

Sarah Maddox Groves

PERSONAL

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EDUCATION

2016-2022	Ph.D. in CHEMICAL AND PHYSICAL BIOLOGY (SYSTEMS BIOLOGY & DATA SCIENCE TRACK) Vanderbilt University , Nashville, TN Advisor: Vito Quaranta, M.D.
2012-2016	B.S. in PHYSICS and MATHEMATICS College of William & Mary , Williamsburg, VA

RESEARCH & PROFESSIONAL EXPERIENCE

JULY 2026- CURRENT OCTOBER 2025-JULY 2026	Academic General Faculty, University of Virginia, School of Data Science <i>Building network models for cancer dynamics</i> Senior Computational Biologist, Northeastern University, Institute for Experiential AI , Boston, MA <i>Building ML Models in Small Cell Lung Cancer</i> Supervised development and maintenance of bioinformatics pipelines and mentored students and junior bioinformaticians in the Ayan Paul Lab on computational biology and bioinformatics. Guided the conceptualization and completion of analyses, data preprocessing and development of machine learning models focused on cell identity and plasticity (RNA sequencing and alternative RNA splicing) of Small Cell Lung Cancer.
JULY 2023- JULY 2026	Postdoctoral Researcher, University of Virginia , Charlottesville, VA <i>Phase separation in a reaction-diffusion model of mitotic signaling in breast cancer</i> Developed a reaction-diffusion model of spatial dynamics of signaling during metaphase in VCell. Assisted in development of an RNA-to-Protein model that will be applied to RNA-seq data from breast cancer patients to encode patient-specific models for prediction of aneuploidy. Encoded in C, Python and Julia a numerical solver to approximate phase separation dynamics of a core mitotic protein complex (CPC). Together, these models are being used to predict the spatial and temporal dynamics of CPC to understand spindle assembly regulation.
MAY 2022- JUNE 2023	Postdoctoral Researcher, Vanderbilt University , Nashville, TN <i>Data-driven Models for Predicting Drivers of Plasticity in Small Cell Lung Cancer</i> Analyzed chromatin accessibility and transcriptomics datasets (scATAC-seq & scRNA-seq) to understand epigenetic regulation of lung cancer phenotypes. Facilitating collaboration between two labs at Vanderbilt to plan experimental design and coordinate omics data collection. The goal of this project was to combine computational modeling and bioinformatics tools to predict lineage drivers for variant SCLC models.
JULY 2022- JANUARY 2023	Part-Time Data Analyst, Decode Health , Nashville, TN Developed pipelines for data processing and analysis such as feature selection, machine learning models, and visualization. Decode Health is a healthcare AI company that identifies predictive biomarkers across a range of diseases, including fatty liver disease, multiple sclerosis, and inflammatory diseases.
2017-2022	Graduate Researcher, Vanderbilt University , Nashville, TN

	<i>Dissertation: Network Control of Cell Identity and Plasticity in Small Cell Lung Cancer (SCLC)</i> Developed and applied a network inference algorithm to determine the epigenetic regulation and stability of phenotypic subtypes of SCLC. Developed a bioinformatics pipeline for analyzing changes in cell identity (scRNA-seq) in classic and variant models of SCLC. Overall, this project led to insights into how intratumoral heterogeneity and plasticity may allow SCLC tumors to overcome therapy and gain resistance.
2016-2017	Graduate Researcher, Vanderbilt University, Nashville, TN <i>Laboratory Rotations</i> Completed four 8-week rotations in labs studying myosin tracking to tips of microvilli, effect of ECM stiffness on cancer cell growth, modeling of drug-induced dynamics in melanoma, and fetal membrane developmental dynamics.
2015-2016	Undergraduate Researcher, The College of William & Mary, Williamsburg, VA <i>Senior Thesis: Quantitative Analysis of Vital Signs in Preterm Infants</i> Programmed a biophysical 'Query User Data Interface' in MATLAB for the Apnea of Prematurity group at UVA and William & Mary. The goal of this project was to streamline data acquirement for the neonatal intensive care unit at UVA.
SUMMER 2015	Undergraduate Researcher, University of Michigan & CERN, Geneva, Switzerland <i>Design of Experiments for the 2015 CLOUD Run</i> Worked under Hamish Gordon and Jasper Kirkby. Used statistical analysis and coding in R of a Kriging model emulator, based on a 5-dimensional Maximin Latin Hypercube, to determine how cloud formation depends on five atmospheric variables. The goal of this project was to design experiments for the fall 2015 run of the CERN CLOUD experiment.
2014-2015	Undergraduate Researcher, The College of William & Mary, Williamsburg, VA <i>Properties of Silk Studied by Atomic Force Microscopy</i> Investigated the structure and physical properties of brown recluse spider silk by atomic force microscopy in the Nanomaterials and Imaging Laboratory of Applied Science.
SUMMER 2014	Undergraduate Researcher, University of Chicago and Argonne National Laboratory, Chicago, IL <i>Analyzing the Viscoelastic Properties of Langmuir Monolayers</i> Worked at the University of Chicago and Argonne National Laboratory APS Sector 15 with ChemMatCARS under the MRSEC program (Materials Research Science and Engineering Center). Analyzed the rheology of nanoparticle and phospholipid monolayers under oscillatory compression to quantitatively describe the viscoelastic properties of the films.
2014-2015	Undergraduate Researcher, The College of William & Mary, Williamsburg, VA <i>Global Fits to the Precision Proton Form Factor Data from Mainz</i> The goal of this project was to statistically analyze data from an electron scattering experiment in Mainz, and to seek an empirical model of the electron charge distribution in the proton to determine its RMS radius, which would address a discrepancy in proton size from varying experiments. Work published in Physics Review C (see Papers section above).

TEACHING EXPERIENCE AND EDUCATIONAL PROJECTS

FALL 2025- SPRING 2026	Lead co-instructor for Computational Biomedical Engineering (BME2315), University of Virginia Overhauled core BME course curriculum to include four project-based modules focused on applying numerical methods and data analytical techniques to datasets in neurodegeneration, fibrosis, cancer, and population health models. Taught 50% of the lectures (cancer and population health modules), coordinated 4 TAs, and wrote assignments and in class activities/example code.
FALL 2025	Educational Research Co-lead, University of Virginia Title: Integration of Social and Ethical AI Topics into a Computational Biomedical Engineering Course Increases Engagement Without Loss of Technical Learning

	This research project evaluated replacing technical content with discussions of the social and ethical impact of AI over two semesters in BME2315 (2022 & 2023). The study showed no loss in technical learning with a self-reported increase in engagement and interest in BME. The abstract for this work was accepted at the American Society for Engineering Education (ASEE) 2026 Annual Conference.
SPRING 2025	Lead co-instructor for <i>Computational Biomedical Engineering (BME2315)</i>, University of Virginia Taught 50% of the lectures for BME2315, a required second-year undergraduate course that focuses on numerical methods for biomedical engineers. In particular, I taught topics including Taylor series and error estimation, linear systems (intro to linear algebra and Gaussian elimination), optimization methods, numerical methods for solving ODEs, and machine learning (clustering, classification, regression, and bias/variance trade-off).
FALL 2023- FALL 2024	Educational Outreach Scholar for <i>UVA NCI U54 Center (SASCO)</i>, University of Virginia Developed an educational video to introduce clinicians and non-computational scientists to systems biology, including designing the educational content and visuals including motion design. Distributed through YouTube, where the video has above-average viewership retention, and UVA promotional materials.
FALL 2023	Lead instructor for <i>Coding Jumpstart</i>, University of Virginia Organized and taught an introductory bioinformatics coding course for incoming Biomedical Engineering graduate students (in Python).
FALL 2022	Guest Lecturer for <i>Introduction to Bioinformatics</i>, Vanderbilt University Taught two lectures on introduction to analysis of sequencing data, including data generation and data cleaning, exploratory data analysis, and unsupervised learning methods such as PCA and clustering.
SPRING 2022	Teaching Assistant for <i>Scientific Communication in Chemical and Physical Biology (CPB)</i>, Vanderbilt University Mentored second year CPBP students in preparing for their qualifying exams by assisting them in grant writing components such as identification of Specific Aims, development of a Research Strategy, and composition of Research Significance and Innovation.
SPRING 2019 & SPRING 2020	Guest Lecturer for <i>Introduction to Single Cell Analysis</i>, Vanderbilt University Taught lectures on dynamical modeling of single-cell data, such as trajectory inference methods and Markov Chain-based modeling (using RNA velocity). Lectures included an introduction to the computation tools and packages used for such modeling.
2018-2020	Course Director & Lead Instructor for <i>Introduction to Cancer Systems Biology</i>, Vanderbilt University Organized, planned and developed course content, and taught lectures to introduce non-computational students to modeling approaches of high-dimensional biomedical data. Course included lectures on introduction to modeling complexity; data preprocessing and visualization; network analysis and modeling (including Boolean networks of signaling pathways and ODE models); and an introduction to machine learning methods.
FALL 2019	Teaching Assistant for <i>Introduction to Bioinformatics</i>, Vanderbilt University Taught two lectures on analysis of sequencing data, held out-of-class office hours, wrote and graded weekly quizzes, and graded students on several project presentations throughout the semester.
FALL 2013	Teaching Assistant for <i>Foundations of Higher Mathematics</i>,

College of William & Mary
Graded weekly assignments and held office hours for support outside of class time.

GRANTS AND FELLOWSHIPS

2023-2024	U54 Center Educational Outreach Scholar Grant , SASCO Center University of Virginia
2022-2023	NIH Postdoctoral Training Grant (T32) , Hiebert Laboratory Vanderbilt University
2017-2022	NSF Graduate Research Fellowship Program (GRFP) Fellow Vanderbilt University
2016-2017	Training Program for Big Biomedical Data Science (BIDS) , NIH Grant 1T32LM012412-01 Vanderbilt University, Department of Biomedical Informatics

AWARDS AND CERTIFICATES

SEP 2025	UVA BME Teaching and Mentoring Award University of Virginia
SEP 2024	UVA Cancer Center Trainee Travel Award University of Virginia
2022	Certificate in College Teaching Vanderbilt Center for Teaching
SPRING 2022	Certificate in Data Science Essentials BRET Office of Career Development: ASPIRE Program Vanderbilt University
AUGUST 2021	Podium Presentation Award : Junior Investigators Annual Meeting Cancer Systems Biology Consortium
FALL 2019	Vanderbilt Graduate School Travel Grant Awardee Vanderbilt University
FALL 2018	Vanderbilt Graduate School Travel Grant Awardee Vanderbilt University
2015-2016	Omicron Delta Kappa Honor Society Member College of William & Mary
2012-2016	James Monroe Scholar College of William & Mary
2012-2016	Academic Dean's List College of William & Mary

PAPERS & PREPRINTS

Groves, S.M., Lu, M.J., Alvarez-Yela, A.C., Gerardo-Ramírez, M.G., Stukenberg, P.T., Lowengrub, J.S., Janes, K.A. (2026). Cell-specific Cahn-Hilliard models predict condensed fates of the chromosomal passenger complex. *Accepted at PLOS Comp Bio*.

Stewart, C.A., Ramkumar, K., Wang, R., Xi, Y., Halliday, A., Diao, L., Wang, Q., Serrano, A., **Groves, S.M.**, Heeke, S., Tanimoto, A., Kaiser, L., Lewis, W., Bose, M., Da Rocha, P., Karacosta, L., Quaranta, V., Wang, J., George, J., Solis Soto, L.M., Zhang, B., Heymach, J.V., Byers, L.A.,

Gay, C.M. (2026). YAP1 defines an emergent, plastic population of relapsed small cell lung cancer. *Journal of Thoracic Oncology*, doi: <https://doi.org/10.1016/j.jtho.2026.103730>.

Groves, S.M.,[^] Clark, A.[^], Wintruba, K., Saucerman, J.J. (2026) Integration of Social and Ethical AI Topics into a Computational Engineering Course Increases Engagement Without Loss of Learning. *ASEE 2026 Conference. Accepted*.

***Groves, S.M.**, Lu, M.J., Alvarez-Yela, A.C., Gerardo-Ramírez, M.G., Stukenberg, P.T., Lowengrub, J.S., Janes, K.A. (2025). Cahn-Hilliard dynamical models for condensed biomolecular systems. *BioRxiv*. doi: [10.1101/2025.07.13.664571](https://doi.org/10.1101/2025.07.13.664571)

Sweatt, A.J., Griffiths, C.D., **Groves, S.M.**, Paudel, B.B., Wang, L., Kashatus, D.F., Janes, K.A. (2024). Proteome-wide copy-number estimation from transcriptomics. *Molec Sys Bio*. doi:[10.1038/s44320-024-00064-3](https://doi.org/10.1038/s44320-024-00064-3).

Groves, S.M., Quaranta, V. (2023). Review Article: Quantifying cancer cell plasticity with gene regulatory networks and single-cell dynamics. *Front. Netw. Physiol.* doi: [10.3389/fnetp.2023.1225736](https://doi.org/10.3389/fnetp.2023.1225736)

Groves, S.M., Panchy, N., Tyson, D.R., Harris, L.A., Quaranta, V., and Hong, T. (2023). Involvement of Epithelial–Mesenchymal Transition Genes in Small Cell Lung Cancer Phenotypic Plasticity. *Cancers* 15, 1477.

Yang, J., Bergdorf, K., Yan, C., Luo, W., Chen, S., Ayers, D., Liu, Q., Liu, X., Boothby, M., **Groves, S.M.**, Oleskie, A.N., Zhang X, Maeda D.Y., Zebala J.A., Quaranta V, Richmond A. (2023). CXCR2 expression during melanoma tumorigenesis controls transcriptional programs that facilitate tumor growth. *Molec Cancer* 22, 1.

Groves, S.M., Ildefonso, G.V., McAtee, C.O., Ozawa, P.M.M., Ireland, A.S., Stauffer, P.E., Wasdin, P.T., Huang, X., Qiao, Y., Lim, J.S., Bader, J., Liu, Q., Simmons, A.J., Lau, K.S., Iams, W.T., Hardin, D.P., Saff, E.B., Holmes, W.R., Tyson, D.R., Lovly, C.M., Rathmell, J.C., Marth, G., Sage, J., Oliver, T.G., Weaver, A.M., Quaranta, V. (2022). Archetype tasks link intratumoral heterogeneity to plasticity and cancer hallmarks in small cell lung cancer. *Cell Systems*, doi: [10.1016/j.cels.2022.07.006](https://doi.org/10.1016/j.cels.2022.07.006)

Olsen, R.R., Ireland, A.S., Kastner, D.W., **Groves, S.M.**, Spainhower, K.B., Pozo, K., Kelenis, D.P., Whitney, C.P., Guthrie, M.R., Wait, S.J., Soltero, D., Witt, B.L., Quaranta, V., Johnson, J.E., Oliver, T.G. (2021) ASCL1 represses a SOX9⁺ neural crest stem-like state in small cell lung cancer. *Genes & Development*, doi:[10.1101/gad.348295.121](https://doi.org/10.1101/gad.348295.121).

Thomas, P.L., **Groves, S.M.**, Zhang, Y.-K., Li, J., Gonzalez-Ericsson, P., Sivagnanam, S., Betts, C.B., Chen, H.-C., Liu, Q., Lowe, C., Chen, H., Boyd, K.L., Kopparapu, P.R., Yan, Y., Coussens, L.M., Quaranta, V., Tyson, D.R., Iams, W., Lovly, C.M. (2021) Beyond PD-L1: B7-H6 emerges as a potential immunotherapy target in small cell lung cancer. *Journal of Thoracic Oncology*, doi:[10.1016/j.jtho.2021.03.011](https://doi.org/10.1016/j.jtho.2021.03.011).

Gay, C. M., Stewart, A., Park, E.M., Diao, L., **Groves, S.M.**, S.M., Heeke, S., Nabet, B.Y., Fujimoto, J., Solis, L.M., Lu, W., Xi, Y., Cardnell, R.J., Wang, Q., Fabbri, G., Cargill, K.R., Vokes, N.I., Ramkumar, K., Zhang, B., Della Corte, C.M., Robson, P., Swisher, S.G., Roth, J.A., Glisson, B.S., Shames, D.S., Wistuba, I.I., Wang, J., Quaranta, V., Minna, J., Heymach, J.V., Byers, L.A. (2021) Patterns of transcription factor programs and immune pathway activation define four major subtypes of SCLC with distinct therapeutic vulnerabilities. *Cancer Cell*, doi:10.1016/j.ccell.2020.12.014.

Wooten, D.^, **Groves, S.M.**^, Tyson, D.R., Liu, Q., Lim, J.S., Albert, R., Lopez, C.F., Sage, J., and Quaranta, V. (2019). Systems-level network modeling of Small Cell Lung Cancer subtypes identifies master regulators and destabilizers. *PLOS Computational Biology* 15, e1007343.

Griffioen, K., Carlson, C., **Maddox, S.** (2016). Consistency of electron scattering data with a small proton radius. *Physics Review C*, 93, 065207.

* Preprint

^ Authors contributed equally to this work.

MENTORING EXPERIENCE

FALL 2025-CURRENT	Mentor for Masters Student [Sanika Thakur] Northeastern University Institute for Experiential AI Developing an ML model of RNA splicing in small cell lung cancer to predict subtype classification.
SUMMER 2024	Mentor for Summer REU Student [Joseph Guillen] University of Virginia Led REU student in a 10-week project focused on modifying a reaction-diffusion model of mitotic signaling from a mesocentric chromosome (with kinetochores in the center of the chromosome) to a telocentric chromosome (kinetochores at one end). This represents a mouse chromosome. The student worked in VCell to evaluate differences between the two models.
FALL 2021	Mentor for Lab Rotation Student [Perry Wasdin] Vanderbilt University Assisted rotation student with 4-week project on analysis and visualization of epigenetic sequencing data in SCLC. Taught introduction to Python and Jupyter notebooks.
SPRING 2021	Mentor for Lab Rotation Student [Mikaela Elder] Vanderbilt University Assisted rotation student with 8-week project on analyzing single cell sequencing data to quantify changes in cell identity for an SCLC tumor before and after treatment.
FALL 2020	Mentor for Lab Rotation Student [Michelle Scott] Vanderbilt University Assisted rotation student with 8-week project with single cell RNA-sequencing data analysis and modeling on the role of the Notch pathway in Small Cell Lung Cancer phenotypic heterogeneity.
2018-2020	Mentor for Fisk-Vanderbilt Bridge Masters student [Wajiha Khalid] Fisk University & Vanderbilt University Assist student with data collection and analysis in Python and R, literature review, and thesis project formation on Small Cell Lung Cancer phenotype biomarkers.
FALL 2019	Mentor for Lab Rotation Student [Cody Heiser] Vanderbilt University

FALL 2018	Assisted rotation student with 8-week project on transcription factor network structure inference of Small Cell Lung Cancer subtypes. Mentor for Lab Rotation Student [Jason Hughes] Vanderbilt University
SPRING 2018	Assisted rotation student with 8-week project on pathway mutational load of Small Cell Lung Cancer cell lines. Taught the student to analyze genomic datasets for mutational signatures. Mentor for Lab Rotation Student [Sarah Fong] Vanderbilt University
	Assisted rotation student with 8-week project on drug response assays and drug sensitivity analysis of Small Cell Lung Cancer cell lines to various perturbagens.

INVITED TALKS

JULY 2025	Cahn-Hilliard dynamical models for condensed biomolecular systems <i>NCI U54 Center Symposium</i> University of Virginia , Charlottesville, VA
AUGUST 2024	Modeling Phase Separation of a Mitosis Signaling Network in Breast Cancer <i>Junior Investigators Meeting</i> National Cancer Institute (NCI) , Bethesda, MD
JULY 2024	Modeling state transitions and phase separation of mitotic condensates <i>NCI U54 Center Symposium</i> University of Virginia , Charlottesville, VA
SEPTEMBER 2023	Modeling Phase Separation in the Inner Centromere <i>BME Postdoctoral Research Symposium</i> University of Virginia , Charlottesville, VA
NOVEMBER 2022	Network Control of Phenotypic Plasticity in Small Cell Lung Cancer <i>Cancer Biology Science Hour</i> , Vanderbilt University , Nashville, TN
JUNE 2022	SCLC Subtype Transitions in Continuum Archetype Space <i>Small Cell Lung Cancer Consortium Meeting</i> , National Cancer Institute (NCI) , Virtual Meeting
AUGUST 2021	PNEC Tasks Define a Continuum of Plastic Cell States between SCLC Archetypes <i>Cancer Systems Biology Consortium Junior Investigators Annual Meeting</i> , NIH , Virtual Meeting This talk won a Podium Presentation Award.
MAY 2021	What is plasticity (and why should we care)? <i>Small Cell Lung Cancer Consortium Meeting</i> , National Cancer Institute (NCI) , Virtual Meeting
MARCH 2021	Cancer Hallmarks Define a Continuum of Plastic Cell States between Small Cell Lung Cancer Archetypes <i>Southern California Systems Biology Conference</i> , City of Hope , Virtual Conference
MARCH 2021	Cancer Hallmarks Define a Continuum of Plastic Cell States between Small Cell Lung Cancer Archetypes <i>Disease Atlas Weekly Meeting</i> , Harvard University , Virtual Meeting
MARCH 2021	Cancer Hallmarks Define a Continuum of Plastic Cell States between

	Small Cell Lung Cancer Archetypes <i>Cancer Systems Biology Consortium Steering Committee Meeting,</i> NIH , Virtual Conference
DECEMBER 2020	Quantifying Plasticity of Single Cells in SCLC <i>Vanderbilt Center for Cancer Systems Biology (CCSB) Tumor Plasticity</i> <i>Virtual Think Tank Meeting,</i> Vanderbilt University , Nashville, TN
OCTOBER 2020	Cell Transport Potential (CTrP), a novel metric of cancer cell plasticity based on RNA velocity <i>2020 Core-to-Core Online Meeting,</i> Japan Society for Promotion of Science (JSPS) , Tokyo, JAPAN
JULY 2020	A new ASCL1+ subtype, A2, resembles a plastic, transit amplifying compartment of SCLC tumors <i>Small Cell Lung Cancer Consortium Biweekly Meeting,</i> National Cancer Institute , Virtual Meeting
OCTOBER 2019	Network Control of Phenotypic Plasticity in Cancer <i>Quantitative Systems Biology Consortium,</i> Vanderbilt University , TN
MARCH 2019	Introduction to RNA Velocity <i>Single Cell RNA-seq Group Meeting,</i> Vanderbilt University , TN
OCTOBER 2018	Introduction to SCLC Mouse Models <i>SCLC U54 Data Club,</i> Vanderbilt University , TN

POSTER PRESENTATIONS

JUNE 2022	Archetype tasks link intratumoral heterogeneity to plasticity and cancer hallmarks in small cell lung cancer <i>International Conference on Systems Biology of Human Diseases</i> Vanderbilt University , Nashville, TN
MARCH 2021	Cancer Hallmarks Define a Continuum of Plastic Cell States between Small Cell Lung Cancer Archetypes <i>Southern California Systems Biology Conference,</i> City of Hope , Virtual Meeting
MARCH 2020	A new ASCL1+ subtype, A2p, forms a plastic, transit-amplifying compartment of SCLC tumors <i>Small Cell Lung Cancer Consortium Annual Meeting,</i> National Cancer Institute (NCI) , Washington, DC**
NOVEMBER 2019	Uncovering Stochastic and Drug-Induced Phenotypic Transitions in Small Cell Lung Cancer <i>Single Cell Analysis Meeting,</i> Cold Spring Harbor Laboratory (CSHL) , Long Island, NY
OCTOBER 2019	Uncovering Stochastic and Drug-Induced Phenotypic Transitions in Small Cell Lung Cancer <i>Second Annual Symposium on Multiscale Cell Fate,</i> NSF-Simons Center at University of California, Irvine (UCI) , Irvine, CA

SEPTEMBER 2018	A Phenotypic Variant of Small Cell Lung Cancer with Drug-Resistant and Immuno-modulatory Properties Identified by Computational Modeling <i>Cancer Systems Biology Consortium Annual Meeting</i> , NIH , Bethesda, MD
JUNE 2018	Characterizing Phenotypic Heterogeneity in Small Cell Lung Cancer with Computational Modeling <i>International Conference on Systems Biology of Human Diseases</i> , University of California, Los Angeles (UCLA) , Los Angeles, CA
OCTOBER 2017	Deciphering Phenotypic Heterogeneity in Small Cell Lung Cancer <i>Cancer Systems Biology Consortium Annual Meeting</i> , Broad Institute , Cambridge, MA
AUGUST 2017	Characterizing Phenotypic Heterogeneity in Small Cell Lung Cancer with Computational Modeling <i>International Conference on Systems Biology</i> , Virginia Tech , Blacksburg, VA

SCIENTIFIC MEETING ATTENDANCE

2025	<i>Systems Approaches to Cancer Biology</i> Association for Cancer Systems Biologists University of Colorado , Attended virtually and on planning committee
AUGUST 2024	<i>Junior Investigators Meeting</i> National Cancer Institute (NCI) , Bethesda, MD
MARCH 2023	<i>Cancer Systems Biology Consortium Annual Meeting</i> NIH , Attended virtually
OCTOBER 2022	<i>Systems Approaches to Cancer Biology</i> Association of Cancer Systems Biologists , Marine Biological Laboratory, Woods Hole, MA (attended virtually)
JUNE 2022	<i>International Conference on Systems Biology of Human Diseases</i> Vanderbilt University , Nashville, TN
AUGUST 2021	<i>Cancer Systems Biology Consortium Junior Investigators Annual Meeting</i> , NIH , Virtual Meeting
MARCH 2021	<i>Southern California Systems Biology Conference</i> , City of Hope , Virtual Meeting
DECEMBER 2020	<i>Multidisciplinary Approaches to Understand Cancer Treatment Resistance</i> , <i>NCI Cancer Target Discovery and Development (CTD2) Network and Cancer Systems Biology Consortium (CSBC) Meeting</i> , National Cancer Institute (NCI) , Virtual Meeting
DECEMBER 2020	<i>Vanderbilt Center for Cancer Systems Biology (CCSB) Tumor Plasticity Virtual Think Tank Meeting</i> , Vanderbilt University , Nashville, TN
OCTOBER 2020	<i>Japan Society for Promotion of Science (JSPS) 2020 Core-to-Core Online Meeting</i> Osaka, Sapporo, Tokyo, Japan , Virtual Meeting
AUGUST 2020	<i>Junior Investigator (JI) Virtual Meeting for the NCI Cancer Systems Biology Consortium</i> , National Cancer Institute (NCI) , Washington, DC

JUNE 2020	<i>Single Cell Cancer Biology</i> Gordon Research Conference , Newry, ME***
MARCH 2020	<i>Small Cell Lung Cancer Consortium Annual Meeting</i> , National Cancer Institute (NCI) , Washington, DC**
NOVEMBER 2019	<i>Single Cell Analysis Meeting</i> , Cold Spring Harbor Laboratory (CSHL) , Long Island, NY
OCTOBER 2019	<i>Second Annual Symposium on Multiscale Cell Fate</i> , NSF-Simons Center at University of California, Irvine (UCI) , Irvine, CA
APRIL 2019	<i>International Association for the Study of Lung Cancer (IASLC) SCLC Meeting</i> , New York City, NY
JANUARY 2019	<i>Stochastic Physics in Biology</i> Gordon Research Conference , Ventura, CA
SEPTEMBER 2018	<i>Cancer Systems Biology Consortium Annual Meeting</i> , NIH , Bethesda, MD
JUNE 2018	<i>International Conference on Systems Biology of Human Diseases</i> , University of California, Los Angeles (UCLA) , Los Angeles, CA
OCTOBER 2017	<i>Cancer Systems Biology Consortium Annual Meeting</i> , Broad Institute , Cambridge, MA
AUGUST 2017	<i>International Conference on Systems Biology</i> , Virginia Tech , Blacksburg, VA
MARCH 2017	<i>Japan Society for Promotion of Science (JSPS) 2017 Core-to-Core Meeting</i> Vanderbilt University , Nashville, TN

** Conference was moved to online format due to coronavirus shutdowns.

*** Conference was canceled due to coronavirus shutdowns.

ACADEMIC AND COMMUNITY SERVICE

JUNE 2024-CURRENT	Volunteer for mathematical oncology website and newsletter I help keep the website up to date, including adding group leaders in the field, identifying and generating art pieces to feature, and writing blog posts.
2024-SPRING 2025	Conference planning committee member for Systems Approaches to Cancer Biology Coordinated conference talks and poster presentations by reviewing abstracts and engaged in planning the structure of the meeting.
APRIL 2023	Reviewed paper for MDPI Cancers
NOVEMBER 2022	Volunteer for School for Science and Math at Vanderbilt (SSMV) Vanderbilt University Women in Science and Engineering (VU-Wise) Facilitated lecture on diabetes, including a personal story and demonstration of checking my blood sugar as a Type 1 Diabetic. Taught through VU-Wise for a class of approximately 20 high school students.
SEPTEMBER 2022	Reviewed paper for MDPI Genes
APRIL 2022	Reviewed paper for iScience
2019-2021	Volunteer at Vanderbilt Student Volunteers for Science, Vanderbilt University

	Led 4 science lessons each semester (Fall and Spring) to elementary and middle school classes on various scientific topics such as vacuums, ocean currents, fossils, and electrical currents.†
2019-2020	Vice President of Social Affairs for Chemical and Physical Biology Program, Vanderbilt University Plan and organize social events to build community in our graduate program.
SEPTEMBER 2019	Leader at Expand Your Horizons STEM Conference, Middle Tennessee State University Lead a group of young women through various activities and experiments to encourage women to choose STEM fields.
APRIL 2019	Reviewed paper for Cell Reports
2018-2019	Committee Member for Chemical and Physical Biology Program Retreat Planning Committee, Vanderbilt University Assisted in planning the annual retreat for my program.
2017-2018	Outreach Chair at Vanderbilt University Women in Science and Engineering, Vanderbilt University Planned and organized various scientific outreach activities with local organizations. Supervised committee of students and acted as liaison to Vanderbilt's Center for Scientific Outreach and Nashville Adventure Science Center.
2012-2016	Society of Physics Students Member, College of William & Mary Assisted with planning and setup of annual Physics Fest event.

† Last two science lessons in Spring 2020 session were canceled due to coronavirus restrictions.

TECHNICAL SKILLS

COMPUTATIONAL	• Python, R, Julia, Github, MATLAB, SQL, UNIX, LATEX • Sequencing analysis tools such as Pandas, Scanpy, CellRank, Seurat • Machine learning: Sci-kit learn, clustering, classification methods • Scientific visualization: Adobe illustrator (figures), Adobe After Effects (motion design/animation), Adobe Premiere Pro (video editing)
THEORY	• Data Science: Data mining, preprocessing, analysis, visualization • ODE modeling, statistical modeling (Markov chain models, Bayesian inference), agent-based modeling • Gene regulatory network structure and dynamical inference, Boolean models, Bayesian networks, gene pathways analysis • Mathematical methods: numerical methods, linear algebra, partial differential equations (multigrid solver), regression