

Curriculum Vitae
Callan C. Frye

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EDUCATION

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

ADDITIONAL TRAINING

- Redox Regulation, Oxidative Stress, and Selenoproteins – University of Nebraska** June 2019
Lincoln, NE
- Participated in coursework to better understand metabolism and contextualize MSBS thesis research

RESEARCH

- The Role of Advanced Glycation End Products in Thyroid Cancer** December 2019–May 2020
Charleston, SC
- Research consultant to Dr. Mahsa Javid at MUSC
 - Trained clinicians in molecular biology techniques, experimental design, and best practices
 - Interpreted data and performed data-based decision making for project progression
 - Investigated experiment failures and problem-solved to correct issues
- Dietary Advanced Glycation End Product Effect on Prostate Cancer-associated Macrophages** December 2018–May 2020
Charleston, SC
- MSBS thesis research with Dr. David P. Turner at MUSC
 - Studied impact of macrophage AGE-RAGE signaling on prostate cancer progression
 - Utilized Western Blot and qPCR to determine phenotypic effects of dAGE in macrophages
- Analysis of Copper Iodide-MTA Disk Inhibition of *E. faecalis* Biofilm Viability** November–December 2018
Charleston, SC
- MSBS rotation project with Dr. Michael G. Schmidt at MUSC
 - Designed experiment to determine bacterial viability via fluorescent staining
 - Trained dental students in laboratory practices
- Advanced Glycation End Product (AGE) Effect on Mitochondrial Function** September–November 2018
Charleston, SC
- MSBS rotation project with Dr. David P. Turner at MUSC
 - Studied the effect of BSA-AGE on cellular respiration *in vitro*
 - Analyzed mitochondrial protein expression via Western Blot
- Tea Tree Oil is an Effective Treatment Against *D. congolensis* Infection** June–July 2018
Lynchburg, VA
- Research Assistant to Dr. Amanda Rumore at Randolph College
 - Conducted literary research to craft more complete manuscripts for submission
 - Created and maintained citation records
- Proinflammatory Cytokine Response in Human Airway Epithelial Cells Following *A. alternata* Spore Exposure** June–July 2018
Lynchburg, VA
- Research Assistant to Dr. Amanda Rumore at Randolph College
 - Conducted literary research to craft more complete manuscripts for submission
 - Created and maintained citation records
- Quorum Sensing (QS) Inhibition to Prevent *P. aeruginosa* Colonization of Cystic Fibrosis (CF) Lungs** August–December 2016
Lynchburg, VA
- BS thesis research with Dr. Adam J. Houlihan at Randolph College
 - Conducted literary research and formulated possible means of targeting QS to benefit CF patient longevity
 - Illustrated *P. aeruginosa* QS systems
- Evaluating Over-the-Counter (OTC) Treatments for Equine Streptothricosis *In Vitro* and *In Vivo*** May–December 2016
Lynchburg, VA
- Summer Research Program and Independent study with Drs. Amanda Rumore and Adam J. Houlihan
 - Tested *in vitro* OTC efficacy against *D. congolensis* via disk diffusion assay and determining MIC/MBC
 - Identified streptothricosis + lesions on horses and evaluated OTC efficacy in lesion recovery

PUBLICATIONS

RESEARCH ARTICLES

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

- Collaborates with fellow graduate students and the college dean to charter and establish the association Charleston, SC
- Formulates ideas for grassroots science policy initiatives and plans to implement them
- Determines association long- and short-term goals

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

- Meets South Carolina legislators to promote policies that support graduate student mental health Remote
- Works with fellow science advocates to develop grassroots initiatives to 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
<ul style="list-style-type: none"> Built understanding of courtroom proceedings and testimony 	Charleston, SC
Ximbassador Intern – Ximbio, Cancer Research UK	April–August 2019
<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 	Charleston, SC
Capitol Hill Day Science Advocate – American Society for Biochemistry and Molecular Biology	March 2019
<ul style="list-style-type: none"> Articulated the benefits of increasing NIH and NSF funding to members of congress and their staff Condensed and summarized current trends in cancer research 	Washington, DC
Science Writing Intern – Office of Public Affairs and Media Relations, MUSC	December 2018–May 2020
<ul style="list-style-type: none"> Authored AAAS EurekAlert! press releases about recently published research Interviewed MUSC researchers about their work 	Charleston, SC
Science Writing Bootcamp Participant – Office of Public Affairs and Media Relations, MUSC	December 2018
<ul style="list-style-type: none"> Learned about and practiced condensing scientific concepts into terms accessible to a lay audience 	Charleston, SC

CERTIFICATIONS & LICENSURE

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

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
<ul style="list-style-type: none"> Trained rotating graduate students in lab techniques, experimental design, and safety practices Provided resources and guidance to foster both personal and professional growth 	Charleston, SC

Supplemental Instruction (SI) Tutor – College of Graduate Studies, MUSC	August–December 2019 Charleston, SC
<ul style="list-style-type: none"> • Aided first year student 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"> • Participated in discussions about what leadership is and who can be a leader 	
Mentor – South Carolina Cancer Health Equity Consortium (SC CHEC)	May–August 2019 Charleston, SC
<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 	
Guest Educator on Tissue Culture – Cell Biology, Citadel	April 2019 Charleston, SC
<ul style="list-style-type: none"> • Taught approximately 40 undergraduate students about Tissue Culture 	
Guest Lecturer – Graduate Students Reaching Out With Science (GROWS)	December 2018 Charleston, SC
<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 	
Biology Lab Volunteer – SciFest, Randolph College	March 2017 Lynchburg, VA
<ul style="list-style-type: none"> • Worked with children to build understanding of biology via hands-on activities • Prepared lab stations and distributed live organisms (incl. planarians, Volvox) 	
Student Educator – Dearington Elementary School	November 2015 Lynchburg, VA
<ul style="list-style-type: none"> • Prepared and presented microbiology coursework to approximately 30 5th grade students • Engaged students in several educational, hands-on activities 	
Peer Tutor – French Department, Randolph College	August–December 2015 Lynchburg, VA
<ul style="list-style-type: none"> • Tutored elementary and intermediate French students 	

COMMUNITY OUTREACH & SERVICE

Building Trust & Leveraging Relationships Workshop Participant – Student Programs & Diversity, MUSC	November 2019 Charleston, SC
<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 	
Great British Bake Sale Volunteer – LowVelo	October 2019 Charleston, SC
<ul style="list-style-type: none"> • Aided the sale of baked goods, helping raise over \$400 for cancer research 	
Leadership & Service Connection Workshop Participant – Student Programs & Diversity, MUSC	September 2019 Charleston, SC
<ul style="list-style-type: none"> • Workshopped ideas for community outreach and service-based leadership 	
Editor – <i>Humanitas</i> Literary Magazine, MUSC	August 2019–May 2020 Charleston, SC
<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 	
Honor Council Member – MUSC Honor Council	April 2019–May 2020 Charleston, SC
<ul style="list-style-type: none"> • Investigated and reviewed allegations of academic misconduct • Deliberated on appropriate sanctions for confirmed cases of academic misconduct 	
Oyster Bagging Volunteer – South Carolina Department of Natural Resources	January 2019 Charleston, SC
<ul style="list-style-type: none"> • Shoveled, bagged, and transported recycled oyster shells for use in local waters to prevent erosion 	
Community Health Outreach Volunteer – Charleston Farmers Market	September 2018 Charleston, SC
<ul style="list-style-type: none"> • Spread awareness of high-AGE diet impact on cancer severity • Promoted community involvement in low-AGE diet clinical trials 	
Operating Room (OR) & Sterilization Supply Runner – Women Orthopaedist Global Outreach (WOGO)	April–May 2018 Havana, Cuba
<ul style="list-style-type: none"> • Prepared supply kits for unilateral and bilateral knee replacements • Transported surgical supplies between the OR and sterilization room 	
Surveying Volunteer – Natural Bridge State Park	April 2017 Natural Bridge State Park, VA
<ul style="list-style-type: none"> • Surveyed marked plots of park land to produce quantitative ecological data 	
Judiciary Member – Judiciary Committee at Randolph College	September 2013–May 2017 Lynchburg, VA
<ul style="list-style-type: none"> • Investigated and reviewed allegations of academic misconduct • Deliberated on appropriate sanctions for confirmed cases of academic misconduct 	

ADDITIONAL EXPERIENCE

Research Specialist – Department of Pathology & Laboratory Medicine, MUSC <ul style="list-style-type: none"> Monitored and maintained pathology lab conditions, equipment, and materials 	February 2019–May 2020 Charleston, SC
Pharmacy Technician – Walgreens <ul style="list-style-type: none"> Entered, filled, and dispensed prescriptions Communicated medication instructions and insurance coverage information to customers 	October 2017–July 2018 Lynchburg, VA
Microbiology Laboratory Technician Aide – Abbott Nutrition <ul style="list-style-type: none"> Tested product, surface, air, and water sterility Collected, organized, and reported data regarding sterility test results Maintained lab equipment and stocks of media, solutions 	May–September 2017 Altavista, VA
Microbiology Laboratory Assistant – Randolph College <ul style="list-style-type: none"> Cultured bacteria and eukaryotic cell lines Maintained lab equipment and stocks of media, solutions 	August 2016–May 2017 Lynchburg, VA

LABORATORY SKILLS

ANALYTICAL CHEMISTRY <ul style="list-style-type: none"> Extraction from myriad matrices HPLC GC 	COMPLIANCE & SAFETY <ul style="list-style-type: none"> AED/CPR/First Aid IACUC training ISO/IEC 17025 compliance OSHA compliance 	GENERAL <ul style="list-style-type: none"> Aseptic technique Data storage, organization, and interpretation Experimental design Media & solution prep Ordering 	MICROBIOLOGY <ul style="list-style-type: none"> Bacterial culture Bacterial isolation Disk diffusion assay Gram stain MIC & MBC Peroxidase assay
ANIMAL CARE <ul style="list-style-type: none"> GEM methods Husbandry 	EQUIPMENT <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 	HISTOLOGY <ul style="list-style-type: none"> Slide preparation Tissue identification 	MOLECULAR BIOLOGY <ul style="list-style-type: none"> Cell & tissue culture Co-culture assay Migration assay Primary cell isolation & culture Proliferation assay Western Blot

ADDITIONAL SKILLS

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