

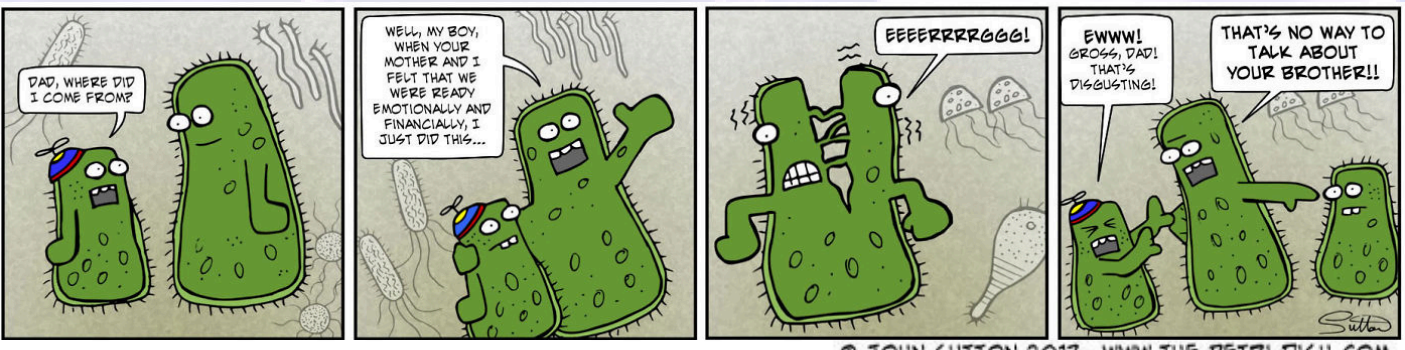
GCC AMR Newsletter

HOUSTON, TEXAS, USA

JUNE 2026

HOUSTON, WE HAVE A MICROBE!

CELEBRATING TRAINEE ACCOMPLISHMENTS



Gulf Coast Consortia



QUANTITATIVE BIOMEDICAL SCIENCES



BY: HOSSAENA AYELE, MSC

Dr. Kang was bitten by the research bug at an early age, after participating in a summer research mentorship program for high school students at UC Santa Barbara. Although initially desiring to pursue a summer research project in chemistry or organic chemistry, Dr. Kang was, by chance, selected to spend 8 weeks in his fourth-choice lab in Microbiology. As luck would have it, this changed the trajectory of the rest of his scientific career. During this 8-week immersion experience, he worked in the lab of Dr. Christopher Hayes in UC Santa Barbara's molecular cell and developmental biology department, studying Type VI secretion systems in the gram-negative bacterium *Enterobacter cloacae*. It was at this moment that he fell in love with microbiology. He learned about competition assays, PCR, cloning, western blotting, spot plating, and many other essential techniques, setting him up perfectly to transition to the BA/MA-PhD accelerated program at Rice University. This was a program for Rice sophomores engaging in on-campus research in biochemistry and cell biology, allowing students to complete coursework and research for a master's degree during their undergraduate education with their thesis defense serving as their qualifying exam for PhD candidacy.

Early Years

When he first enrolled at Rice University for an undergraduate degree, Dr. Kang was eager to join a microbiology lab, seeking the research high he had first experienced while working with Dr. Hayes. Fortunately, Dr. Natasha Kirienko had just joined Rice University as a faculty member. She was in the early stages of setting up her lab when Dr. Kang reached out about an undergraduate research position. This was fortuitous because, as the only student in her lab, Dr. Kang received extensive hands-on mentoring, gaining junior graduate-level skills as an undergraduate during the first few months he worked with Dr. Kirienko.

COMPOUNDING EXCELLENCE THROUGH CONTINUITY

D. ALEX KANG, PHD

POST-DOCTORAL RESEARCH FELLOW
HOUSTON METHODIST RESEARCH INSTITUTE



Dr. Kang credits much of his growth as a microbiologist to his time with Dr. Kirienko and the mentoring he received. As a first- and second-year student at Rice, Dr. Kang recounts how fortunate he was to attend national meetings, such as the Texas Medical Center AMR conference in 2016 and the International *C. elegans* Meeting in 2017.

When it works, it works.

Although some view remaining at one institution for multiple degrees as limiting, Dr. Kang found this continuity invaluable due to the immensely supportive environment Dr. Kirienko provided, resulting in an 8.5-year stint in her lab. Dr. Kang was incredibly productive during this time, publishing 13 research articles, many of which were first-author publications, and gaining expertise in the microbiology and pathogenesis of *Pseudomonas aeruginosa*. Throughout his time working on this bug, he has enjoyed learning the tools and techniques available for studying *P. aeruginosa*, the robustness of the large scientific community that studies it, as well as the diversity of mechanisms found in this bug, especially in the clinical strains. Dr. Kang revels in the scientific untapped potential of *P. aeruginosa* research and the versatility of this bug, which has led him to continue down this path in his postdoctoral research with Dr. William Miller at Houston Methodist Research Institute.

In fact, while in Dr. Miller's lab, Dr. Kang has received a NIH/NIAID T32 fellowship ("Antimicrobial Resistance Training Program in the Texas Medical Center" administered by the Gulf Coast Consortia) and a Cystic Fibrosis Foundation postdoctoral research fellowship – impressive accomplishments for an early-career investigator.

If it is not obvious, Dr. Kang has been enjoying his time in academia and wants to continue, eventually starting his own lab at an R1 institution while also pursuing teaching at the undergraduate and/or graduate levels. If he could impart one piece of wisdom to the next generation of scientists, it would be that research is not always about flashy science; it should be about what you are interested in and passionate about. Furthermore, comparison is the thief of joy. In academia, you will be surrounded by others doing great work, and it can be easy to fall into the trap of imposter syndrome – so make a conscious effort to avoid comparing yourself to others and enjoy the science you are discovering.

Outside the lab, Dr. Kang enjoys relaxing with his cats and exploring new video games. Dr. Kang is a strong proponent of work-life balance and encourages establishing it early in your academic career to avoid burnout.

Dr. Kang's work continues to advance understanding of *P. aeruginosa* pathogenesis and antimicrobial resistance, and we are excited to see his inevitable successes in the near future.



BY: ANN M. MCKELVEY, PHD

Guadalupe Calderon, a baccalaureate of Rhodes College in Memphis Tennessee, is pursuing her PhD in the lab of Dr. Yi Xu at the Texas A&M School of Medicine Institute of Biosciences and Technology. A first generation Mexican-American, Calderon hails from a family that is one of her most powerful motivations. The bravery shown by her parents in leaving their families and friends to move to a different country has helped her through difficult times both before and during the process of earning her PhD.

The Work

As a third year PhD candidate, Guadalupe is studying the clinically relevant *Streptococcus gallolyticus* subspecies *gallolyticus* (SGG), which is a bacteria known to cause infective endocarditis, bacteremia, and has also been associated with colorectal cancer. Interestingly, SGG is an opportunistic pathogen and is known to be a commensal microbe in ruminants. Her work is examining how SGG transitions from commensal to pathogen, by understanding the Type VII secretion system found in SGG and other Gram-positive bacteria and how the presence of this TSS is correlated to colorectal cancer. While preparing her manuscript, Guadalupe encountered a situation common to researchers everywhere—another group published a paper similar to hers. The setback pushed Guadalupe to dig deeper. Her efforts have borne out and in her hands now is data that is not only impactful but relevant to human health.

Mentors

Asked about the start of her career in the sciences, Guadalupe shares that much of her initial motivation to pursue a PhD had to do with a deep-seated fascination with the intricacy of the human body. Early on, she was sure that a career as a physician was not quite the direction she wished her career to go. This was in part because of a driving curiosity to understand the how of the mechanisms that support life.

AT THE END OF THE DAY, THIS IS SOMETHING THAT MATTERS

GUADALUPE CALDERON

PHD CANDIDATE
TEXAS A&M IBT



“How diseases work, deep down to the molecular level was something I just found interesting...it really is just truly amazing to me how detailed, how specifically things work in our bodies. We really have a mechanism for everything.”

Despite this overarching interest in pursuing the sciences, Guadalupe acknowledges that she overextended herself while earning her bachelors degree. She notes that one of the actions she took to re-energize herself was taking a leave of absence. The decision to briefly pause in her coursework and recharge only increased her motivation. Prioritizing herself and her needs during that time has helped her recognize that the work will always be there. “Research [is always] needing to be done. Make sure that you are okay.”

Coming into the doctoral program, Guadalupe prioritized not only doing good science but finding a lab that would prioritize her development as an independent thinker. She credits the excellence of her mentors at Rhodes College. “My research advisor and my academic advisor were both women who pushed me and taught me the things I should look out for.” She has carried forward that mentorship and has created her own support communities to help her and others stay focused during the PhD. Having this community around her has helped her remember why she is pursuing research in the sciences. “At the end of the day, I’m doing something that matters. I’m contributing something good to the community.”

The Path Ahead

Community has played a large part in maintaining motivation as Guadalupe has progressed through the stages of achieving the doctorate. Having a support system has been key to successfully staying on her chosen course. With friends also working toward their own PhDs both within the IBT and at other institutions in the TMC, offering and receiving support has been essential to Guadalupe’s success. She also embraces that every step along the journey is a chance to learn something new. “I had never seen a dissertation defense before. Once I joined the IBT, I’ve [seen] multiple, and it’s another thing driving me. Seeing students who are graduating makes me believe I can do it too.”

Guadalupe believes that understanding both yourself and the environment of the lab are fundamental to succeeding, in addition to interest in what is being studied. Asked about what advice she might give to a first year student: “Asking for help and asking questions is part of the reason why I got to where I am.” Having a clear picture of what comes next is just as important, and Guadalupe is on the cusp of deciding between a more clinically focused career and the exploratory research that becoming a bench scientist can offer. Guadalupe also encourages aspiring student researchers to remember the following:

If you can do it, I can do it, and if I can do it, you can do it.

ADVERTISEMENTS AND GCC SPECIAL EVENTS

- AMR SEMINAR ZOOM SERIES EVERY 2ND MONDAY OF THE MONTH AT NOON

*Keep an eye out for GCC announcements for speaker information and ZOOM link.

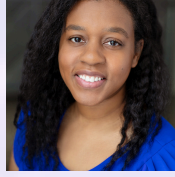
- SAVE THE DATE: 10TH ANNUAL TEXAS MEDICAL CENTER ANTIMICROBIAL RESISTANCE AND STEWARDSHIP CONFERENCE, JANUARY 13-15, 2027.

*Stay tuned for updates on confirmed speakers.

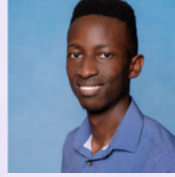
AMR Scholars Committee



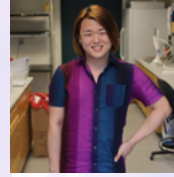
HOSSAENA AYELE
UTHEALTH
HOSSAENA.AYELE@UTH.TMC.EDU



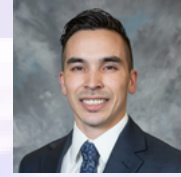
ANN M. MCKELVEY
TEXAS A&M HEALTH
AMCKELVEY@TAMU.EDU



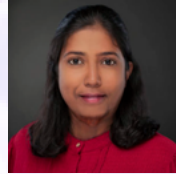
DIGNITE FABRICE NGANGO
BCM
DIGNITEFABRICE.NGANGO@BCM.EDU



ALEX KANG
HMRI
DKANG@HOUSTONMETHODIST.ORG



JACOB MCPHERSON
UH
J&MCPHER@CENTRAL.UH.EDU



CHETNA DUREJA
TEXAS A&M HEALTH
CHETNADUREJA@EXCHANGE.TAMU.EDU



BISHNU JOSHI
BCM
BISHNU.JOSHI@BCM.EDU

Newsletter Goals

- Support the career progression of trainees in the Texas Medical Center (TMC) who participate in Microbiology-related research by highlighting their accomplishments and contributions to their respective fields.
- Support community building by providing the opportunity to discover trainees within the TMC conducting research on similar topics, supporting collaboration efforts and career advancement.

Newsletter Scope:

- This newsletter is specifically tailored for PhD students and early-career postdoctoral researchers in the field of Microbiology. It is exclusively intended for trainees affiliated with member institutions of the Texas Medical Center (TMC) in Houston.

If you wish to nominate (or self-nominate) a trainee in the TMC that is doing stellar research, was awarded a competitive fellowship, and/or is just simply awesome, scan the below QR code.

Thank you for reading!

