Peyton Panovich

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Education

University of Michigan — Ann Arbor, Michigan
Doctor of Philosophy in Biomedical Engineering — Expected Spring 2028

University of Michigan — Ann Arbor, Michigan
Masters in Biomedical Engineering — May 2025

University of Kansas — Lawrence, Kansas
Bachelor of Science in Chemical Engineering — May 2023
Minor in Business, Minor in Biomedical Engineering
Honors Program

Research Experience

University of Michigan, Graduate Student — Ann Arbor, Michigan
Department of Biomedical Engineering — 2023-Present
Research Mentor: Dr. Alexandra Piotrowski-Daspit
Exploration of polymeric nanoparticles for nucleic acid delivery to multiple organs *in vivo* with a focus on engineering decoy nanoparticles for improved tissue tropism and reduced off-target accumulation

University of Kansas, Undergraduate Researcher — Lawrence, Kansas
Department of Pharmaceutical Science — 2021-2023
Research Mentors: Dr. Cory Berkland and Dr. Grant Downes
Functionalization and synthesis of pro-insulin for antigen-specific immunotherapy for type 1 diabetes

Johns Hopkins University, REU Summer Scholar — Baltimore, Maryland
Department of Chemical and Biological Engineering — Summer 2022
Research Mentors: Dr. Sangmoo Jeong and Alli Abolarin
Role of serine and glycine modulation on the metabolic behavior of acute myeloid leukemia for use in combination therapies for synergistic therapeutic efficacy

University of Nebraska Lincoln, REU Summer Scholar Lincoln, Nebraska
Department of Biological Systems Engineering Summer 2021
Research Mentors: Dr. Angela Pannier and Kari Heck
Optimization of loading plasmid DNA into bacterial outer membrane vesicles for oral vaccine and gene delivery platform

University of Kansas, Undergraduate Researcher Lawrence, Kansas
Department of Bioengineering 2020- 2021
Research Mentors: Dr. Kenneth Fischer and Dr. Nolan Norton
Segmentation of thumb metacarpal and trapezium bones from MRI scans for development of 3-D models and analysis of osteoarthritic risk of micropipette operation.

University of Kansas, Undergraduate Researcher Lawrence, Kansas
Department of Chemical Engineering 2019-2020
Research Mentors: Dr. Mei He and Dr. Shaobo Ruan
Investigation of UV light treatment for increased exosome secretion of cells

University of Kansas Medical Center, Biotechnology Program Kansas City, Kansas
Department of Cancer Biology 2018-2019
Research Mentors: Dr. Prasad Dandawate and Dr. Shrikant Anant
Cucurbitacin B and I inhibits colon cancer cell growth by targeting the Notch signaling pathway

Publications

Liu, J., Plaster, E., Fan, M. , Ahmed, D., Roy, A., Duran, **P., Panovich**, P., Piotrowksi-Daspit, A., Aguilar, A., Killian, L., Loebel, C. Nascent Extracellular Matrix Converts Biomaterial Cues into Cell Fate Decisions, *Nature Communications*, Under review

Panovich, P., Ganesan, A. Markey, A., Stevens, M, Kelly, O., Piotrowski-Daspit, A. Engineered Cargo-Free Nanoparticles Decoys for Phagocytic Modulation of Macrophages, *Journal of Controlled Release,* In press.

Panovich, P. Ganesan, A. Angadi, A. Piotrowski-Daspit, A. (2025) Recent Advances in the Application of Polymeric Nanoparticles to the Pulmonary Delivery of mRNA, *Nanomedicine*, 1-17.

Dandawate, P., Subramaniam, D., **Panovich, P**., Standing, D., Krishnamachary, B., Kaushik, G., Thomas, S. M., Dhar, A., Weir, S. J., Jensen, R. A., & Anant, S. (2020). Cucurbitacin B and I inhibits colon cancer growth by targeting the Notch signaling pathway. *Scientific Reports*, *10*(1), 1.

Presentations

North American Cystic Fibrosis Conference October 2025
Poster presentation on "Esomeprazole and Cargo-free Nanoparticle "Decoys" Modulate Phagocytic Clearance of Polymeric NPs for Improved Delivery to the Lung and Gastrointestinal Tract"

Annual Biomedical Engineering Society Meeting October 2025
Oral presentation on "Esomeprazole and Cargo-free Nanoparticle "Decoys" Modulate Phagocytic Clearance of Therapeutic NPs"

University of Michigan BME Symposium, Ann Arbor Michigan May 2025
Poster Presentation on "Cargo-free Nanoparticle and Esomeprazole decoys Prevent Phagocytic Clearance of Therapeutic Polymeric Nanoparticles"

Ohio Valley Cystic Fibrosis Consortium, Columbus Ohio March 2025
Poster Presentation on "Cargo-free Nanoparticle and Esomeprazole decoys Prevent Phagocytic Clearance of Therapeutic Polymeric Nanoparticles"

Annual Biomedical Engineering Society Meeting October 2024
Poster presentation on "Cargo-free Nanoparticle and Esomeprazole decoys Prevent Phagocytic Clearance of Therapeutic Polymeric Nanoparticles"

Bio interfaces and Regenerative Medicine Monthly Meeting August 2024
Oral presentation on "Cargo-free Nanoparticle and Esomeprazole decoys Prevent Phagocytic Clearance of Therapeutic Polymeric Nanoparticles"

Ohio Valley Cystic Fibrosis Consortium, Columbus Ohio March 2024
Poster Presentation on "Engineered Decoy Pretreatment Avoids Phagocytic Clearance of Polymeric Nanoparticles"

Institute for Nano Biotechnology In-House Symposium, Johns Hopkins University August 2022
Oral presentation on "Effect of Serine/Glycine on Metabolic Behavior of Acute Myeloid Leukemia"

Annual C.A.R.E.S Symposium, Johns Hopkins University July 2022
Oral presentation on "Effect of Serine/Glycine on Metabolic Behavior of Acute Myeloid Leukemia"

Annual Biomedical Engineering Society Meeting October 2021
Poster presentation on "Optimization of Loading Plasmid DNA into Bacterial Outer Membrane Vesicles"

Summer Research Program Symposium, University of Nebraska-Lincoln July 2021
Poster presentation on "Optimization of Loading Plasmid DNA into Bacterial Outer Membrane Vesicles"

University of Kansas Undergraduate Research Symposium, University of Kansas April 2021
Oral presentation on "Developing 3-D Models of Thumb Carpometacarpal Joints to Analyze Impact of Pipette Operation"

INTEL International Science and Engineering Fair, Phoenix Arizona May 2019
Poster presentation on "The Effect of Cucurbitacin B and I on Colon Cancer Cell Proliferation"

Abstracts at Scholarly Meetings

Liu, J., Plaster, E., Fan, M., Ahmed, D., Roy, A., Duran, **P., Panovich**, P., Piotrowksi-Daspit, A., Aguilar, A., Killian, L., Loebel, C. (2026) Nascent Extracellular Matrix Converts Biomaterial Cues into Cell Fate Decisions, *Society for Biomaterials:* Atlanta, GA

Liu, J., Plaster, E., Fan, M., Ahmed, D., Roy, A., Duran, **P., Panovich**, P., Piotrowksi-Daspit, A., Aguilar, A., Killian, L., Loebel, C. (2025) Nascent Extracellular Matrix Converts Biomaterial Cues into Cell Fate Decisions, *Biomaterials International:* Seattle, WA

Peyton Panovich, Aditi Ganesan, Miriam Stevens, Alexandra Piotrowski-Daspit (2025): Esomeprazole and Cargo-free Nanoparticle "Decoys" Modulate Phagocytic Clearance of Polymeric NPs for Improved Delivery to the Lung and Gastrointestinal Tract, *North American Cystic Fibrosis Conference*: Seattle, WA

Peyton Panovich, Aditi Ganesan, Miriam Stevens, Alexandra Piotrowski-Daspit (2025): Esomeprazole and Cargo-free Nanoparticle "Decoys" Modulate Phagocytic Clearance of Therapeutic NPs, *Biomedical Engineering Society Annual Meeting*: San Diego, CA

Peyton Panovich, Alexandra Piotrowski-Daspit (2024): Engineered Pretreatment Prevents Phagocytic Clearance of Therapeutic Nanoparticles, *Biomedical Engineering Society Annual Meeting*: Baltimore, MD

Peyton Panovich, Kari Heck, Amanda E. Ramer-Tait, Angela K. Pannier (2021): Optimization of Loading Plasmid DNA into Bacterial Outer Membrane Vesicles, *Biomedical Engineering Society Annual Meeting*: Orlando, FL (virtual attendance)

Workshops and Trainings

NextProf Pathfinder-Mentor October 2025
Participated as a mentor where I served on a graduate student panel and facilitated student-to-student communication throughout workshop

NextProf Pathfinder October 2024
Workshop designed to prepare early career graduate students for careers in academia

Mentoring Experience

Mentored Public Health undergraduate, Aishani Bajpai, University of Michigan 2026-Present

Mentored BME undergraduate, Aditi Ganesan, University of Michigan 2024-Present

Teaching Experience

BME 419/519 Quantitative Physiology WN2026
Graduate Student Instructor

Leadership

Biomedical Engineering Graduate Student Council 2024-2025
Retreat Chair
- Managed annual planning of departmental retreat for new and returning graduate students

Biomedical Engineering Graduate Student Council 2023-Present
Social Committee Member
- Organized inter departmental mixers between chemical engineering, biomedical engineering, and pharmaceutical science departments

SELF Engineering Leadership Program 2021-2023
Junior-Admit Fellow
- Executed "Undergraduate Research Involvement Fair" as personal capstone project
- Room and Space lead for High School Design planning committee

Engineering Student Council 2021-2022
Vice President of Finance
- Directed Funding Advisory Committee for School of Engineering
- Distributed funding to student organizations

Engineering Student Council 2020-2021
EXPO Finance Chair
- Assisted in organizing Engineering Expo event for elementary and middle school students
- Tabulated and monitored budget throughout the project

Awards and Honors

Graduate Assistance in Areas of National Need (GAANN) Fellow 2025
- Fellowship awarded to graduate students pursuing teaching experience. Provides one year of full funding and opportunities for teaching development

National Science Foundation Graduate Research Fellowship: Honorable Mention 2024
- Awarded to meritorious applications

Tau Beta Pi Engineering Honors Society 2021-Present
- Engineering honor society recognized by esteemed scholarship and honorary character across all engineering disciplines

Undergraduate Research Award 2021
- Research scholarships awarded to students pursuing creative independent research projects during their undergraduate education at the University of Kansas

STEMMY Nominee 2020 & 2021

- Recognizes exemplary female scientists in Kansas City Area to increase gender diversity in STEM fields

Dean's Honor Roll All Semesters 2019-2023

- Awarded to top 10% of students within their field of study at the University of Kansas

Professional Memberships

- American Society of Engineering Educators
- Biomedical Engineering Society
- American Institute of Chemical Engineers
- Society of Women Engineers

References

Alexandra Piotrowski-Daspit, PhD
University of Michigan
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Ann Arbor, MI 48109
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