies, funders, or organizations that advocate for science. [🔗](#)
- **Civil Service:** A PhD and postdoc can lead to roles in various government departments, leveraging your analytical and research skills. [🔗](#)
- **Non-Profit and Funders:** Positions in national academies, learned societies, and charities can involve scientific strategy, portfolio management, or outreach. [🔗](#)

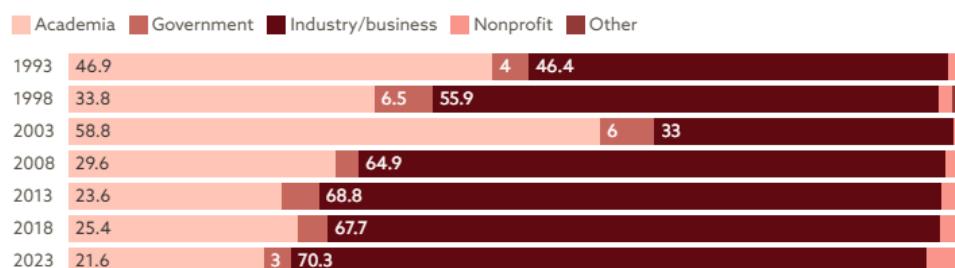
# Changing career paths

A growing percentage of Ph.D.s are opting for jobs in industry instead of academia.

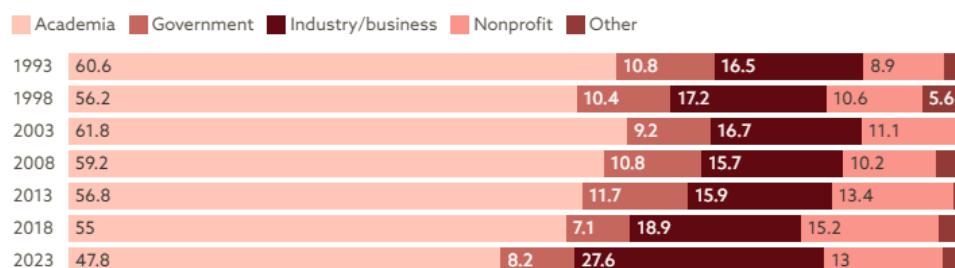
## Biological and biomedical sciences



## Computer and information sciences



## Health sciences

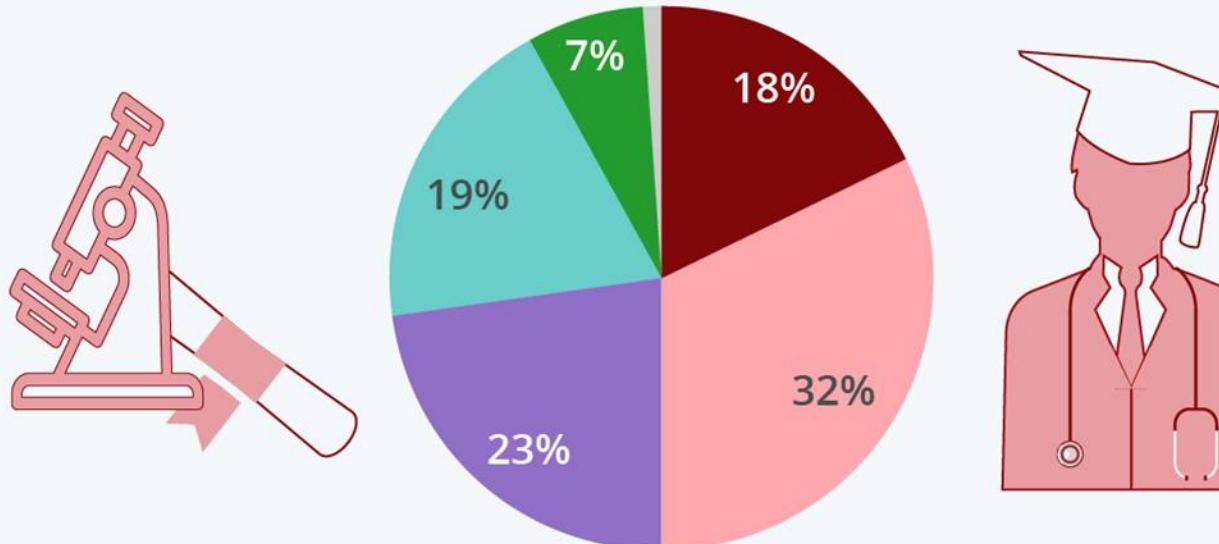


THIS IS  
NOT FOR  
EVERYONE

# Many Unsatisfied with Postdoc Work

Percentage of global postdocs who said their job satisfaction has improved/worsened over the last year

- Significantly worsened
- Worsened a little
- Stayed the same
- Improved a little
- Significantly improved



Survey conducted of 7,670 postdoctoral researchers from 93 nations;  
Those with no response shaded in grey.

Source: Nature



2020

## Challenges to consider

**Low pay and financial strain:** salaries are often lower than starting salaries for industry jobs

**Short-term contracts and uncertainty:** typically temporary positions lasting 1–3 years

**Overwork and burnout:** pressure to produce publications and secure funding

**Misalignment for industry careers:** employers may view a prolonged academic postdoc as a sign that a candidate is not fully committed to an industry career

# Static pay, shrinking prospects fuel neuroscience postdoc decline

Postdoctoral researchers sponsored by the National Institutes of Health now toil longer than ever before, for less money. They are responding accordingly.

BY KATIE MOISSE  
31 JANUARY 2025 | 20 MIN READ

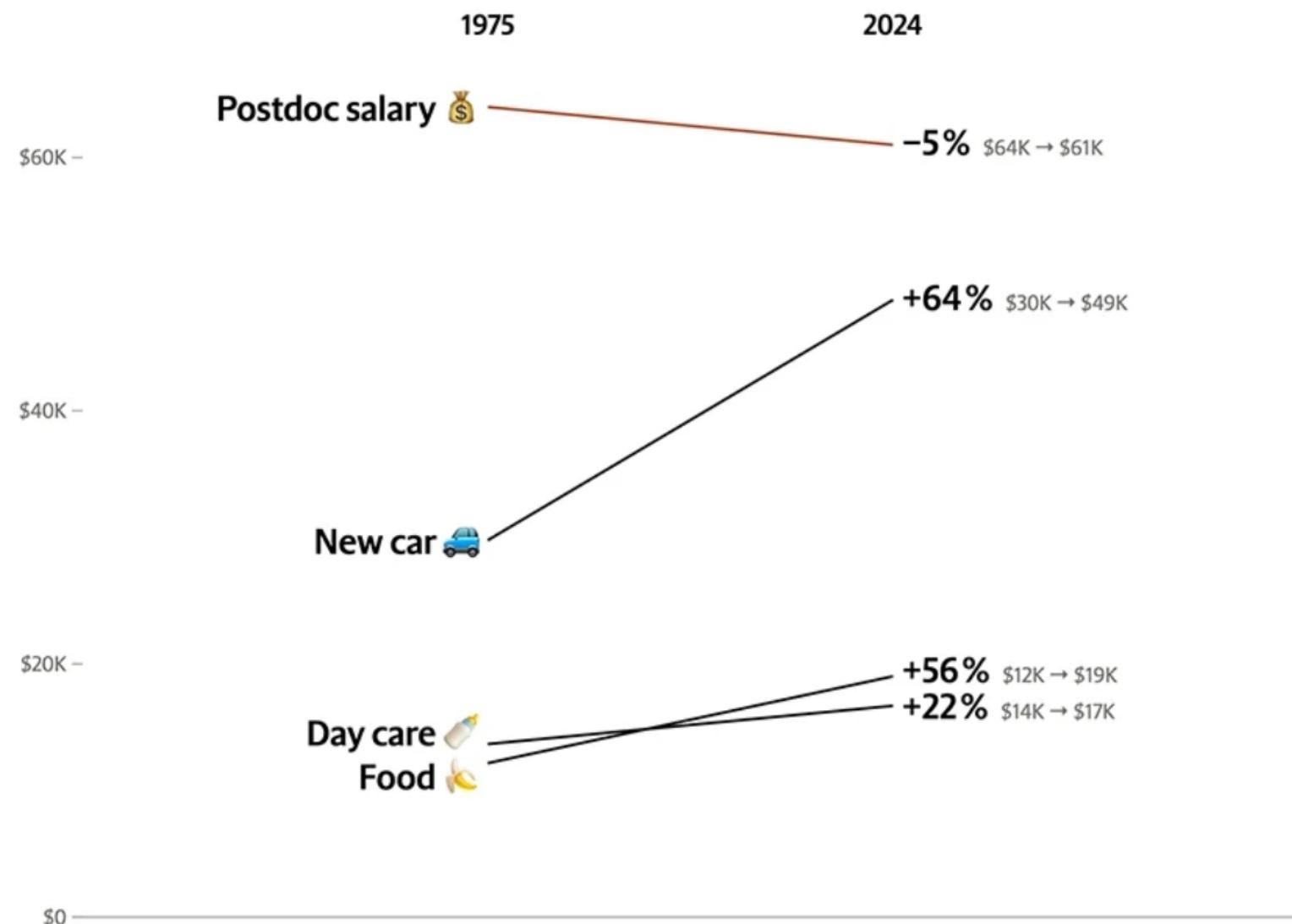
In its 2023 report, the NIH advisory committee recommended [boosting the base salary for postdocs to \\$70,000](#)—an increase of about 15 percent—with an annual adjustment for inflation. But the agency responded by increasing the base wage by just 8 percent, stating that it would [strive to reach the \\$70,000 target within five years](#) (about \$400 shy of what the current salary would be with inflation).

**“** You have this highly skilled group of thinkers, leaders and problem solvers working through a system that hasn’t been updated in eons, and they’re outgrowing it.

— KAELE SINGLETON

## Cost of living as a postdoctoral researcher

Price tags for food, day care and cars have grown over the past 50 years as the base salary for postdocs has stayed roughly the same. Figures below have been adjusted for inflation.



Data for food come from the Department of Agriculture and census documents. Data for day care and cars come from the Department of Health and Human Services, care.com, the Department of Energy and Consumer Affairs.

# NRSA Stipend Levels

The HHS Secretary sets National Research Service Awards (NRSA) stipend levels and adjusts them periodically to reflect increases in the cost of living, as specified in 42 U.S. Code § 288(b)(5). NIH announced the levels for 12 months shown below in an [May 16, 2025 Guide notice](#).

## Fellowship and Training Stipend Levels, in Dollars

Career Level	12 months	1 month
Predoc	28,788	2,399
Postdoc 0	62,232	5,186
Postdoc 1	62,652	5,221
Postdoc 2	63,120	5,260
Postdoc 3	65,640	5,470
Postdoc 4	67,824	5,652
Postdoc 5	70,344	5,862
Postdoc 6	72,960	6,080
Postdoc 7 or more	75,564	6,297

# Barriers to Belonging: Challenges in the Postdoctoral Research Culture

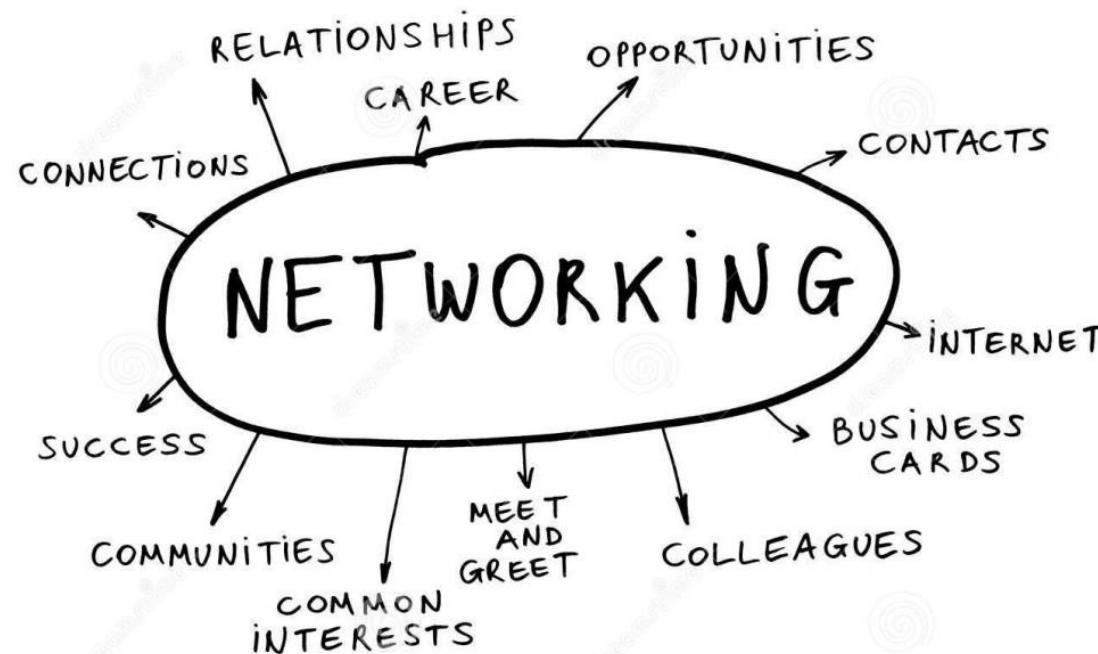
“Postdocs hold a distinct and often vulnerable position in the academic ecosystem. They are early-career professionals with significant scientific expertise and enthusiasm. While poised for impactful contributions and career advancement, many find themselves navigating ***complex power dynamics and unclear professional boundaries***. Despite their skills and dedication, postdocs may ***experience difficulty securing recognition, protecting their intellectual contributions, and maintaining mental well-being***. Challenges such as limited access to resources, inconsistent support, and an occasionally tense or competitive lab culture can sometimes hinder the very progress postdocs aim to achieve.”



ADVOCATE

# How do you decide?





## AU Postdoctoral Association



Mona Elgazzaz, PhD

AUPA Officer

[melgazzaz@augusta.edu](mailto:melgazzaz@augusta.edu)

Physiology



Neel Sinha, PhD

AUPA Officer

[arsinha@augusta.edu](mailto:arsinha@augusta.edu)

Center for Biotechnology & Genomic Medicine



Amr Salem, PhD

AUPA Officer

[asalem@augusta.edu](mailto:asalem@augusta.edu)

Vascular Biology Center



Lun Cai, PhD

AUPA Officer

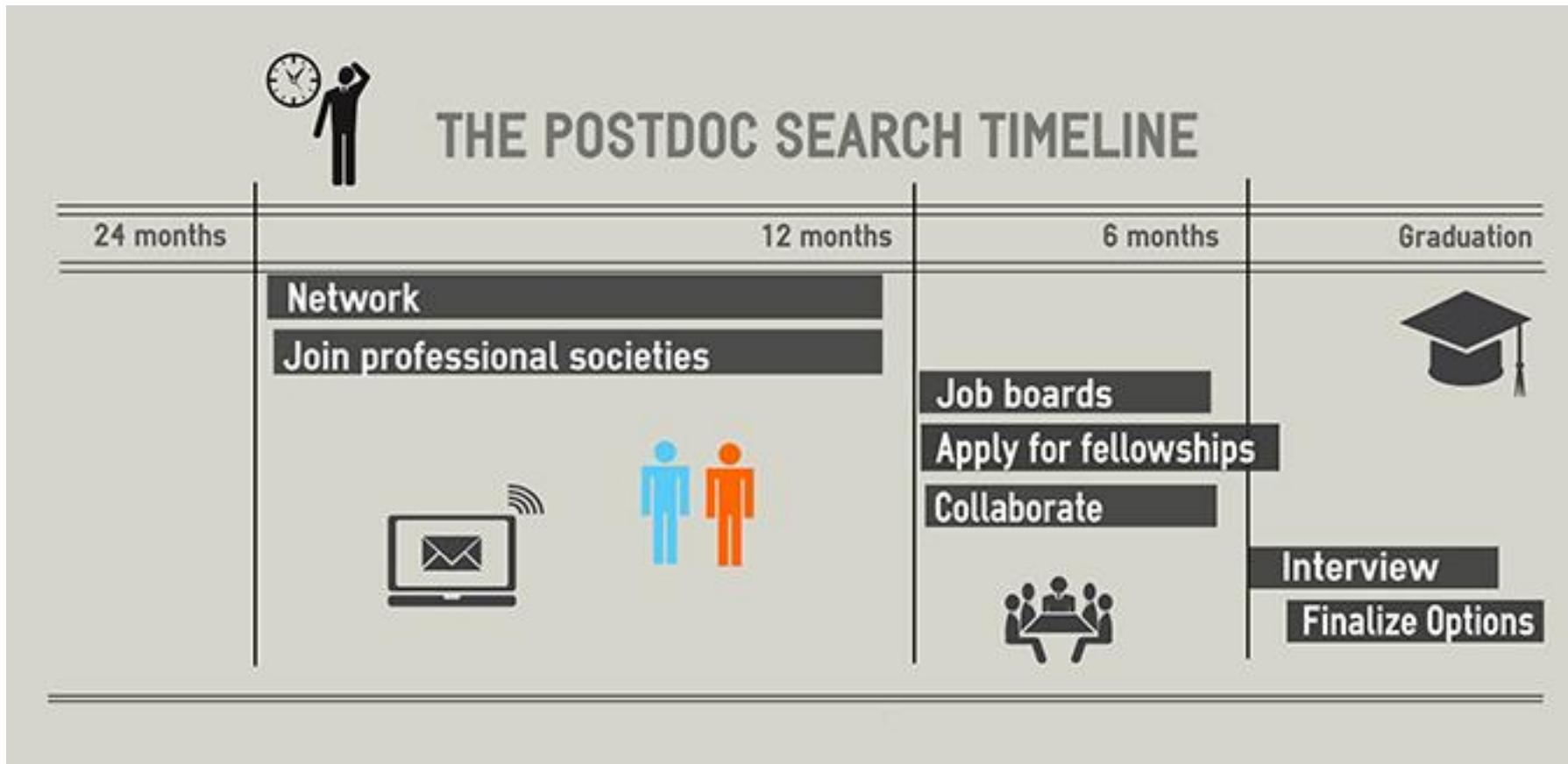
[lcai@augusta.edu](mailto:lcai@augusta.edu)

Pharmacology & Toxicology

**Define your career path and goals:** Are you committed to a career in academia, or are you exploring options in industry, government, or non-profits? A postdoc is most beneficial if you aim for an academic research role.

- 1. Evaluate the value:** Consider what specific skills or experiences you hope to gain. If a postdoc offers training that will make you a more attractive candidate for your desired career, it may be a good investment.
- 2. Network with professionals:** Talk to people who have the job you want, both inside and outside of academia. Ask them about their career path and whether a postdoc helped them get there.
- 3. Explore different types of postdocs:** If you decide to do a postdoc, remember they can be in academic, industry, or government settings. Researching the differences can help you find the best fit for your goals.

# When do you start looking for a postdoc?

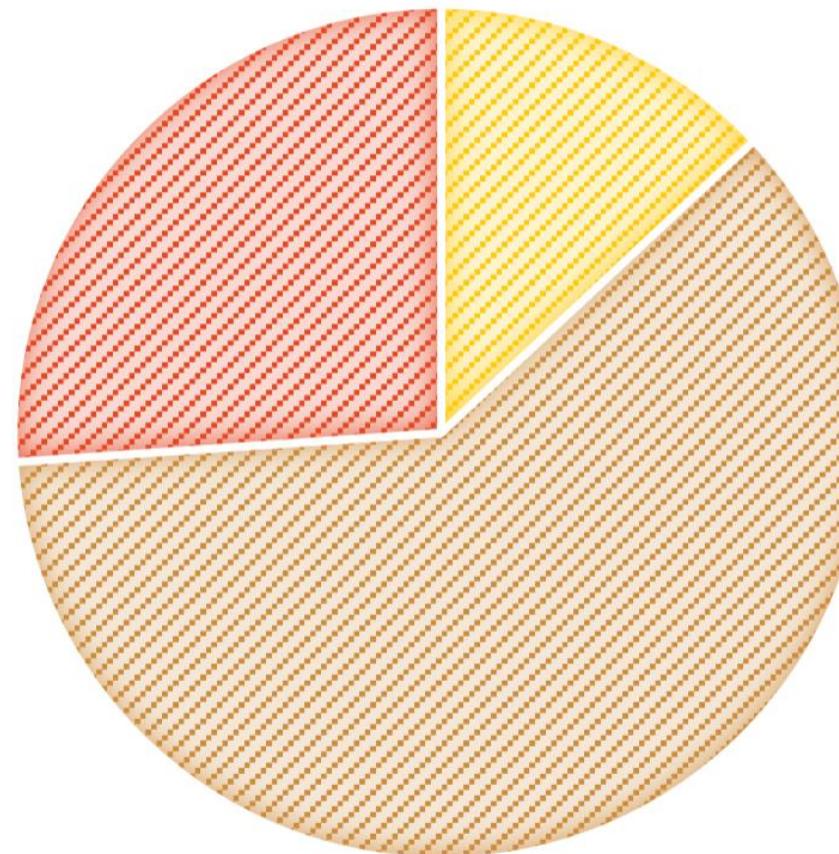


# HOW FAR BEFORE DEFENDING DID YOU START REACHING OUT/APPLYING?

■ 2+ years

■ 1 year

■ 6 months



# How do you find a **GOOD** postdoc?

It sounds like common sense to say that doing a postdoc in a research group on similar subjects to your PhD is the easiest. But there are two problems:

- First, finding a research group with a similar research interest to your PhD is not that easy. Or, the number of research groups with similar research themes is limited, which reduces your chances of success in securing a postdoc position.
- Second, if you are willing to become an academic, the expectation is that you move away from what you have done as your PhD and work on something new in your postdoc.

Now, the question is what should you do? Our advice is to go for a Postdoc program in a subject that has some overlap with your PhD background, but is not fundamentally the same. It sounds like maybe a bit of a contradiction! In the following, we will tell you what to do for the first issue and then we go for the next.

## Use your network

- **Inform your contacts:** Let your advisor, mentors, and professional network know you are looking for a postdoc, as they may have inside information on openings or can make introductions. [🔗](#)
- **Seek recommendations:** Ask professors in your field for recommendations of potential supervisors or labs. [🔗](#)

## Search for advertised positions

- **Professional job boards:** Check specialized sites like [PostdocJobs.com](#) and [FindAPostDoc.com](#). [🔗](#)
- **Professional society websites:** Many academic societies post opportunities on their websites and newsletters. [🔗](#)
- **University websites:** Look for open positions on the career pages of universities. [🔗](#)
- **General job sites:** Search platforms like [Indeed.com](#) for "postdoc research positions" in your desired country or location. [🔗](#)

## Reach out to potential supervisors

- **Cold email:** Contact professors whose research aligns with your interests directly via email. [🔗](#)
- **Prepare your materials:** Include your CV, a research statement, and a cover letter explaining your interest in their work and the lab. [🔗](#)
- **Inquire about openings:** Briefly introduce yourself and express interest in their research, asking about potential openings in their group. [🔗](#)

## Other tips

- **Attend conferences and meetings:** Presenting your work and networking at these events can lead to opportunities. [🔗](#)
- **Use social media:** Platforms like Twitter are used by many PIs to announce lab opportunities and engage with the scientific community. [🔗](#)
- **Consider your goals:** Reflect on how a postdoc fits into your long-term career goals and whether the funding and scientific freedom of the position are right for you. [🔗](#)

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# For how long should I be a postdoc?

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[smartsciencecareer.com](http://smartsciencecareer.com)



# Pathway to Independence Awards (K99/R00)

## Applicant Eligibility

Applicants must have **no more than 4 years** of postdoctoral research experience at the time of the initial or the subsequent Resubmission application. Eligible principal investigators include promising postdoctoral candidates who have terminal clinical or research doctorates including the Ph.D., M.D., D.O., Pharm.D., D.C., N.D., D.D.S., D.V.M., Sc.D., D.N.S. or equivalent. NIGMS will not use K99/R00 awards to support individuals who already have faculty appointments — including assistant professor, clinical assistant professor, research assistant professor and instructor — or their equivalent in academia, industry or elsewhere.

A candidate for these awards may not simultaneously submit or have an application pending for any other NIH career award (e.g., K01, K07, K08, K22, K23, K25) or any PHS award that duplicates any of the provisions of the Pathway to Independence Award. Ineligible individuals include current and former principal investigators on NIH research project grants, comparable individual career development awards (e.g., K01, K07, K08, K23, K25) or equivalent non-PHS peer-reviewed research grants over \$100,000 direct costs per year, or project leaders on subprojects of program project (P01) or center (P50) grants or similar awards.



Supporting a postdoctoral researcher is a responsibility shared by multiple parties, including the postdoc themselves, their faculty adviser, the host institution, and funding organizations. This shared responsibility covers everything from day-to-day research guidance to career development and long-term funding. 

# Postdoc Expectations: what will be expected of you?

As a professor hiring a postdoc, you should expect them to **develop into an independent researcher by building a strong publication record, acquiring new skills, and taking the lead on projects, while also contributing to the lab by supervising students, reviewing grants, and preparing publications**. The postdoc should also be a strategic partner, bringing their unique perspective to your research agenda, expanding the lab's capabilities, and actively engaging in networking and professional development to advance their own career towards a faculty position. [🔗](#)

## For the Postdoc:

### Conduct and Publish Research:

Perform original, high-quality research, document findings thoroughly, and strive to publish in top journals, ideally as the lead author. [🔗](#)

### Develop Independence and Innovation:

Learn to solve problems creatively and lead new research directions, rather than just being an "extra pair of hands". [🔗](#)

### Network and Mentor:

Build connections within the research community and serve as a mentor to graduate and undergraduate students, imparting new skills. [🔗](#)

### Engage in Career Development:

Utilize the postdoctoral appointment to gain new technical and professional skills, attend conferences, and actively seek grant funding to demonstrate independence. [🔗](#)

### Communicate and Document:

Keep a meticulous lab notebook and promptly inform mentors about discoveries, progress, and any challenges encountered. [🔗](#)

### Adhere to Standards:

Follow all institutional and university guidelines for handling laboratory materials and conducting research responsibly. [🔗](#)

# Postdoc Expectations: what should you expect?

As a postdoc, you should expect **intensive further training to develop independence and a broader research skill set, including advancing technical skills, grant writing, scientific publishing, mentoring junior researchers, teaching, and expanding your professional network**. Success depends on defining your research goals, communicating them with your mentor, consistently publishing high-impact work, and building a strong professional reputation to transition to a permanent research position in academia, industry, or government. 🔗

## What a Postdoc Should Expect from the Role

### **Mentorship and Guidance:**

Receive detailed advice, education on research ethics, and support in developing your research and career goals from your faculty mentor. 🔗

### **Clear Expectations and Structure:**

Have a written outline of the initial expectations, research plan, and responsibilities, reviewed annually to allow for mid-course corrections. 🔗

### **Resources for Career Development:**

Access opportunities and support for professional development, including occasional courses, teaching, internships, and resources for seeking permanent positions. 🔗

### **Appropriate Compensation and Benefits:**

Receive fair compensation and benefits, though these may be lower than for a permanent position in your field. 🔗

## Key Responsibilities for Postdocs and Their Mentors

### **Communication:**

Maintain open and ongoing communication about progress and expectations to ensure alignment between the postdoc and adviser. 🔗

### **Proactive Planning:**

The postdoc should take initiative in career planning and seek out necessary skills for growing employment areas, often outside their immediate specialty. 🔗

### **Strategic Focus:**

Embrace challenges and risks strategically to design projects and choose training environments that best align with your career goals. 🔗

### **Ethical Conduct:**

Uphold responsible conduct of research, including ethical and legal choices, and be aware of relevant policies and resources for addressing concerns. 🔗

To support postdoctoral researchers effectively, institutions must promote a culture of respect, inclusivity, and accountability.

Universities should support postdocs by implementing clear policies, providing competitive compensation and benefits including relocation support, offering robust professional development and career services, ensuring strong mentorship, and fostering an inclusive and equitable environment with equitable hiring and career advancement practices. Providing resources for independent research, grant writing, and networking also helps postdocs transition successfully into permanent positions. 



@emmanueltseklevs

# 15 Things I Wish I Knew Before Applying for a Postdoc

Before Applying

When Selecting Postdocs

When Applying

- 1) Publish during your PhD to strengthen your application
- 2) Network & build relationships with potential mentors before applying
- 3) Gain teaching experience to enhance future academic career prospects
- 4) Start the application process 6-12 months before your intended start date
- 5) Balance specialising in your field with developing diverse, transferable skills
- 6) Develop a career plan beyond the postdoc, whether in academia or industry
- 7) Research and compare postdoc salaries & benefits across institutions and countries
- 8) Assess the mentor's leadership style & lab culture
- 9) Investigate the lab's funding situation & prospects
- 10) Seek postdoc positions that offer professional development opportunities
- 11) Consider work-life balance & location factors, not just the research opportunity
- 12) Prepare a clear research proposal or project idea
- 13) Align your research interests with the lab or department you're applying to
- 14) Explore opportunities to create a postdoc position by securing your own funding
- 15) Negotiate terms of your postdoc, including salary, duration, and authorship agreements



Samira Hosseini • 3rd+

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(edited) 1y ...

Postdoc is a very shaky phase in every scholar's academic life.

I wish I knew how lonely the journey would be and how much trust I needed to have in my skills and abilities to succeed in this journey.

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1y ...



Ali MK Hindi IQKWP • 3rd+

I help people thrive in academia.

love this post [Emmanuel Tseklevs](#). Having been a postdoc for 2.5 years, I have a special place in my heart for postdocs. From personal experience, I'd say go for a PI who is truly interested in your personal development, not just their own agenda. Also, make sure to discuss authorship very early on, as things can get nasty if left unaddressed until the end. Good luck, postdocs!

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1y ...



Samvit Menon, PhD • 3rd+

Engineering Manager | Technical Team Lead | uLED Test and Characterisation |...

Brilliant! To me, the most important point in this list is #10. I cannot stress enough the importance of having a personal career development plan as a part of your postdoc. It breaks down your postdoc into short term and long term goals with opportunities to spend time with other institutes and industry. This helps plan and design the next stages of your career.

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# Questions & Discussion

