

Justin T. Marinko

2921 West Linden Ave. Nashville TN, 37212 | 1-978-204-3625 | justin.t.marinko@gmail.com

Education

Vanderbilt University

PhD Candidate, Department of Biochemistry, GPA: 3.96/4.00

Nashville, TN

Expected Graduation: Dec 2020

Boston University, College of Arts and Sciences

B.A. Chemistry: Biochemistry, graduated with honors, GPA: 3.25/4.00

Boston, MA

May 2014

Research Experience

PhD Researcher, Vanderbilt University

September 2015-Present

Research Advisor: Dr. Charles Sanders

- Initiated and lead a project aimed at understanding how mutations in the membrane protein PMP22 alter cellular trafficking and cause peripheral neuropathies in humans with the goal of discovering novel therapeutic avenues.
- Managed a collaboration between four labs at Vanderbilt and Michigan working on various aspects of the project.
- Employed electron microscopy to describe structures of lipid membrane assemblies formed in the presence of PMP22.
- Utilized confocal microscopy to visualize and characterize PMP22 partitioning into lipid membrane microdomains.
- Designed a novel, high-throughput, experimental technique which measures the cell surface trafficking of a protein in over 15,000 individual cells in under one minute.
- Performed co-immunoprecipitation and mass spectrometry based proteomic experiments to identify >2500 unique proteins that interact with wild-type and disease variants of PMP22. Utilized pathway enrichment analysis to trim this initial list to <50 candidate proteins believed to mediate PMP22 trafficking and quality control decisions.
- Developed knockout mammalian cell lines using CRISPR/Cas9 technologies to test the role of various candidate proteins on PMP22 trafficking.
- Presented work at a number of highly regarded national conferences including Cold Spring Harbor, Gordon Research conferences and Protein Society Meetings.

Research Associate, Celgene Pharmaceuticals

June 2014-August 2015

- Designed, developed, and ran kinetic high throughput *in vitro* assays to test potential small inhibitor molecules against biological targets including but not limited to: kinases, ligases, arginases, oxidases, and methyl-transferases.
- Collaborated with three separate project teams and oversaw biochemical screening of compounds for these projects. Communicated results from assays to project leaders and members of the various teams.
- Responsible for all on-site protein expression and purification for *in vitro* screening.

Undergraduate Research Assistant, Boston University

Research Advisor: Dr. Karen Allen

June 2012-May 2014

- Collaborated with a senior graduate student to determine three protein structures using X-ray crystallography.
- Defended an independent senior year thesis project to a jury of three tenured faculty members.

Extracurricular Activities

Biocentury Inc.

Data Analyst Intern

January 2020-Present

- Identified and analyzed life science data for incorporation into Biocentury's database for both commercial and editorial use under the direction of the Biocentury Informational Group. Researched and distilled clinical data as well as press releases for Biocentury's database.

Biochemistry Student Association, Vanderbilt University

President

May 2018-May 2019

- Managed various aspects of the Biochemistry Student Association including biweekly student colloquiums, monthly social events. Integrated new students into the department and served as a bridge between students and faculty.
- Worked with the director of graduate studies to rewrite the academic guidelines for graduate students, clarifying requirements and expanding student outreach to increase involvement in departmental events.
- Organized the annual two-day departmental retreat. Managed a budget of \$10,000, booked event space, coordinated with catering groups, supervised volunteers working the event, and served as the master of ceremonies for the retreat which had over 25 speakers and 160 registered attendees.

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Chairman, Candidacy Committee

May 2017-May 2018

- Coached second-year students through the qualifying exam process. Counseled students on selecting thesis projects and committees and organized mock-qualifying exams to allow students opportunities to prepare for the exam.

Management and Business Principles for Scientists, Vanderbilt University

January 2019-May 2019

- Participated in a module focused on the tools and skills required to be successful in business. The module comprised in-class lectures, at-home readings, and a year-end capstone group project aimed at applying the principles learned.

Teaching Assistant, Vanderbilt University

August -December 2018

- Facilitated weekly, two hour long, discussions amongst a class of 10 first-year graduate students about research papers covering a wide variety of biological topics. Selected from a pool of over 300 candidates for this position.

Teaching Assistant, Boston University

September 2013-May 2014

- Taught two one-hour discussion sections per week with 20 students for Introduction to Biochemistry. Designed lesson plans and graded exams.

Funding

- Russell G. Hamilton Dissertation Enhancement Grant from the Graduate Leadership Institute at Vanderbilt University
- F31 Predoctoral Fellowship from the National Institute of Neurological Disorder and Stroke (NINDS). NIH Code: NS113494-01
- T32 Predoctoral Training Grant in Molecular Biophysics. NIH Code: 5T32GM008320-25
- Research Grant from the Undergraduate Research Opportunities Program (UROP) at Boston University

Awards

- Frank Chytil Travel Award**, Vanderbilt University Department of Biochemistry, January 2020
- Anne Karpay Award**, Vanderbilt University Center for Structural Biology, January 2020
- Finalist for **“Best Poster Presentation”**, Gordon Research Conference on Membrane Protein Folding, July 2019
- “Best Talk for a Post-Doc or Graduate Student”**, Biochemistry Department Retreat, February 2018
- Chemistry Department Undergraduate Teaching Assistant of the Year**, Boston University, May 2014

Publications

Marinko, J.T; Wright, M.T; Heintzman, D.R; Plate, L; Sanders, C.R: “Glycosylation Limits Forward Trafficking of the Tetraspan Integral Membrane Protein PMP22”. *In Preparation*. *

Marinko, J.T; Carter, B.D; Sanders, C.R: “Direct Relationship Between Expression Level and Intracellular Retention of Peripheral Myelin Protein 22 (PMP22)”. *Journal of Biological Chemistry*. **2020**; 295 (34).*⁺

Marinko, J.T; Kenworthy, A.K; Sanders, C.R: “Peripheral Myelin Protein 22 Preferentially Partitions into Ordered Phase Membrane Domains”. *Proc. Nat. Acad. Sci*. **2020**; 117 (25).*

Marinko, J.T; Huang, H.; Penn, W.D; Capra, J.A; Schleich, J.P; Sanders, C.R: “Folding and Misfolding of Human Membrane Proteins in Health and Disease: From Single Molecules to Cellular Proteostasis”. *ACS Chemical Reviews*. **2019**; 119 (9).*

Mittendorf, K.F; **Marinko, J.T**; Hampton, C.M; Zunglong, K.; Hadziselimovic, A.; Schleich, J.P; Law, C.L; Li, J.; Wright, E.L; Sanders, C.R; Ohi, M.D: “Peripheral Myelin Protein 22 Alters Membrane Architecture”. *Science Advances*. **2017**; 3 (7).*

*Denotes first author or co-first author paper

⁺Denotes Editor’s Choice

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Skills and Interests

Computational: Proficient in R; using Illustrator, Photoshop, GraphPad Prism, Origin, and FlowJo

Lab Skills: Mammalian cell culture (primary and immortalized cells), CRISPR/Cas9 gene editing, single-cell flow-cytometry, tandem mass spectrometry proteomics, confocal and electron microscopy, membrane and soluble protein expression and purification, biological NMR, x-ray crystallography, high-throughput screening, enzymology, and classical biochemical techniques

Interests: Basketball, skiing, running, yoga, reading, cooking, and guitar

References

Dr. Charles Sanders

Professor of Biochemistry, Associate Dean for Research, Investigator Center for Molecular Neurosciences, Professor of Medicine, Aileen M. Lange & Annie Mary Lyle Chair in Cardiovascular Research, Vanderbilt University

5110 C MRB3, 465 21st Avenue S., Nashville TN, 37232

615-936-5736

chuck.sanders@vanderbilt.edu

- Dr. Sanders has been my PhD mentor since 2015.

Dr. John York

Natalie Overall Warren Chair of Biochemistry, Professor of Biochemistry, Chairman of Biochemistry, Vanderbilt University

607 Light Hall, 2215 Garland Ave., Nashville TN, 37232

615-322-3318

John.york@vanderbilt.edu

- Dr. York is the chair of my department. We worked closely together when I served on the BSA, and has been a mentor to me since. I have known Dr. York since 2016.

Dr. Melanie Ohi

Research Associate Professor, Life Sciences Institute, University of Michigan

6th Floor Life Sciences Institute, 210 Washtenaw, Ann Arbor MI, 48109

734-763-6493

mohi@umich.edu

- Dr. Ohi served on my thesis committee before moving from Vanderbilt to Michigan and was corresponding author on my first publication. I have known Dr. Ohi since 2015.

Dr. Lars Plate

Assistant Professor of Chemistry and Biological Sciences, Vanderbilt University

7665 Stevenson Center, 2401 Vanderbilt Place, Nashville TN, 37240

615-343-3405

Lars.plate@vanderbilt.edu

- Dr. Plate has been a member of my thesis committee since 2016 and a collaborator on one of my projects.

Dr. Karen Allen

Professor Department of Chemistry, Boston University

SCI 394A, 590 Commonwealth Ave., Boston MA, 02215

617-358-5544

drkallen@bu.edu

- Dr. Allen was my undergraduate research mentor from 2011-2014.