SARA E. KEARNEY, PH.D

Scientific Program Manager | Gainesville, FL

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PROFESSIONAL SUMMARY

- Highly self-motivated scientist with 7+ years of experience in chemical research, cross-functional collaboration, and science communication
- Detail-oriented with a proven ability to strategically manage multiple projects simultaneously and independently solve complex problems in a matrix environment
- Skilled communicator and conscientious team player dedicated to critical systems thinking, process innovation, and relationship building

EDUCATION

Doctor of Philosophy, Organic Chemistry (May 2023)
University of Florida

Bachelor of Science, Chemistry, ACS Certified in Biochemistry; Spanish language minor (May 2016)
Wheaton College, IL

RESEARCH EXPERIENCE

Scientific Program Manager [C] (February 2023 – present)
Axle Informatics | National Center for Advancing Translational Sciences (NCATS)

- Researching and evaluating the operation of early drug discovery scientific programs and initiatives
- Developing and executing strategic communications initiatives for the intramural research program
- Composing and editing scientific and technical documents for internal and external stakeholders
- Providing medicinal chemistry portfolio and project management support
- Preparing programmatic presentation materials for technical meetings and consultations
- Coordinated a quadrennial scientific review involving individual, team, and branch level assessments of productivity, innovation, and portfolio management

Doctoral Research Assistant (August 2018 – January 2023)
University of Florida Department of Chemistry | Advisor: Professor Alexander J. Grenning

- Developed versatile strategies for the synthesis of novel axially chiral cannabinoids to inspire new directions in cannabinoid-based rational drug discovery
- Coordinated 2 external collaborations to explore the therapeutic potential of drug-like compounds
- Performed routine literature searches using scientific databases (e.g., SciFinder; Mendeley; PubMed)
- Independently drafted and edited scientific documents including technical protocols, SOPs, abstracts, research summaries, and poster presentations

- Independently composed and delivered presentations for internal group meetings and scientific conferences (e.g., Gordon Research Conference; Florida Heterocyclic & Synthetic Chemistry)
- Critically reviewed and edited all scientific documents (grant proposals, journal publications, research summaries, and dissertations) produced by group members and the principal investigator
- Tactfully trained and mentored junior graduate and undergraduate students in basic laboratory practice, data analysis, scientific writing, and oral presentation

NIH Post-baccalaureate Research Fellow (August 2016 – June 2018)
National Center for Advancing Translational Sciences (NCATS) **|** Mentor: Jason M. Rohde, Ph.D.

- Performed pre-clinical translational research with a multidisciplinary team of medicinal chemists, assay biologists, and bioinformaticians to develop novel chemical probes for promising biological targets
- Advanced multiple projects in parallel within a matrix environment
- Developed in-depth knowledge of project-relevant therapeutic areas
- Conducted structure-activity relationships (SAR) studies and hit-to-lead optimization with small molecule high-throughput screening hits
- Designed and executed cytotoxicity and fluorescence imaging studies to evaluate select analogs
- Optimized small molecule leads to improve pharmacokinetic and pharmacodynamic properties
- Evaluated multi-assay data sets generated by high-throughput screening and organized the progression of compelling hits (*Canvass: A Crowd-Sourced, Natural-Product Screening Library*)

Volunteer Research Assistant (Summer 2016)
University of Florida College of Pharmacy **|** Supervisor: Professor Yousong Ding

- Demonstrated learning agility by rapidly developing skills in biochemistry and molecular biology, including molecular cloning, protein expression and purification, PCR, bacterial cell culture, and gel electrophoresis
- Performed heterologous expression of cyanobacterial recombinant Sfp-like phosphopantetheinyl transferases (PPTases) in *E. coli* bacteria to obtain detailed biochemical characterization and kinetic analyses
- Consulted with chemistry expertise to optimize chromatographic methodologies for data acquisition

Research & Development Intern (Summer 2015)
Ferring Pharmaceuticals, Department of Analytical Development **|** Supervisor: Ashley Lister, Ph.D.

- Developed and validated analytical methods to quantify active pharmaceutical ingredients in drug products
- Fulfilled all regulatory requirements, meticulously performing and recording scientific analyses and testing according to cGMP standards and company SOPs
- Independently prepared and delivered a cumulative research presentation summarizing the development of an automated complexiometric titration method

TEACHING EXPERIENCE

University of Florida (August 2018 – April 2019)
Graduate Student Instructor, Organic Chemistry II Laboratory

- Prepared and delivered lectures to introduce chemical theory and laboratory practice
- Provided general supervision and instructed students in proper handling of chemical reagents and appropriate use of laboratory instrumentation

- Initiated one-on-one coaching with students to improve laboratory technique and establish clear links between classroom learning, laboratory experimentation, and real-world application
- Edited written laboratory reports, offering extensive guidance and feedback regarding scientific writing
- Authored letters of recommendation for students' medical and veterinary school applications

Freelance Tutor (September 2016 – December 2019)
Organic Chemistry, Spanish, and Elementary Education

- Designed lesson plans, problems sets, and interactive learning activities
- Executed a student-focused pedagogy through highly individualized instruction
- Adapted communication and teaching style to successfully engage child, adolescent, and adult learners

Wheaton College (August 2013 – December 2014)
Teaching Assistant, *Organic, Inorganic, and General Chemistry*

- Delivered lectures and instructed problem-solving sessions in general and inorganic chemistry classes
- Supervised and guided students in the use of chemical materials and proper use of laboratory equipment

Wheaton College (August 2013 – May 2016)
Tutor, *Department of Chemistry*

- Elected by department faculty as the most highly recommended chemistry tutor
- Frequently improved both college and high school student performance by 2-3 letter grades (e.g., D [65%] to A- [90%]; F [32%] to C [74%])
- Elucidated interdisciplinary concepts to enhance comprehension of material
- Mentored students in the context of both their academic and extracurricular pursuits

PRESENTATIONS

- **Kearney, S. E.** et al. "From Beaker to Bedside: Chemistry in the NCATS Early Translation Branch." Poster, presented at: Organic Reactions & Processes Gordon Research Conference; Smithfield, RI, 2024.
- **Kearney, S. E.**, Gangano, A. J.; Ghiviriga, I.; Grenning, A. J. "Tuning Reaction Trajectories Enables the Synthesis of Axially Chiral Cannabinols." Poster, presented at: Organic Reactions & Processes Gordon Research Conference; Smithfield, RI, 2022.
- **Kearney, S. E.**, Gangano, A. J.; Ghiviriga, I.; Grenning, A. J. "New Strategies for the Synthesis of Axially Chiral Cannabinoids." Poster, presented at: Florida Heterocyclic & Synthetic Chemistry Conference; Gainesville, FL, 2022.
- **Kearney, S. E.** & Grenning, A. J. "Curtin-Hammett [4+2] or [3,3]: Controlling reaction trajectories via catalysis to synthesize axially chiral cannabinoids or pyranocoumarins." Lecture, presented at: Telluride Workshop (virtual); 2021.
- **Kearney, S. E.** et al. "Synthesis of Axially Chiral Cannabinols for Cannabinoid-Based Drug Discovery." Poster, presented at: Florida Heterocyclic and Synthetic Chemistry Conference; Gainesville, FL, 2020.
- **Kearney, S. E.** et al. "Development of Small-Molecule Modulators of TorsinA Protein Mislocalization for the Treatment of DYT1 Dystonia." Poster, presented at: Postbac Poster Day, National Institutes of Health; Bethesda, MD, 2018.
- **Kearney, S. E.** "The Role of Medicinal Chemistry in Translational Science." Lecture, presented at: NCATS Connector Seminar, NIH National Center for Advancing Translational Sciences; Rockville, MD, 2017.

- **Kearney, S. E.**, Cheff, D. M.; Choe, J. Y.; Ferraris, R. P.; Oprea, T. I.; Ursu, O.; Jadhav, A.; Jansen, D. J.; Hall, M. D.; Rohde, J. M. "Development of Potent and Selective Modulators of Human Fructose Transporter GLUT5." Poster, presented at: Postbac Poster Day; National Institutes of Health, Bethesda, MD, 2017.

Invited Lectures

- **Kearney, S. E.** "Axially Chiral Cannabinoids: Design, Synthesis, and Cannabinoid Receptor Affinity." Research Spotlight, presented at: Synthesis Workshop (virtual); 2023.
- **Kearney, S. E.** "Axially Chiral Cannabinoids: Design, Synthesis, and Cannabinoid Receptor Affinity." Lecture, presented at: ACS Northwest Regional Meeting; Bozeman, MT; 2023.
- **Kearney, S. E.** & Grenning, A. J.; "Design and Synthesis of Axially Chiral Cannabinols for Cannabinoid-Inspired Drug Discovery." Lecture, presented at: Open Science Livestream (virtual); 2022.
- **Kearney, S. E.**, Gangano, A. J.; Ghiviriga, I.; Grenning, A. J. "Tuning Reaction Trajectories Enables the Synthesis of Axially Chiral Cannabinols or Pyranocoumarins." Lecture, presented at: Corteva Chemistry Scholars Symposium; Indianapolis, IN; 2022.
- **Kearney, S. E.** & Grenning, A. J. "Curtin-Hammett [4+2] or [3,3]: Controlling reaction trajectories via catalysis to synthesize axially chiral cannabinoids or pyranocoumarins." Lecture, presented at: Synth-posium by the Sea (virtual); 2021.
- **Kearney, S. E.** "Medicinal Chemistry: The Magic of Molecules." Lecture, presented at: The German International School Washington D.C.; Potomac, MD; 2018.

PUBLICATIONS & PATENTS

Publications

- **Kearney, S. E.** et al. "Axially Chiral Cannabinoids: Design, Synthesis, and Cannabinoid Receptor Affinity." *J. Am. Chem. Soc.* **2023**, *145*, 13581–13591.
- Shi, L. et al. "SULT1A1-Dependent Sulfonation of Alkylators is a lineage-dependent vulnerability of liver cancers." *Nat. Cancer*. **2023**, *4*, 365 – 381.
- **Kearney, S. E.** et al. "Canvass: A Crowd-Sourced, Natural-Product Screening Library for Exploring Biological Space." *ACS Cent. Sci*. **2018**, *4*, 1727-1741.
- Yang, G.; Zhang, Y.; Lee, N. K.; Cozad, M. A.; **Kearney, S. E.**; Luesch, H.; Ding, Y. "Cyanobacterial Sfp-type phosphopantetheinyl transferases functionalize carrier proteins of diverse biosynthetic pathways." *Scientific Reports*. **2017**, *7*, 11888.

Patents

- Grenning, A. J.; **Kearney, S. E.**; A New Route for Synthesizing Axially Chiral Cannabinoids from Coumarins. PCT/US2022/081229, filed December 9, 2022.

AWARDS & HONORS

- Corteva Agriscience Chemistry Scholar (2022)
- Outstanding Lecture Award **|** *Synth-Posium by the Sea* (2021)
- Invited Guest Lecturer **|** *German International School Washington D.C.* (2018)

- Graduate School Preeminence Award **|** *University of Florida* (2018)
- NCATS Director's Award **|** *National Center for Advancing Translational Sciences* (2018)
- Outstanding Research Poster Award **|** *National Center for Advancing Translational Sciences* (2017)
- Postbaccalaureate Intramural Research Training Award **|** *National Institutes of Health* (2016)
- Wheaton College President's Award **|** *Wheaton College, IL* (2012)

SKILLS

- Small molecule synthesis
- New reaction/methodology development
- <10 mg to >10 g scale synthesis
- Compound purification (flash chromatography, recrystallization)
- Compound characterization (NMR, FTIR, HRMS, LC-MS)
- Data analysis/interpretation
- Project management
- Cross-functional collaboration
- Scientific & technical writing
- Line-editing & proofreading
- Critical thinking
- Complex problem-solving
- Literature searching/review
- Communication
- Teaching
- Public speaking
- Mentoring
- Personnel development
- Relationship building
- Time management
- Proficient in Spanish

PROFESSIONAL CERTIFICATIONS

- Advancing Innovation through Mentorship (AIM) (2024) | *Credly - NCATS*

VOLUNTEER SERVICE

Recruitment/New Student Ambassador (2020 – 2022)
UF Chemistry Department

- Served as a representative of the Organic Division, delivered introductory presentations, and led department-wide tours
- Proactively engaged prospective students during virtual informational meetings and on-site visits

Student Volunteer Coordinator (2020, 2022)
Florida Heterocyclic and Synthetic Chemistry Conference

- Assisted with event planning, logistical preparations, and conference registration

Visiting Scientist (2021 – 2022)
Florida Museum of Natural History **|** Scientists in Every Florida School)

- Served as a scientist role model for children in underprivileged K-12 public schools
- Conducted virtual classroom visits to perform live laboratory demonstrations
- Participated in Q&A sessions with students and teachers to provide personal insight into scientific research and opportunities for careers in STEM

REFERENCES

- Matthew D. Hall, Ph.D. **|** *Scientific Director*, *Division of Preclinical Innovation, NCATS, NIH* (hallma@nih.gov)

- Professor Alexander J. Grenning **|** *Department of Chemistry, University of Minnesota* (grenning@umn.edu)
- Jason M. Rohde, Ph.D. **|** *Associate Director Medicinal Chemistry, Hansoh Bio* (Jason.Rohde@hansohbio.com)