

Meghan Logun

(404)409-3691 | meglog@uga.edu

www.linkedin.com/in/meglog

EDUCATION AND RESEARCH

University of Georgia

Doctor of Philosophy in Neuroscience

Athens GA

Anticipated Spring 2021

• **Advisor:** Dr. Lohitash Karumbaiah

• **Dissertation Project:** Elucidating the role of chondroitin sulfate glycosaminoglycans (CS-GAGs) in glioblastoma invasion and progression.

• Includes biomaterials and microfluidics for studying glioma cell migration *in vitro* and *in vivo*, and the potential for invasion-blocking therapeutics.

• Current projects within the NSF-funded Engineering Research Center for Cell Manufacturing Technologies (CMaT) focus on potency assays for CAR-T cell efficacy against glioblastoma and glioma-on-chip models for physiologically relevant co-culture platforms.

• **Coursework completed includes:** Neuroanatomy, Neurophysiology, Biomaterials, Cancer Biology, Neuroscience Seminars, Grant Writing, MATLAB for Neuroscientists, Statistics I and II. GPA 3.8

Master of Science in Animal and Dairy Science

Received May 2016

• **Advisor:** Dr. Lohitash Karumbaiah in the Regenerative Bioscience Center.

• **Dissertation project:** Investigation of CS-GAGs in glioma invasion *in vitro* using a novel microfluidics platform and tailored hydrogel matrices. GPA 3.5

• Also involved in research analyzing CS-GAG hydrogels as stem cell carriers for traumatic brain injury.

Emory University

Atlanta GA

Bachelor of Science in Biology and minor in Anthropology

Received May 2014

• **Undergraduate research:** Assistant within the Howell Neuropharmacology Research Lab group for two years. Conducted research on molecular and behavioral effects of MDMA in animal models of mice and squirrel monkeys under supervision of graduate research assistants.

• **Coursework includes:** Developmental Biology, Microbiology, Comparative Vertebrate Anatomy, Genetics, Evolutionary Biology, Organismal Form and Function, Intro to Neurobiology, Calculus I and II, Life Sciences Calculus I and II, Biology I and II (with labs), General Chemistry I and II (with labs), Organic Chemistry I and II (with labs), and Physics I and II (with labs).

PUBLICATIONS

Logun MT, Colonna MB, Edison AS, Karumbaiah LK. “Differential Energy Utilization of T cells in glioblastoma tumor microenvironment” In preparation.

Logun MT, Chvatal SA, Hayes HB, Millard DC, Karumbaiah L. “Real-time assessment of immune cell interactions with glioblastoma using cellular electrical impedance sensing.” In preparation.

Liu Y, Zhao W, Cheng R, **Logun MT**, Zayas-Viera M, Karumbaiah L, Mao L. “Label-free ferrohydrodynamic separation of exosomes” *Lab on Chip*. 2020; 20(17): 3187-3201.

McCrary MR, Jesson K, Wei ZZ, **Logun MT**, Lenear C, Tan S, Gu X, Jiang MQ, Karumbaiah L, Yu SP, Wei L. “Cortical Transplantation of Glycosaminoglycan Hydrogel and Neural Progenitor Cells Promotes Vascular Regeneration and Functional Recovery after Ischemic Stroke in Mice” *Advanced Materials*. 2020; 9(5): e1900285.

Logun MT, Wynens KE, Simchick G, Zhao W, Mao L, Zhao Q, S Mukherjee, DJ Brat, Karumbaiah L. “Surfen Mediated Blockade of Extratumoral Chondroitin-Sulfate Glycosaminoglycans Inhibits Glioma Invasion” *FASEB J*. 2019; 33(11): 11973-11992.

Chopra P, **Logun MT**, White EM, Lu W, Locklin J, Karumbaiah L, and Boons G. “A Synthetic Heparan Sulfate Derivatives-Based Neural Tissue Construct that can Maintain Neural Stem Cell Features” ACS Central Science. 2019; 14(9): 1921-1929.

Andrews S, Cheng A, **Logun MT**, Stevens H, Webb R, Jordan E, Xia B, Karumbaiah L, Guldborg RE, Stice S. “CS-GAG Scaffolds for Cell and Recombinant Protein-Based Bone Regeneration.” Stem Cells Translational Medicine. 2019; 8(6): 575-585.

Logun MT, Dowling MB, Raghavan SR, Wallace ML, Schmiedt CW, Stice S, Karumbaiah L. “Expanding Hydrophobically-Modified Chitosan Foam for Internal Surgical Hemostasis: Safety Evaluation in a Murine Model.” Journal of Surgical Research. 2019; 239: 269-277.

Logun MT, Zhao W, Mao L, Karumbaiah L. “Microfluidics in Glioma Research and Medicine.” Advanced Biosystems. 2018; 2(5).

Pitts EG, Minerva AR, Chandler EB, Kohn JN, **Logun MT**, Sulima A, Rice KC, Howell LL. 3, 4-Methylenedioxymethamphetamine Increases Affiliative Behaviors in Squirrel Monkeys in a Serotonin 2A Receptor-Dependent Manner. Neuropsychopharmacology. 2017; 42(10): 1962-71.

Logun MT, Bisel N, Tanasse E, Zhao W, Leidong M, and Karumbaiah L. “Glioma cell invasion is significantly enhanced in composite hydrogel matrices composed of chondroitin 4- and 4,6-sulfated glycosaminoglycans.” Journal of Materials Chemistry B. 2016; 4(36): 6052-6064.

Logun MT, Karumbaiah L, Stice S. “Design Considerations for 3D Tissue Culture Models of Glioblastoma Multiforme” *Engineering 3D Tissue Test Systems*. Karen Burg, Didier Dreau, Timothy Burg. Taylor & Francis, 2017. Textbook.

INVENTION DISCLOSURES AND PATENTS

1. “In Situ Cell Delivery Using Reconstituted Photopolymerized Chondroitin Sulfate Glycosaminoglycan Hydrogel Matrices” – Inventor: Lohitash Karumbaiah, Leidong Mao, **Meghan Logun**, Wujun Zhao. University of Georgia Research Foundation Inc (UGARF) assignee. United States patent application US 16/322,680. April 16 2020.
2. “In Vitro Diagnostic (IVD) Device for the Rapid Identification and Therapeutic Targeting of Invasive Glioma”. Lohitash Karumbaiah. **Meghan Logun**, Wujun Zhao, Leidong Mao. Aug 7th 2017. On Hold.
3. “A Multifunctional Glioma-On-Chip Microfluidic Device for Immunotherapy Potency Assays”. Lohitash Karumbaiah. **Meghan Logun**, Wujun Zhao, Leidong Mao. April 8th 2019. Active.
4. “Micro- and Nanoparticle Encapsulation and Release of Multifunctional Agents for Treating Invasive Solid Tumors”. Lohitash Karumbaiah, **Meghan Logun**, Haylea Mannebach. Aug 20th 2019. On Hold.

AWARDS

2020 St. Jude Future Fellow Research Conference presenter

- 23 national fellows selected out of 1,500 invited applications (fully supported travel), based on academic achievement, quality of research, and topical relevance to St. Jude.
- National- postponed due to COVID-19

2019 Third Place “Perfect Pitch” Award Winner

- Placed as a regional finalist in NSF ERC’s 90-second Perfect Pitch competition for the Cellular Manufacturing and Technologies (CMaT) 2019 annual retreat.

2018 NSF REU Excellence in Mentorship Award

- Nominated for university award by visiting NSF nanobiology student for excellence and dedication to mentorship in science, research, and leadership during student’s time at UGA.

2018 Franklin Foundation Neuroimaging Fellowship

- Received 2 years of university support and \$2000 in travel funding for chosen neuroimaging researchers who demonstrated intensive imaging research at UGA.

UGA BHSI Neuroscience Division Travel Award

- University travel award funding (\$1500) for attending and presenting at the Cold Springs Harbor Meeting on Mechanisms & Models of Cancer 2018.

UGA Graduate Program “Innovative and Interdisciplinary Research Grants for Doctoral Students”

- University funding (\$1000) for interdisciplinary and cutting-edge research for doctoral dissertation projects.

ARCS Foundation Award

- Received one of seven UGA awards and funding (\$22,500) contributing towards 2017-2020 duration of dissertation projects, for significant achievement in STEM doctoral studies and science communication.

Second Place Oral Presentation

- Received university award for oral research presentation at 2017 Regenerative Bioscience Center Fellows Symposium.

Graduate Student Best Poster Award Runner-Up

- Received regional poster award at the 2016 Southern Translational Education and Research Conference.

ORAL PRESENTATIONS

“Targeting Chondroitin Sulfate Glycosaminoglycans in the Glioblastoma Tumor Microenvironment” St. Jude Future Fellow Research Conference 2020 (Memphis, TN). Postponed due to COVID-19.

“Small Molecule GAG-Antagonist Surfen Decreases Glioma Infiltration *in vitro* and Attenuates Tumor Growth *in vivo*” RBC Fellows Symposium 2017 (Athens, Georgia).

“Elucidating the Role of Chondroitin Sulfate Glycosaminoglycans in Glioma Cell Progression” BMES National Conference 2016 (Minneapolis, Minnesota).

POSTER PRESENTATIONS (10 most recent)

“Energy metabolism and therapeutic T cell efficacy in the glioblastoma microenvironment” Society for Neuro-Oncology Annual Scientific Meeting 2020 (Austin, TX). Virtual due to COVID-19.

“Sulfated Glycosaminoglycan Targeting PLGA Nano- and Microparticles for Anti-Glioma Therapeutics” World Biomaterials Congress 2020 (Glasgow, Scotland). Postponed/Virtual due to COVID-19.

“Glioma-on-chip” Assays to Evaluate Glioma Immune Evasion and CAR-T Potency” 2019 ASTM Workshop on Cell Manufacturing (Atlanta, GA).

“Glioma-on-chip” Assays to Evaluate Glioma Immune Evasion and CAR-T Potency” NSF ERC CMaT 2019 Annual Retreat (Athens, GA).

“Inhibition of Extratumoral Chondroitin Sulfate Glycosaminoglycans Stems Glioma Cell Invasion” Society for Biomaterials Annual Meeting 2019 (Seattle, WA).

“Tissue-on-a-Chip Platforms for CAR-T Cell Potency” NSF ERC Site Visit to CMaT 2019 (Atlanta, GA).

“Surfen- A Small Molecule Glycosaminoglycan Antagonist Attenuates Glioma Invasion” Cold Springs Harbor Laboratory “Meeting on Mechanisms and Models of Cancer” 2018 (Cold Spring Harbor, NY).

“Chondroitin Sulfate Glycosaminoglycans Stimulate Glioma Cell Invasion” Society for Biomaterials Annual Meeting 2018 (Atlanta, GA).

“Surfen- A Small Molecule Glycosaminoglycan Antagonist Attenuates Glioma Invasion” Regenerative Medicine Workshop 2018 (Charleston, SC).

“The Small Molecule GAG-Antagonist Surfen Decreases Glioma Infiltration *In Vitro* and Attenuates Tumor Growth in Rodent Model of Glioma.” Society for Neuroscience Annual Meeting 2017 (Washington, D.C.).

MENTORSHIP

Graduate mentor for BIOL4960/4960H, BCHEM4960/4960H Research and Thesis Courses:

Riley Rodier (Biochemistry and Molecular Biology) 2019-Present
Divya Ventarapragada (Biochemistry and Molecular Biology) 2019-Present
Mason Wolfe (Biology) 2018-Present
Kallie Wynens (Honors Biology and Spanish) 2017-2019
Haylea Mannebach (Honors Biochemistry and Molecular Biology) 2018-2019
Akshaya Narayanan (Biology and Psychology) 2016-2017
Nicole Bisel (Honors Biochemistry and Spanish) 2014-2016

Graduate mentor for Engineering Research Experiences for Undergraduates (REU) program at UGA:

Resulted in six consecutive published abstracts by undergraduate poster presenters at the BMES Annual Meeting those years.

Summer 2019: Rachel Fitzgerald, Georgia Institute of Technology. “Glioma-on-chip” Assays to Evaluate Glioma Immune Evasion”

Summer 2018: Yasmine Stewart, Savannah State University. “Microfluidics for the Evaluation of Interactions between CAR-T Cells and Solid Tumors”

Summer 2017: Kylie Klinkowski, College of Engineering at UMass Amherst. “Optimization of a Microfluidics Device for the Cell Separation of F98 Glioma Cells from Primary Rat Astrocytes”

Summer 2016: Kylie Balotin, Department of Bioengineering at Rice University. “Live Cell Tracking of Glioma Cells Encapsulated in 3D Biomimetic Hydrogel Scaffolds”

Summer 2016: Lauren Mehanna, College of Engineering at University of Kentucky. “Synthesis of Fe₃O₄ Nanoparticles and Quantification of Nanoparticle Uptake in U87MG-EGFP Glioma Cells and Primary Astrocytes”

Summer 2015: Emily Tanasse, College of Engineering at Boise State University. “Design and Fabrication of a Microfluidic Device for Imaging Glioma Cell Invasion in Biomimetic Hydrogel Scaffolds”

Graduate Teaching Assistant for ADSC2000 Animal Practicum - Spring 2015.

PROFESSIONAL AFFILIATIONS

American Society for Matrix Biology, student member 2020-Present
American Association for Cancer Research, student member 2020-Present
Society for Biomaterials, student member 2018-Present
Society for Neuroscience, student member 2016- Present
Biomedical Engineering Society, student member 2016- Present

SKILL SET

- Advanced in vitro scientific technical skills including: Mammalian cell culture, tissue cryosectioning, tissue processing, standard microplate assays, IHC/ICC, qRT-PCR, DNA/RNA/protein isolation, and western blotting.
- Mammalian Cell Culture: Rodent (F98) and human cancer cell lines (U87MG), patient-derived primary human cancer cell lines (PD GBM; N08-30, N12-159) and human donor PBMC/T cell isolation and culture.
- Flow Cytometry: Multidimensional panel design and acquisition on ACEA Quanteon analyzer. Imaging flow cytometry experiment design and execution on the Millipore ImagestreamX Mark II.
- Microscopy: Epifluorescent and confocal microscopy (Zeiss LSM 710 and 880), super resolution microscopy (Zeiss), scanning electron microscopy (FEI Teneo).
- Magnetic Resonance Imaging: Rodent brain MRI for tumor progression and TBI lesion determination on Bruker 7T MRI magnet and porcine brain MRI for tumor progression on GE Discovery MR750 3T MRI magnet.
- Microfluidics: Fabrication of and cell culture within microfluidics devices (SU-8/soft lithography) for co-culture and invasion assays.
- Animal Work: Husbandry, handling and executing behavioral/observational studies, stereotaxic surgery, organ/cell extraction in rodent glioma and TBI models, and porcine glioma models.
- Software experience in: Volocity image analysis, ImageJ analysis, SigmaPlot analysis, MATLAB, Photoshop CS6, MS PowerPoint and Excel. For flow and imaging cytometry, experience in FlowJo and IDEAS software.
- Administrative work: Laboratory inventory upkeep, grant funding drafting and budgeting, ordering and maintenance of laboratory consumables.

VOLUNTEERING AND CAMPUS INVOLVEMENT

- Integrated Life Sciences (ILS) Program Liason (UGA): January 2016-Present
- Graduate Students and Postdocs in Science (GSPS) Executive Board member (UGA): September 2016-December 2019
- Neuroscience for Kids at the University of Georgia: September 2015-Present
- Zoo Atlanta: January 2015-Present
- The Georgia Aquarium: May 2012-June 2014