

Reese Richardson, PhD

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Education

PhD, Interdisciplinary Biological Sciences

2019 – 2024

Northwestern University, Evanston, IL USA

Thesis: *Metascientific studies in reproducibility, bias and fraud*

Advisor: Dr. Luís A. Nunes Amaral

BS, Applied Mathematics, BA, Physics

2015 – 2019

North Central College, Naperville, IL USA

Research

Postdoctoral Research Fellow

2025 – Present

Center for Science of Science and Innovation, Northwestern University

Studying the accumulation of scientific and medical evidence before the approval of breakthrough drug candidates

Postdoctoral Researcher

2024 – 2025

Laboratory of Dr. Luís A Nunes Amaral, Department of Engineering Science and Applied Mathematics, Northwestern University

Characterized networks underlying industrialized scientific fraud and developing methods for inferring irreproducibility in the published literature

Graduate Researcher

2019 – 2024

Laboratory of Dr. Luís A. Nunes Amaral, Department of Engineering Science and Applied Mathematics, Northwestern University

Developed methods for quantifying undocumented bias in bioinformatics pipelines, investigated inequality in research attention to human gene, developed Find My Understudied Genes

Laboratory of Dr. Jaline Gerardin (rotation), Department of Preventive Medicine, Northwestern University

Developed COVID-19 epidemiological models for use by Office of the Governor of Illinois and Illinois Department of Public Health

Laboratory of Dr. Guillermo Ameer (rotation), Department of Biomedical Engineering, Northwestern University

Engineered and fabricated 3D-printed vascular stents

Computational Biology Intern	2024
<i>Envisagenics, New York City, NY USA</i>	
Benchmarked pipelines for processing bioinformatics data for target discovery	
Epidemiology Public Service Intern	2020 - 2022
<i>Chicago Department of Public Health, Chicago, IL USA</i>	
Developed pipelines for COVID-19 sentinel surveillance from public health data	
Undergraduate Researcher	2018 – 2019
<i>Department of Biochemistry, North Central College</i>	
Designed study to investigate the formation of complex pores during electroporation	
Undergraduate Researcher	2017 – 2019
<i>Northern Illinois University, Dekalb, IL USA</i>	
Conducted and analyzed molecular dynamics simulations of ionic liquids systems	

Grants, Awards and Honors

Chicago Collaboration Research Initiative Grant (Senior Personnel)	2026
<i>Berlin University Alliance (BUA)</i>	
€11,843 (workshop support)	
Award for Selected PubPeer Comments	2025
<i>PubPeer Foundation</i>	
\$1,000	
Outstanding Dissertation Award	2024
<i>Interdisciplinary Biological Sciences, Northwestern University</i>	
CoDEx Best Poster Award	2024
<i>Research Computing Services, Northwestern University</i>	
\$3,000	
Moderna Global Fellowship	2023 – 2025
<i>Moderna, Inc.</i>	
\$207,000 (salary, overhead and research expenses)	
Dr. John N Nicholson Fellowship	2022 – 2023
<i>Northwestern University</i>	
~\$70,000 (salary, overhead and research expenses)	
Biotechnology Training Program (Trainee)	2020 - 2022
<i>NIH-NIGMS T32 GM008449</i>	
~\$140,000 (salary, overhead and research expenses)	

Peer-reviewed Publications

- Richardson, R.A.K.**, Spick, M. *Meeting the challenges posed by mass-produced manuscripts and click-data science*. *European Science Editing* 51: e165043 (2025). [10.3897/ese.2025.e165043](https://doi.org/10.3897/ese.2025.e165043) (2025 Best Viewpoint Paper Award, EASE)
- Richardson, R.A.K.**, Hong, S.S., Byrne, J.A., Stoeger, T., Amaral, L.A.N. *The entities enabling scientific fraud at scale are large, resilient, and growing rapidly*. *Proceedings of the National Academy of Sciences*, 122 (32) e2420092122, (2025). [10.1073/pnas.2420092122](https://doi.org/10.1073/pnas.2420092122) (2025 Cozzarelli Prize Finalist, Behavioral and Social Sciences, PNAS)
- Richardson, R.A.K.**, Moon, J., Hong, S.S., Amaral, L.A.N. *Widespread misidentification of scanning electron microscope instruments in the peer-reviewed materials science and engineering literature*. *PLOS One* (2025). [https://10.1371/journal.pone.0326754](https://doi.org/10.1371/journal.pone.0326754)
- Richardson, R.A.K.**, Wise, N.H., Hong, S.S., Draper, M.J., Fackrell, S. *Exploitation of intellectual property systems for the manipulation of academic reputations*. *International Journal for Educational Integrity*, 21, 15 (2025). [10.1007/s40979-025-00185-8](https://doi.org/10.1007/s40979-025-00185-8)
- Oste, D.J., Pathmendra, P., **Richardson, R.A.K.** ..., Byrne, J.A. *Misspellings or “miscellings”-non-verifiable cell lines in cancer research publications*. *International Journal of Cancer*, 1-12 (2024). [10.1002/ijc.34995](https://doi.org/10.1002/ijc.34995)
- Richardson, R.A.K.**, Tejedor Navarro, H., Amaral, L.A.N., Stoeger, T. *Meta-Research: understudied genes are lost in a leaky pipeline between genome-wide assays and reporting of results*. *eLife* (2024). [10.7554/eLife.93429](https://doi.org/10.7554/eLife.93429)
- Toh, K.B., Runge, M., **Richardson, R.A.K.**, Hladish, T.J., Gerardin, J. *Design of effective outpatient sentinel surveillance for COVID-19 decision making: a modeling study*. *BMC Infectious Diseases*, 23(1), 287 (2023). [10.1186/s12879-023-08261-5](https://doi.org/10.1186/s12879-023-08261-5)
- Byrne, J.A., Park, Y., **Richardson, R.A.K.**, Pathmendra, P., Sun, M., Stoeger, T. *Protection of the human gene research literature from contract cheating organizations known as research paper mills*. *Nucleic Acids Research*, gkac1139 (2022). [10.1093/nar/gkac1139](https://doi.org/10.1093/nar/gkac1139)
- Richardson, R.A.K.**, Jorgensen, E., Arevalo, P., Holden, T.M., Pacilli, M., Ghinai, I., Lightner, S., Cobey, S., Gerardin, J. *Tracking changes in SARS-CoV-2 transmission with a novel outpatient sentinel surveillance system in Chicago, Illinois, USA*. *Nature Communications* 13, 5547 (2022). [10.1038/s41467-022-33317-6](https://doi.org/10.1038/s41467-022-33317-6)
- Runge, M., **Richardson, R.A.K.**, Clay, P., Eagan, A., Holden, T.M., Singam, M., Tsuboyama, N., Arevalo, P., Fornoff, J., Patrick, S., Ezike, N.O., Gerardin, J. *Modeling robust*

COVID-19 intensive care unit occupancy thresholds for imposing mitigation to prevent exceeding capacities. PLOS Global Public Health 2, 5 (2022).

[10.1371/journal.pgph.0000308](https://doi.org/10.1371/journal.pgph.0000308)

Xavier, J., ..., **Richardson, R.A.K.**, ..., Yeaman, M.R. *Mathematical models to study the biology of pathogens and the infectious diseases they cause.* iScience, 104079 (2022).

[10.1016/j.isci.2022.104079](https://doi.org/10.1016/j.isci.2022.104079)

Burke, J.A., ..., **Richardson, R.A.K.**, Ameer, G.A., Scott, E.A. *Subcutaneous nanotherapy repurposes the immunosuppressive mechanism of rapamycin to enhance allogeneic islet graft viability.* Nature Nanotechnology (2022). [10.1038/s41565-021-01048-2](https://doi.org/10.1038/s41565-021-01048-2)

Holden, T.M.*, **Richardson, R.A.K.***, Arevalo, P., ..., Gerardin, J. *Geographic and demographic heterogeneity of SARS-CoV-2 diagnostic testing in Illinois, USA, March to December 2020.* BMC Public Health 21, 1105 (2021). [10.1186/s12889-021-11177-x](https://doi.org/10.1186/s12889-021-11177-x)

Other Works

Richardson, R.A.K., Hong, S.S., Abalkina, A. *BuyTheBy: A dataset of 18,710 text-based paper mill advertisements with 51,812 timestamped prices.* arXiv (2026).

[10.48550/arXiv.2604.24576](https://arxiv.org/abs/10.48550/arXiv.2604.24576)

Richardson, R.A.K., Puebla, I., Portenoy, J., Gutzman, K., Holmes, K. *Opening up translational data impact through the Data Citation Corpus.* Zenodo (2025).

[10.5281/zenodo.15241442](https://doi.org/10.5281/zenodo.15241442)

Richardson, R.A.K. *The Collection of Open Science Integrity Guides: Expanding participation in post-publication peer review.* Zenodo, under review (2025). [10.5281/zenodo.15564777](https://doi.org/10.5281/zenodo.15564777)

Richardson, R.A.K., Hong, S.S., Amaral, L.A.N. *Hidden hydras: uncovering the massive footprint of one paper mill's operations.* Retraction Watch (2024). retractionwatch.com

Elasser, S., ..., **Richardson, R.A.K.**, ..., Nixon, R.A. *A Comprehensive Enumeration of the Human Proteostasis Network. 2. Components of the Autophagy-Lysosome Pathway.*

bioRxiv 2023.03.22.533675, under review (2023). [10.1101/2023.03.22.533675](https://doi.org/10.1101/2023.03.22.533675)

Invited Presentations

Springer Nature Editors' Webinar

June 2026

“*The Collection of Open Science Integrity Guides*”

University of Southern Mississippi Libraries SOAR Session Webinar

April 2026

“*A primer on the research and credential fraud industry*”

Pakistan Economics Frontier Research Integrity Week Webinar <i>“Exploitation of intellectual property systems for the manipulation of academic reputations”</i>	January 2026
STM Integrity Day, London, UK <i>“How responsive are publishers to integrity concerns?”</i>	December 2025
Chemistry World Webinar <i>“Tackling fraud and data manipulation in scientific research”</i>	November 2025
COPE Publication Integrity Week Webinar <i>“The Collection of Open Science Integrity Guides”</i>	November 2025
IP4OS Webinar <i>“Exploitation of intellectual property systems for the manipulation of academic reputations”</i>	October 2025
Wisconsin League for Nursing Webinar <i>“A primer on the research and credential fraud industry”</i>	October 2025
Thieme Group Lunch and Learn Webinar <i>“The entities enabling scientific fraud at scale are large, resilient, and growing rapidly”</i>	September 2025
Paper Mill Detect and Correct Group Webinar <i>“The entities enabling scientific fraud at scale are large, resilient, and growing rapidly”</i>	August 2025
King’s College London Open Research Summer School <i>“The Collection of Open Science Integrity Guides”</i>	July 2025
STM Research Integrity Committee Meeting <i>“The Collection of Open Science Integrity Guides”</i>	July 2025
NICO Data Science Nights, Northwestern University <i>“Using data science to better understand the academic black market”</i>	May 2025
Truth in Beauty e-Summit <i>“Research fraud, predatory journals and science integrity”</i>	September 2024

Service

Lead Developer and Maintainer <i>The Collection of Open Science Integrity Guides (COSIG, cosig.net)</i> Launched and grew open-source educational resource for post-publication peer review, currently features 35 guides	2025 - Present
Editorial Board Member <i>Accountability in Research</i>	2025 - Present

Peer Reviewer**2022 - Present**

Accountability in Research, PLOS One, European Journal of Epidemiology, iScience, The Innovation, BMC Medicine, MetaROR

Teaching

Teaching Assistant**Fall 2023**

Eukaryotic Molecular Biology, Interdisciplinary Biological Sciences, Northwestern University
Assisted with instruction of 7 graduate students

Graduate Teaching Assistant**Winter 2022**

Functional Genomics, Biological Sciences, Northwestern University
Wrote course content and instructed 36 undergraduate students

Graduate Teaching Assistant**Winter 2021**

Molecular and Cellular Processes Laboratory, Biological Sciences, Northwestern University
Instructed 54 undergraduate students remotely in cell biology laboratory course

Assistant Speech Coach**Winter 2017 – Spring 2019**

Community High School District 99 South

Provided coaching and mentorship for 60+ high school speech competitors

Undergraduate Laboratory Teaching Assistant**Winter 2017 – Spring 2017**

Physics II, Physics III, Physics of Music, North Central College

Guided majors and non-majors through introductory laboratory coursework