

Janet E. Sorrells

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EDUCATION

Doctor of Philosophy, Bioengineering

Aug 2020 – July 2024 (expected)

University of Illinois at Urbana-Champaign

Urbana, IL

- Advisor: Professor Stephen A. Boppart
- Proposed thesis: Computational methods for fast nonlinear optical microscopy of label-free metabolic dynamics in live organisms
- GPA: 4.00/4.00
- National Science Foundation Graduate Research Fellowship Program (NSF GRFP) recipient
- Tissue Microenvironment (NIH T32) Training Program Scholar, Cancer Center at Illinois

Master of Science, Bioengineering

Aug 2018 – Aug 2020

University of Illinois at Urbana-Champaign

Urbana, IL

- Advisor: Professor Stephen A. Boppart
- Thesis: Development of fluorescence lifetime imaging microscopy techniques for analysis of single extracellular vesicles
- GPA: 4.00/4.00

Bachelor of Science, Biomedical Engineering

Aug 2013 – May 2018

University of Rochester

Rochester, NY

- GPA: 3.83/4.00
- Graduated Cum Laude with Highest Distinction
- Concentration in Medical Optics
- Minors in Electrical & Computer Engineering, Optics, and Health Policy
- Certificate in Nanoscience and Nanoengineering
- Take Five Scholar in Chinese Language and Culture

RESEARCH APPOINTMENTS

Visiting Assistant Professor

Jan 2024 – present

Department of Electrical & Systems Engineering, Washington University in St. Louis

St. Louis, MO

- Preparing to begin as a tenure track assistant professor in August 2024.
- Developing new technologies for label-free nonlinear optical microscopy.

Graduate Research Assistant, Biophotonics Imaging Lab (Prof. Stephen Boppart)

Aug 2018 – present

Beckman Institute, University of Illinois at Urbana-Champaign

Urbana, IL

- Worked on various diverse teams creating and innovating methods for label-free multimodal optical imaging systems integrating multiphoton fluorescence lifetime imaging microscopy (FLIM) of NAD(P)H and FAD autofluorescence, optical coherence microscopy, harmonic generation, and coherent Raman scattering microscopy for applications in cancer and infectious diseases.
- Investigated optical metabolic properties of a variety of biological systems and phenomena including: bacteria and biofilms, extracellular vesicles, biopharmaceutical drug production, and the tumor microenvironment. Experience with 2D/3D cell culture, organoid, xenograft, and *in vivo* biological models.
- Led efforts in fast single-photon sensitive detection, fs pulse shaping with a spatial light modulator, real-time processing with GPU and FPGA, and multi-dimensional image analysis of multimodal datasets.
- Created new hardware and software techniques for faster, higher-throughput, and more accurate multiphoton FLIM by developing methods for computational photon counting with single-photon sensitive detectors, enabling single-channel FLIM over forty times faster than conventional systems and over two times faster than the most advanced existing commercial system.
- Collaborated with multiple academic (Prof. Eric Nelson Lab, Prof. Marni Boppart Lab), clinical (Carle Foundation Hospital, UIUC College of Veterinary Medicine, Mayo Clinic) and industrial (GSK, P&G) groups on a variety of projects and mentored multiple undergraduate and graduate students.

- Undergraduate Research Assistant** Jan 2014 – Aug 2017
Beckman Institute, University of Illinois at Urbana-Champaign Urbana, IL
- Explored optical coherence tomography for visualization of micron-scale dynamic processes in the lab of Prof. Stephen Boppart (Summer 2017).
- Biomedical Engineering Dept., University of Rochester* Rochester, NY
- Characterized the response of cells to nanoparticle treatment and performed multiple methods to assess nanoparticle size, concentration, and aggregation in the lab of Prof. Danielle Benoit (Jan 2016 – May 2017).
- Optics Dept., University of Rochester* Rochester, NY
- Developed techniques for elastic scattering measurements of single organelles in the lab of Prof. Andrew Berger (Jan 2014 – May 2017).

FUNDING FOR RESEARCH AND TRAINING

- McGinnis Medical Innovation Fellowship (\$60,000) Aug 2022 – July 2024
Bioengineering Department, University of Illinois at Urbana-Champaign
- Tissue Microenvironment (TiMe) Training Program Scholar (NIH T32, \$28,000) Aug 2022 – July 2024
Cancer Center at Illinois, University of Illinois at Urbana-Champaign
- Support for Under-Represented Groups in Engineering (SURGE, \$42,000) Aug 2018 – May 2023
Grainger College of Engineering, University of Illinois at Urbana-Champaign
- Mavis Future Faculty Fellows Program (\$2,000) Aug 2022 – May 2023
Grainger College of Engineering, University of Illinois at Urbana-Champaign
- Graduate Research Fellowship Program (NSF GRFP, \$138,000) July 2019 – June 2022
National Science Foundation
- SPARK Faculty Training Program June 2021 – Aug 2021
Strategic Preparation for Academic Resilience and Know-how (SPARK) Faculty training program
- Nadine Barrie Smith Memorial Fellowship (\$4,000) Apr 2019
Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign
- Take Five Scholar (Provides a tuition-free 5th year of undergraduate study) Aug 2017 – May 2018
University of Rochester
- Discoveries in Bioimaging Research Experience for Undergraduates (\$5,000) June 2017 – Aug 2017
Grainger College of Engineering, University of Illinois at Urbana-Champaign
- Rush Rhees Scholarship (\$120,000) Aug 2013 – May 2017
University of Rochester
- Research and Innovation Grant (\$3,000) Aug 2013
Office of Undergraduate Research, University of Rochester

AWARDS AND HONORS

- Best Poster Award July 2023
Student Network on Extracellular Vesicles Virtual Conference 2023
- Optics & Photonics Educational Scholarship (\$5,000) June 2023
SPIE
- International Society for Extracellular Vesicles Scholarship (\$400) May 2023
International Society for Extracellular Vesicles Annual Meeting 2023
- Illinois Innovation Award (\$20,000) Apr 2023
Grainger College of Engineering, University of Illinois at Urbana-Champaign
- PEO Scholar Award (\$20,000) Apr 2023
PEO International
- JenLab Young Investigator Award (\$1,500) Jan 2023
JenLab GmbH and SPIE Photonics West
- Kuck Computational Science & Engineering Scholarship (\$2,500) Feb 2022
Grainger College of Engineering, University of Illinois at Urbana-Champaign

- Best Presentation Award for Imaging and Sensing Feb 2022
CSL Student Conference, University of Illinois at Urbana-Champaign
- Elected to Tau Beta Pi, Graduate Jan 2019
Tau Beta Pi Engineering Honor Society
- Chinese Department Book Award May 2018
Modern Languages and Cultures Department, University of Rochester
- Dean's List 10/10 Semesters Aug 2013 – May 2018
University of Rochester
- Tau Beta Pi Scholarship Award (\$2,000) June 2017
Tau Beta Pi Engineering Honor Society
- Faculty Award for Undergraduate Service Apr 2017
Biomedical Engineering Department, University of Rochester
- Rochester Alumnae Panhellenic Scholarship (\$3,000) Mar 2017
Rochester Alumnae Panhellenic Association
- Engineering Impact - Bobbie Banaszak Gleiter Scholarship (\$1,300) Dec 2016
Chi Omega Executive Headquarters
- Travel Award to BMES Annual Meeting (\$500) Sep 2016
Alpha Eta Mu Beta National Honor Society of Biomedical Engineering
- Raytheon Scholars Scholarship (\$2,000) Aug 2016
Raytheon Corporation
- Elected to Tau Beta Pi, Undergraduate Oct 2016
Tau Beta Pi Engineering Honor Society, University of Rochester
- Elected to Order of Omega Oct 2016
Order of Omega, University of Rochester
- Elected to Alpha Eta Mu Beta Apr 2016
Alpha Eta Mu Beta National Honor Society of Biomedical Engineering
- Renaissance Electronics Corporation Scholarship (\$1,000) June 2013
Renaissance Electronics Corporation
- Gold Award July 2012
Girl Scouts of Central and Western Massachusetts

TEACHING AND MENTORING

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- Teaching Assistant** Summer 2023
University of Illinois at Urbana-Champaign Urbana, IL
Biophotonics Summer School, Center for Label-free Imaging and Multiscale Biophotonics
 - Assisted with planning and implementation of a two-week summer school program for graduate students and post-docs in biophotonics.
 - Created and implemented a laboratory exercise based on multiphoton optical metabolic imaging.
 - Research Mentor for Graduate Student** Fall 2022 – Summer 2023
University of Illinois at Urbana-Champaign Urbana, IL
 - Kevin Tan, Bioengineering
 - Project: Optical metabolic imaging of the effect of magnetic fields on cellular metabolism.
 - Teaching Volunteer** Fall 2022
University of Illinois at Urbana-Champaign Urbana, IL
BIOE 303: Quantitative Physiology Lab
 - Supervised weekly in-person physiology labs and assisted students perform and analyze topics including ECG, PPG, and muscle stimulation.
 - Academic Mentor for I-Promise Program** Fall 2021 – Spring 2022
University of Illinois at Urbana-Champaign Urbana, IL
 - Mentored a first-year undergraduate student as part of a university program to help students with high financial need adjust to the university setting.

Research Mentor for Undergraduate Students

Summer 2019 – Spring 2022
Urbana, IL

University of Illinois at Urbana-Champaign

- Elisabeth Martin, Bioengineering (Summer 2019 – Spring 2022)
 - Project: Examining optical metabolic properties of extracellular vesicles in cancer.
 - Fundamentals of Bioimaging REU (2019), Clare Booth Luce Scholar (Fall 2020 – Spring 2022)
- Yan Luo, Bioengineering (Spring 2020 – Fall 2020)
 - Project: Using digital holographic tomography to study cellular dynamics of apoptosis.
 - Undergraduate Research Support Grant (Spring 2020)

STEM Program Lead

Summer 2018
Shanghai, China

Ivy League Camps

- Worked with an international team to provide a fun and educational summer camp experience.
- Taught STEM classes for elementary-aged children on topics including acoustics, light, and biology.

Teaching Assistant

Fall 2014 – Spring 2018

University of Rochester

Rochester, NY

BME 245: Biomaterials

- Head Teaching Assistant: Instructed labs, graded lab reports, held office hours (Spring 2018).
- Teaching Assistant: Helped instruct labs, graded lab reports, held office hours (Spring 2017).

BME 201: Fundamentals of Biomechanics

- Head Teaching Assistant: Wrote weekly homework assignments, organized grading and office hours of other TAs, designed final project and gave a lecture describing final project, held office hours, graded homework (Fall 2016, Fall 2017).
- Teaching Assistant: held office hours, graded homework (Fall 2015).

BME 101: Introduction to Biomedical Engineering

- Teaching Assistant: Helped instruct labs, graded lab reports, held office hours (Fall 2014, Fall 2015).

CHM 132: Chemical Concepts, Systems, and Practices II

- Workshop Leader: Ran weekly mandatory weekly workshops for students, graded exams (Spring 2015).

Engineering Tutor

Oct 2016 – May 2018

Tau Beta Pi, University of Rochester

Rochester, NY

- Tutored various undergraduate students in engineering courses.

SERVICE, LEADERSHIP, AND OUTREACH

Marketing Committee

Mar 2023 – present
Urbana, IL

Bioengineering Department, University of Illinois at Urbana-Champaign

- Provided feedback and ideas for department marketing and branding.

Cancer Imaging Team Leader

Nov 2022 – present
Urbana, IL

Biophotonics Imaging Laboratory, University of Illinois at Urbana-Champaign

- Managed project/publication timelines and ran weekly meetings for a team of 8-9 lab members including undergraduate students, graduate students, and research scientists whose main focus is optical metabolic imaging of cancer and the tumor microenvironment.
- Provided feedback and mentorship on aspects of research projects from brainstorming to publication.

House Corporation Board Treasurer

May 2019 – present
Champaign, IL

Omicron Chapter, Chi Omega

- Worked closely with alumni board and student chapter members to collect room and board, created annual budget (approximately \$500,000/year).
- Interviewed, hired, and managed house staff and contractors.

Alumni Volunteer

Aug 2018 – present
Virtual

University of Rochester

- UR Real Reader: Acted as a mentor to 23 undergraduate students (1-2 per semester) in the Communicating Your Professional Identity (Engineering) course providing career advice (2018 – present).
- Alumni Interviewer: Conducted admissions interviews for 25 prospective undergraduates (2018-2024).

- Peer Reviewer for Scientific Journals** May 2019 – present
• Biomed. Opt. Express, Nat. Commun., Neurophotonics, Opt. Express, Opt. Lett., Sci. Adv., Sci. Rep.
- Tissue Microenvironment (TiMe) Day Planning Committee** Mar 2023, 2024
Cancer Center at Illinois, University of Illinois at Urbana-Champaign Urbana, IL
• Worked within a team of T32 trainees to plan and implement a day of contributed and invited seminars and a poster session devoted to research on the tissue microenvironment.
• Co-hosted the day's talks and events with other trainees in 2023.
- Judge for Undergraduate Research Symposium** Apr 2021, 2022, 2023, 2024
University of Illinois at Urbana-Champaign Urbana, IL
• Provided constructive feedback and scores for undergraduate research posters and presentations.
- Judge for resarcHStart Symposium** Aug 2023
Cancer Center at Illinois, University of Illinois at Urbana-Champaign Urbana, IL
• Provided constructive feedback and scores for high school summer research posters and presentations.
- Beckman Open House Volunteer** Mar 2019, 2023
Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign Urbana, IL
• Helped with planning, coordination, and implementation of different exhibits for a two-day public open house to communicate ongoing research endeavors to community members.
- Webmaster** Aug 2018 – Feb 2023
Biophotonics Imaging Laboratory, University of Illinois at Urbana-Champaign Urbana, IL
• Redesigned lab website and updated content such as publications, current research, and lab news.
- Signal Processing and Machine Learning Session Chair** Feb 2023
Coordinated Science Laboratory Student Conference, University of Illinois at Urbana-Champaign Urbana, IL
• Worked as part of a team to put on this student-organized conference which involved advertising the conference, reviewing abstracts, moderating discussion, and inviting external speakers.
• Invited external speakers and organized internal talks for Signal Processing and Machine Learning session.
- iOptics Student Chapter Treasurer** Dec 2019 – July 2022
University of Illinois at Urbana-Champaign Urbana, IL
• Managed funds in a conglomerate of OSA, SPIE, and IEEE Photonics graduate student chapters to coordinate interdisciplinary optics-related seminars and social events.
- Discussion Leader** July 2022
Gordon Research Seminar on Optics and Photonics in Medicine and Biology Lewiston, ME
• Moderated discussion for session “New Solutions to Old Problems: Innovative Design in Biophotonics.”
- Exhibits Committee Volunteer** Sep 2018 – Apr 2020
Orpheum Children's Science Museum Champaign, IL
• Assisted with exhibit planning, creation, and maintenance.
• Mentored undergraduate university student groups building exhibits for capstone projects.
- Educational Volunteer** Aug 2017 – May 2018
Rochester Museum and Science Center Rochester, NY
• Spoke with, assisted, and educated visitors on various exhibits, maintained exhibit upkeep, created a fun and educational experience for all visitors to the museum.
- BMES Student Chapter President** Apr 2016 – Apr 2017
University of Rochester Rochester, NY
• Organized a variety of social, outreach, mentoring, and academic events for students in the department.

PROFESSIONAL EXPERIENCE

- Graduate Research Assistant** Nov 2021 – present
Center for Optical Molecular Imaging (COMI), a collaboration between GSK and UIUC Urbana, IL
• Worked with a 15-20 person academic-industrial partnership team to apply novel technology to address biological questions in pharmaceutical research related to drug uptake, delivery, and production in biological models ranging from cell culture, complex *in vitro* models, and *in vivo*.

- Led upgrades and alignment of a label-free multimodal nonlinear optical imaging system and significantly improved SNR and imaging speed for multiphoton autofluorescence intensity and lifetime, spectral-focusing CARS, and harmonic generation.

Systems Engineering Intern

Summer 2015, Summer 2016

Ortho Clinical Diagnostics

Greece, NY

- Acquired data, wrote a processing pipeline for image analysis, and presented data to a cross-functional team designing a new optical imaging system with applications in clinical chemistry.

Engineering Intern

Summer 2013

Renaissance Electronics Corporation

Harvard, MA

- Collected and interpreted data on isolator insertion loss and created computational model to predict insertion loss for different isolator properties.

Professional Affiliations:

- American Society for Microbiology (ASM) Mar 2023 – present
- American Society for Engineering Education (ASEE) June 2021 – present
- Society of Women Engineers (SWE) June 2020 – present
- International Society for Optics and Photonics (SPIE) Feb 2020 – present
- Institute of Electrical and Electronics Engineers (IEEE) and IEEE Photonics Feb 2020 – present
- Optica (formerly OSA) Dec 2019 – present
- Biomedical Engineering Society (BMES) May 2016 – present

PUBLICATIONS AND PRESENTATIONS

Peer-Reviewed Journal Publications (* denotes co-first author)

1. L Yang, RR Iyer, **JE Sorrells**, EJ Chaney, SA Boppart, “Multiparametric quantitative characterizations of collagen using label-free multimodal polarization-sensitive optical imaging,” *accepted for publication in Optica* (2024).
2. J Park*, **JE Sorrells***, EJ Chaney, AM Abdelrahman, JA Yonkus, J Leiting, H Nelson, JJ Marrington, E Aksamitiene, M Marjanovic, C Bushell, MJ Truty, SA Boppart, “*In vivo* label-free optical signatures of chemotherapy response in human pancreatic ductal adenocarcinoma patient-derived xenografts,” *Commun. Biol.*, 6: 980 (2023).
3. RR Iyer, CA Renteria, L Yang, **JE Sorrells**, J Park, L Sun, Z Yu, Y Huang, M Marjanovic, LM Mirica, SA Boppart, “Tracking the binding of multi-functional fluorescent tags for Alzheimer’s disease using quantitative multiphoton microscopy,” *J. Biophotonics*, 15(9): e202200105 (2022).
4. **JE Sorrells**, RR Iyer, L Yang, EM Martin, G Wang, H Tu, M Marjanovic, SA Boppart, “Computational photon counting using multi-threshold peak detection for fast fluorescence lifetime imaging microscopy,” *ACS Photonics*, 9: 2748-2755 (2022).
5. L Yang, J Park, EJ Chaney, **JE Sorrells**, M Marjanovic, H Phillips, DR Spillman, SA Boppart, “Label-free multimodal nonlinear optical imaging of needle biopsy cores for intraoperative cancer diagnosis,” *J. Biomed. Opt.*, 27(5): 056504 (2022).
6. J Park, RL Kamerer, M Marjanovic, **JE Sorrells**, S You, R Barkalifa, KA Selting, SA Boppart, “Label-free optical signatures from urinary extracellular vesicles as a biomarker for genitourinary cancer,” *Am. J. Cancer Res.*, 12(5): 2068-2083 (2022).
7. RR Iyer, **JE Sorrells**, L Yang, EJ Chaney, DR Spillman, BE Tibble, CA Renteria, H Tu, M Zuraszkas, M Marjanovic, SA Boppart, “Label-free metabolic and structural profiling of dynamic biological samples using multimodal optical microscopy with sensorless adaptive optics,” *Sci. Rep.*, 12(1):3438 (2022).
8. **JE Sorrells**, RR Iyer, L Yang, EJ Chaney, M. Marjanovic, H Tu, SA Boppart, “Single-photon peak event detection (SPEED): a computational method for fast photon counting in fluorescence lifetime imaging microscopy,” *Opt. Express*, 29(23): 37759-37775 (2021).
9. **JE Sorrells**, RR Iyer, L Yang, AJ Bower, DR Spillman, EJ Chaney, H Tu, SA Boppart, “Real-time pixelwise phasor analysis for video-rate two-photon fluorescence lifetime imaging microscopy,” *Biomed. Opt. Express*, 12(7): 4003-4019 (2021).
10. AE Baek, N Krawczynska, A Das Gupta, SV Dvoretzkiy, S You, J Park, YH Deng, **JE Sorrells**, BP Smith, L Ma, AT Nelson, HB McDowell, A Mukherjee, M Henn, Z Madak-Erdogan, H Kong, SA Boppart, M Boppart,

ER Nelson, "The cholesterol metabolite, 27-hydroxycholesterol promotes the secretion of extracellular vesicles which promote breast cancer progression," *Endocrinology*, 162(7):bqab095 (2021).

11. **JE Sorrells**, EM Martin, E Aksamitiene, P Mukherjee, A Alex, EJ Chaney, M Marjanovic, SA Boppart, "Label-free single extracellular vesicle characterization using two-photon fluorescence lifetime imaging microscopy of NAD(P)H," *Sci. Rep.*, 11(1): 3308 (2021).
12. JA Dornbusch, LE Selmic, JP Samuelson, JK Reagan, E McLaughlin, VA Wavreille, J Ogden, B Abrams, A Kalamaras, E Green, E Hostnik, L Every, J Fuerst, R Jennings, C Premanandan, J Lorbach, SC Linn, P Huang, A Alex, **JE Sorrells**, L Yang, SA Boppart, "Diagnostic accuracy of optical coherence tomography for assessing surgical margins of canine soft tissue sarcomas in observers of different specialties," *Vet. Surg.*, 50(1): 111-120 (2021).
13. AJ Bower, **JE Sorrells**, J Li, M Marjanovic, DR Spillman, SA Boppart, "Tracking metabolic dynamics of apoptosis with high-speed two-photon fluorescence lifetime imaging microscopy," *Biomed. Opt. Express*, 10(12): 6408-6421 (2019).
14. S You, R Barkalifa, EJ Chaney, H Tu, J Park, **JE Sorrells**, Y Sun, YZ Liu, L Yang, DZ Chen, M Marjanovic, S Sinha, SA Boppart, "Label-free visualization and characterization of extracellular vesicles in breast cancer," *Proc. Natl. Acad. Sci.*, 116(48): 24012-24018 (2019).
15. AE Cannaday, **JE Sorrells**, AJ Berger, "Angularly resolved, finely sampled elastic scattering measurements of single cells: requirements for robust organelle size extractions," *J. Biomed. Opt.*, 28(8): 086502 (2019).
16. DW Malcolm, JJ Varghese, **JE Sorrells**, CE Ovitt, DSW Benoit, "The effects of biological fluids on colloidal stability and siRNA delivery of a pH-responsive micellar nanoparticle delivery," *ACS Nano*, 12(1): 187-197 (2018).
17. DW Malcolm, **JE Sorrells**, D Van Twisk, J Thakar, DSW Benoit, "Evaluating side effects of nanoparticle-mediated siRNA delivery to mesenchymal stem cells using next generation sequencing and enrichment analysis," *Bioeng. and Transl. Med.*, 1(2): 193-206 (2016).

Patents and Disclosures

1. SA Boppart, J Shi, **JE Sorrells**, SR Hood, A Alex, R Talaban A Ho, "Accelerated biopharmaceutical CHO cell line selection using label-free multimodal nonlinear optical microscopy and machine learning-assisted single-cell high-content analysis." Disclosed 21 Dec, 2023.
2. SA Boppart, L Yang, RR Iyer, **JE Sorrells**. "Method and apparatus for fast tunable coherent Raman scattering micro-spectroscopy by spectral-domain phase-and-amplitude shaping." Disclosed Mar 6, 2023. U.S. Patent Application: 63/596,554, Nov 6, 2023.
3. SA Boppart, **JE Sorrells**, RR Iyer. "Fast Fluorescence Lifetime Imaging Microscopy." Disclosed Mar 23, 2021. U.S. Provisional Patent Application: 63/208,947, June 9, 2021. "Digital Domain Photon Peak Event Detection System and Method." U.S. Patent Application: 17/836,146, June 9, 2022.

Invited Seminars and Lectures

1. JE Sorrells, "Computational methods for fast nonlinear optical microscopy of label-free metabolic dynamics," *Invited seminar, Electrical & Systems Engineering Department, Washington University in St. Louis*. St. Louis, MO, Dec 12, 2023.
2. **JE Sorrells**, J Park, E Aksamitiene, M Marjanovic, EM Martin, EJ Chaney, AM Higham, KA Cradock, ZG Liu, SA Boppart, "Label-free nonlinear optical microscopy for characterization of optical metabolic signatures of isolated and *in situ* EVs in human breast cancer," *Invited seminar, SNEV Virtual Seminar Series*. Virtual, Nov 21, 2023.
3. **JE Sorrells**, "Computational methods for label-free multiphoton fluorescence lifetime imaging microscopy of fast metabolic dynamics," *Invited seminar, Bioengineering Distinguished Seminar Series, University of Illinois at Urbana-Champaign*. Urbana, IL, Sep 13, 2023.
4. **JE Sorrells**, "Label-free optical metabolic imaging of the tissue microenvironment," *Guest lecture, BIOE 298: Healthcare Innovation & Translation, University of Illinois at Urbana-Champaign*. Urbana, IL, Sep 7, 2023.
5. **JE Sorrells**, RR Iyer, "How to prepare a research poster and presentation," *Invited seminar, ResearchStart program, Cancer Center at Illinois, University of Illinois Urbana-Champaign*. Urbana, IL, June 29, 2023.
6. **JE Sorrells**, "Single-Photon Detectors," *Guest lecture, Biophotonics Summer School, University of Illinois Urbana-Champaign*. Urbana, IL, June 5, 2023.
7. **JE Sorrells**, "Multimodal optical imaging laboratory," *Hands-on laboratory exercise, Biophotonics Summer School, University of Illinois Urbana-Champaign*. Urbana, IL, June 5-7, 2023.

8. **JE Sorrells**, RR Iyer, “How to prepare a research poster and presentation for the Undergraduate Research Symposium,” *Invited seminar, Cancer Center at Illinois, University of Illinois Urbana-Champaign*. Urbana, IL, Apr 18, 2023.
9. **JE Sorrells**, “Investigating cellular metabolism with label-free nonlinear optical microscopy,” *Invited seminar, Parkland College Science Club, Parkland Community College*. Urbana, IL, Apr 12, 2023.
10. **JE Sorrells**, “The future is bright: Career opportunities in biomedical optics,” *Invited seminar, Applied Math and Science Club, Central High School*. Urbana, IL, Mar 2, 2023.
11. **JE Sorrells**, “Current topics and challenges in extracellular vesicle research,” *Invited seminar, Extracellular Vesicles Imaging and Therapeutics (EVIT) Working Group, University of Illinois Urbana-Champaign*. Urbana, IL, Sep 28, 2022.
12. **JE Sorrells**, S Zhang, “Using MATLAB to analyze the biomechanics of sitting and standing,” *Guest lecture, BME 201: Fundamentals of Biomechanics, University of Rochester*. Rochester, NY, Nov 29, 2017.

Invited Conference Presentations (National/International)

1. **JE Sorrells**, J Park, EM Martin, E Aksamitiene, EJ Chaney, AM Higham, KA Cradock, ZG Liu, KA Selting, M Marjanovic, SA Boppart, “Characterization of metabolic signatures of extracellular vesicles in breast cancer using label-free autofluorescence nonlinear optical microscopy,” *Invited oral presentation and poster, Gordon Research Conference on Extracellular Vesicles*. Newry, ME, July 24-29, 2022.
2. **JE Sorrells**, J Park, EM Martin, E Aksamitiene, EJ Chaney, AM Higham, KA Cradock, ZG Liu, KA Selting, M Marjanovic, SA Boppart, “Characterization of metabolic signatures of extracellular vesicles in breast cancer using label-free autofluorescence nonlinear optical microscopy,” *Invited oral presentation and poster, Gordon Research Seminar on Extracellular Vesicles*. Newry, ME, July 23-24, 2022.

Contributed Conference Posters and Presentations (National/International)

1. KKD Tan, CA Renteria, RR Iyer, A HO, **JE Sorrells**, RJ Usselman, SA Boppart, “Probing magnetic field effects on cellular redox state using autofluorescence intensity and lifetime microscopy,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 27-Feb 1, 2024.
2. A Ho, J Shi, EJ Chaney, **JE Sorrells**, K Tan, A Alex, R Talaban, DR Spillman, M Marjanovic, M Doan, SR Hood, SA Boppart, “Predicting productivity in CHO cells based on co-occurrence of metabolism-related features in simultaneous label-free autofluorescence multiharmonic (SLAM) microscopy,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 27-Feb 1, 2024.
3. J Shi, A Ho, E Chaney, **JE Sorrells**, A Alex, R Talaban, DR Spillman, M Marjanovic, M Doan, SR Hood, SA Boppart, “Early selection of desired biopharmaceutical CHO cell lines using label-free multimodal optical microscopy and machine learning,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 27-Feb 1, 2024.
4. J Shi, A Ho, K Tan, **JE Sorrells**, RR Iyer, EJ Chaney, DR Spillman, M Marjanovic, SA Boppart, “Self-supervised deep learning enables robust fluorescence lifetime estimation with limited photons,” *Poster, SPIE Photonics West*. San Francisco, CA, Jan 27-Feb 1, 2024.
5. RR Iyer, L Yang, **JE Sorrells**, SA Boppart, “Dispersion compensation technique for evident chromatic anomalies in ultrafast optical interferometry,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 27-Feb 1, 2024.
6. RR Iyer, **JE Sorrells**, L Yang, EJ Chaney, SA Boppart, “VAMPIRE microscopy enables fast and simultaneous structural, metabolic, and chemical characterization of living tissues label free,” *Oral presentation and poster, SPIE Photonics West*. San Francisco, CA, Jan 27-Feb 1, 2024.
7. L Yang, RR Iyer, **JE Sorrells**, EJ Chaney, SA Boppart, “Label-free polarimetric multimodal optical imaging of collagen,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 27-Feb 1, 2024.
8. G Wang, RR Iyer, **JE Sorrells**, E Aksamitiene, EJ Chaney, CA Renteria, J Park, J Shi, Y Sun, SA Boppart, H Tu, “Pixelation with concentration-encoded effective photons for molecular optical sectioning microscopy,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 27-Feb 1, 2024.
9. RR Iyer, **JE Sorrells**, CA Renteria, L Yang, SA Boppart, “Label-free metabolic microscopy of neuronal activity using fluorescence lifetime imaging,” *Poster, Society for Neuroscience Annual Meeting*, Nov 13, 2023.
10. **JE Sorrells**, J Park, E Aksamitiene, M Marjanovic, EM Martin, EJ Chaney, AM Higham, KA Cradock, ZG Liu, SA Boppart, “Optical metabolic signatures of extracellular vesicles from biofluids and ex vivo tissue in breast cancer using label-free multimodal multiphoton microscopy,” *Poster, BMES Annual Meeting*. Seattle, WA, Oct 11-14, 2023.

11. **JE Sorrells**, J Park, E Aksamitiene, M Marjanovic, EM Martin, EJ Chaney, AM Higham, KA Cradock, ZG Liu, SA Boppart, “Label-free nonlinear optical microscopy for characterization of optical metabolic signatures of isolated and *in situ* EVs in human breast cancer,” *Poster, Student Network on EVs (SNEV) Virtual Conference*. Virtual, Jul 13-14, 2023. *Best Poster Award*
12. **JE Sorrells**, RR Iyer, L Yang, F Zaki, EJ Chaney, M Marjanovic, SA Boppart, “Label-free characterization of bacteria and biofilm metabolism with high spatiotemporal resolution using multiphoton autofluorescence microscopy,” *Oral presentation and poster, ASM Microbe*. Houston, TX, June 15-19, 2023.
13. A Das Gupta, N Krawczynska, HEV Gamage, H Kim, J Park, **JE Sorrells**, SA Boppart, ER Nelson, “The cholesterol metabolite, 27-hydroxycholesterol, enhances the secretion of cancer promoting extracellular vesicles by impairing lysosomal integrity,” *Poster, ENDO*. Chicago, IL, June 15-18, 2023.
14. **JE Sorrells**, J Park, E Aksamitiene, EM Martin, EJ Chaney, AM Higham, KA Cradock, ZG Liu, M Marjanovic, SA Boppart, “Metabolic signatures of biofluid-derived extracellular vesicles in breast cancer characterized using label-free nonlinear optical microscopy,” *Oral presentation, International Society for Extracellular Vesicles Annual Meeting*. Seattle, WA, May 17-21, 2023.
15. SA Boppart, S You, Y Sun, **JE Sorrells**, J Park, E Aksamitiene, EJ Chaney, H Tu, M Marjanovic, “Label-free visualization and optical characterization of extracellular vesicles *in situ* and *in vivo* at single-vesicle resolution using multimodal nonlinear imaging,” *Oral presentation, International Society for Extracellular Vesicles Annual Meeting*. Seattle, WA, May 17-21, 2023.
16. A Das Gupta, N Krawczynska, HEV Gamage, H Kim, J Park, **JE Sorrells**, SA Boppart, ER Nelson, “The cholesterol metabolite, 27-hydroxycholesterol impairs lysosomal function, leading to increased secretion of cancer promoting extracellular vesicles,” *Poster, International Society for Extracellular Vesicles Annual Meeting*. Seattle, WA, May 17-21, 2023.
17. M Marjanovic, J Park, **JE Sorrells**, EJ Chaney, AM Abdelrahman, JA Yonkus, J Leiting, H Nelson, E Aksamitiene, MJ Truty, SA Boppart, “Label-free multimodal nonlinear imaging of the EVs in response to treatment of pancreatic tumor patient-derived murine xenografts,” *Oral presentation, International Society for Extracellular Vesicles Annual Meeting*. Seattle, WA, May 17-21, 2023.
18. A Das Gupta, N Krawczynska, HEV Gamage, H Kim, J Park, **JE Sorrells**, SA Boppart, ER Nelson, “27-Hydroxycholesterol impairs lysosomal integrity in myeloid immune cells, resulting in enhanced secretion of cancer promoting extracellular vesicles,” *Poster, American Association for Cancer Research Annual Meeting*. Orlando, FL, Apr 14-19, 2023.
19. TT Roh, A Alex, **JE Sorrells**, P Chandramouleeswaran, M Marjanovic, SR Hood, B Sridharan, SA Boppart, “Label-free multimodal multiphoton microscopy for predicting DNA damage response in patient derived non-small cell lung cancer organoids,” *Poster, American Association for Cancer Research Annual Meeting*. Orlando, FL, Apr 14-19, 2023.
20. **JE Sorrells**, RR Iyer, L Yang, EM Martin, F Zaki, M Marjanovic, SA Boppart, “Fast label-free multiphoton fluorescence lifetime imaging microscopy for metabolic characterization of the skin microbiome,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 28-Feb 2, 2023.
21. **JE Sorrells**, J Park, EM Martin, E Aksamitiene, EJ Chaney, AM Higham, KA Cradock, ZG Liu, KA Selting, M Marjanovic, SA Boppart, “Characterizing metabolic signatures of biofluid-derived extracellular vesicles using label-free nonlinear optical microscopy,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 28-Feb 2, 2023.
22. **JE Sorrells**, M Marjanovic, RR Iyer, L Yang, EJ Chaney, G Wang, H Tu, SA Boppart, “Fast fluorescence lifetime imaging microscopy using single- and multi-photon peak event detection for rapid quantification of NAD(P)H-related metabolic dynamics during apoptosis,” *Oral presentation and poster, SPIE Photonics West*. San Francisco, CA, Jan 28-Feb 2, 2023. *JenLab Young Investigator Award*
23. J Shi, A Ho, C Snyder, E Chaney, **JE Sorrells**, A Alex, R Talaban, DR Spillman, M Marjanovic, SR Hood, SA Boppart, “Machine learning-assisted label-free multimodal optical bioimaging for biopharmaceutical CHO cell line characterization,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 28-Feb 2, 2023.
24. A Ho, J Shi, E Chaney, C Snyder, **JE Sorrells**, A Alex, R Talaban, DR Spillman, M Marjanovic, SR Hood, SA Boppart, “Characterization of Chinese hamster ovary (CHO) cell lines by simultaneous label-free autofluorescence multi-harmonic (SLAM) microscopy for upstream bioprocessing,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 28-Feb 2, 2023.
25. G Wang, **JE Sorrells**, RR Iyer, SA Boppart, H Tu, “Photon counting with analog photodetection for sign-

- signal-rate quantitative nonlinear microscopy,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 28-Feb 2, 2023.
26. RR Iyer, **JE Sorrells**, G Wang, L Yang, H Tu, SA Boppart, “Fewer photons for fast FLIM using analog multiplexing of laser clock,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 28-Feb 2, 2023.
 27. RR Iyer, **JE Sorrells**, CA Renteria, L Yang, J Kahng, SA Boppart, “Label-free optophysiology of neural activity using dual-channel fast autofluorescence lifetime imaging microscopy,” *Oral presentation, SPIE Photonics West*, San Francisco. CA, Jan 28-Feb 2, 2023.
 28. L Yang, RR Iyer, **JE Sorrells**, CA Renteria, KF Tehrani, DR Spillman, SA Boppart, “Versatile phase and amplitude pulse shaping using 2D spatial light modulator for spectrally optimized multimodal optical imaging,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 28-Feb 2, 2023.
 29. TT Roh, A Alex, **JE Sorrells**, P Chandramouleeswaran, P Mukherjee, K Bera, J Ekert, SR Hood, B Sridhara, SA Boppart, “Label-free multimodal multiphoton microscopy for predicting DNA damage response in patient derived non-small cell lung cancer organoids,” *Invited oral presentation, BEN Symposium, GlaxoSmithKline*. Collegeville, PA, September 12-14, 2022.
 30. A Ho, J Shi, E Chaney, **JE Sorrells**, C Snyder, A Alex, R Talaban, D Spillman, M Marjanovic, S Hood, S Boppart, “Characterization of Chinese hamster ovary (CHO) cells by simultaneous label-free autofluorescence multiharmonic (SLAM) microscopy for upstream bioprocessing,” *Invited oral presentation, BEN Symposium, GlaxoSmithKline*. Collegeville, PA, September 12-14, 2022.
 31. **JE Sorrells**, RR Iyer, L Yang, EM Martin, F Zaki, M Marjanovic, SA Boppart, “Fast fluorescence lifetime imaging microscopy enabled by computational photon counting for investigation of rapid, label-free metabolic dynamics in bacteria,” *Poster, Gordon Research Conference on Optics and Photonics in Medicine and Biology*. Lewiston, ME, July 10-15, 2022.
 32. SA Boppart, S You, **JE Sorrells**, J Park, J Shi, E Aksamitiene, M Marjanovic, H Tu, “Imaging and characterization of extracellular vesicles as biomarkers of cancer using simultaneous label-free autofluorescence multi-harmonic (SLAM) microscopy,” *Poster, Gordon Research Conference on Optics and Photonics in Medicine and Biology*. Lewiston, ME, July 10-15, 2022.
 33. **JE Sorrells**, RR Iyer, L Yang, EM Martin, F Zaki, M Marjanovic, SA Boppart, “Fast fluorescence lifetime imaging microscopy enabled by computational photon counting for investigation of rapid, label-free metabolic dynamics in bacteria,” *Poster, Gordon Research Seminar on Optics and Photonics in Medicine and Biology*. Lewiston, ME, July 9-10, 2022.
 34. TT Roh, A Alex, P Chandramouleeswaran, **JE Sorrells**, P Mukherjee, K Bera, SR Hood, J Ekert, SA Boppart, “Longitudinal imaging of non-small cell lung carcinoma organoids via label-free multimodal microscopy,” *Poster, Microphysiological Systems World Summit*. New Orleans, LA, May 30-June 3, 2022.
 35. L Yang, RR Iyer, **JE Sorrells**, E Chaney, SA Boppart, “Combining linear and nonlinear polarization-sensitive imaging probes for enhanced characterization of collagen,” *Oral presentation, Biophotonics Congress: Biomedical Optics*. Fort Lauderdale, FL, Apr 24-27, 2022.
 36. EM Martin, **JE Sorrells**, E Aksamitiene, P Mukherjee, A Alex, EJ Chaney, M Marjanovic, SA Boppart, “Metabolic characterization of breast cancer cells and their extracellular vesicles using fluorescence lifetime imaging microscopy,” *Poster, American Association for Cancer Research Annual Meeting*. New Orleans, LA, Apr 8-13, 2022.
 37. J Park, R Kramerer, M Marjanovic, **JE Sorrells**, S You, R Barkalifa, K Selting, SA Boppart, “Label-free optical metabolite imaging signatures of urinary extracellular vesicles from dogs as a genitourinary cancer biomarker,” *Poster, Symposium on Urinary Extracellular Vesicles*. Virtual, February 15-16, 2022.
 38. **JE Sorrells**, RR Iyer, L Yang, EJ Chaney, M. Marjanovic, H Tu, SA Boppart, “Computational single-photon counting for fast fluorescence lifetime imaging microscopy using single-and multi-photon peak event detection,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 22-27, 2022.
 39. RR Iyer, **JE Sorrells**, L Yang, EJ Chaney, H Tu, M Marjanovic, SA Boppart, “FOCALS microscopy: a label-free single-source multimodal optical system for holistic characterization of dynamics living samples,” *Oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 22-27, 2022.
 40. RR Iyer, **JE Sorrells**, G Wang, L Yang, H Tu, SA Boppart, “Photon budget analysis for label-free quantitative multiphoton microscopy,” *Oral presentation, SPIE Photonics West*. Jan 22-27, 2022.
 41. G Wang, RR Iyer, **JE Sorrells**, KF Tehrani, K Bera, EJ Chaney, H Tu, SA Boppart, “User-friendly photodamage-monitored imaging by simultaneous label-free autofluorescence multiharmonic (SLAM)

- microscopy,” *Invited oral presentation, SPIE Photonics West*. San Francisco, CA, Jan 22-27, 2022.
42. AD Gupta, N Krawczynska, AE Baek, SV Dvoretzkiy, S You, J Park, YH Deng, **JE Sorrells**, BP Smith, L Ma, AT Nelson, HB McDowell, A Sprenger, M Henn, Z Madak-Erdogan, H Kong, SA Boppart, M Boppart, ER Nelson, “Mechanisms by which 27-Hydroxycholesterol modulates extracellular vesicle biogenesis,” *Poster, The Steroid Hormones and Receptors in Health and Disease Conference, FASEB and RRSB*. Virtual, May 25-27, 2021.
 43. **JE Sorrells**, RR Iyer, L Yang, AJ Bower, M Marjanovic, SA Boppart, “Real-time phasor analysis of two-photon fast FLIM for visualizing metabolic dynamics,” *Oral presentation, SPIE Photonics West*. Virtual, Mar 6-11, 2021.
 44. **JE Sorrells**, EM Martin, E Aksamitiene, RR Iyer, L Yang, M Marjanovic, SA Boppart, “Characterization of cellular response to extracellular vesicles using two-photon FLIM of NAD(P)H,” *Oral presentation, SPIE Photonics West*. Virtual, Mar 6-11, 2021.
 45. RR Iyer, **JE Sorrells**, L Yang, M Zurauskas, SA Boppart, “Automated single-shot sensorless adaptive optics on a multimodal imaging platform using computational adaptive optics,” *Oral presentation, SPIE Photonics West*. Virtual, Mar 6-11, 2021.
 46. Y Luo, **JE Sorrells**, SA Boppart, “Label-free 3D digital holographic imaging of apoptosis processes in human breast cancer cells,” *Poster, BMES Annual Meeting*. Virtual, Oct 14-17, 2020.
 47. EM Martin, **JE Sorrells**, SA Boppart, “Optimization of a blob detection algorithm for analysis of fluorescence lifetime imaging microscopy (FLIM) of extracellular vesicles,” *Poster, BMES Annual Meeting*. Virtual, Oct 14-17, 2020.
 48. **JE Sorrells**, EM Martin, E Aksamitiene, J Park, P Mukherjee, A Alex, M Marjanovic, SA Boppart, “Label-free imaging and characterization of isolated extracellular vesicles with fluorescence lifetime imaging microscopy,” *Poster, Gordon Research Conference on Extracellular Vesicles*. Cancelled due to COVID-19, July 2020.
 49. M Marjanovic, S You, **JE Sorrells**, J Park, E Aksamitiene, Y Sun, H Tu, SA Boppart, “Label-free optical imaging and characterization of cancer-associated extracellular vesicles in tissues,” *Poster, International Society for Extracellular Vesicles Annual Meeting*. Virtual, July 20-22, 2020.
 50. RR Iyer, **JE Sorrells**, L Yang, M Zurauskas, C Renteria, YZ Liu, SA Boppart, “Supervised computational adaptive optics on a multimodal optical imaging platform,” *Poster, Gordon Research Conference on Image Science*. Cancelled due to COVID-19, June 2020.
 51. **JE Sorrells**, EM Martin, P Mukherjee, E Aksamitiene, S You, A Aneesh, M Marjanovic, SA Boppart, “Imaging heterogeneity of NAD(P)H in individual extracellular vesicles using fluorescence lifetime imaging microscopy (FLIM),” *Oral presentation, OSA Biophotonics Congress: Biomedical Optics*. Virtual, Apr 20-23, 2020.
 52. EM Martin, **JE Sorrells**, P Mukherjee, SA Boppart, “Measuring the effect of storage on extracellular vesicles using fluorescence lifetime imaging microscopy (FLIM),” *Poster, BMES Annual Meeting*. Philadelphia, PA, Oct 16-19, 2019.
 53. RR Iyer, **JE Sorrells**, C Renteria, AJ Bower, J Li, SA Boppart, “Design and characterization of a multimodal fast fluorescence lifetime imaging and optical coherence microscopy system for studying neuron dynamics,” *Oral presentation, BMES Annual Meeting*. Philadelphia, PA, Oct 16-19, 2019.
 54. **JE Sorrells**, J Li, AJ Bower, P Huang, SA Boppart, “Transient optical scattering as an imaging contrast mechanism for molecular-scale dynamics in tissues,” *Poster, BMES Annual Meeting*. Phoenix, AZ, Oct 11-14, 2017.
 55. DW Malcolm, **JE Sorrells**, DSW Benoit, “Off-target effects of nanoparticle (NP)-mediated siRNA delivery to mesenchymal stem cells (MSCs),” *Oral presentation, BMES Annual Meeting*. Minneapolis, MN, Oct 5-8, 2016.
 56. AE Cannaday, **JE Sorrells**, R Draham, AJ Berger, “Angular scattering analysis of single cells,” *Poster, Gordon Research Conference on Lasers in Medicine and Biology*. West Dover, VT, July 10-15, 2016.

Contributed Conference Posters and Presentations (Local/Regional)

1. **JE Sorrells**, RR Iyer, L Yang, F Zaki, EJ Chaney, M Marjanovic, SA Boppart, “Label-free optical metabolic imaging of bacteria and biofilms with high spatiotemporal resolution using multiphoton autofluorescence microscopy,” *Poster, Microbial Multiverse Symposium, University of Illinois at Urbana-Champaign*. Urbana, IL, Sep 15, 2023.
2. C Chesser, RR Iyer, **JE Sorrells**, SA Boppart, “Statistical analysis of autofluorescence in multimodal metabolic microscopy,” *Poster, researchStart Symposium, University of Illinois at Urbana-Champaign*. Urbana, IL, Aug

- 4, 2023.
3. **JE Sorrells**, M Marjanovic, RR Iyer, L Yang, EJ Chaney, G Wang, H Tu, SA Boppart, “Fast fluorescence lifetime imaging microscopy using single- and multi-photon peak event detection for rapid quantification of NAD(P)H-related metabolic dynamics during apoptosis,” *Poster, Bioengineering Graduate Research Symposium, University of Illinois at Urbana-Champaign*. Urbana, IL, May 4, 2023.
4. **JE Sorrells**, J Park, EM Martin, E Aksamitiene, EJ Chaney, AM Higham, KA Cradock, ZG Liu, KA Selting, M Marjanovic, SA Boppart, “Characterization of metabolic signatures of extracellular vesicles in breast cancer using label-free nonlinear optical microscopy,” *Poster, New Discoveries in Extracellular Vesicle Therapies, University of Illinois at Urbana-Champaign*. Urbana, IL, Apr 21, 2023.
5. A Das Gupta, N Krawczynska, HEV Gamage, H Kim, J Park, **JE Sorrells**, SA Boppart, ER Nelson, “The cholesterol metabolite, 27-hydroxycholesterol impairs lysosomal function, leading to increased secretion of cancer promoting extracellular vesicles,” *Poster, New Discoveries in Extracellular Vesicle Therapies*, Urbana, IL, Apr 21, 2023.
6. **JE Sorrells**, M Marjanovic, RR Iyer, L Yang, EJ Chaney, G Wang, H Tu, SA Boppart, “Quantifying NAD(P)H-related metabolic dynamics using single- and multi-photon peak event detection,” *Poster, CLIMB Kick-off Symposium, University of Illinois at Urbana-Champaign*. Urbana, IL, Apr 14, 2023.
7. **JE Sorrells**, M Marjanovic, RR Iyer, L Yang, EJ Chaney, G Wang, H Tu, SA Boppart, “Fast fluorescence lifetime imaging microscopy using single- and multi-photon peak event detection for rapid quantification of NAD(P)H-related metabolic dynamics during apoptosis,” *Poster, Tissue Microenvironment (TiMe) Day, University of Illinois at Urbana-Champaign*. Urbana, IL, Mar 9, 2023.
8. J Park, **JE Sorrells**, EM Martin, E Aksamitiene, EJ Chaney, AM Higham, KA Cradock, ZG Liu, KA Selting, M Marjanovic, SA Boppart, “Label-free properties of extracellular vesicles derived from serum, urine, and human breast cancer tissue,” *Poster, Tissue Microenvironment (TiMe) Day, University of Illinois at Urbana-Champaign*. Urbana, IL, Mar 9, 2023.
9. **JE Sorrells**, J Park, EM Martin, E Aksamitiene, EJ Chaney, AM Higham, KA Cradock, ZG Liu, KA Selting, M Marjanovic, SA Boppart, “Characterization of metabolic signatures of extracellular vesicles in breast cancer using label-free nonlinear optical microscopy,” *Poster, Cancer Center at Illinois Winter Celebration*, Urbana, IL, Dec 14, 2022.
10. A Das Gupta, N Krawczynska, J Park, **JE Sorrells**, SA Boppart, ER Nelson, “Mechanisms by which 27-Hydroxycholesterol modulates extracellular vesicle biogenesis,” *Poster, Midwest Tumor Microenvironment Meeting*. Kansas City, KS, May 23-25, 2022.
11. **JE Sorrells**, RR Iyer, L Yang, EM Martin, G Wang, H Tu, M Marjanovic, SA Boppart, “Computational photon counting for fast fluorescence lifetime imaging microscopy using single- and multi-photon peak event detection,” *Oral presentation, Coordinated Science Laboratory Student Conference, University of Illinois at Urbana-Champaign*. Virtual, Feb 23-25, 2022. *Best Presentation Award for Imaging and Sensing*
12. A Das Gupta, **JE Sorrells**, N Krawczynska, J Park, SA Boppart, ER Nelson, “Mechanisms by which 27-Hydroxycholesterol modulated extracellular vesicle biogenesis,” *Poster, Tissue Microenvironment (TiMe) Day, University of Illinois at Urbana-Champaign*. Urbana, IL, Nov 18, 2021. *Best Poster Award*
13. EM Martin, **JE Sorrells**, SA Boppart, “Effect of aggressive breast cancer extracellular vesicles on breast cell metabolism determined by fluorescence lifetime imaging microscopy,” *Oral presentation, Undergraduate Research Symposium, University of Illinois at Urbana-Champaign*. Virtual, Apr 26-30, 2021.
14. Y Luo, **JE Sorrells**, SA Boppart, “Morphologic and metabolic changes in apoptosis,” *Poster, Undergraduate Research Symposium, University of Illinois at Urbana-Champaign*. Virtual, Apr 2020.
15. EM Martin, **JE Sorrells**, P Mukherjee, SA Boppart, “Effect of storage on extracellular vesicles,” *Poster, Engineering Research Fair, University of Illinois at Urbana-Champaign*. Urbana, IL, Sep 2019.
16. EM Martin, **JE Sorrells**, P Mukherjee, SA Boppart, “Stability of stored melanoma microvesicles determined by optical imaging,” *Oral presentation, Illinois Summer Research Symposium*. Champaign, IL, July 2019.
17. **JE Sorrells**, J Li, AJ Bower, P Huang, SA Boppart, “Transient Scattering Contrast: an optical imaging technique for observing cellular dynamics,” *Oral presentation and poster, Illinois Summer Research Symposium*. Champaign, IL, July 2017.
18. K Konopka*, N Sardana*, **JE Sorrells***, “The effect of music on group and individual learning in chemistry,” *Poster, Center for Excellence in Teaching and Learning Spring Symposium*. Rochester, NY, Apr 2015.