Nicholas Cusick

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Education

University of Arizona | Ph.D. in Molecular Medicine | 3.725 Cumulative GPA *Aug 2023 – Present*

University of Arizona | B.S. Microbiology (Honors) | 3.891 Cumulative GPA *Aug 2020 – May 2023*

- **Minors:** *Biochemistry; Ecology & Evolutionary Biology*

Research & Professional Experience

Market Research Associate – Life Sciences | Tech Launch Arizona *Oct 2026 – Present*

- Review, edit, and expand Commercialization Assessment Reports evaluating University-disclosed life science technologies and their commercialization potential.
- Conduct technical and market research on patent/prior-art landscapes, scientific literature, competing products and companies, market size and trends, and potential applications and licensees.

Graduate Research Assistant | Farr Lab, University of Arizona *Aug 2023 – Present*

- Studying the role of cellular senescence in breast cancer bone metastases and associated skeletal dysfunction and contributing to projects examining senescence in diabetes-associated skeletal fragility.
  - Design and evaluate translational research projects related to cancer and skeletal biology.
  - Conduct technical literature reviews to evaluate scientific evidence, identify knowledge gaps, and synthesize findings for research proposals, manuscripts, and translational research projects.
  - Primary research mentor for an Undergraduate Summer Internship Program (USIP) student; provide training in laboratory techniques, experimental design, data analysis, and professional development.

Graduate Teaching Assistant | PSIO 201, University of Arizona *Aug 2026 – Present*

- Teach three undergraduate Human Anatomy & Physiology laboratory sections (PSIO 201) each semester, supporting approximately 75–90 students through laboratory instruction, office hours, and assessment feedback.
- Present laboratory concepts, grade assignments and assessments, assist with laboratory preparation and course logistics, participate in instructional training and preparation meetings, and proctor laboratory and lecture exams.

Student Researcher | Ahmad Lab, University of Arizona *Dec 2021 – Mar 2024*

- Investigated HIV-1 viral genetics and gene regulation through sequence characterization of viral accessory genes from individuals on long-term antiretroviral therapy.

UBRP Undergraduate Researcher | Horton Lab, University of Arizona *May 2022 – May 2023*

- Studied structural and biochemical properties of B19V viral replication proteins and metabolic enzyme polymers.

Immunology Preceptor | University of Arizona *Aug 2022 – Dec 2022*

- Prepared materials and content for lectures, assisted students with in-class activities, graded coursework and returned feedback to students, and hosted office hours/exam review sessions.

CIRM SPARK Research Intern | Nolta Lab, University of California, Davis *Jun 2018 – Aug 2018*

- Assisted with mammalian cell culture and molecular assays (PCR, ELISA, karyotyping) supporting research on mesenchymal stem cell–mediated RNAi delivery for Huntington's disease.

Analytical, Research & Writing Skills

- Technical & scientific literature evaluation and synthesis
- Scientific and technical writing, editing, and critical review
- Experimental design and quantitative data analysis
- Microsoft Office: Excel, Word, PowerPoint | Box | GraphPad Prism | ImageJ

Grants & Funding

2025 — University of Arizona Cancer Center Internal Pilot Award (FY25) — $50,000

Proposal author and project lead (trainee); PI: Joshua N. Farr

Author of funded research proposal supporting translational cancer research. Developed project rationale, research strategy, and budget justification.

2023 — Research and Projects (ReAP) Grant, GPSC, University of Arizona

Proposal author and project lead (trainee); PI: Nancy C. Horton

Publications & Presentations

Presentations

Cusick N. Exploring therapy-induced cellular senescence in ER+ breast cancer bone metastases. Presented at: Department of Cellular and Molecular Medicine Seminar; February 25, 2026; Tucson, AZ.

Cusick N. Targeting therapy-induced senescence in ER+ breast cancer bone metastases. Poster presented at: Joint Biology Research Retreat; October 10–11, 2025; Biosphere 2, Oracle, AZ.

Cusick N, Darwish N, Horton N. High-resolution structure of the nuclease domain of the HNHDMv3 mutant of human parvovirus B19 main replication protein NS1. Poster presented at: 34th Annual UBRP Conference; January 2023; Tucson, AZ.

Cusick N, Nacey C, Nolta J, Bauer G. Justification for cytogenetic testing as a form of quality control for cultured research cell lines. Poster presented at: CIRM SPARK Research Conference; August 2018; Sacramento, CA.

Peer-Reviewed Articles

Brooks HW, **Cusick NC**, Wu S, Farr JN. Future directions of osteoanabolic therapies in osteoporosis: integrating current anabolic agents and emerging senescence-targeted strategies. *Best Pract Res Clin Rheumatol*. 2026;102203. doi:10.1016/j.berh.2026.102203.

Kaur J, Brooks HW, Froemming MN, **Cusick NC**, Funk JL, Farr JN. Examination of skeletal and senescence phenotypes in young mice with juvenile onset type 1 diabetes. *Calcif Tissue Int*. 2025;116(1):93. doi:10.1007/s00223-025-01401-w

Kummet N, Mishra N, Diaz A, **Cusick N**, Klotz S, Ahmad N. Genetic characterization of HIV-1 *tat* gene from virologically controlled aging individuals with HIV on long-term antiretroviral therapy. *AIDS Res Hum Retroviruses*. 2025;41(3):143-154. doi:10.1089/aid.2024.0029

Manuscripts Under Review

Froemming M†, Brooks H†, Wu S, Pařízek V, Doolittle M, Saul D, **Cusick NC**, Funk JL, Monroe D, Aroumougame A, Khosla S, Farr J. Type 2 diabetes accelerates senescence and drives skeletal dysfunction. *JCI Insight*. Under review.

Undergraduate Honors Thesis

Cusick N. Genetic characterization of HIV-1 *vif* gene from virologically controlled aging individuals with HIV on long-term antiretroviral therapy. *Undergraduate honors thesis*. University of Arizona; May 2023.

Service & Outreach

Co-Chair, JBRR Advisory Committee | University of Arizona *Jun 2024 – Oct 2025*

- Co-led the student advisory committee organizing the University of Arizona Joint Biology Research Retreat, coordinating interdisciplinary participation across multiple biology departments.

Panelist | Molecular & Cellular Biology Club, University of Arizona *Apr 2024*

- Participated in a graduate student panel advising undergraduates on research involvement and graduate school pathways.

HASB Volunteer | Biosphere 2, University of Arizona *Jan 2022 – May 2022*

- Service-learning project on Arizona sustainability policy linking food, water, and energy systems to science communication and public outreach.

Hospital Volunteer | Mercy San Juan Medical Center, Dignity Health *Jun 2019 – Aug 2021*

- Supported surgical bariatric and acute care units by assisting nursing staff with patient services, supply restocking, and administrative tasks.

Honors & Awards

2026 — PhD Candidacy

2023 — Magna Cum Laude, University of Arizona

2022 — Phi Beta Kappa, University of Arizona

2021, 2023 — Highest Academic Distinction, University of Arizona