



Pursuing a Postdoc Proactively: Postdoctoral Positions Outside Academia



David Knight's Postdoc Journey



International Postdoc!

- Learn a brand new system
- Great expanded research network
- Excellent opportunities while there
- Different WLB policies
- “Good postdocs get poached”

Assoc Professor, Engineering Education

- Special Assistant to the Dean for Strat Planning
- 10 PhD graduates so far
- 7 Postdocs so far

My international postdoc helped me get the job in 2013.
My postdoc helped me be more successful in my job.
Your PhD and Postdoc and “Permanent” Job Can vary
Key: transferable skills!

PLOS ONE

 OPEN ACCESS  PEER-REVIEWED

RESEARCH ARTICLE

U.S. postdoctoral careers in life sciences, physical sciences and engineering: Government, industry, and academia

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Analyzed NSF's Survey of Earned Doctorates and Survey of Doctorate Recipients to understand employment implications for physical sciences and engineering (PSE) and life sciences (LS) graduates who took postdoctoral positions in government, industry, and academic sectors.

Examined:

- postdoc duration
- reasons for staying in a postdoc
- movement between sectors
- salary implications

Postdoctoral Careers and Government vs Industry vs Academia

Table 2. Percentage of postdocs and estimated length of postdoc by field and employment sector from 2009 to 2018.

	Physical sciences/engineering (n = 40,564)		Life sciences (n = 40,975)		Mathematics (n = 5,050)
	Percent in sector (%)	Length of postdoc (yr)	Percent in sector (%)	Length of postdoc (yr)	Percent in sector (%)
Academic	71.8	2.40	79.9	3.31	71.8
Government	12.0	2.16	8.0	2.67	3.9
Industry	3.3	1.28	2.1	1.63	1.0
Non-U.S.	10.5	3.06	5.2	3.58	21.8
Non-profit	2.4	2.38	4.8	3.20	1.6

Table 6. Reasons (%) for remaining in a postdoc at Year 2 for life sciences, physical sciences and engineering.

Reason (%)	Government		Industry		Academic		Non-U.S. positions		Non-profit	
	PSE n = 51	LS n = 72	PSE n = 13	LS n = 16	PSE n = 394	LS n = 541	PSE n = 47	LS n = 47	PSE n = 42	LS n = 90
Training	76.5	86.1	76.9	81.3	75.1	74.7	68.1	72.3	66.7	78.9
Outside training	49.0	48.6	38.5	50.0	45.9	46.8	42.6	44.7	45.2	47.8
Person/place	70.6	65.3	61.5	68.8	64.5	60.8	57.5	85.1	71.4	56.7
Not available	39.2	25.0	-	-	22.8	23.5	23.4	19.2	19.1	20.0
Expected	86.3	84.7	6.15	87.5	76.7	83.9	87.2	87.2	69.1	93.3
Other	19.6	9.72	-	-	7.61	6.84	-	-	-	5.56

Postdoctoral Careers and Government vs Industry vs Academia

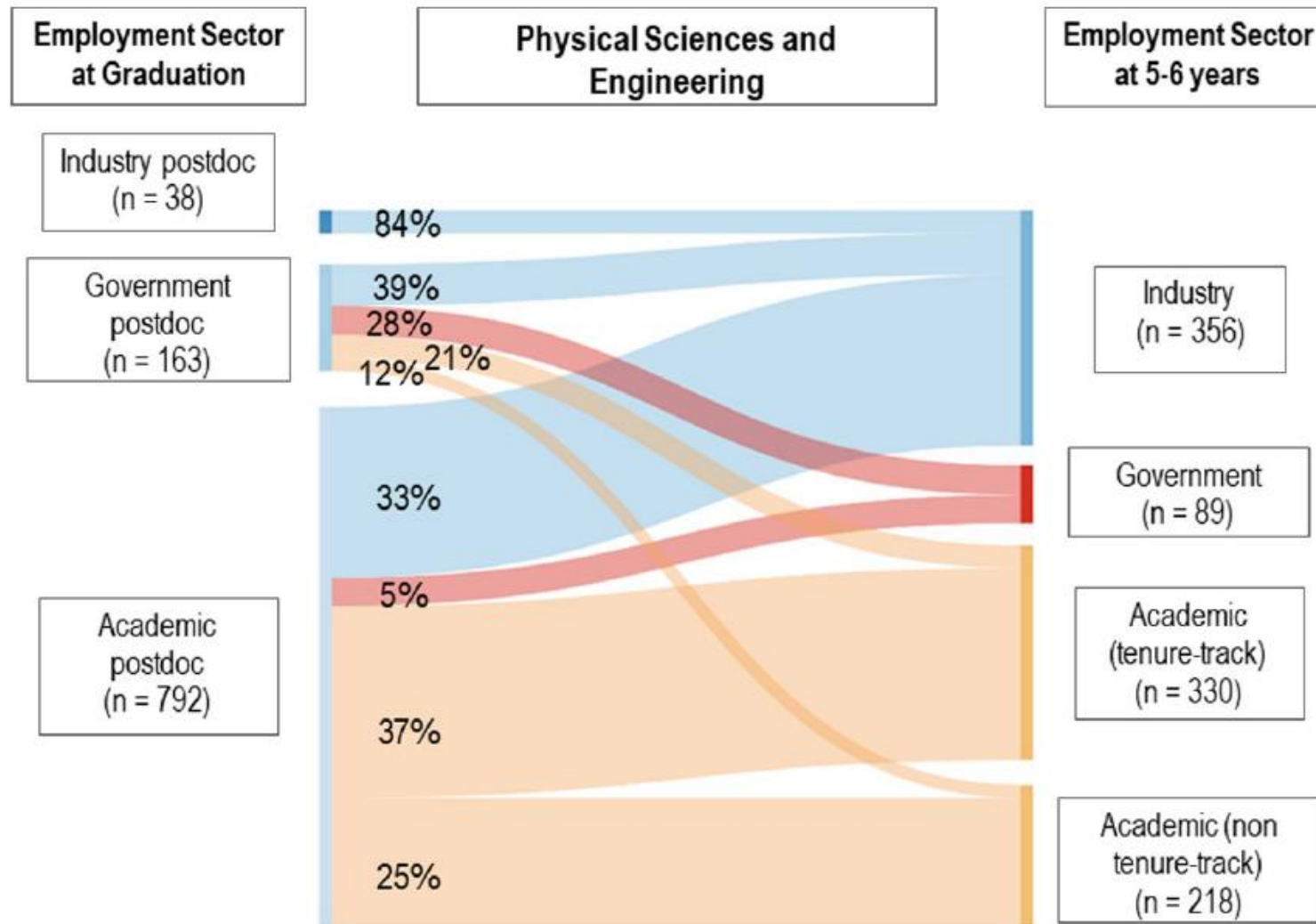


Fig 1. Sankey diagram of physical sciences and engineering postdoc movement to permanent employment.

Postdoctoral Careers and Government vs Industry vs Academia

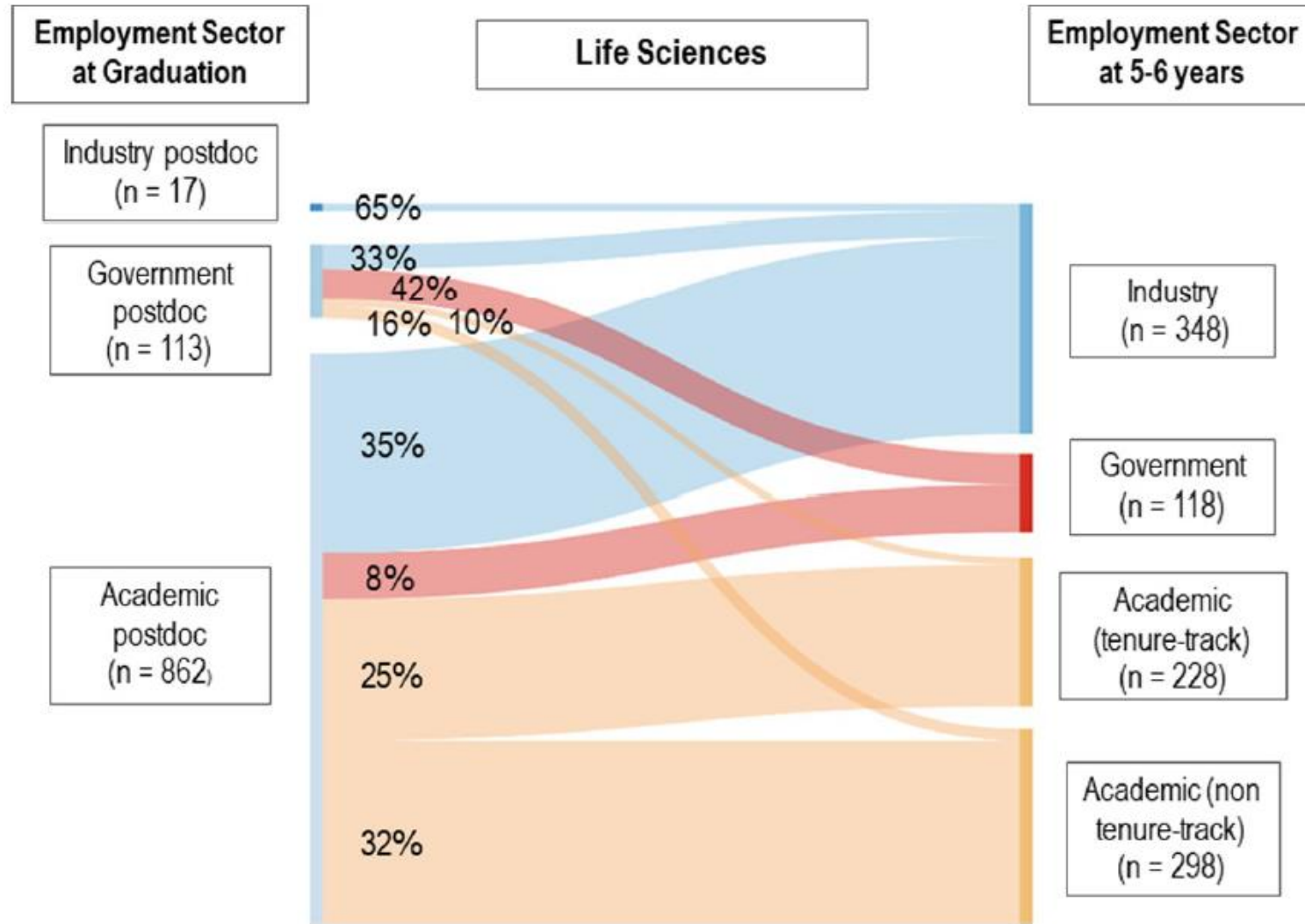


Fig 2. Sankey diagram of life sciences postdoc movement to permanent employment.

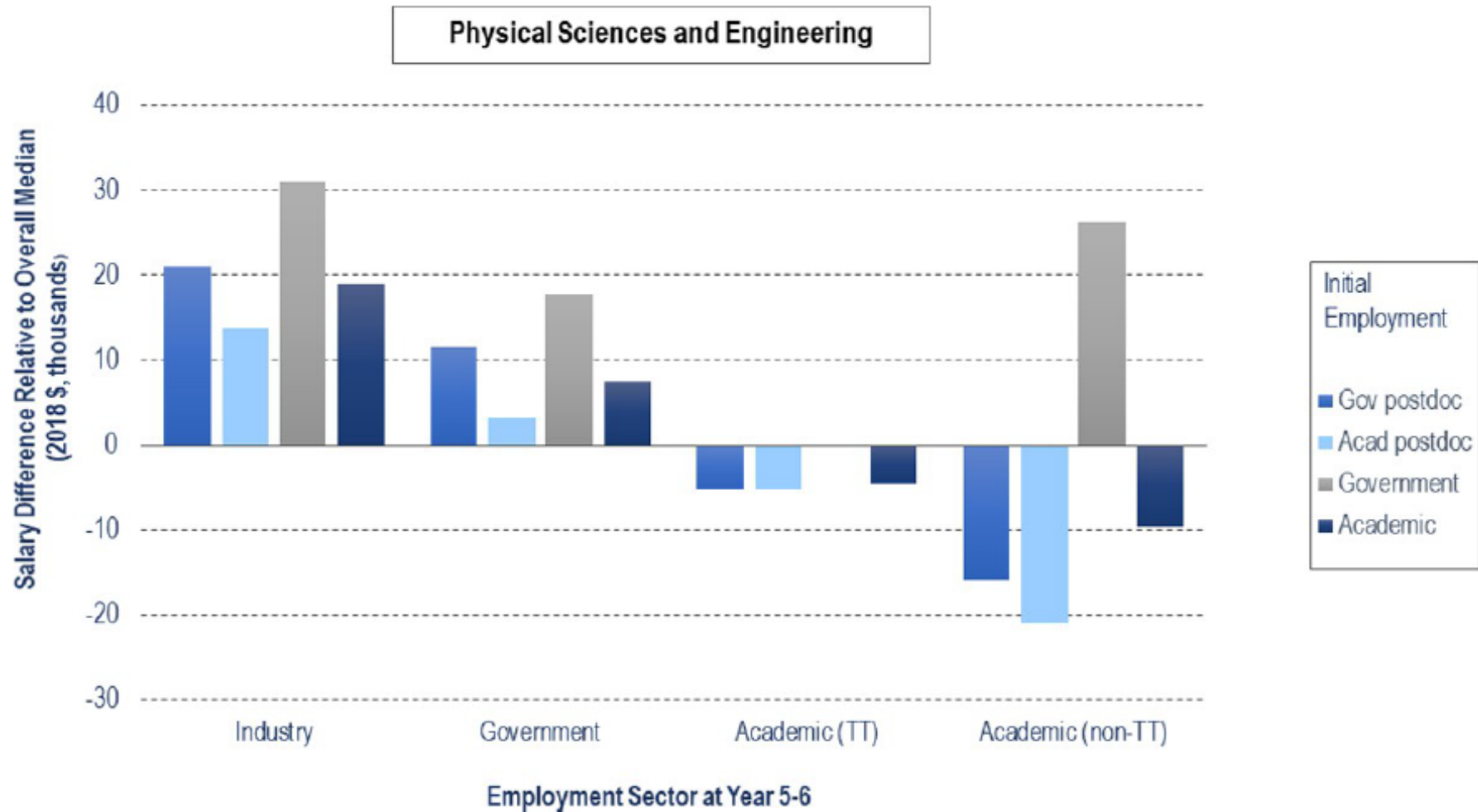
Postdoctoral Careers and Government vs Industry vs Academia

Median starting salary (adjusted for inflation to 2018 values)
for postdocs in...

	Physical Sciences/Engineering	Life Sciences
Positions outside US	\$46,610	\$45,600
US Academic	\$48,000	\$44,554
US Non-Profit	\$53,000	\$46,800
US Government	\$70,000	\$53,000
US Industry	\$71,400	\$60,320

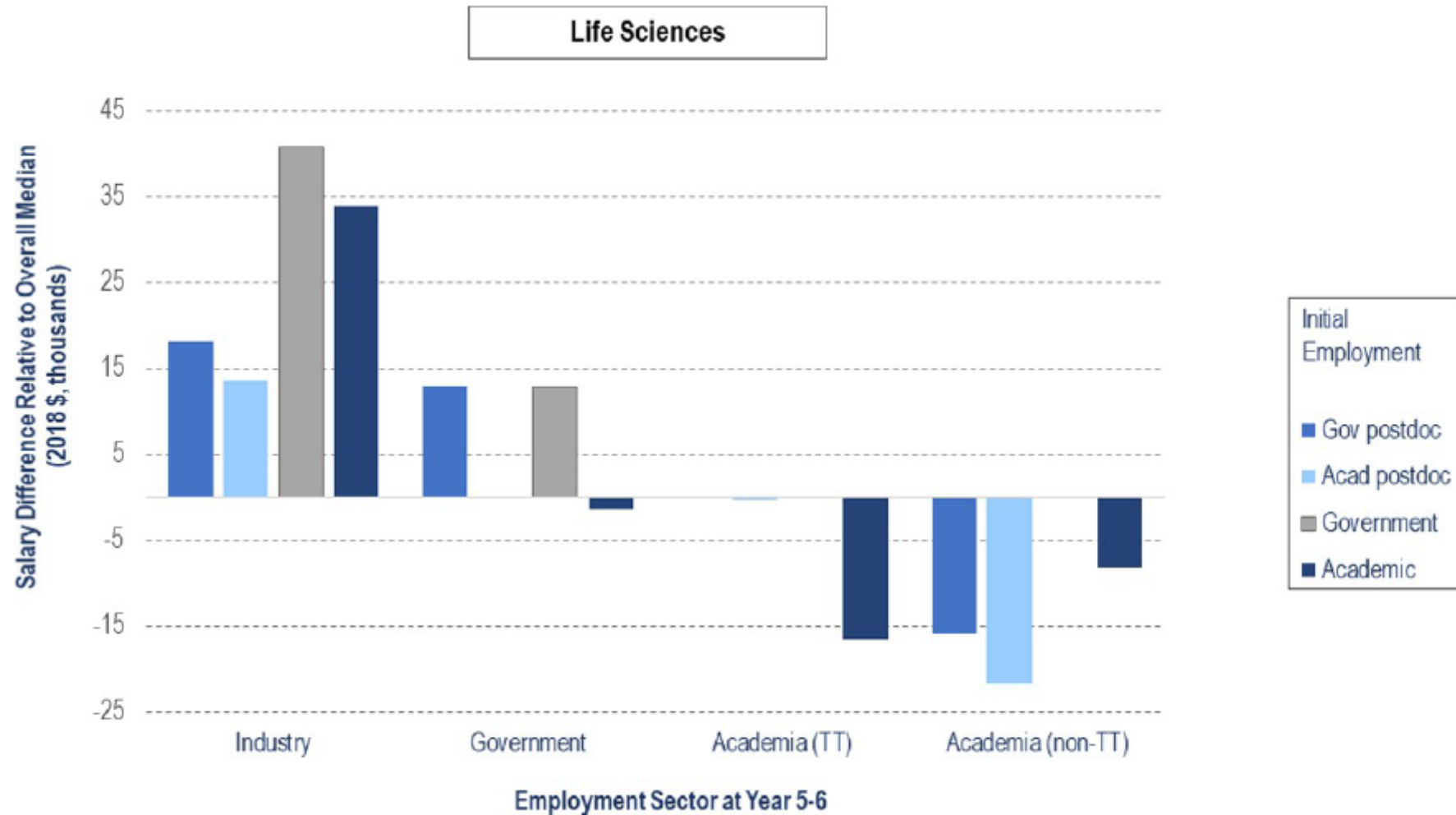
Postdoctoral Careers and Government vs Industry vs Academia

Median salary comparison at year 5-6 by initial employment type and sector



Postdoctoral Careers and Government vs Industry vs Academia

Median salary comparison at year 5-6 by initial employment type and sector



Postdoctoral Positions Beyond Academia – National Labs

- National Labs
 - Through Department of Energy:
 - Argonne (101 postdoc openings), Brookhaven (25), Fermilab (2), Oak Ridge (69), Berkeley Lab (92), Sandia (61), Los Alamos (98), Lawrence Livermore (60), etc...
 - Most have their own jobs portal and postdoc landing pages
 - <https://jobs.ornl.gov/>
 - <https://www.lanl.gov/careers/career-options/postdoctoral-research/index.php>
 - <https://www.llnl.gov/join-our-team/careers/postdocs>
 - Some have special fellowship programs:
 - <https://www.anl.gov/hr/argonne-fellowship-opportunities>
 - <https://www.sandia.gov/careers/career-possibilities/students-and-postdocs/fellowships/>
 - <https://www.fnal.gov/pub/forphysicists/fellowships/>

Postdoctoral Positions at Oak Ridge National Laboratory

69 openings

jobs.ornl.gov/go/Postdoctoral-Jobs/4537100/

Postdoctoral Research Associate – Advanced Polymer Composite Processing and Design	Oak Ridge, TN, US, 37830	Oct 12, 2022
Postdoctoral Research Associate – Computational Chemist	Oak Ridge, TN, US, 37830	Oct 12, 2022
Postdoctoral Research Associate – Additive Manufacturing	Oak Ridge, TN, US, 37830	Oct 12, 2022
Postdoctoral Research Associate – Polarized Neutron Scattering Study of Magnetic Materials	Oak Ridge, TN, US, 37830	Oct 12, 2022
Postdoctoral Research Associate – Plant-Microbe Interfaces	Oak Ridge, TN, US, 37830	Oct 12, 2022
Postdoctoral Research Associate – Radiochemistry and Spectroscopic Methods	Oak Ridge, TN, US, 37830	Oct 11, 2022
Postdoctoral Research Associate – Fusion Energy	San Diego, CA, US, 92173	Oct 11, 2022
Postdoctoral Research Associate – Medical Imaging on HPC	Oak Ridge, TN, US, 37830	Oct 11, 2022
Postdoctoral Research Associate – Mobility and Energy Transitions Analysis	Oak Ridge, TN, US, 37830	Oct 11, 2022
Postdoctoral Research Associate – Plant Systems Biology	Oak Ridge, TN, US, 37830	Oct 11, 2022
Postdoctoral Research Associate – Characterization and Performance of Prototypical Nuclear Relevant	Oak Ridge, TN, US, 37909	Oct 9, 2022
Postdoctoral Research Associate – Automated Neutron Scattering on Magnetic Materials	Oak Ridge, TN, US, 37803	Oct 9, 2022
Postdoctoral Research Associate – Environmental Impacts of Hydropower	Oak Ridge, TN, US, 37830	Oct 8, 2022
Postdoctoral Research Associate – Scalable Algorithms and Mathematical Software	Oak Ridge, TN, US, 37830	Oct 7, 2022

Postdoctoral Research Associate - Computational Chemist

Overview:

We are seeking a Postdoctoral Research Associate who will focus on applying computational methods to design new chelating agents optimized for use in chemical separations. This position resides in the Chemical Separations Group of the Chemical Sciences Division, Physical Sciences Directorate (PSD) at Oak Ridge National Laboratory (ORNL). In this role, you will perform computational studies aimed at better understanding of ligand binding in solution and at interfaces. Computational methods will primarily involve density functional theory calculations for molecular and periodic systems and molecular dynamics simulations using classical, ab initio, and machine-learning potentials. You will also work within a multidisciplinary multi-institutional team involving specialists in theory, spectroscopy, organic synthesis, and surface characterization.

Basic Qualifications:

A Ph. D. in theoretical or computational chemistry or closely related field in physical chemistry or chemical physics completed within the last five years

Experience with static Density Functional Theory (DFT) calculations (e.g., Vienna Ab initio Simulation Package (VASP), Gaussian) and classical molecular dynamics (MD) simulations or MD simulations based on DFT theory (e.g., Large-scale Atomic/Molecular Massively Parallel Simulator (LAMMPS), VASP, CP2K Open Source Molecular Dynamics)

Postdoctoral Research Associate - Computational Chemist

Preferred Qualifications:

Experience or knowledge in some of the following areas: (i) training of machine-learning-based atomistic potentials; (ii) classical and/or ab initio molecular dynamics simulations of liquids and solids; (iii) advanced free energy simulation methods (e.g., constrained MD, Umbrella sampling); (iv) development of force fields (v) modeling of the solid and aqueous interfaces; (vi) theoretical spectroscopy

Applicants cannot have received their Ph.D. more than five years prior to the date of application and must complete all degree requirements before starting their appointment.

The appointment length will be up to 24 months with the potential for extension. Initial appointments and extensions are subject to performance and availability of funding.

Three letters of reference are required and can be uploaded to your profile or emailed directly to PSDrecruit@ornl.gov.

Please provide a list of publications when applying for this position. Three letters of reference are required and can be emailed directly to PSDrecruit@ornl.gov. Please include the title of the position in the subject line.

Moving can be overwhelming and expensive. UT-Battelle offers a generous relocation package to ease the transition process. Domestic and international relocation assistance is available for certain positions. If invited to interview, be sure to ask your Recruiter (Talent Acquisition Partner) for details.

National Lab Pay & Benefits

ORNL offers competitive pay and benefits programs to attract and retain talented people. The laboratory offers many employee benefits, including medical and retirement plans and flexible work hours, to help you and your family live happy and healthy. Employee amenities such as on-site fitness, banking, and cafeteria facilities are also provided for convenience.

Other benefits include: Prescription Drug Plan, Dental Plan, Vision Plan, 401(k) Retirement Plan, Contributory Pension Plan, Life Insurance, Disability Benefits, Generous Vacation and Holidays, Parental Leave, Legal Insurance with Identity Theft Protection, Employee Assistance Plan, Flexible Spending Accounts, Health Savings Accounts, Wellness Programs, Educational Assistance, Relocation Assistance, and Employee Discounts.

Benefits Overview from:

Argonne National Lab: <https://www.anl.gov/reference/argonne-benefits-summary>

Los Alamos: <https://www.lanl.gov/careers/employees-retirees/new-hires/benefit-options/index.php>

Sandia: <https://www.sandia.gov/careers/career-possibilities/benefits-and-perks/>

Salary data from Los Alamos: <https://www.lanl.gov/careers/career-options/postdoctoral-research/index.php>; Postdoc salaries start at \$92,000

Postdoctoral Positions Beyond Academia – Gov't Agencies

- Government Agencies & Labs

- Many government agencies and organizations host postdocs:

- CDC, FDA, USDA, NASA, Army Research Lab, etc...

- NASA: <https://npp.orau.org/>

- Leverage Zintellect to explore open government agency positions: <https://www.zintellect.com/>

- Also see: NRC Research Associateship Program (RAP):

- <https://sites.nationalacademies.org/PGA/RAP/index.htm>

- Sponsoring programs include: National Security Agency, NOAA, EPA, US Army, Air Force, Navy, Federal Highway Administration, and more
- While many NRC Postdocs are open to only US Citizens are permanent residents, some agencies will host non-US Citizens
- Application deadlines of: Nov 1, Feb 1, May 1, Aug 1

Zintellect: Online Opportunity Database

zintellect.com

This website provides listings of internships, experiential learning opportunities, academic fellowships and scholarships funded by government and private sector organizations. These programs are administered by ORAU and the Oak Ridge Institute for Science and Education (ORISE).

Opportunity	Reference Code	Location	Posted
FDA Postdoctoral Research Fellowship in Neurotoxicology Application deadline is 01-31-2023 03:00:00 PM Eastern time zone	FDA-NCTR-2022-10A	Jefferson, AR	10-11-2022
FDA Postdoctoral Research Fellowship in Neurotoxicology Application deadline is 01-31-2023 03:00:00 PM Eastern time zone	FDA-NCTR-2022-09A	Jefferson, AR	10-11-2022
USDA-ARS SCINet Fellowship on Machine Learning Techniques to Advance Understanding of How Dietary Patterns Influence Human Health Application deadline is 02-01-2023 03:00:00 PM Eastern time zone	USDA-ARS-2022-0369	Beltsville, MD	10-11-2022
USFS Postdoctoral Fellowship on Exploring Plant Structure and Fuel Physical Characteristics that Dominate Fire Behavior in Live Wildland Fuels Application deadline is 10-31-2022 03:00:00 PM Eastern time zone	USDA-USFS-2022-0365	Missoula, MT	10-10-2022
USDA-ARS Fellowship in Modeling Microbial Fate and Transport Affecting Microbial Quality of Irrigation Water Sources Application deadline is 12-07-2022 03:00:00 PM Eastern time zone	USDA-ARS-2022-0367	Beltsville, MD	10-07-2022
Remote Sensing and Machine Learning to Better Define Wetland Loss and Gain in the Mississippi Delta Application deadline is 11-01-2022 06:00:00 PM Eastern time zone	0106-NPP-NOV22-ARC-EarthSci	Moffett Field, CA	10-06-2022
USDA-ARS Postdoctoral Computational Microbiology Fellowship Application deadline is 10-14-2022 03:00:00 PM Eastern time zone	USDA-ARS-2022-0364	Athens, GA	10-06-2022
Computational Modeling of Narratives & Sense-making from Narratives	ARL-C-CIST-300160	Adelphi, MD	10-05-2022
Laboratory Studies of Astrophysical Ices and Organic Compounds Application deadline is 11-01-2022 06:00:00 PM Eastern time zone	0105-NPP-NOV22-ARC-Cosmochem	Moffett Field, CA	10-05-2022
USDA-ARS Postdoctoral Fellowship on Soil Processes at Ryegrass Root -	USDA-ARS-2022-0356	Ames, IA	10-05-2022

884 opportunities under
Academic Level = “postdoctoral”

252 for US Citizens Only

Opportunity	Reference Code	Location	Posted
HHS Intersex Health Policy Fellowship Application deadline is 11-30-2022 03:00:00 PM Eastern time zone	HHS-OASH-2022-0343	Washington, DC	09-26-2022
HHS Health Policy Fellowship Application deadline is 11-30-2022 03:00:00 PM Eastern time zone	HHS-OASH-2022-0344	Washington, DC	09-26-2022
HHS Primary Care Fellowship Application deadline is 11-30-2022 03:00:00 PM Eastern time zone	HHS-OASH-2022-0345	Washington, DC	09-26-2022
HHS Office of Long COVID Practice and Research Fellowship Application deadline is 11-30-2022 03:00:00 PM Eastern time zone	HHS-OASH-2022-0346	Washington, DC	09-26-2022
USFS Postdoctoral Fellowship in Sustainable Forest Management Research Application deadline is 11-16-2022 03:00:00 PM Eastern time zone	USDA-USFS-2022-0340	Washington, DC	09-16-2022
HHS Health Policy and Outcomes Research Fellowship Application deadline is 03-01-2023 11:59:00 PM Eastern time zone	HHS-ASPE-2022-0041	Washington, DC	11-09-2021
HHS Health Policy and Informatics Fellowship Application deadline is 03-01-2023 11:59:00 PM Eastern time zone	HHS-ASPE-2022-0037	Washington, DC	11-09-2021

<p>USDA-ARS SCINet Fellowship on Machine Learning Techniques to Advance Understanding of How Dietary Patterns Influence Human Health</p> <p>Application deadline is 02-01-2023 03:00:00 PM Eastern time zone</p>	USDA-ARS-2022-0369	Beltsville, MD	10-11-2022
<p>USDA-ARS Fellowship in Modeling Microbial Fate and Transport Affecting Microbial Quality of Irrigation Water Sources</p> <p>Application deadline is 12-07-2022 03:00:00 PM Eastern time zone</p>	USDA-ARS-2022-0367	Beltsville, MD	10-07-2022
<p>Computational Modeling of Narratives & Sense-making from Narratives</p>	ARL-C-CIST-300160	Adelphi, MD	10-05-2022
<p>FDA Fellowship in Cellular Therapeutics</p> <p>Application deadline is 12-30-2022 03:00:00 PM Eastern time zone</p>	FDA-CBER-2022-03A	Silver Spring, MD	10-04-2022
<p>FDA Clinical Pharmacology Fellowship</p> <p>Application deadline is 02-28-2023 03:00:00 PM Eastern time zone</p>	FDA-CDER-2022-1213	Silver Spring, MD	09-14-2022
<p>Tropical meteorology, cloud and precipitation variability</p> <p>Application deadline is 11-01-2022 06:00:00 PM Eastern time zone</p>	0258-NPP-NOV22-GSFC-EarthSci	Greenbelt, MD	09-07-2022
<p>FDA Quality Standards for Drug Products Fellowship</p>	FDA-CDER-2022-1198	Silver Spring, MD	09-02-2022
<p>FDA Fellowship in Advanced Manufacturing of MSCs through the Optimization of Biomanufacturing</p> <p>Application deadline is 12-31-2022 03:00:00 PM Eastern time zone</p>	FDA-CBER-2022-46A	Silver Spring, MD	09-02-2022
<p>FDA Bioinformatics Fellowship</p> <p>Application deadline is 12-31-2022 03:00:00 PM Eastern time zone</p>	FDA-CDER-2022-1207	Silver Spring, MD	09-01-2022
<p>USDA-ARS Postdoctoral Fellowship in Dairy Genomics</p> <p>Application deadline is 10-31-2022 03:00:00 PM Eastern time zone</p>	USDA-ARS-2022-0317	Beltsville, MD	08-29-2022

USDA-ARS Postdoctoral Fellowship in Molecular Plant Pathology

Application Deadline 12/8/2022 3:00:00 PM Eastern Time Zone

Description ***Applications may be reviewed on a rolling-basis.**

ARS Office/Lab and Location: A postdoctoral research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service(ARS), at the Genetic Improvement for Fruits and Vegetables Lab (GIFVL) located in Beltsville, Maryland.

The Agricultural Research Service (ARS) is the U.S. Department of Agriculture's chief scientific in-house research agency with a mission to find solutions to agricultural problems that affect Americans every day from field to table. ARS will deliver cutting-edge, scientific tools and innovative solutions for American farmers, producers, industry, and communities to support the nourishment and well-being of all people; sustain our nation's agroecosystems and natural resources; and ensure the economic competitiveness and excellence of our agriculture. The vision of the agency is to provide global leadership in agricultural discoveries through scientific excellence.

Research Project: The Genetic Improvement for Fruits and Vegetables Lab studies multiple microbial pathogens of potato, pepper, and tomato to develop novel disease management tools. Major pathogens being studied currently are Streptomyces pathogens that cause potato common scab, Verticillium Wilt of potato, and tomato chlorotic spot virus in pepper.

Learning Objectives: The successful applicant will have the opportunity to conduct research with several pathosystems and expand core skills in plant pathology, molecular biology, plant biology, and microbiology.

Mentor: The mentor for this opportunity is Christopher Clarke (christopher.clarke@usda.gov). If you have questions about the nature of the research please contact the mentor.

Anticipated Appointment Start Date: September 30, 2022. Start date is flexible and will depend on a variety of factors.

Postdoctoral Positions Beyond Academia – Industry

- Industry – Biotech & Pharma

- Genentech (n=20): <https://careers.gene.com/us/en/students-postdocs>
- J&J/Janssen (n=36): <https://www.janssen.com/careers/postdoctoral-program>
- AstraZeneca (n=17): <https://careers.astrazeneca.com/postdocs-astrazeneca>
- Novartis: <https://www.novartis.com/careers/career-programs/postdoc-program>
 - Have Innovation and Discovery tracks
- Regeneron (n=5): <https://www.regeneron.com/postdoctoral-training-program>
- Pfizer (n=37): <https://www.pfizer.com/en/about/careers/postdoctoral-program>
- Abbvie (n=22): <https://www.abbvie.com/careers/development-programs/postdoc-programs.html>
- GSK (n=5): <https://www.gsk.com/en-gb/careers/early-talent/post-graduate-opportunities/#PhDsandPostdocs>
- Roche (n=2): <https://careers.roche.com/global/en/graduates-programmes>
- Sanofi (n=1): <https://jobs.sanofi.us/postdoctoral-careers>
- Eli Lilly: <https://careers.lilly.com/us/en/visiting-scientist>

[Ten Simple Rules for Doing A Postdoc in Pharma Article](#)

Postdoc Positions in Tech + Tech Commercialization/Start-ups

- Industry - Tech

- Amazon: <https://www.amazon.science/postdoctoral-science-program>
- Microsoft AI Residency Program: <https://www.microsoft.com/en-us/research/academic-program/microsoft-ai-residency-program/>
- vmware Research: <https://research.vmware.com/pages/recruiting>

- Commercialization Postdoc Programs

- Hosted by universities, often to facilitate intellectual property commercialization
- [See crowdsourced list](#)

- Start-Up Experience

- NSF Innovative Postdoctoral Entrepreneurial Research Fellowship: <https://iperf.asee.org/>

Recruits, trains, mentors, matches, and funds early-career Science and Engineering (S&E) doctoral degree recipients to participate in innovative entrepreneurial activities at some of the nation's most promising startup companies.

Open to US Citizens, nationals, or permanent residents only.

Dispelling Common Myths + Industry Postdoc Pros/Cons

A 2020 survey of biotech/pharma industry postdoc programs through the NPA found:

- Over 85% encourage or allow postdocs to have both company and academic mentors
- 100% encourage postdocs to publish their research while working at the company
- 57% have internal paths to long-term employment for postdoc trainees
- Pay (~40% higher, on avg) and benefits are usually better than for academic postdocs
- HOWEVER training and professional development opportunities may be more limited

% of Responding Institutions

Supporting/Endorsing	Universities	Industry
Career Fairs/Symposium	59	14
Employer Presentations	45	14
Networking Events	86	71
On-Campus Interviews	13	14
On-Site Visits	27	0
Job Shadowing	17	57
Career Library	37	0
Career-related resources on website	64	14

% of Responding Institutions

Supporting/Endorsing	Universities	Industry
Grant Writing	84	0
Science Writing	71	57
Mock Study Sections	23	0
Academic Lab Mgmt	44	0
Academic Project Mgmt	37	43
Industry Project Mgmt	23	43
Teaching Skills	75	0
Presentation Skills	79	86

Things to Consider

While pay and benefits may be better outside a traditional academic postdoc, this is not always the case.

The National Postdoctoral Association's Institutional Policy Report (updated in 2021) provides a nice overview of the percent of academic/research institutions offering specific benefits and programs to Postdocs.

A postdoctoral position based outside a university may result in less opportunities for broad training and development as some organizations will not be setup to do this as completely as a university.

- You may need to be more proactive to seek out training and professional development opportunities if you are postdocing outside academia

Mentoring in non-academic settings can look different as well as you may be viewed more like an employee than trainee in some organizations.

Positions advertised on Zintellect are often contracted through ORISE and thus you are not directly an employee of FDA, USDA, CDC, etc...

While this is not necessarily a problem it may mean transitioning to a more permanent position will require you to be more proactive and wait for a federal position to be created, when you will still need to apply through USAJobs (most likely).



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