

Lee S. Cantrell

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Education & Work Experience

- Seer Bio**, Redwood Shores, CA January 2023 -
Bioinformatic Scientist I
- Vanderbilt University**, Nashville, TN August 2018 – January 2023
PhD in Chemical and Physical Biology
Structural Biology and Molecular Biophysics track
- BioCentury Publications**, Redwood City, CA Oct 2021 – December 2022
Biopharmaceutical Data Analyst
- Whitworth University**, Spokane, WA Sep 2014 - May 2018
Bachelor of Science in Chemistry, Minor in Mathematics

Research Experience

- Graduate Student: Vanderbilt University (Nashville, TN)**
Advisor: Dr. Kevin Schey (March 2019 – January 2023)
“Data-Independent Acquisition Mass Spectrometry measurement of Protein Networks in the Aging Human Lens and Lens Influx Pathways”
- Undergraduate Research Assistant: Whitworth University (Spokane, WA)**
Advisor: Dr. Kraig Wheeler (September 2017-May 2018)
- NSF Research Experience for Undergraduates: Vanderbilt University (Nashville, TN)**
Advisor: Dr. Prasad Polavarapu (June 2017 – August 2017)
- Undergraduate Research Assistant: Whitworth University (Spokane, WA)**
Advisor: Dr. Trisha Russell (January 2016 – May 2017)

Publications

- 2023 **Cantrell, L.S.**, Gletten, R.B., Schey, K.L., “Proteomic measurement of lens influx pathways” *In preparation*.
- 2023 **Cantrell, L.S.**, Gletten, R.B., Schey, K.L., “Proteome Remodeling of the Eye Lens at 50 Years Identified with Data-Independent Acquisition” *Mol. Cell. Proteomics, In Press*, 2023.
- 2022 Gletten, R.B., **Cantrell, L.S.**, Bhattacharya, S., Schey, K.L., “Lens aquaporin-5 inserts into bovine plasma membranes through mitochondria-associated lysosome secretion” *Invest Ophthalmol Vis Sci*, 2022, 63(8), 5.
- 2021 **Cantrell, L.S.**, Schey, K.L. “Data Independent Acquisition Mass Spectrometry of the Human Lens Enhances Spatiotemporal Measurement of Fiber Cell Aging” *JASMS*, 2021, 32(12), 2755-2765.
- 2021 Kotnala, A., Anderson, D.M., Fincher, J.A., Patterson, N.H., **Cantrell, L.S.**, Messinger, J.D., Curcio, C.A., Schey, K.L., “Tissue fixation effects on human retinal lipid analysis by MALDI imaging and LC-MS/MS technologies” *J. Mass Spectrom.*, 2021.
- 2021 Wang, Z., **Cantrell, L.S.**, Schey, K.L. “Spatially-Resolved Proteomic Analysis of the Lens Extracellular Diffusion Barrier” *Invest Ophthalmol Vis Sci*, 2021, 62(12), 25.
- 2021 **Cantrell, L.S.**, Schey, K.L. “Proteomic characterization of the human lens and cataractogenesis” *Expert Rev Proteomics*, 2021, 18(2), 119-135.

- 2018 Pinter, E.N., **Cantrell, L.S.**, Day, G.M., Wheeler, K.A. "Pasteur's tartaramide/malamide quasiracemates: new entries and departures from near inversion symmetry" *CrystEngComm*, 2018, 20, 4213.

Selected Presentations

- 2022 **Cantrell, L.S.**, Gletten, R.B., Schey, K.L., "Proteomic measurement of influx networks in the lens microcirculatory system" – International Conference on the Lens, Kona, HI. Oral presentation.
- 2022 **Cantrell, L.S.**, Schey, K.L., "Proteomic Consequences of Aging in the Human Lens" – American Society of Mass Spectrometry Annual Conference, Minneapolis, MN. Poster
- 2021 **Cantrell, L.S.**, Schey, K.L. "Data Independent Acquisition Mass Spectrometry of the Human Lens Enhances Spatiotemporal Measurement of Fiber Cell Aging" – American Society of Mass Spectrometry Annual Conference, Philadelphia, PA. Poster
- 2020 **Cantrell, L.S.**, Rose, K., Schey, K.L., "Enhanced Inference into Cell-Age Specific Changes in the Ocular Lens Proteome with Data Independent Acquisition Mass Spectrometry" – Annual Southeastern Vision Research Conference, Atlanta, GA/online. Oral recording.
- 2020 **Cantrell, L.S.**, Rose, K., Schey, K.L., "Enhanced Profiling of the Lens Proteome with Data independent Acquisition Mass Spectrometry" – Annual Chicago Mass Spectrometry Day, Chicago, IL/Online. Oral presentation.
- 2020 **Cantrell, L.S.**, Rose, K., Schey, K.L., "Enhanced Profiling of the Lens Proteome with Data independent Acquisition Mass Spectrometry" – Vanderbilt Institute for Chemical Biology Annual Symposium, Nashville, TN. Oral presentation, Poster presentation. Awarded.
- 2020 **Cantrell, L.S.**, Rose, K., Schey, K.L., "Development of Single-Cell Proteomics for Lens Fiber Cells using Tandem Mass Spectrometry" – Annual International ARVO Meeting, Baltimore, MD/Online. Oral recording.
- 2020 **Cantrell, L.S.**, Rose, K., Schey, K.L., "Enhanced Profiling of the Lens Proteome with Data Independent Acquisition Mass Spectrometry" – Annual Vanderbilt Trafficking Symposium, Nashville, TN. Oral presentation.
- 2019 **Cantrell, L.S.**, Schey, K.L., "A Single-Cell and Global Proteomics Approach for Discovery of Cataract Biomarkers" – Vanderbilt Institute of Chemical Biology Colloquium, Nashville, TN. Poster
- 2018 **Cantrell, L.S.**, Pinter, E.N., Day, G.M., Wheeler, K.A. "Uncharacteristic quasiracemic assemblies derived from tartramide/malamide molecular frameworks" – 255th National ACS Meeting, New Orleans, LA. Poster
- 2018 **Cantrell, L.S.**, Polavarapu, P.L. "Absolute Configuration Determination of Sesquiterpene Lactone Inuloxin A Based on Experimental and Computational Analysis of Chiroptical Properties" – Spokane Intercollegiate Research Conference, Spokane, WA. Poster
- 2018 **Cantrell, L.S.**, Pinter, E.N., Day, G.M., Wheeler, K.A., "Uncharacteristic quasiracemic assemblies derived from tartramide/malamide molecular frameworks" – 255th National ACS Meeting (2018), Spokane Intercollegiate Research Conference, Spokane, WA. Poster
- 2017 **Cantrell, L.S.**, Polavarapu, P.L. "Absolute Configuration Determination of Sesquiterpene Lactone Inuloxin A Based on Experimental and Computational Analysis of Chiroptical Properties" – Vanderbilt Summer Science Academy Colloquium, Nashville, TN. Poster
- 2016 **Cantrell, L.S.**, DeGraaf, B., Zeitler, S.M., Russell, T.A. "Microwave-Assisted Synthesis of Praziquantel Derivatives and their Evaluation as Modulators of Aryl Sulfatase B Activity" – Rupert J. Murdoch Conference, Spokane, WA. Poster and Talk

Academic Awards

2022	National Foundation for Eye Research Young Investigator Travel Award – National Foundation for Eye Research, Kona, HI.
2022	Student Travel Support Award – American Society for Mass Spectrometry, Minneapolis, MN.
2021	Chemical and Physical Biology Program Student Service Award, Vanderbilt University, Nashville, TN.
2021	Student Travel Support Award – American Society for Mass Spectrometry, Philadelphia, PA.
2021	Graduate School Student Travel Award – Awarded for Presentation at 2021 American Society for Mass Spectrometry Annual Conference, Vanderbilt University, Nashville, TN.
2020	Poster & Talk Awards, Systems Analysis – Vanderbilt Institute of Chemical Biology Colloquium, Nashville, TN.
2020	Graduate Research Fellowship Recipient – Life Sciences: Proteomics, National Science Foundation, Alexandria, VA.
2019	Vanderbilt Chemical-Biology Interface Training Program (NIH Training Grant), Vanderbilt University, Nashville, TN.
2018	Most Promising Career in Chemistry, Whitworth University, Spokane, WA.

Teaching Experience

2020-2022	NSF GRFP peer review seminar coordinator; Editing of 8 students application materials resulted in 2 awards, 4 honorable mention
2020-2023	Mentoring of 4 rotation students and 1 permanent member of Schey Lab
2021	Guest lecturer for Graduate Methods in Neuroscience Research, Vanderbilt University, Nashville, TN.
2018	Instructor Assistant for General Chemistry I & II, Organic Chemistry I & II, and Thermochemistry, Whitworth University, Spokane, WA.
2017-2018	Lab TA for Organic Chemistry I & II, Whitworth University, Spokane, WA.
2017-2018	Department Tutor for General Chemistry and Organic Chemistry, Whitworth University, Spokane, WA.
2017-2018	Underclassmen STEM major advising through the Chemistry and Other Sciences Club, Whitworth University, Spokane, WA.
2016-2018	Supplemental Instructor (SI) for General Chemistry I & II, Whitworth University, Spokane, WA.

Professional Societies and Memberships

2019-Present	American Society for Mass Spectrometry (ASMS)
2018-2023	Vanderbilt Initiative for Maximizing Student Diversity (IMSD)
2019-2020	Association for Research, Vision, and Ophthalmology (ARVO)
2017-2020	American Chemical Society (ACS)

Selected Professional Development and Service

2022	National Foundation for Eye Research International Conference on the Lens Attendance and Presenter, Kona, HI.
2022	American Society for Mass Spectrometry National Conference Attendance and Presenter, Minneapolis, MN.
2020-2021	Chemical and Physical Biology Program Student Executive President, Vanderbilt University, Nashville, TN.
2019-2021	Chemical and Physical Biology Program Student Executive Board, Vanderbilt University, Nashville, TN.
2019-Present	Peer mentoring for code development in R.
2018-2022	Volunteer at the Nashville Adventure Science Center, Nashville, TN.
2021	American Society for Mass Spectrometry National Conference Attendance and Presenter, Philadelphia, PA.
2020	Southeastern Vision Research Conference Presenter, Atlanta, GA/Online.
2020	Single-Cell Proteomics Conference Attendance, Northeastern University, Boston, MA/Online.
2020	American Society for Mass Spectrometry National Conference Attendance and co-presenter, Houston, TX/Online.
2020	Chicago Mass Spectrometry Day Presenter, Chicago, IL/Online.
2020	Association for Research, Vision, and Ophthalmology International Conference Presenter, Baltimore, MD/Online.
2019	American Society for Mass Spectrometry National Conference Attendance, Atlanta, GA.
2019	Vanderbilt Center for Quantitative Sciences: Machine Learning in Data Science summer course attendee, Vanderbilt University, Nashville, TN.
2019	Vanderbilt Center for Quantitative Sciences: Big Data in Biomedical Research summer course attendee, Vanderbilt University, Nashville, TN.
2019	Vanderbilt Center for Quantitative Sciences: Introduction to Causal Inference summer course attendee, Vanderbilt University, Nashville, TN.
2018	American Chemical Society National Conference Presenter, New Orleans, LA.
2018	Spokane Intercollegiate Research Conference Presenter, Spokane, WA.
2016	Annual Rupert Murdoch Research Conference Presenter, Spokane, WA.