When you think of a scientist, what comes to mind? A studious worker dedicated to mentorship, who writes and edits a science communication blog and, perhaps, periodically plays tennis for a healthy dose of physical activity? How about a vivacious makeup artist that dominates online gaming, dealing out “crits” (critical strikes) like candy in World of Warcraft, likely on a computer she built herself? I suppose it is good for us to keep our definition of “scientist” amorphous to some degree. As such, the BioCoRE creates a stage on which the wide variety of scientists at Duke can be showcased. In this issue, the spotlight has been captured by Elizabeth Mendes—a BioCoRE Scholar embodying all the aforementioned characteristics and then some. Elizabeth is a rising second-year in the Cell and Molecular Biology Program (CMB); with her rotations finished, she plans to affiliate with and, eventually, receive her Ph.D. from the Department of Pharmacology and Cancer Biology.
(PCB). Responding to the infamous question both faithfully and universally asked Ph.D. students, “What are you going to do with that?”, Elizabeth shares some big dreams. She is interested in technology transfer, patent law, and the biotechnology industry, any of which offer a wealth of job opportunities; in the long-run, she wants her own startup company. And the story behind these big dreams is truly amazing.

“My father immigrated from Brazil in the 90s with only the shoes on his feet and no education. My mother overcame her own [disadvantaged] circumstances and was the first person in her family to graduate high school. Growing up, schoolwork was not overly encouraged, but work ethic was. I was taught from a young age that I needed to work hard to get anything in this life. I chose to delve into my school work. I always loved learning.” Despite the promising direction her parents’ example inspired and the immense respect Elizabeth had for her father, familial challenges led to his subtraction in 2006. Leaving Elizabeth, her mother, and her three siblings in a new living situation with substantially more responsibility placed on her 11-year-old shoulders. Nevertheless, her love for learning persisted, pressing her into the fascinating and illustrious world of academics. “I learned about a vague concept of college in middle school. I didn’t know much about it, but I knew that I needed good grades to get there and receive a scholarship.” With her dogged work ethic, Elizabeth forged a path to college in hopes of being the first in her family to attend. Her steps were aided by a collection of outstanding educators, of which she especially notes her eighth-grade science teacher, Ms. Mele, and her tenth-grade chemistry teacher, Mrs.Champi. Along this path, Elizabeth developed a love for all subjects, but, much like her educator role models, she had a particular affinity for science, innovation, and discovery.

She let these passions drive her throughout her undergraduate studies: beginning with archaeology then transitioning to the basic sciences, where she saw more of an opportunity to help both people and the planet. During this time, Elizabeth identified Neil deGrasse Tyson as an inspirational role model, a top-tier astrophysicist from a marginalized demographic. After receiving her bachelor’s degree, Elizabeth recalls a deep-seated desire to give back and make a difference (something that has only grown over the years). She decided to channel this into working as a teacher in a low-income community. Despite such meaningful work,
her end goal was not teaching; therefore, when she felt that the time was right, she set out to pursue a master’s degree in molecular biology. Elizabeth wanted to conduct and make contributions to science—she knew paramount to this was learning how to be an effective researcher. She found a home in the laboratory of Dr. Caroline Dealy, who became an influential role model for Elizabeth. It was at this time, 2018, that Elizabeth’s mother was diagnosed with breast cancer, a diagnosis that transformed her life and the lives of her family. “Throughout the first part of my graduate education, I learned firsthand about the ‘why.’ Why researchers and doctors do what they do every day. This sparked a fire within me and inspired me to pursue doctoral education. Along the way, I have been told my dreams are too big; I want to show myself and my family that my dreams weren’t big enough. In 2020, my mom received a second cancer diagnosis—stage 3 lung cancer. This solidified my interests in cancer biology and desire to develop better therapeutics.”

As Elizabeth blossoms as a doctoral student, she takes the responsibility of biomedical research to society seriously. Although she feels the whole of it cannot be summed up in words, Elizabeth believes our mission as scientists is to, first, do our work well and, second, communicate our work such that it is readily accessible. She pinpoints a societal need for more minds to be thinking about science. Via our communication, she feels that we need to pave the way for a future in which such thinking is realized. In a more pragmatic sense, specifically regarding advancement in PCB, Elizabeth foresees the next “big thing” as a comprehensive transition to further personalized medical approaches. With the advent of advanced sequencing and CRISPR technology, she thinks science now has the capacity to yield highly specific drugs to broadly combat individual cases of disease. Driven by familiarity with the pains of cancer and equipped with skills conferred by premature responsibility, Elizabeth is formidable in her addressment of societal needs, like critical thinking promotion, and next-generation disease therapies. This is not the only way she is making a difference. Her success in biomedical research is beating down the brush and making firm footprints along the road less traveled for younger females, Latinxs, and all those from marginalized demographics and/or disadvantaged backgrounds to follow. To them she says this:

“You’re going to be told to stop. You’re going to be told you can’t do what you want. You will hear this from those inside and outside of your community. Keep pushing. Don’t give up. Eventually, you will look back, and those same people will say that they are proud of you. Don’t be scared to ask for help. You are not alone. Let your failures empower you.”

elizabeth.mendes@duke.edu
Congrats Grads!

As of May this year, the BioCoRE Scholars program has seen eight of its doctoral students defend and graduate. We are honored to recognize those students here.

Grace Beggs

**Dissertation:** Biochemical and structural mechanisms of multidrug efflux pump transcription regulators, Neisseria gonorrhoeae MtrR and Escherichia coli MprA  
**Ph.D. Mentor:** Richard Brennan  
**Hometown:** Lakeland, Florida  
**Quote:** "A person who never made a mistake never tried anything new." - Albert Einstein

Brinnae Bent

**Dissertation:** Discovering Digital Biomarkers of Glycemic Health from Wearable Sensors  
**Ph.D. Mentor:** BIG IDEAS Lab (Jessilyn Dunn)  
**Hometown:** Flint, Michigan  
**Quote:** “Just keep swimming” – Dory, Finding Nemo
Carina Block

Dissertation: Prenatal Environmental Stressors Impair Postnatal Microglia Function and Adult Behavior in Males
Ph.D. Mentor: Staci Bilbo & Cagla Eroglu
Hometown: Napa, California
Quote: “You were once wild here, don’t let them tame you” – Isadora Duncan

Rossie Clark-Cotton

Dissertation: How a yeast cell finds a mate: Tracking chemical signals in complex environments
Ph.D. Mentor: Danny Lew
Hometown: Kosciusko, Mississippi
Quote: “Your feet have to keep moving as if you’ve already made it.” – Valerie Ashby

Lindsay Dahora

Dissertation: Impact of Antibody Biophysical Properties on Antigen Recognition and Fc Effector Functions
Ph.D. Mentor: Georgia Tomaras
Hometown: Atlanta, Georgia
Quote: “Science knows no country, because knowledge belongs to humanity, and is the torch which illuminates the world.” – Louis Pasteur
Elias Eteshola

**Dissertation:** Using Nucleic Acid Scavengers to Limit Innate Immune Activation on Cancer Cells and Thereby Inhibit Metastasis  
**Ph.D. Mentor:** Bruce Sullenger  
**Hometown:** Nazareth, Israel & Ibadan, Oyo State, Nigeria  
**Quote:** “If the sky’s the limit, then aim for the stars, and if you fail, you’ll land on the moon”

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Joshua Jones Macopson

**Dissertation:** Assessing Nucleocytoplasmic Transport in Spinocerebellar Ataxia Type 7  
**Ph.D. Mentor:** Albert La Spada  
**Hometown:** Fayetteville, Georgia  
**Quote:** “What’s possible is not a matter of what can or can’t be done but rather what has or hasn’t been done.”

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Kelsey McDonald

**Dissertation:** Computational Modeling of Multi-Agent, Continuous Decision Making in Competitive Contexts  
**PhD Mentor:** Pearson and Huettel  
**Hometown:** Tampa, FL  
**Quote:** “I am learning every day to allow the space between where I am and where I want to be to inspire me and not terrify me.” – Tracee Ellis Ross
so what comes next?

Career Options for Science Ph.D.s

If you want to continue doing bench science after graduate school, there are plenty of options in academia, industry, or government positions that you are probably already aware of. However, there are also a lot of career options that do not involve bench science! We spotlight several of these here:

TEACHING There are non-research positions in academia, particularly at smaller liberal arts universities that do not focus on research, or hybrid careers that involve part-time research and part-time teaching. Duke offers many opportunities for teaching experience and relevant professional development, including TAing classes, a certificate in college teaching, Graduate Academy short courses, and various workshops.

CONSULTING A career in consulting can mean a lot of different things, but consultants are contracted to provide a third-party perspective and expertise on projects and problems that companies are working through. PhD scientists can consult on scientific endeavors, but it is also common for PhDs to simply contribute problem-solving abilities and an outsider perspective.

VENTURE CAPTIALISM Are you always thinking of new ideas? Do your ideas have potential for application to a biotech startup company? Venture capitalism might be for you! If this is a track you are interested in, you may benefit from taking business courses through Duke’s Fuqua School of Business or even pursuing a MBA in addition to your PhD. Also be on the lookout for innovative grants and internships that would allow you to pursue some of your ideas and gain experience while still in school.

SCIENCE POLICY People working in science policy serve as a liaison between scientists and policymakers. For biomedical PhDs working in this field, science communication is extremely important because they way the research is conveyed to policymakers can have a huge impact on the laws and policy that passes legislation.
REGULATION/SCIENCE WRITING The development and market of new drugs, therapeutics, vaccines, and medical technology is strictly regulated, and someone has to make sure that things going through to market are safe and qualify for appropriate licensure. PhDs in this field are generally leaders within the regulatory framework of their organization, and it is ideal to have practical experience in drug development before starting a career in regulatory affairs.

SCIENTIFIC REVIEW/FUNDING Scientific review officers and program officers are MDs or PhDs with relevant research experience in the field. Broad scientific interest and experience is necessary for this type of career, so if this sounds like an interesting option for a career, you may want to plan to do at least one postdoc that will allow you to broaden your experience within your field.

PUBLISHING Similar to scientific review positions, publishing is another career involving the evaluation of others’ science. As such, broader scientific experience is beneficial for an editorial career as well. A firm handle on the English language would also be a valuable skill on this career track in particular.

SCIENCE JOURNALISM Science communication to the general public is incredibly important, a fact which became even more painfully obvious during the COVID-19 pandemic. Science journalists can work with news organizations or scientific journals to disseminate important findings in recent research to the general public. As such, knowing your audience is key to this type of career, and it is essential to be able to convey complex topics in simple language.

ADMINISTRATION Similar to a teaching track, many administration professionals in higher education are PhDs. If you don’t love bench work and teaching is not for you but you want to help support students, this could be a great option for you!
What is At the CoRE?

At the CoRE is a newsletter intended to highlight the accomplishments of Duke's BioCoRE Scholars as they progress through their graduate careers. The newsletter also intends to highlight community efforts towards diversity, equity, and inclusion on Duke's campus and in the Triangle. This publication is student-driven from conception to circulation.

Contribute to At The CoRE

Interested in developing your abilities alongside other rising science communicators? The Communications team is looking for additional minds to join in making this newsletter and other projects possible.

At the CoRE is part of the BioCoRE Scholars Program efforts to improve DEI on campus and create opportunity for our scholars. Whether you are an incoming scholar or already established at Duke, reach out if you want to begin your path as a science communicator.

If you are interested in publishing your writing as a guest author, At the CoRE is also taking rolling submissions. Please email Monroe to submit your work or receive writing topic suggestions.

monroe.monroe@duke.edu