

UCSD NANOENGINEERING/CHEMICAL ENGINEERING  
**SEMINAR SERIES**

Wednesday, January 10th, 2024

Seminar Presentation: 11:00am - 12:00pm

**SME room 248*****“Determining sex differences in cardiovascular disease using biomaterials”*****Dr. Brian Aguado, PhD***Assistant Professor**Shu Chien-Gen Lay Department of Bioengineering  
University of California, San Diego*

**Abstract:** Cardiovascular disease is the leading cause of death in both men and women, yet our mechanistic knowledge of the sex-specific molecular and cellular mechanisms that guide cardiovascular disease progression, particularly in women, remain poorly characterized. Studies evaluating disease mechanisms rarely state the sex of cells used for in vitro studies or are performed primarily in male animal models, causing our gap in knowledge. My laboratory uses precision biomaterials as in vitro and in vivo tools to dissect mechanisms that contribute to sexual dimorphisms in cardiovascular diseases, specifically aortic valve stenosis. In my talk, I will discuss how we have used hydrogel biomaterials as engineered valve matrix mimics to explore sex dimorphisms in valvular interstitial cell phenotypes in vitro and describe sex-specific molecular mechanisms that may drive dimorphisms in aortic valve stenosis. Our work seeks to leverage biomaterial technologies to understand sex dimorphisms in health and disease, with the long-term goal of achieving sex and gender equity in cardiovascular disease treatments and outcomes.

**Biosketch:** Dr. Brian Aguado (Twitter: @BrianAguado) is currently an Assistant Professor of Bioengineering at UC San Diego, where his laboratory research is focused on studying sex differences in cardiovascular disease using biomaterial technologies. Dr. Aguado completed his BS degree in Biomechanical Engineering from Stanford University and his MS and PhD in Biomedical Engineering from Northwestern University. He also obtained his certificate in Management for Scientists and Engineers from the Kellogg School of Management at Northwestern. He completed his postdoctoral fellowship in Chemical and Biological Engineering at the University of Colorado Boulder. Dr. Aguado has received numerous awards to support his research, including the NIH K99/R00 Pathway to Independence Award, the American Heart Association Career Development Award, the Chan Zuckerberg Initiative Science Diversity Leadership Award, and the NIH DP2 New Innovator Award. Dr. Aguado currently serves on the editorial advisory boards for the Journal of Biomedical Materials Research Part A and GEN Biotechnology. Dr. Aguado is also a dedicated science communicator outside of the lab and seeks to engage historically excluded and marginalized populations in the sciences. Dr. Aguado co-founded LatinXinBME (Twitter: @LatinXinBME), a new social media initiative dedicated to building a diverse and inclusive community of Latinx biomedical engineers and scientists to support each other personally and professionally through their careers. For his efforts, he was named one of the 100 Most Inspiring Latinx Scientists in America by Cell Press and received the Biomaterials Diversity Award for Young Investigator from the Biomaterials journal and the GEMINI Faculty Mentor Award from the Institute for Engineering in Medicine.