

December 30, 2021

Dear Search Committee Members,

I am excited to apply to the open Assistant Professor position in the Biology of Microbial Communities at the University of North Carolina at Charlotte. My unique interdisciplinary research focus on the diversity and function of host-microbe-microbe interactions is a great fit for this position. I seek a position at UNC-Charlotte so I can establish a research program that can flourish within a large, resource-rich community while training and educating graduate and undergraduate students. Using my scientific expertise in microbiology and my dedication to higher education, **I can provide the Department of Biological Sciences with a versatile educator capable of teaching a variety of courses and a productive research program on understudied microbial interactions.** My multifaceted research interests and integration of computational tools will allow me to collaborate widely and take full advantage of the computing, imaging, and sequencing resources at the Biotechnology Resource Center.

Trained in biochemistry at North Carolina State University and in molecular plant-microbe interactions at Cornell University, **I use molecular, genetic, and computational techniques to investigate the diversity and function of host-associated bacterial-fungal interactions.** Endofungal bacteria inhabit diverse fungi, including animal and plant pathogens and mutualists, affecting reproduction, pathogenicity, and metabolism. My interest in endofungal bacteria started during my graduate studies and now, as a USDA Postdoctoral Fellow at the University of Arizona, I study the genetics underlying how bacteria associate with and inhabit endophytic and plant pathogenic fungi. I initiated this position to explore facultative partnerships identified by Dr. David Baltrus' and Dr. A. Elizabeth Arnold's labs and have combined microbes and techniques from their labs with my own expertise in secretion systems, cloning, and transcriptomics. Since July 2020, I have conducted dual RNA-seq analysis and fungal genome assembly, while creating pipelines, strains, and transposon libraries that I can use to jumpstart an independent position. Furthermore, I have carefully maintained a network of other collaborators and ongoing projects to build on in my independent laboratory.

The research program I propose will investigate the fundamentals of when and how these fungal-bacterial relationships form, and their impact on host health, promising new avenues for controlling fungal pathogens, improving plant growth promotion, and understanding microbiomes at a greater resolution. **My research career has a strong track record of funding,** beginning as a Goldwater and NC Biotechnology fellow during my undergraduate degree and running through my doctoral degree as a Cornell Life Sciences and USDA Predoctoral fellow. **Recently, two nonoverlapping, external postdoctoral fellowships I applied for (USDA EWD and NSF PRFB) were recommended for funding, highlighting my ability to independently fund the separate research areas that I propose in my Research Statement.** My current USDA fellowship can be converted to a traditional grant and the remaining ~\$80,000 moved with me to an independent position should I obtain one with a start date after June 2022.

Beyond my research, I am a dedicated teacher and community member, as is exemplified by my service and leadership experience listed on my C.V. I have served as a teaching assistant for five semesters in biochemistry and molecular biology undergraduate classes, voluntarily co-taught a graduate-level plant microbiology course, and mentored many students formally (9) and informally. As elaborated on in my statements, **my teaching and mentoring philosophy is firmly rooted in my belief**





THE UNIVERSITY OF ARIZONA

College of Agriculture
& Life Sciences

SCHOOL OF PLANT SCIENCES

Marley Building
1145 E 4th St
Tucson, AZ 85719

morgancarter.wordpress.com
e: morgancarter@arizona.edu
p: 336-909-1925

that everyone should feel individually welcomed, valued, and supported in their workplace or educational environment. I greatly look forward to the opportunity to contribute to the community and educational experience at UNCC.

Thank you for your consideration. I am happy to provide any additional information you may need and have included two publications from my graduate work as well as a recent preprint from my postdoctoral work, as it is extremely relevant to my proposed research program.

Sincerely,

A handwritten signature in black ink that reads "Morgan E. Carter".

Dr. Morgan E. Carter

