# Kayle Riley

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## EDUCATION

**University of Michigan** *Ann Arbor, MI*
Doctoral Degree, Biomedical Engineering *January 2023-Expected May 2027*
- *Thesis: Engineering a semi-synthetic mucin MAP Gel with Bioluminescent Probes for graft rejection monitoring*

Master of Science, Biomedical Engineering *August 2022- Expected August 2024*
- Concentration: Biotechnology and Systems Biology

GPA: 3.95/4.0

**University of Cincinnati** *Cincinnati, OH*
Post-Baccalaureate Research Education Program (PREP) *June 2021-June 2022*
Supplemental Graduate Coursework:
- Principles of Molecular and Cellular Biology
- Career Opportunities in Biomedical Sciences
- Ethics

**Trine University** *Angola, IN*
Bachelor of Science, Biomedical Engineering *August 2017-May 2021*
Minor: Chemistry
GPA: 3.7/4.0

## RESEARCH EXPERIENCE

**Engineering Semi-Synthetic Mucin MAP Gels with Bioluminescent Probes for Graft Rejection Monitoring** *Ann Arbor, MI* *1/2023-present*
University of Michigan
María Coronel, PhD

**Modeling Type II Diabetes as a Microphysiological System** *Cincinnati, OH*
University of Cincinnati *11/2021-6/2022*
Patrizia Tornabene, PhD & James Wells, PhD
- Differentiated human iPSCs into beta-like insulin-secreting cells and co-cultured them with liver and intestinal organoids in a microfluidic device to serve as an in vitro model for type II diabetes.

**Enteroendocrine Cells are Required for Nutrient Sensing and Absorption in the Intestine** *Cincinnati, OH* *7/2021-11/2021*
University of Cincinnati
Heather McCauley, PhD & James Wells, PhD
- Used mouse models and intestinal organoids to understand how the paracrine activity of specific hormones released by enteroendocrine cells affects intestinal nutrient sensing and absorption.

**Designing a Hemostatic Wound Bandage for Patients with Blood Clotting Disorders** *Angola, IN* *8/2020-5/2021*
Trine University
Melanie Watson, PhD & Max Gong, PhD

- Designed a 3D printed hemostatic bandage with a chitosan and genipin cross-linked hydrogel loaded with platelet agonists.

**Pegylated Gold Nanoparticles Attached to Thrombin for Coagulation** *Angola, IN*
Trine University *8/2020-*
Melanie Watson, PhD *12/2020*

- Fabricated thrombin conjugated gold nanoparticles as a therapeutic for hemophilia by bypassing the coagulation cascade and directly providing the body with thrombin during a bleeding episode.

**Sanford Program for Undergraduate Research (SPUR)** *Sioux Falls, SD*
Sanford Research *Cancelled due to Covid-19*

- Ten-week research education program for undergraduate students interested in research-related fields providing them with access to create a project proposal and present findings at a symposium.

**Zoom Research Experience for Undergraduates (REU)** *Angola, IN*
University of California, San Diego *7/2020-9/2020*

- In light of COVID-19, professors gave lectures over Zoom on various topics related to biomedical sciences, talked about their career paths, gave insight into applying to graduate schools and publishing papers, and invited graduate students to talk about their research, career paths, and experiences.

**Effectiveness of Chemical Sensitivity in Colorimetric Potassium Testing** *Angola, IN*
**Using G-Quadruplex DNA and Repeatedly Thawed Hemin** *8/2019-12/2019*
Trine University
Lab Mentors: Melanie Watson, PhD

- Hemin was added to G-Quadruplex structured DNA to create a DNAzyme to catalyze a TMB+$H_2O_2$ colorimetric response in the presence of potassium ions. The effectiveness of repeatedly frozen and thawed hemin was tested concluding that fresh hemin is more sensitive to potassium and provides better detection.

## PUBLICATIONS

1. Racca, Nicole M., Alexander Dontu, **Kayle Riley**, Esma S. Yolcu, Haval Shirwan, and María M. Coronel. “Bending the Rules: Amplifying PD-L1 Immunoregulatory Function through Flexible Polyethylene Glycol Synthetic Linkers.” *Tissue Engineering Part A* 30, no. 7–8 (April 1, 2024): 299–313. https://doi.org/10.1089/ten.tea.2023.0274.
2. Coronel, María M., Stephen W. Linderman, Karen E. Martin, Michael D. Hunckler, Juan D. Medina, Graham Barber, **Kayle Riley**, Esma S. Yolcu, Haval Shirwan, and Andrés J. García. “Delayed Graft Rejection in Autoimmune Islet Transplantation via Biomaterial Immunotherapy.” *American Journal of Transplantation* 23, no. 11 (November 2023): 1709–22. https://doi.org/10.1016/j.ajt.2023.07.023.
3. McCauley, Heather A., Anne Marie Riedman, Jacob R. Enriquez, Xinghao Zhang, Miki Watanabe-Chailland, J. Guillermo Sanchez, Daniel O. Kechele, Emily F. Paul, **Kayle Riley**, Courtney Burger, Richard A. Lang, James M. Wells. “Enteroendocrine Cells Protect the Stem Cell Niche by Regulating Crypt Metabolism in Response to Nutrients.” *Cellular and Molecular Gastroenterology and Hepatology* 15, no. 6 (2023): 1293–1310. https://doi.org/10.1016/j.jcmgh.2022.12.016.

## AWARDS

**Rackham Merit Fellowship** *4/2022*

- Competitive 3-year funding package awarded to incoming doctoral students with superior academic achievement who come from

underrepresented communities. Only 4 awards are given per cycle to a class of ~ 40 incoming students.

**Trine Valedictorian or Salutatorian award** *8/2017*

- $1,000 scholarship awarded to incoming freshmen with either valedictorian or salutatorian standing.

**Trine Trustee Scholarship** *8/2017*

- Competitive merit-based scholarship awarded to incoming freshmen. Limited to those invited to compete after an interview process.

**President's List** *12/2019*

- Maintained a GPA of 3.75/4.00 while taking a minimum of 15 credit hours per semester.

**Care Center Hospital Science and Math Achievement Award** *4/2017*

- $2,500 scholarship for excelling in STEM courses.

**AP Scholar** *8/2016*

- Passed a minimum of 3 AP tests.

## CONFERENCE PRESENTATIONS

1. **Kayle Riley**, Heather McCauley, James Wells. "Enteroendocrine Cells are Required for Nutrient Sensing and Absorption in the Intestine." 20th Annual Biomedical Research Conference for Minority Students (ABRCMS), November 10-13, 2021.

## SERVICE AND LEADERSHIP EXPERIENCE

**miLEAD** *10/2023-present*

- Nonprofit student run organization that offers consulting services to real world clients

**BME Graduate Application Assistance Program (GAAP)** *8/2023-present*

- Student run initiative where we help review application materials from prospective applicants who come from disadvantaged backgrounds.

**BME Graduate Student Council (GSC)** *1/2023-present*

- Member of the academic committee. I have helped with the annual BME symposium and help run workshops for BME graduate students such as the "Qualifying Exam Workshop" and the "Writing Workshop."

**First Generation Engineers Mentorship Program** *9/2022-9/2023*

- Graduate student mentor for first generation undergraduate engineering students

## WORK EXPERIENCE

**Research Techniques Teacher's Assistant** *Angola, IN*

Trine University *8/2020-12/2020*

Professor: John Patton, PhD

- I helped students conduct experiments, maintain a proper lab notebook, edited literature reviews, helped during poster sessions, and ensured proper lab safety protocols were followed.

**Lab Techniques Teacher's Assistant** *Angola, IN*

Trine University *1/2020-4/2020*

Professor: John Patton, PhD

- I supervised students during their experiments, responded to inquiries and explained experimental procedures such as ELISA, gel electrophoresis, blood cell separation, cell

culturing, microscopy, live/dead staining, IF imaging, blood smear, and ensured proper lab safety protocols were followed.

## MENTORING

| Mentee | Time Frame | Program |
|---|---|---|
| Nevaeh Hawkins | 6/2023-8/2023 | Biomed Focus Program |
| Alexander Dontu | 9/2023-5/2024 | Undergraduate Research Assistant |
| Cora Pomaranski | 8/2023-12/2023 | Undergraduate Research Assistant |

## CERTIFICATES

**Biotech Career Development Program** *Ann Arbor, MI*
University of Michigan *6/2023-8/2023*