

Isabella Richter

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EDUCATION

Doctor of Philosophy, Pharmacology August 2022-Present
Weill Cornell Graduate School of Medical Sciences, New York, NY

Bachelor of Engineering, Biomedical Engineering / Minor: Neuroscience August 2018-May 2022
Vanderbilt University, Nashville, TN

RESEARCH EXPERIENCE

Weill Cornell Graduate School of Biomedical Sciences, New York, NY August 2022-Present
PhD Student

- Co-mentored in the labs of Daniel Heller and Mohamad Hamieh.
- Developing a novel lipid nanoparticle formulation for *in vivo* targeting of T cells.
- Investigating a novel synthetic co-stimulatory molecule to leverage the expression of immune-regulatory molecules and boost the anti-tumor efficacy of T cells.
- Perform both *in vitro* and *in vivo* experiments to optimize LNP transfection and T cell anti-tumor efficacy.
- Generate retrovirus and adeno-associated virus for *ex vivo* transduction of mouse and human primary T cells.
- Refine skills in Molecular Biology, Pharmacology, mRNA delivery, adoptive T cell therapies, and *in vivo* experimentation with mouse models of cancer.

Memorial Sloan Kettering Cancer Center, New York, NY June 2021-August 2021
Marie-Josée Kravis Fellow of the Engineering Summer Program

- Developed lipid nanoparticles for encapsulation of hydrophobic drugs in Daniel Heller's laboratory.
- Refined formulation of nanoparticles to improve transfection and cell viability.
- Collaborated on development of targeted liposomes for cancer drug delivery and mRNA delivery.
- Performed cell culture and Western blots, processed images, measured nanoparticle properties, and analyzed all experimental data.
- Processed tumors from *in vivo* experiments to produce stained single cell suspensions for flow cytometry.
- Engaged in weekly lectures, lab meetings, and professional development seminars.

Dept of Chemical and Biomolecular Engineering, Vanderbilt University August 2019-May 2021
Undergraduate Research Assistant

- Collaborated on research concerning the effect of tissue stiffness on the blood-brain barrier in Ethan Lippmann's laboratory.
- Prepared 60 coverslip-bound hydrogels per week of varying stiffnesses to serve in development of an *in vitro* blood brain barrier model.
- Processed microscope images by manually counting actin filaments in cells cultured on different hydrogel stiffnesses.

PUBLICATIONS

Bosworth, A.M., Kim, H., O'Grady, K.P., Richter, I. *et al.* Influence of Substrate Stiffness on Barrier Function in an iPSC-Derived *In Vitro* Blood-Brain Barrier Model. *Cel. Mol. Bioeng.* (2021).

HONORS

Weill Cornell Medicine, Pediatrics Research Day, Oral Presentation 2024
Vincent du Vigneaud Research Symposium, Poster Presentation 2024
Vincent du Vigneaud Research Symposium, Poster Presentation 2023
Thomas G. Arnold Prize for Biomedical Engineering Design 2022

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Dean's List, Spring Semester, Vanderbilt University	2022
Dean's List, Fall Semester, Vanderbilt University	2021
Dean's List, Spring Semester, Vanderbilt University	2021
Dean's List, Fall Semester, Vanderbilt University	2020
Dean's List, Fall Semester, Vanderbilt University	2019

SKILLS

- *Software:* SnapGene, FlowJo, LivingImage, Prism, Microsoft Office, MATLAB, ImageJ/Fiji
- *Lab Experience:* Mouse handling and injection, Mammalian cell culture, Bacterial cell culture, Plasmid cloning, Flow cytometry, Microfluidic mixing (NanoAssemblr), Western blotting, Gel electrophoresis, Dynamic Light Scattering.

TEACHING EXPERIENCE

Dept of Neuroscience, Vanderbilt University August 2021-December 2021

Teaching Assistant, Drug Discovery for Neuropsychiatric Disorders

- Organized syllabus and prepare necessary materials for 30 undergraduate students.
- Served as main point of contact for student groups regarding course material and interpersonal dynamics.

LEADERSHIP ACTIVITIES

Theta Tau Professional Engineering Fraternity, Vanderbilt University January 2020-May 2022

Professional Development Chair

- Organize professional development events such as resume workshops, mock interviews, and negotiation workshops to promote professional, academic, and social development of members.

Tennessee Louis Stokes Alliance for Minority Participation October 2019-May 2022

- Attend annual research conference highlighting accomplishments of fellow underrepresented minority students in STEM with opportunities to present at the conference.
- Mentor underclassmen engineering students by offering advice on course registration and holding regular meetings.

Society of Hispanic Professional Engineers, Vanderbilt University August 2019-May 2022

Treasurer

- Attend yearly conference and career fair to learn about current research and engineering careers with fellow Hispanic engineers of all disciplines.
- Manage club funding to send members to annual conference and organize meetings to promote a sense of community among Hispanic engineers.

Alpha Eta Mu Beta National BME Honor Society, Vanderbilt University October 2021-May 2022

- Qualified based on GPA as part of the top 33% of seniors in Biomedical Engineering.
- Participate in programming such as guest speakers, community outreach, and networking.