Alex R. Leake

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Education

- Doctor of Philosophy in Medical Sciences; Neuroscience Concentration | University of South Florida College of Medicine | Tampa, FL | 2022 - Exp. 2028
- Master of Science in Medical Sciences; Molecular Medicine Concentration | University of South Florida College of Medicine | Tampa, FL | 2020-2022
- Bachelor of Science in Biology/Pre-Medicine with Minors in Chemistry, History & Religion | Southeastern University | Lakeland, FL | August 2016-April 2020

Skills/Certifications

- Relate-A-Bull trained (graduate student peer mentoring program) – 04/2024
- University of South Florida IACUC/AALAS Aseptic Technique in Rodent Survival Surgical Procedures – 09/2022
- CITI - Biomedical Responsible Conduct of Research Certified – 05/2021
- CITI - Human Research - Biomedical Investigators and Key Personnel Certified – 05/2021
- University of South Florida IACUC Certified-Laws, Regulations, Policies, and the Guide – 01/2021
- University of South Florida IACUC - Rodent Basic Biomethodologies & Rodent Biomethodologies Wet Lab Training - 01/2021
- International Tutor Training Program Certification - Level 3 Master Tutor- CRLA - 05/2020
- CITI - Good Laboratory Practices - Stage 1 Certified - 03/2020
- CPR Certified - 06/2019
- Clinical Solutions - FBN-Approved Phlebotomy Training - 10/2018
- BACE Certified - Biotility at the University of Florida - 05/2015
- FEMA Certified - National Incident Management System (NIMS)- 04/2014

Professional Societies/Memberships

- Society for Neuroscience | 2023 – present
- American Association for Advancement of Science | 2018 – present

Publications/Manuscripts

- **2-Bromo-Psilacetin: a potential non-hallucinogenic tryptamine derivative (2025)** *Jeanine Yacoub, Elena Bray, Christopher G. Witowski, Alex Leake, Danielle Gulick, Jude Bayyat, Grant C. Glatfelter, Michael H. Baumann, John McCorvy, Jacqueline L. von Salm.* (in prep)
- **Adolescent two-bottle choice ethanol exposure and circadian disruptions in C57 mice show adulthood differences in ethanol motivation and consumption (2025)** *Alex Leake, Danielle Gulick, Jude Bayyat, Genesis D'aoloisio.* (in prep).

Honors/Awards

- UF CARES Graduate Data Blitz Award | University of Florida | April 2022
- Southeastern University Dean's List Honors Award | Lakeland, FL | Fall 2016 - Spring 2020
- NAIA Champion of Character Award Winner | NAIA Soccer | Lakeland, FL | Fall 2019
- Academic All-Conference Collegiate Athlete | NAIA Soccer | Lakeland, FL | 2016-2020

- First Place Bioethics Poster | Southeastern University Science Symposium | Lakeland, FL | December 2017
- Daytona Beach News-Journal Medallion of Excellence recipient | Spring 2016

Conferences/Symposiums Attended/Presented

- 34th Annual USF Health Research Day **(Poster Presenter) Title: Effects of Adolescent Circadian Disruption and Alcohol Access on Behavior in C57BL/6J Mice** | University of South Florida Health | Tampa, FL | March 2024
- 14th Annual North Central Florida Society for Neuroscience **(Poster Presenter) Title: Effects of Adolescent Circadian Disruption and Alcohol Access on Behavior in C57BL/6J Mice** | University of Florida | Gainesville, FL | February 2024
- 46th Annual Research Society on Alcohol Scientific Meeting **(Poster Presenter) Title: Differences in Operant Behavior and Motivation For Alcohol Across Age And Sex in Per1/Per2 Clock Mutant Mice** | RSA | Bellevue, WA | June 2023
- 33rd University of South Florida Health Research Day | University of South Florida Health | Tampa, FL | March 2023
- 20th Raymond N. Castle Student Research Conference | University of South Florida Chemistry | Tampa, FL | April 2022
- UF CARE 9th Annual Symposium **(Data Blitz Presenter); Title: Adolescent Alcohol Seeking Behavior is Linked to Circadian Desynchrony** | UF CAREs | Gainesville, FL | April 2022
- 18th Raymond N. Castle Student Research Conference **(Poster Presenter) Title: Cesium-assisted cyclization: Mild and Efficient Synthesis of Saturated & Aromatic Heterocycles and Macrocycles** | University of South Florida Chemistry | Tampa, FL | March 2020
- Southeastern University Science Symposium **(Poster Presenter)** December 2017: **The Ethics of Synthetic Human Entities with Embryo-like Features (SHEEFs)** – Original Bioethics Research
- Southeastern University Science Symposium **(Article Summary Posters)** | Lakeland, FL | Presented research articles (work done by other groups) at SEU science symposium as an academic exercise:
  i) December 2019: Identification of in vivo Essential Genes of Vibrio vulnificus for Establishment of Wound Infection by Signature-Tagged Mutagenesis (work by: Kohei Yamazaki, Takashige Kashimoto, Mio Morita, Takehiro Kado, Kaho Matsuda, Moeko Yamasaki, and Shunji Ueno; Laboratory of Veterinary Public Health, School of Veterinary Medicine, Kitasato University, Towada, Japan)
  ii) April 2019: Design, synthesis, and biological evaluation of tacrine-1,2,3-triazole derivatives as potent cholinesterase inhibitors (work by: Gaochan Wu, Yun Gao, Dongwei Kang, Boshi Huang, Zhipeng Huo, Huiqing Liu, Vasanthanathan Poongavanam, Peng Zhan, Xinyong Liu)
- Southeastern University Science Symposium | Lakeland, FL | Attended the SEU science symposium: December 2018; April 2018; December 2016

Professional Experience

- Graduate Researcher | Gulick-Gamsby Lab | Byrd Center for Alzheimer's Research University of South Florida | Tampa, FL | Fall 2022-Current | Conducting literature searches, performing wet-lab experimentation, animal handling, behavior studies, data management, maintaining data collection files, assisting with data analysis and generating correspondence, reports, and graphics.
- Teaching Assistant | Graduate Human Structure and Function | University of South Florida | Tampa, FL | Fall 2024 | Assisted in course management, led exam review sessions, provided student support and mentorship, created course review assignments, coordinated office hours, and proctored examinations.

- Teaching Assistant | Graduate Foundations in Biomedical Sciences | University of South Florida | Tampa, FL | Fall 2023 | Assisted in course management, led exam review sessions, provided student support and mentorship, created and graded course review assignments, coordinated office hours, and proctored examinations.
- Volunteer Research Assistant | Gulick-Gamsby Lab | Byrd Center for Alzheimer's Research University of South Florida | Tampa, FL | 2021-2022 | Conducting literature searches, performing wet-lab experimentation, animal handling, behavior studies, data management, maintaining files, maintaining data collection files, assisting with data analysis and generating correspondence, reports, and graphics.
- Chemistry/Biochemistry Lab Teacher's Assistant | College of Natural and Health Sciences, Southeastern University | Lakeland, FL | 2021-2022 | Worked as a laboratory teaching assistant on a college campus, working with students in chemistry and biochemistry lab settings to perform experiments and develop laboratory skills and etiquette.
- Lead Tutor | Academic Center for Enrichment, Southeastern University | Lakeland, FL | 2018-2020 | Worked as a lead tutor on a college campus, working with students of all kinds to approach math and science problems and studying to achieve success and help lead other tutors in personal development.
- Peer Tutor | Academic Center for Enrichment, Southeastern University | Lakeland, FL | 2017-2018

Volunteer/Outreach

- Letters to a Pre-Scientist | Pen Pal Program with Middle School Students | Writing letters to a "Pre-Scientist" to facilitate one-on-one connections to humanize STEM professionals, demystify STEM career pathways, and inspire all students to explore a future in STEM. | Letters to a Pre-Scientist | Virtual/By Mail | Fall 2024-Spring 2025 | 8 hrs
- Skype a Scientist | Virtual Live Q&A Sessions with K-12 Students | Engaging with classrooms to discuss neuroscience research, answer student questions, and inspire interest in STEM careers by making scientists accessible and relatable | Skype a Scientist | Virtual | Fall 2024 | 6 hrs
- RELATE-A-BULL | Graduate Peer Mentorship Program | Providing guidance and support to incoming graduate students by sharing academic and professional experiences, fostering community, and promoting student success through peer-to-peer mentoring | University of South Florida | Tampa, FL | Fall 2024-Spring 2025 | 10 hrs
- Health Professions Panel Discussion | I shared my experiences and enthusiasm about my role as a scientist in the health profession field and my current academic program with middle school students. | Sligh Middle School @ USF | Tampa, FL | Spring 2024 | 1 hour
- Judge for MD Student Presentations | Evaluated and provided feedback on research projects, contributing to the development of students' presentation and critical thinking skills | University of South Florida Health MD Program | Tampa, FL | Spring 2023 & Spring 2024 | 10 hrs
- Great American Teach-In Outreach | Conducted neuroscience outreach, designing and delivering an age-appropriate presentation on the basics of the brain and the structure and function of a neuron using candy to engage and educate 3rd-grade students, fostering an interest in science and promoting community engagement | Clark Elementary | Tampa, FL | Fall 2023 | 2 hrs
- Society for Neuroscience Brain Awareness Week Primary School Outreach | Conducted neuroscience outreach, designing and delivering age-appropriate presentations on the basics of brain structure and function to engage and educate young students, fostering an interest in science and promoting community engagement | Lee Academy | Tampa, FL | Spring 2023 | 2 hrs
- Pharmacy/Optometry Clinic Volunteer | Handed out and filled prescriptions as a temporary pharmacy technician during a pop-up outreach clinic | One Nation 1 Day Peru | Mira Flores, Peru | June 2019 | 38 hrs
- First Aid/Referee | Southeastern University Soccer High School Tournaments | Lakeland, FL | Fall 2016- Spring 2020 | 65 hrs

- Walk to End Alzheimer's Participant/Volunteer | Lakeland, FL | Fall 2019 | 3 Hrs
- Meet up and eat up | Summer Hot Lunch Program partnered with Second Harvest Food Bank | DeBary, FL | Summer 2017 | 62 hrs
- Night to Shine Prom for Developmentally Delayed Adults and Children | Lakeland, FL | Spring 2017 | 7 hrs
- Various Community Outreach | CHARGE program at Southeastern University | Lakeland, FL | 2016-2017 | 15 hrs
- Various Community Outreach | The Lakeland Dream Center | Lakeland FL | 2016- 2019 | 20 hrs

Extracurricular Activities

- Gulick/Gamsby Lab Volunteer Research Assistant | Spring 2021 - Spring 2022
  i) **Alcohol, Addiction & Sleep Across the Lifetime**: Mice with mutations in the transcriptional regulatory genes Per1 and Per2, key components of the circadian clock, show increased alcohol consumption. Dr. Danielle Gulick's group conducted an operant conditioning experiment to examine how circadian clock changes affect alcohol intake, using male and female mice to explore sex differences. The study revealed significant differences in operant behavior and motivation across age, sex, and genotype. Adolescent male and female Per1/Per2 mice and adolescent C57 males exhibited more premature responses compared to adults, their maximum response for rewards remained stable with age. Female Per1/Per2 mice had a higher maximum response than female C57 mice. Adolescent mice displayed greater motivation than adults, particularly among PER1/PER2 mutants. My involvement in this project included data collection and analysis from prior experiments and will extend to future phases involving EEG and telemetry readings.

  ii) **Psilocybin/Psilocin-Derived Therapeutic Compounds:** I worked on a research project in Dr. Danielle Gulick's lab that explored a 2-halogenated tryptamine, referred to as compound A, for treating psychiatric conditions like anxiety and mood disorders associated with alcohol use disorder (AUD). Depression often co-occurs with AUD, leading to worse outcomes and increased suicide risk. There has been renewed interest in the therapeutic use of psychedelics, particularly psilocybin, for its promising safety profile. My role involved testing how compound A activates serotonin (5-HT2A) receptors through in vivo behavioral tests (e.g., head twitch analysis, elevated plus maze) and western blot analysis of brain regions like the nucleus accumbens and amygdala. This pilot experiment focused on optimizing procedures and provided insights for future studies on halogenated tryptamines as potential AUD treatments.

- Southeastern University Chemistry Research Team | Fall 2019- Spring 2020
  i) **Synthesis of Peptidomimetics as Potential Anticancer Agents:** The regulation of apoptosis is influenced by various stimuli, with the Bcl-2 family of oncoproteins playing a key role. Bcl-2 prevents apoptosis, and its overexpression is linked to tumor formation. The Southeastern University Chemistry research team, under Dr. Ralph Salvatore, worked on synthesizing non-peptide Bcl-2 inhibitors. I contributed by developing protocols for creating carbazate and dithiocarbazate peptidomimetics and synthesizing amino acid analogs for anti-cancer applications. The project later expanded to design additional analogs to disrupt Bcl-2's protein-protein interactions, aiming to develop novel biomolecules with potential therapeutic effects in chemotherapy.

- Southeastern University Pre-Health Service Organization member | Fall 2019- Spring 2020
- Southeastern University Alpha Chi Member | Fall 2018 – Spring 2020
- Southeastern University NAIA D1 Collegiate Soccer | Fall 2016-Fall 2020