Kathryn (Katie) L. Kapp, Ph.D.

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Education

Doctor of Philosophy, Chemistry **August 2023**

Vanderbilt University (Advisor: Renã A. S. Robinson, Ph.D.) *Nashville, TN*

- Dissertation: Plasma Proteomic Factors Associated with Sepsis Survival Outcomes (http://hdl.handle.net/1803/18652)
- Vanderbilt Chemistry-Biology Interface Pre-Doctoral Trainee (T32)
- Certificate in College Teaching
- GPA: 3.928/4.000

Bachelor of Science, Chemistry, *summa cum laude* **May 2017**

Gannon University *Erie, PA*

- Honors Program Scholar
- GPA: 3.900/4.000

Research Experience

Postdoctoral Scholar **September 2023 – Present**

Stanford Cancer Imaging Postdoctoral Trainee (T32) **September 2025 - Present**

Propel Postdoctoral Scholar **September 2023 – September 2025**

Canary Center at Stanford, Department of Radiology, Stanford University School of Medicine *Stanford, CA*

Advisor: Sharon J. Pitteri, Ph.D.

- **Using mass spectrometry (MS)-based (glyco)proteomics to study protein N-glycosylation in various samples to improve early detection/risk stratification of different cancers (e.g., colon, pancreatic, prostate, kidney) with clinical collaborators**
- Acquiring and analyzing (glyco)proteomics data on patient pancreatic cyst fluid samples to study glycosylation differences across various pancreatic cyst types, which are precursor lesions to pancreatic cancer and show promise for early detection or risk stratification; validating data via enzyme-linked immunosorbent assays (ELISAs); in collaboration with **Walter Park, M.D.**
- Analyzed (glyco)proteomics data from patient colon tissue and serum to understand protein glycosylation differences associated with colon cancer development and how those differences do or do not appear in patients' blood
- Analyzed (glyco)proteomics data from patient prostate and kidney tissue to understand protein glycosylation differences associated with prostate and kidney cancer development (in collaboration with **James D. Brooks, M.D.**)
- Analyzed proteomics data from breast cancer patients undergoing radiotherapy to identify longitudinal changes in the plasma proteome because of radiotherapy (in collaboration with **Edward Graves, Ph.D.**)
- Collaborated with other postdoctoral scholars (**Keith Garcia, Ph.D.** [Stanford]; **Pragya Tripathi, Ph.D.** [Stanford]; **Jonathan Kastan, Ph.D.** [Cold Spring Harbor Laboratory]) to provide proteomics expertise to their projects
    - Shared sample preparation expertise to prepare different sample types for MS (patient-derived xenograft mouse model tissue, immunoprecipitated proteins in yeast and human cell lines); acquired MS data and analyzed in collaboration

  - Learned about clinical considerations, different sample type considerations, immunoprecipitation experimental design and data analysis, and related biology
- Techniques used: bottom-up quantitative proteomics sample preparation (bicinchoninic acid assay [BCA], tryptic digestion, high pH reverse phase fractionation); intact glycopeptide enrichment via strong anion exchange-electrostatic repulsion hydrophilic interaction chromatography (SAX-ERLIC); label-free quantitation; immunodepletion of human patient serum samples (Agilent 1260 Infinity HPLC); high resolution liquid chromatography-tandem mass spectrometry (LC-MS/MS) analysis using Dionex Ultimate 3000 LC and Orbitrap Eclipse Tribrid MS (Thermo Fisher Scientific); ELISAs
- Software/tools used: Byonic (Protein Metrics), Xcalibur (Thermo), Lab Advisor (Agilent), Glygen, STRING

Graduate Student **August 2018 – August 2023**

Department of Chemistry, Vanderbilt University *Nashville, TN*

Advisor: Renã A. S. Robinson, Ph.D.

- Explored impact of patients' racial/ethnic backgrounds and infection source on survival outcomes from sepsis using high resolution LC-MS-based proteomics
- Contributed to development of high throughput, automated plasma proteomics workflow including publication of a review of the field
- Techniques used: bottom-up quantitative proteomics sample preparation; immunodepletion of human patient plasma samples (Waters Acquity HPLC); automated sample preparation using Biomek i7 Liquid Handling Workstation (Beckman Coulter); tandem mass tag (TMT) labeling for multiplexing and relative quantification; in-house column pulling and packing; high resolution LC-MS/MS analysis using Dionex Ultimate 3000 LC and Q-Exactive HF MS (Thermo Fisher Scientific); Western blotting
- Software/tools used: Proteome Discoverer (Thermo), Xcalibur (Thermo), Empower (Waters), Ingenuity Pathway Analysis, STRING

Senior Undergraduate Research Assistant **August 2016 – May 2017**

Department of Chemistry & Biochemistry, Gannon University *Erie, PA*

Advisor: Keith Michael Krise, Ph.D.

- Assessed pepsin A activity loss in the presence of a free-radical scavenger following sonication
- Mentored a sophomore student working on the project
- Techniques used: sonication, UV-VIS assay

NSF-REU Student **May – July 2016**

C. Eugene Bennett Department of Chemistry, West Virginia University *Morgantown, WV*

Advisor: Justin Legleiter, Ph.D.

- Developed a thioflavin assay to monitor small peptides' inhibition of huntingtin protein aggregation
- Gained experience with atomic force microscopy (AFM) sample preparation and data acquisition and analysis
- Techniques used: atomic force microscopy, protein purification using LC and gel electrophoresis, fluorescence assay

Kathryn (Katie) L. Kapp, Ph.D.

Publications

**Authors contributed equally*

Manuscripts in Preparation:

13. **Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N.; DaDamio, A. E.; Parra, M. C.; Diaz-Perez, C.; Liu, S.; Kim, J.; Dongre, A.; Pitteri, S. J., Site-Specific Heterogeneity of Protein Glycosylation in Colon Cancer Tissue and Serum. *Manuscript in submission.*
12. García-Marqués, F. J.; **Kapp, K. L.**; Bermudez, A.; Wen, R.; Marti, G. E. W.; Zhao, H.; Brooks, J. D.; Pitteri, S. J., Deep Intact Glycoproteomic Analysis Reveals Multi-Level Glycosylation Heterogeneity in Renal Tumors. *Manuscript in revisions.*

Published Articles:

11. **Kapp, K. L.***; Going, C. C.*; García-Marqués, F. J.*; Leow, K.; Maltos, A.; Bermudez, A.; Vilalta, M.; Rafat, M.; Jenkins, M.; Chen, J. J.; Mallick, P.; Horst, K.; Graves, E.; Pitteri, S. J., Quantifying Protein Temporal Changes with Mass Spectrometry in Plasma Samples from Breast Cancer Patients Undergoing Radiotherapy. *J. Am. Soc. Mass Spectrom.,* **2026**, *37* (9), 2141–2154.
10. **Kapp, K. L.***; García-Marqués, F. J.*; Totten, S.*; Bermudez, A.; Tanimoto, C.; Brooks, J. D.; Pitteri, S. J., Intact glycopeptide analysis of human prostate tissue reveals heterogeneity of protein glycosylation in prostate cancer. *Glycobiology,* **2025,** *35* (10), cwaf010.
9. Polasko, A. L.; Zhang, D.; Ramraj, A.; Chiu, C-L.; García-Marqués, F. J.; Bermudez, A; **Kapp, K.**; Peterson, E.; Qiu, Z.; Pollack, A. S.; Zhao, H.; Pollack, J.; Pitteri, S.; Brooks, J. D., Establishing and characterizing the molecular profiles, cellular features, and clinical utility of a patient-derived xenograft model using benign prostatic tissues. *Lab Invest,* **2024,** *104* (10), 102129.
8. Seymour, C. W.; Urbanek, K. L.; Nakayama, A.; Kennedy, J. N.; Powell, R.; Robinson, R. A. S.; **Kapp, K. L.**; Billiar, T. R.; Vodovotz, Y.; Wendell, S.; Gelhaus, S. L.; Cooper, V. S.; Tang, L.; Mayr, F. B.; Reitz, K. M.; Horvat, C.; Meyer, N. J.; Dickson, R. P.; Angus, D. C.; Peck Palmer, O. M., A prospective cohort protocol for the remnant investigation in sepsis study. *Crit Care Explor,* **2023,** *5* (11), e0974.
7. Stonebraker, A. R.; Hankin, R.; **Kapp, K. L.**; Li, P.; Valentine, S. J.; Legleiter, J., Charge within Nt17 peptides modulates huntingtin aggregation and initial lipid binding events. *Biophys Chem,* **2023,** *303*, 107123.
6. **Kapp, K. L.**; Choi, M. J.; Bai, K.; Du, L.; Yende, S.; Kellum, J. A.; Angus, D. C.; Peck-Palmer, O. M.; Robinson, R. A. S. Pathways associated with positive sepsis survival outcomes in African American/Black and Non-Hispanic White patients with urinary tract infection. *Shock,* **2023,** *60* (3), 362-372.
5. **Kapp, K. L.**; Robinson, R. A. S.; Verberne-Sutton, S. D.; Stepler, K. E., Incorporation of a virtual proteomics module into the undergraduate analytical curriculum. *J Chem Educ,* **2023,** *100* (8), 3124-3131.
4. **Kapp, K. L.**; Arul, A. B.; Zhang, K. C.; Du, L.; Yende, S.; Kellum, J. A.; Angus, D. C.; Peck-Palmer, O. M.; Robinson, R. A. S., Proteomic changes associated with racial background and sepsis survival outcomes. *Mol Omics*, **2022**, *18* (10), 923-937.
3. King, C.D.; **Kapp, K. L.**; Arul, A. B.; Choi, M. J.; Robinson, R. A. S., Advancements in automation of plasma proteomics protocols. *Mol Omics*, **2022**, *18* (9), 828-839.
2. Beasley, M.; Stonebraker, A. R.; Hasan, I.; **Kapp, K. L.**; Liang, B. J.; Agarwal, G.; Groover, S.; Sedighi, F.; Legleiter, J., Lipid membranes influence the ability of small molecules to inhibit huntingtin fibrillization. *Biochemistry,* **2019,** *58* (43), 4361-4373.

1. **Kapp, K.**; Hetz, R.; Krise, K.M., Effects of ultrasound on the digestive enzyme pepsin A. *Proceedings of the 31st National Conference on Undergraduate Research (NCUR),* Memphis, TN, April 6-8, 2017.

Presentations

**Invited presentation*

27. **Kapp, K. L.** García-Marqués, F. J.; Bermudez, A.; Shamsher, N., DaDamio, A. E.; Parra, M. C.; Diaz-Perez, C.; Pitteri, S. J. "High-Resolution Liquid Chromatography-Tandem Mass Spectrometry Enables Comparison of Protein Glycosylation Heterogeneity in Patient-Matched Colon Cancer Tissue and Serum." Presented at the American Society for Mass Spectrometry (ASMS) 2026 Conference, San Diego, CA. June 3, 2026; Poster.
26. ***Kapp, K. L.** "Analysis of Protein Glycosylation Heterogeneity in Complex Clinical Samples by High Resolution Liquid Chromatography-Tandem Mass Spectrometry." Presented at Thermo Fisher Scientific's Users' Meeting at the ASMS 2026 Conference, San Diego, CA. May 31, 2026; Oral.
25. ***Kapp, K. L.** "Mass Spectrometry Analysis of Protein Glycosylation Heterogeneity in Pancreatic Cyst Fluid." Presented at the Stanford Cancer Imaging Training Program Quarterly Seminar, Stanford, CA. May 20, 2026; Oral.
24. **Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N., DaDamio, A. E.; Parra, M. C.; Pitteri, S. J. "Site-Specific Heterogeneity of Protein Glycosylation in Patient-Matched Colon Cancer Tissue and Serum." Presented at the Cancer Glyco-X Symposium, Grand Rapids, MI. May 5, 2026; Poster & Highlight Talk.
23. **Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N., DaDamio, A. E.; Parra, M. C.; Pitteri, S. J. "Site-Specific Heterogeneity of Protein Glycosylation in Patient-Matched Colon Cancer Tissue and Serum." Presented at the Canary Center Symposium, Stanford, CA. April 28, 2026; Poster.
22. **Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N., DaDamio, A. E.; Parra, M. C.; Pitteri, S. J. "Site-Specific Heterogeneity of Protein Glycosylation in Patient-Matched Colon Cancer Tissue and Serum." Presented at the US Human Proteome Organization (HUPO) 2026 Conference, St. Louis, MO. February 23, 2026; Poster & Lightning Talk.
21. **Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N., Pneh, S.; Park, W.; Pitteri, S. J. "High-Resolution Liquid Chromatography-Tandem Mass Spectrometry Enables Characterization of Protein Glycosylation Heterogeneity in Pancreatic Cyst Fluid." Presented at the ASMS 2025 Conference, Baltimore, MD. June 2, 2025; Oral.
20. ***Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N., Pneh, S.; Park, W.; Pitteri, S. J. "Proteomic and Glycoproteomic Changes in Pancreatic Cyst Fluid for Early Detection of Pancreatic Cancer." Presented at Stanford Radiology Department-Wide Research Retreat, Stanford, CA. November 19, 2024; Oral.
19. ***Kapp, K. L.** "Country strong: How a farm kid became a chemist." Presented at Gannon University Chemistry Club, Virtual. November 14, 2024; Oral.
18. **Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N., Pneh, S.; Park, W.; Pitteri, S. J. "Proteomic and Glycoproteomic Changes in Pancreatic Cyst Fluid for Early Detection of Pancreatic Cancer." Presented at The Early Detection of Cancer Conference, San Francisco, CA. October 23, 2024; Poster.
17. **Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N., Pneh, S.; Park, W.; Pitteri, S. J. "Proteomic and Glycoproteomic Changes in Pancreatic Cyst Fluid for Early Detection of Pancreatic

Cancer." Presented at 3rd Annual Stanford Research Park Symposium and Poster Session, Palo Alto, CA. October 16, 2024; Poster.

16. ***Kapp, K. L.** "Country strong: How a farm kid made it to the Canary Center." Presented at Canary Center All Staff Meeting, Stanford, CA. September 18, 2024; Oral.
15. ***Kapp, K. L**. "Country strong: How a farm kid became a Stanford chemist." Presented at Synthesis Supergroup Summer Seminar Series, Stanford University Department of Chemistry, Stanford, CA. September 10, 2024; Oral.
14. ***Kapp, K. L.** "Country strong: How a farm kid became a chemist." Presented at the American Chemical Society (ACS) Fall 2024 Conference, Denver, CO. August 19, 2024; Oral.
13. ***Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N., Liu, S.; Kim, J.; Dongre, A.; Pitteri, S. J. "Intact Glycopeptide Analysis of Human Colon Cancer Tissue by High Resolution Liquid Chromatography-Tandem Mass Spectrometry." Presented at Canary Garden Soiree, Woodside, CA. June 9, 2024; Poster.
12. **Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N., Liu, S.; Kim, J.; Dongre, A.; Pitteri, S. J. "Intact Glycopeptide Analysis of Human Colon Cancer Tissue by High Resolution Liquid Chromatography-Tandem Mass Spectrometry." Presented at ASMS 2024 Conference, Anaheim, CA. June 5, 2024; Poster.
11. **Kapp, K. L.**; García-Marqués, F. J.; Bermudez, A.; Shamsher, N.; Pitteri, S. J. "Proteomic and Glycoproteomic Changes associated with Colon Cancer in Human Tissue." Presented at US HUPO 2024 Conference, Portland, OR. March 11, 2024; Poster & Lightning Talk.
10. ***Kapp, K. L**. "Plasma proteomic factors associated with sepsis survival outcomes." Presented at Du Bois Lab Group Meeting, Stanford University Department of Chemistry, Stanford, CA. January 26, 2024; Oral.
9. **Kapp, K. L.**; Choi, M. J.; Arul, A. B.; Zhang, K. C.; Du, L.; Yende, S.; Kellum, J. A.; Angus, D. C.; Peck-Palmer, O. M.; Robinson, R. A. S. "Proteomic changes associated with racial background and survival outcomes of sepsis patients with primary urinary tract infection." Presented at World HUPO 2022 Congress, Cancún, Quintana Roo, Mexico. December 5, 2022; Oral.
8. ***Kapp, K. L**. "Plasma proteomics to study disparities in sepsis survival outcomes." Presented at Vanderbilt University Chemical Biology Association of Students Seminar, Nashville, TN. October 17, 2022; Oral.
7. **Kapp, K. L.**; Arul, A. B.; Zhang, K. C.; Du, L.; Yende, S.; Kellum, J. A.; Angus, D. C.; Peck-Palmer, O. M.; Robinson, R. A. S. "Proteomic changes associated with survival outcomes of sepsis patients with primary intra-abdominal infection." Presented at US HUPO 2022 Conference, Charleston, SC. March 1, 2022; Oral.
6. **Kapp, K. L.**; Yende, S.; Kellum, J. A.; Angus, D. C.; Peck-Palmer, O. M.; Robinson, R. A. S. "Plasma proteomics to study disparities in sepsis." Presented at Vanderbilt Institute of Chemical Biology 2021 Student Research Symposium, Nashville, TN. August 12, 2021; Poster.
5. ***Kapp, K. L.** "Plasma proteomics to study the effect of race on survivorship outcomes in sepsis." Presented at Vanderbilt University Chemistry Forum, Nashville, TN. April 15, 2021; Oral.
4. **Kapp, K.**; Hetz, R.; Pham, S.; Krise, K. M. "Effects of ultrasound on the digestive enzyme pepsin A." Presented at Sigma Xi's 26th Annual Undergraduate Student Research and Creative Accomplishment Conference, Erie, PA. April 22, 2017; Oral.
3. **Kapp, K.**; Hetz, R.; Pham, S.; Krise, K. M. "Effects of ultrasound on the digestive enzyme pepsin A." Presented at Celebrate Gannon, Erie, PA. April 18, 2017; Poster.
2. **Kapp, K.**; Hetz, R.; Pham, S.; Krise, K. M. "Effects of ultrasound on the digestive enzyme pepsin A." Presented at the 31st National Conference on Undergraduate Research (NCUR), Memphis, TN. April 6-8, 2017; Oral.

1. **Kapp, K.**; Legleiter, J. "Optimizing a small peptide's ability to inhibit huntingtin aggregation." Presented at West Virginia University's Summer Undergraduate Research Symposium, Morgantown, WV. July 28, 2016; Poster.

Teaching & Tutoring Experience

Office of Vice Provost for Graduate Education, Stanford University **Stanford, CA**

Co-Instructor of Record *Winter Quarters 2024, 2025, & 2026*

- Mass Spectrometry and Proteomics: Opening the Black Box (BIOS 227; 2024 Instructors: Kathryn Kapp, Ph.D. and Sharon Pitteri, Ph.D.; 2025 Instructors: Kathryn Kapp, Ph.D., Ruth Huttenhain, Ph.D, and Sharon Pitteri, Ph.D.)
  - Co-taught a two-week, intensive mini course designed to provide a broad overview of the proteomics field for graduate students and postdoctoral scholars, staff, and faculty auditors (2024: 17 students, 50+ auditors; 2025: 18 students, 25+ auditors; 2026: 11 students, 15 auditors)
  - For 2024 course – updated overall course design and lecture materials to improve learning goals and increase active learning, based on previous student feedback
    - Incorporated questionnaires into daily attendance forms to increase students' metacognition, acquire feedback throughout the course, and allow students to privately ask questions
  - For 2025 course – updated course syllabus to align with Stanford's Center for Teaching and Learning syllabus template to make expectations and logistics explicit, build an inclusive learning environment, and engage and excite students
    - Designed a new laboratory experience featuring an original case study, wherein students analyzed a mimic of quantitative proteomics data with a Disney/Pixar "Inside Out" theme in Excel
  - All years:
    - Used previous experiences and student feedback to update and optimize course
    - Coordinated labs with Stanford University Mass Spectrometry facility and organized guest lecturers
    - Administered course's website on Canvas
  - Student evaluations indicated they achieved their learning goals through excellent, organized instruction in lectures and hands-on laboratory sessions

Office of Vice Provost for Graduate Education, Stanford University **Stanford, CA**

Preparing Future Teaching Professors (PFTP) Program Participant *Winter 2025*

- Explored faculty life and responsibilities at different institution types through a practicum course (EDUC 343B) and shadowing of Gilles Muller, Ph.D. at San José State University (SJSU) in the Department of Chemistry
- Met with Dr. Muller weekly 1:1 to discuss chemistry faculty responsibilities around research, teaching, and service at an R2, teaching-focused institution like SJSU
- Explored service commitments by shadowing Dr. Muller's role as a Faculty Senator and university policy committee member
- Shadowed Dr. Muller's instruction of Writing Workshop: Chemical Communication (CHEM 100W), an online course for chemistry and biochemistry majors to develop field-specific communication skills and job documents
  - Guest-lectured on how to cite references using the ACS citation style and citation managers for students' final research paper

    - Incorporated active learning by having students write citations and fix incorrect citations of example papers
    - Gained online teaching experience via Zoom and discussed challenges and benefits of online instruction with Dr. Muller
- Guest-lectured in Advanced Chemistry (CHEM 270), an upper-level undergraduate/Master's-level course on bioanalytical methods
    - Connected previously learned concepts regarding LC and MS fundamentals to the application of proteomics
    - Incorporated active learning to demonstrate how database-directed searching works to analyze proteomics data
    - Answered questions about MS in the laboratory portion
    - Gained experience and insight into courses designed for master's and non-traditional chemistry students

Vanderbilt University Center for Teaching **Nashville, TN**

Certificate in College Teaching *Awarded Fall 2021*

- Studied different styles of pedagogy, assessment, and diversity, equity, and inclusion strategies for the college classroom, with an emphasis on backward design
- Re-designed a general chemistry unit on stoichiometry using backward design and active learning
- Guest-lectured on fundamentals of mass spectrometry (see CHEM 2100 TA experience below) and was observed with an excellent peer-review

Department of Chemistry, Vanderbilt University **Nashville, TN**

Teaching Assistant *Fall 2018, Spring 2019, Fall 2021, & Spring 2022*

- STEM Success Honors Professional Development Seminar (CHEM 1611; Instructor: Tara Todd, Ph.D.)
    - Contributed to development of syllabus and curriculum
- General Chemistry 2 Discussion (CHEM 1602D; Instructor: Craig Tainter, Ph.D.)
    - Led recitation sessions for undergraduates (2 sections of typically 24 students each) using the Chem101 online platform
    - Graded student exams using Gradescope
    - Held office hours and maintained sections' websites on Brightspace
- Introduction to Analytical Chemistry (CHEM 2100; Instructor: Susan Verberne-Sutton, Ph.D.)
    - Guest-lectured on fundamentals of mass spectrometry; received excellent student reviews
    - Implemented a virtual activity to introduce undergraduates to mass spectrometry-based proteomics
    - Graded exams
- General Chemistry 2 Laboratory (CHEM 1602L; Instructor: Shawn Phillips, Ph.D.)
    - Supervised laboratory techniques for undergraduates (2 sections of typically 19 students each)
    - Graded and gave feedback on laboratory reports and worksheets
    - Held office hours and maintained sections' websites on Brightspace
- Introductory Chemistry Laboratory (CHEM 1010L; Instructor: Shawn Phillips, Ph.D.)
    - Compiled individual lab experiment assignments into an official lab manual
- General Chemistry 1 Laboratory (CHEM 1601L; Instructor: Shawn Phillips, Ph.D.)
    - Supervised laboratory techniques for undergraduates (2 sections of typically 24 students each)
    - Graded and gave feedback on laboratory reports and worksheets
    - Held office hours and maintained sections' websites on Brightspace

Source4Teachers **Tionesta, PA**
Dedicated Building Substitute to North Clarion High School *September 2017 – May 2018*
- Gained experience with classroom management and teaching lessons for grades 7-12

Writing & Research Center, Gannon University **Erie, PA**
Peer Consultant *August 2014 – May 2017*
- Facilitated interactive, one-on-one reviews of undergraduate and graduate papers with native English speakers and ESL and international students
- Assisted students with all stages of the writing and research process including writing thesis statements, organizing papers, developing content, citing sources, and reviewing grammar and sentence structure

Keystone SMILES AmeriCorps **Knox, PA**
Quarter-Term Member *May – August 2015*
- Day-camp instructor for grades 3-6
- Organized and implemented science-based activities, including lessons on the solar system and Earth's geography, with other AmeriCorps members

STEM Center, Gannon University **Erie, PA**
Peer Tutor *August 2014 – May 2015*
- Facilitated interactive, one-on-one tutoring sessions with undergraduate students
- Tutored General Chemistry 1 & 2; Calculus 1, 2, & 3; Trigonometry; and Business Algebra

Mentoring Experience

Canary Cancer Research Education Summer Training (CREST) Program, Pitteri Laboratory, Department of Radiology, Stanford University **Stanford, CA**
Project: Shotgun Proteomics Data Analysis of Pancreatic Cyst fluid *Summer 2025*
- Mentored a visiting undergraduate student, **Quynh Nguyen** (Biochemistry Major; San Jose State University [SJSU]) for a ten-week summer program
  - Guided the analysis of pancreatic cyst fluid shotgun proteomics data and development of an ELISA protocol to validate MS data
  - Guided development of a workflow to analyze patient-matched pancreatic cyst tissue and prove feasibility
  - Assisted with research goal setting and time management
  - Taught proper laboratory and sample preparation techniques, LC-MS instrumentation, ELISAs, database searching, data analysis strategies, and scientific writing and presentation skills
  - Provided feedback for a written research proposal and cumulative final poster and written report
- Contributed to the training of other CREST student **Karina He** (Biology Major; Carleton College)
- Led a workshop, "How to Present a Scientific Poster" for all 27 CREST students

Canary Cancer Research Education Summer Training (CREST) Program, Pitteri Laboratory, Department of Radiology, Stanford University **Stanford, CA**
Project: Shotgun Proteomics Data Analysis of Metastatic Melanoma Cell Lines *Summer 2025*

- Co-mentored a visiting undergraduate student, **William Pham** (Biochemistry Major; SJSU) for a ten-week summer program
  - Taught data analysis strategies and scientific writing and presentation skills
  - Provided feedback for a written research proposal and cumulative final poster and written report
- Contributed to the training of another CREST student, **Patrick Vasquez** (Bioengineering Major; Stanford University)
- Led a workshop, "How to Present a Scientific Poster" for all 29 CREST students

Pitteri Laboratory, Department of Radiology, Stanford University **Stanford, CA**

Project: Shotgun Proteomics Data Analysis of Human Colon Cancer Tissue *Spring 2025*

- Mentored **Audrey DaDamio** (Biology Major; Stanford University) for an undergraduate research project during the spring quarter
- Taught data analysis and interpretation techniques for label-free quantitation of shotgun proteomics
- Guided Audrey's independent analysis of human colon cancer tissue and non-cancerous adjacent tissue
- Guided production of and gave feedback on a figure for inclusion in a publication

Stanford University Office of Postdoctoral Affairs (OPA) **Stanford, CA**

Mentoring Certificate *Awarded Spring 2025*

- Completed "Tier 1: Learn" section of the Certificate program
  - Attended one two-day workshop and four lunchtime workshops on fundamental topics of mentoring
    - Topics included: Effective Communication, Aligning Expectations, Assessing Understanding, Addressing Equity and Inclusion, Fostering Independence, and Promoting Professional Development
    - Brainstormed mentoring best practices and solutions to common problems with other postdoctoral scholars
- Completed "Tier 2: Practice" section of the Certificate program
  - Served as a mentor for a quarter (to **Melissa Parra** in CREST program below)
    - Developed a mentoring compact in collaboration with Melissa
    - Held and recorded weekly check-ins and reflections
    - Met with a peer mentoring coach to discuss successes and strategies for improvement
  - Attended an additional four lunchtime workshops on fundamental topics of mentoring
  - Developed a mentoring portfolio featuring my mentoring compact, performance, and philosophy

Canary Cancer Research Education Summer Training (CREST) Program, Pitteri Laboratory, Department of Radiology, Stanford University **Stanford, CA**

Project: Proteomic and Glycoproteomic Changes in Human Colon Cancer Tissue and Serum *Summer 2024*

- Mentored a visiting undergraduate student, **Melissa Parra** (Molecular, Cellular, and Developmental Biology Major; University of California at Los Angeles) for a ten-week summer program
  - Guided the development of a workflow for the immunoprecipitation (IP) of carcinoembryonic antigen (CEA) in human colon cancer serum and tissue to study CEA glycosylation patterns
  - Guided the inclusion of clinical variables into shotgun proteomics data from human colon cancer tissue to complete pathway and functional analysis comparing malignant and normal-adjacent samples
  - Assisted with research goal setting and time management
  - Taught proper laboratory and sample preparation techniques, LC-MS instrumentation, database searching, and data analysis strategies

  - Provided feedback for a written research proposal and cumulative final poster and written report (poster presentation was runner-up at the CREST summer poster symposium)
- Contributed to the training of other CREST students, **Nickel Spartz** (Biochemistry and Spanish Major; Allegheny College) and **Patrick Vasquez** (Bioengineering Major; Stanford University)
- Led two workshops for all 16 CREST students
  - 1) How to Present a Scientific Poster
  - 2) How to Read a Scientific Paper (with **Nikhiya Shamsher**, Computer Science Major; Stanford University)

Pitteri Laboratory, Department of Radiology, Stanford University **Stanford, CA**

Project: Intact Glycoproteomics of Cerebrospinal Fluid (CSF) to Study Brain Metastases *Winter 2024*

- Mentored **Claudia Leonard** (Cancer Biology Graduate Student; Stanford University) for a ten-week rotation
- Guided the development of an optimized protocol for intact glycopeptide analysis of CSF
- Assisted with research goal setting and time management
- Provided feedback for lab meeting presentations and conference abstracts and posters
- Taught sample preparation and data analysis techniques, LC-MS instrumentation, and database searching

Robinson (RASR) Laboratory, Department of Chemistry, Vanderbilt University **Nashville, TN**

Project: Fruit Fly Proteomics to Study Sex Disparities in Aging *Spring 2023*

- Mentored a team of two Vanderbilt undergraduate researchers: **Rowan Atwood** (Psychology and Spanish Major) and **Kaitlyn Kim** (Chemistry Major)
- Guided the development of an optimized protocol for fruit fly proteomics analysis
- Advised on experimental design for a future large-scale fruit fly proteomics study to study differences in aging fruit flies based on sex
- Assisted with research goal setting and time management
- Guided the creation and delivery of lab meeting presentations
- Taught proper laboratory and sample preparation techniques and data analysis strategies

Fellowships

- Stanford Cancer Imaging Training Program (SCIT) T-32 Fellow (5T32CA009695; PI: J. Dahl, B. Daniel) 2025 – Present
- Stanford Propel Postdoctoral Scholar 2023 – 2025
- Stanford Postdoctoral Recruitment Initiative in Science and Medicine (PRISM) Baker Fellowship *(declined)* 2023 – 2024
- Stanford PRISM Spring 2023
- Vanderbilt Chemistry-Biology Interface T-32 Training Grant Fellow (5T32GM065086; PI: G. Sulikowski, B. Bachmann) 2019 – 2021

Honors & Awards

- Stanford.Berkeley.UCSF Next Generation Faculty Symposium Honorable Mention Summer 2025
- ACS Postdoc to Faculty Workshop Attendee Summer 2025
- ASMS Postdoctoral Career Development Award Summer 2025
- World HUPO Congress 2022 Travel Award Fall 2022
- Vanderbilt University Graduate School Travel Grant to Present Research Fall 2022

- Vanderbilt University Graduate Student Council Travel Award *(declined)* — Fall 2022
- American Chemical Society Nashville Local Section Student Travel Grant *(declined)* — Fall 2022
- US HUPO 2022 Travel Award — Spring 2022
- First-Year Chemistry Graduate Student Three-Minute Thesis Competition — Spring 2019
- St. Catherine Medal — Spring 2015
  - Awarded to a Gannon University undergraduate student for demonstrating outstanding leadership, scholarship, and service
- Braeger Award for Research Writing — Spring 2014
  - Selected out of undergraduate students at Gannon University for excellence in research writing
- Excellence in First-Year Chemistry Award — Spring 2014
  - Selected out of undergraduate students who completed the general chemistry sequence at Gannon University for excellence in general chemistry

Professional Affiliations

- Stanford Cancer Institute (Associate Trainee Member) — 2024 - Present
- American Society for Mass Spectrometry (ASMS) — 2023 – Present
- World Human Proteome Organization (HUPO) — 2022 – Present
- United States Human Proteome Organization (US HUPO) — 2021 – Present
- American Chemical Society (ACS) — 2021 – Present
- American Association for the Advancement of Science (AAAS) — 2020 – Present
- Graduate Women in Science (GWIS; Nashville Chapter) — 2019 – 2023
- Vanderbilt University Women in Science and Engineering (VU-WiSE) — 2019 – 2023
- Vanderbilt University Chemical Biology Association of Students (VU CBAS) — 2019 – 2023

Leadership Experience & Service Activities

- Member, US HUPO Education and Outreach Committee — Fall 2025 – Present
  - Collaborating with another committee member to create a "proteomics communications toolkit" for the community to use
- Reviewer, Biochimica et Biophysica Acta – Reviews on Cancer — Summer 2025
- Judge, ASMS Undergraduate Poster Competition — June 2025
- Table Lead, Females in Mass Spectrometry (FeMS) Networking Event at ASMS — June 2025
- Pop Up Chemistry Volunteer, Silicon Valley ACS Local Section — Fall 2024 – Fall 2025
- Pen Pal, Stanford Science Pen Pals — Fall 2023 – Present
  - Recruitment Officer — Fall 2024 – Spring 2026
- Abstract Reviewer – Canary Center at Stanford Representative, The Early Detection of Cancer Conference — Summer 2024
- Scientist Pen Pal, Letters to a Pre-Scientist — Fall 2022 – Present
- Pod Coordinator, FeMS Mentoring Committee — 2022 – Present
  Pen Pal with a Purpose, Vanderbilt University Graduate Student Council — Fall 2019 – Spring 2023
- Mock Thesis Committee Member for **Sarah Zelle**, Vanderbilt University Chemical & Physical Biology Program's Student Support Initiative — Summer 2022

- Invited Panelist, Presenting & Publishing Your Research, Gannon University Writing & Research Center Experience Panel — April 2022
- Member, Vanderbilt University Beckman Scholars Program Selection Committee — January 2022
- Membership Vice-President, White Rose Alumni Chapter of Gamma Sigma Sigma National Service Sorority (GSS) — January 2022 – May 2023
- Alumni Member of Strategic Planning & Evaluation Committee, GSS — September 2021 – July 2023
- Judge, Vanderbilt University Summer Science Academy Undergraduate Symposium — August 2022
- Vice-President, GWIS Nashville Chapter — Fall 2021 – Spring 2022
- Invited Panelist, Presenting & Publishing Your Research, Gannon University Writing & Research Center Experience Panel — April 2021
- Invited Panelist, Graduate School for First-Generation Students, Gannon University Writing & Research Center Experience Panel — February 2021
- Event Planner, GWIS Nashville Chapter — Fall 2020 – Spring 2021
- Organizer, ComSciCon Atlanta 2021 — Fall 2020 – Spring 2021
- Secretary, White Rose Alumni Chapter of GSS — Spring 2020 – Present
- Outreach Chair, VU-WiSE — Fall 2019 – Spring 2020
- Nationals Representative, Eta Pi Chapter of GSS — Spring 2017
- Secretary, Gamma Sigma Epsilon Chemistry Honor Society — Fall 2016 – Spring 2017
- Service Vice-President, Eta Pi Chapter of GSS — Fall 2016
- Service Auditor, Eta Pi Chapter of GSS — Spring 2016
- Alternative Break Service Trip Student Leader to Mérida, Yucatán, México, Gannon University Center for Social Concerns — Spring 2016
- Gannon University Ambassador — Fall 2015 – Spring 2017
- President, Alpha Sigma Honor Chapter of Lambda Sigma Sophomore Honor Society — Fall 2015 – Spring 2017
- ServeMore Sophomore, Gannon University Center for Social Concerns — Fall 2014 – Spring 2015