

Curriculum Vitae
Callan C. Frye

callanfrye@gmail.com • +1 336-529-4464 • www.callan-c-frye.com

EDUCATION

Master of Science in Biomedical Science (MSBS) – Medical University of South Carolina (MUSC)	May 2020
• GPA: 3.58	Charleston, SC
Bachelor of Science (BS), Biology – Randolph College	May 2017
• <i>cum laude</i> , Phi Beta Kappa, Sigma Xi, Beta Beta Beta, Pi Delta Phi	Lynchburg, VA
• GPA: 3.55	

ADDITIONAL TRAINING

Redox Regulation, Oxidative Stress, and Selenoproteins – University of Nebraska	June 2019
• Program to better understand metabolism and contextualize MSBS thesis research	Lincoln, NE

RESEARCH

The Role of Advanced Glycation End Products in Thyroid Cancer	December 2019–May 2020
• Research consultant to Dr. Mahsa Javid at MUSC	Charleston, SC
• Trained clinicians in molecular biology techniques, experimental design, and best practices	
• Interpreted data and applied findings to inform project progression	
Dietary Advanced Glycation End Product Effect on Prostate Cancer-Associated Macrophages	December 2018–May 2020
• MSBS thesis research with Dr. David P. Turner at MUSC	Charleston, SC
• Studied impact of macrophage AGE-RAGE signaling on prostate cancer progression	
• Utilized Western Blots and real-time PCR to determine the effects of dAGE in macrophages	
Analysis of Copper Iodide-MTA Disk Inhibition of <i>E. faecalis</i> Biofilm Viability	November–December 2018
• MSBS rotation project with Dr. Michael G. Schmidt at MUSC	Charleston, SC
• Studied the effects of Copper Iodide-MTA disks on <i>E. faecalis</i> viability	
• Designed and executed experiment to determine bacterial viability via fluorescent staining	
Advanced Glycation End Product (AGE) Effect on Mitochondrial Function	September–November 2018
• MSBS rotation project with Dr. David P. Turner at MUSC	Charleston, SC
• Studied the effect of BSA-AGE on cellular respiration <i>in vitro</i>	
• Analyzed mitochondrial protein expression via Western Blotting	
Tea Tree Oil is an Effective Treatment Against <i>D. congolensis</i> Infection	June–July 2018
• Research Assistant to Dr. Amanda Rumore at Randolph College	Lynchburg, VA
• Conducted literary research to craft more complete manuscripts for submission	
Proinflammatory Cytokine Response in Human Airway Epithelial Cells Following <i>A. alternata</i> Spore Exposure	June–July 2018
• Research Assistant to Dr. Amanda Rumore at Randolph College	Lynchburg, VA
• Conducted literary research to craft more complete manuscripts for submission	
Quorum Sensing (QS) Inhibition to Prevent <i>P. aeruginosa</i> Colonization of Cystic Fibrosis (CF) Lungs	August–December 2016
• BS thesis research with Dr. Adam J. Houlihan at Randolph College	Lynchburg, VA
• Conducted literary research and identified potential means of targeting QS in CF patients	
Evaluating Over-the-Counter (OTC) Treatments for Equine Streptothricosis <i>In Vitro</i> and <i>In Vivo</i>	May–December 2016
• Summer research project and independent study with Drs. Amanda Rumore and Adam J. Houlihan	Lynchburg, VA
• Tested OTC efficacy against <i>D. congolensis</i> <i>in vitro</i>	
• Identified streptothricosis + lesions on horses and tested OTC efficacy in lesion recovery	

PUBLICATIONS

RESEARCH ARTICLES

Turner D., Krisanits B., Frye C., Nogueira I., Schuster R., Ford M. et al. (2020). Consumption of Dietary Advanced Glycation End Products Promotes Prostate Tumor Growth by Creating a Tumor Enhancing Stromal Microenvironment. *Current Developments in Nutrition* 4, 359.

Frye C.C., Bei D., Parman J.E., Jones J., Houlihan A.J., and Rumore A. (2019). Efficacy of Tea Tree Oil in the Treatment of Equine Streptothricosis. *Journal of Equine Veterinary Science* 79, 79-85.

PUBLIC WRITING

Frye, Callan. “New insights into target for cancer therapeutics.” MUSC Catalyst News, October 22, 2019.

Frye, Callan. “A ‘Joint’ Problem: Investigating Marijuana and Tobacco Co-Use and Its Impacts on Smoking Cessation.” Progressnotes, Summer 2019, 7.

Frye, Callan. “Potential new therapy takes aim at a lethal esophageal cancer's glutamine addiction.” MUSC Catalyst News, May 20, 2019.

PRESENTATIONS

POSTER

Advanced Glycation End Product (AGE) Effect on Macrophage MYC Expression and Metabolism Contributes to Prostate Cancer Severity

National Science Policy Network Symposium – University of Wisconsin-Madison; Madison, WI November 2019

Consumption of Dietary AGEs During Puberty and Increased Breast Cancer Risk: A Link Between Lifestyle and Cancer Disparity

The Science of Cancer Health Disparities in Racial/Ethnic Minorities – AACR; San Francisco, CA September 2019

Advanced Glycation End Products Alter Stromal Metabolic Phenotype to Promote Prostate Cancer Progression

Oxidants, Redox Balance, and Stress Signaling – University of Nebraska-Lincoln; Lincoln, NE June 2019

ORAL

***In Vitro* and *In Vivo* Evaluation of Over-the-Counter Treatments for Equine Streptothricosis**

Symposium of Artists and Scholars – Randolph College; Lynchburg, VA April 2017

National Conference on Undergraduate Research (NCUR) – University of Memphis; Memphis, TN April 2017

Mid-Atlantic Regional Conference for Undergraduate Scholarship (MARCUS) – Sweet Briar College; Sweet Briar, VA October 2016

Summer Research Program Symposium – Randolph College; Lynchburg, VA July 2016

Skeletons in Our Closet: The Four Lives of the Gamma Skeleton

Mid-Atlantic Regional Conference for Undergraduate Scholarship (MARCUS) – Randolph College; Lynchburg, VA October 2015

Symposium of Artists and Scholars – Randolph College; Lynchburg, VA April 2015

SCIENCE COMMUNICATION & POLICY

National Science Policy Symposium Attendee – National Science Policy Network November 2019

- Participated in discussions regarding bioethics, policy initiatives, and science communication Madison, WI
- Collaborated with fellow attendees to draft policy memos and identify key stakeholders in complex issues

Science Advocacy Training Session Participant – Society for Neuroscience (SfN) September 2019

- Learned how to speak with legislators and about scientific research and its impact Charleston, SC
- Participated in group activities that built understanding of multifaceted advocacy strategies

Experience the Alan Alda Method, a Transformative Communication Forum Participant – MUSC August 2019

- Engaged in improvisational exercises to build science communication skills Charleston, SC
- Collaborated with fellow participants to creatively describe our research

Steering Committee Member – South Carolina Policy Engagement, Advocacy, & Research (SC-PEAR) May 2019–2020

- Collaborated with fellow graduate students and the college dean to charter and establish the association Charleston, SC
- Developed ideas for grassroots science policy initiatives and plans to implement them
- Worked with fellow members to determine association long- and short-term goals

Advocacy Training Program Participant – American Society for Biochemistry and Molecular Biology May–December 2019

- Met South Carolina legislators to promote policies that support graduate student well-being Remote
- Worked with fellow science advocates to develop grassroots initiatives that promote science

Communicating Science to Policy Makers Workshop Participant – The New York Academy of Sciences May 2019

- Worked with a diverse team of scientists to analyze science policy case studies New York, NY
- Participated in roleplaying activities that built negotiation, compromise, and critical thinking skills

Communication Skills and Courtroom Testimony Seminar Attendee – MUSC May 2019

- Built understanding of courtroom proceedings and testimony Charleston, SC

Ximbassador Intern – Ximbio, Cancer Research UK	April–August 2019 Charleston, SC
<ul style="list-style-type: none"> • Liaised with Ximbio, the MUSC Foundation for Research Development, and MUSC researchers • Identified scientific resources of value for addition to the Ximbio repository 	
Capitol Hill Day Science Advocate – American Society for Biochemistry and Molecular Biology	March 2019 Washington, DC
<ul style="list-style-type: none"> • Articulated the benefits of increasing NIH and NSF funding to members of congress and their staff • Succinctly communicated current trends in cancer research 	
Science Writing Intern – Office of Public Affairs and Media Relations, MUSC	December 2018–May 2020 Charleston, SC
<ul style="list-style-type: none"> • Authored AAAS EurekAlert! press releases about recently published research • Interviewed MUSC researchers about their work 	
Science Writing Bootcamp Participant – Office of Public Affairs and Media Relations, MUSC	December 2018 Charleston, SC
<ul style="list-style-type: none"> • Learned about and practiced condensing scientific concepts into terms accessible to a lay audience 	

CERTIFICATIONS & LICENSURE

Adult & Pediatric First Aid, CPR, & AED – American Red Cross	October 2019–present Charleston, SC
<ul style="list-style-type: none"> • Certified to administer first aid, CPR, and AED to both adults and children 	

DISTINCTIONS

HONORS SOCIETIES

Phi Beta Kappa National Honor Society	2017
Sigma Xi: The Scientific Research Honor Society	2017
Beta Beta Beta National Biological Honor Society	2014
Pi Delta Phi National French Honor Society	2014

AWARDS & GRANTS

MUSC Provost’s Scholarship	2019
\$2,000 award based on the recommendation of College of Graduate Study leadership	
National Science Policy Symposium Travel Scholarship	2019
\$300 travel funds	
TEDxCharleston 2019: Currents Scholarship	2019
Full coverage of event admission	
Randolph College Summer Research Travel Grant	2016
\$2,500 travel funds for presentation of research at National Conference on Undergraduate Research (NCUR)	
Best Oral Presentation Award at Randolph College Summer Research Program Symposium	2016
Monetary prize for outstanding presentation of summer research project	
Virginia Foundation of Independent Colleges (VFIC) Summer Undergraduate Research Fellowship	2016
\$2,000 general funds for Summer Research Program project at Randolph College	
Randolph College Summer Research Program	2016
Stipend and \$1,000 supplies budget	
Randolph College Innovative Student Experience (RISE) Grant	2015
\$2,000 applied to Provence, France educational excursion	
Outstanding First Year Student in Art History	2014
Monetary prize for noteworthy performance in Art History coursework at Randolph College	

TEACHING & MENTORSHIP

Peer Mentor for Rotating Students – College of Graduate Studies, MUSC	September–December 2019 Charleston, SC
<ul style="list-style-type: none"> • Trained rotating graduate students in lab techniques, experimental design, and safety practices • Provided students with resources and guidance to foster professional growth 	
Supplemental Instruction (SI) Tutor – College of Graduate Studies, MUSC	August–December 2019 Charleston, SC
<ul style="list-style-type: none"> • Aided first year students’ understanding of core course material 	
Leadership 101 Workshop Participant – Office of Student Programs & Diversity, MUSC	August 2019 Charleston, SC
<ul style="list-style-type: none"> • Discussed the nature of leadership and who can be a leader 	

Mentor – South Carolina Cancer Health Equity Consortium (SC CHEC)	May–August 2019
<ul style="list-style-type: none"> ● Trained undergraduate student in lab techniques and data collection ● Taught student about literary research, scientific writing, and citation management ● Advised student on career advancement and professionalism 	Charleston, SC
Guest Educator on Tissue Culture – Cell Biology, Citadel	April 2019
<ul style="list-style-type: none"> ● Taught approximately 40 undergraduate students about Tissue Culture 	Charleston, SC
Guest Lecturer – Graduate Students Reaching Out With Science (GROWS)	December 2018
<ul style="list-style-type: none"> ● Introduced local middle and high school students to principles of biomedical research ● Guided an interactive class activity to design a scientific study 	Charleston, SC
Biology Lab Volunteer – SciFest, Randolph College	March 2017
<ul style="list-style-type: none"> ● Fostered understanding of biology in children through hands-on activities ● Prepared lab stations and distributed live organisms (incl. planarians, <i>Volvox</i>) 	Lynchburg, VA
Student Educator – Dearington Elementary School	November 2015
<ul style="list-style-type: none"> ● Prepared and presented microbiology coursework to a class of 5th grade students ● Engaged students in several educational, hands-on activities 	Lynchburg, VA
Peer Tutor – French Department, Randolph College	August–December 2015
<ul style="list-style-type: none"> ● Tutored elementary and intermediate French students 	Lynchburg, VA

COMMUNITY OUTREACH & SERVICE

Building Trust & Leveraging Relationships Workshop Participant – Student Programs & Diversity, MUSC	November 2019
<ul style="list-style-type: none"> ● Participated in discussions regarding the practices and traits needed to build trusting relationships ● Collaborated with fellow participants to make value judgments on different trust-building behaviors 	Charleston, SC
Great British Bake Sale Volunteer – LowVelo	October 2019
<ul style="list-style-type: none"> ● Sold baked goods, helping raise over \$400 for cancer research 	Charleston, SC
Leadership & Service Connection Workshop Participant – Student Programs & Diversity, MUSC	September 2019
<ul style="list-style-type: none"> ● Workshopped ideas for community outreach and service-based leadership 	Charleston, SC
Editor – <i>Humanitas</i> Literary Magazine, MUSC	August 2019–May 2020
<ul style="list-style-type: none"> ● Promoted creativity by encouraging students, faculty, and staff to make and submit art ● Reviewed submitted visual and literary works to be featured in yearly <i>Humanitas</i> publication 	Charleston, SC
Honor Council Member – MUSC Honor Council	April 2019–May 2020
<ul style="list-style-type: none"> ● Investigated and reviewed allegations of academic misconduct ● Deliberated on appropriate sanctions for confirmed cases of academic misconduct 	Charleston, SC
Oyster Bagging Volunteer – South Carolina Department of Natural Resources	January 2019
<ul style="list-style-type: none"> ● Shoveled, bagged, and transported recycled oyster shells for use in local waters to prevent erosion 	Charleston, SC
Community Health Outreach Volunteer – Charleston Farmers Market	September 2018
<ul style="list-style-type: none"> ● Spread awareness of high-AGE diet impact on cancer severity 	Charleston, SC
Operating Room and Sterilization Supply Runner – Women Orthopaedist Global Outreach (WOGO)	April–May 2018
<ul style="list-style-type: none"> ● Prepared supply kits for unilateral and bilateral knee replacements ● Transported surgical supplies between the operating and sterilization rooms 	Havana, Cuba
Surveying Volunteer – Natural Bridge State Park	April 2017
<ul style="list-style-type: none"> ● Surveyed marked plots of park land, yielding quantitative ecological data 	Natural Bridge State Park, VA
Judiciary Member – Judiciary Committee at Randolph College	September 2013–May 2017
<ul style="list-style-type: none"> ● Investigated and reviewed allegations of academic misconduct ● Deliberated on appropriate sanctions for confirmed cases of academic misconduct 	Lynchburg, VA

ADDITIONAL EXPERIENCE

Microbiology Supervisor & Quality Assurance Officer – SQRD Lab	August 2020–present
<ul style="list-style-type: none"> ● Develops and validates methods related to microbial impurities analysis in cannabis products ● Ensures compliance with ISO/IEC 17025:2017 standard, BCC requirements, and OSHA standards ● Tests cannabis products for microbial impurities using real-time PCR 	Los Angeles, CA
Research Specialist – Department of Pathology & Laboratory Medicine, MUSC	February 2019–May 2020
<ul style="list-style-type: none"> ● Monitored and maintained pathology lab conditions, equipment, and materials 	Charleston, SC

Pharmacy Technician – WalgreensOctober 2017–July 2018
Lynchburg, VA

- Entered, filled, and dispensed prescriptions
- Communicated medication instructions and insurance coverage information to customers

Microbiology Laboratory Technician Aide – Abbott NutritionMay–September 2017
Altavista, VA

- Tested product, surface, air, and water sterility
- Collected, organized, and reported data regarding sterility test results
- Maintained lab equipment, and stocks of media and solutions

Microbiology Laboratory Assistant – Randolph CollegeAugust 2016–May 2017
Lynchburg, VA

- Cultured bacteria and eukaryotic cell lines
- Maintained lab equipment, and stocks of media and solutions

LABORATORY SKILLS

ANIMAL CARE	EQUIPMENT	GENERAL	MOLECULAR BIOLOGY
<ul style="list-style-type: none"> • GEM methods • Husbandry 	<ul style="list-style-type: none"> • Autoclave • Azure c300 imager • BSL2 hood • Confocal microscope • Dark room • Incubator • Light microscope • Liquid nitrogen tank • Microplate reader • Milli-Q filter system • Peristaltic pump • Thermocyclers 	<ul style="list-style-type: none"> • Aseptic technique • Data storage, organization, and interpretation • Experimental design • Media & solution prep 	<ul style="list-style-type: none"> • BCA assay • Cell & tissue culture • Co-culture assay • DNA, RNA, & protein extraction • Gel electrophoresis • Migration assay • PCR • Primary cell isolation & culture • Proliferation assay • Real-time PCR (qPCR) • Western Blot
COMPLIANCE & SAFETY <ul style="list-style-type: none"> • AED/CPR/First Aid • BCC regulations • IACUC • ISO/IEC 17025:2017 • OSHA • Quality management system 		MICROBIOLOGY <ul style="list-style-type: none"> • Bacterial culture • Bacterial isolation • Disk diffusion assay • Gram stain • MIC & MBC 	

ADDITIONAL SKILLS

LANGUAGES	SOFT SKILLS	SOFTWARE	TECHNOLOGY & MISC
<ul style="list-style-type: none"> • English: native • French: three years at collegiate level • Japanese: intermediate 	<ul style="list-style-type: none"> • Communication • Critical thinking • Delegation • Interviewing • Networking • Organization • Problem-solving • Project management • Public speaking • Record-keeping • Staff training 	<ul style="list-style-type: none"> • FIJI/ImageJ • Gen5 • GraphPad Prism • Laboratory Information Management System (LIMS) • LightCycler 480 • Microsoft Office • RStudio • Shell (e.g., Terminal, PowerShell) • Zotero 	<ul style="list-style-type: none"> • Arduino • Mac OS X • SEO optimization • Windows
PROGRAMMING <ul style="list-style-type: none"> • Python • R 			WRITING <ul style="list-style-type: none"> • Blog posts • Manuals • Manuscripts • Press releases • Quality documents • Research reports • Standard Operating Procedures (SOPs)