Clayton D. Jacobs
L2
Louisiana State University Health Sciences Center, New Orleans, LA

Mentor: Alison Quayle, PhD
Louisiana State University Health Sciences Center, Department of Microbiology, Immunology & Parasitology
(collaborators: Jacob Elnaggar, Caleb Ardizzone, Christopher Taylor and Rebecca Lillis)

"Effects of Metronidazole on *Mycoplasma genitalium* in a high-risk population"

Mycoplama genitalium (MG) is a facultative intracellular pathogen that is a common cause of urethritis in men and has more recently has been associated with cervicitis and pelvic inflammatory disease (PID) in women. Treatment of MG is becoming increasingly difficult due to its rising resistance to azithromycin and moxifloxacin. A recent randomized controlled treatment trial for PID found that addition of metronidazole (MTZ) to the standard doxycycline plus ceftriaxone treatment improved treatment outcomes. This was unsurprising, since MTZ targets anaerobic organisms that are common to PID and also to bacterial vaginosis (BV). However, it also unexpectedly reduced the incidence of MG, leading to the hypothesis that anaerobic bacteria may enhance colonization by MG. To test this hypothesis, I am using a set of unique archived samples from a longitudinal study of young, high-risk women attending the CrescentCare sexual health clinic in New Orleans in which (i) BV was diagnosed and MTZ was prescribed at a screening visit (V1), and (ii) reassessed at a follow-up visit (V2) 7-9 days later. The objectives of my study are to (i) adapt and refine a published qPCR methodology for the quantification of MG genome copy number in clinical specimens, (ii) establish the prevalence of MG in this high-risk population with high rates of BV (>60%), (iii) observe the effects of MTZ treatment on MG burden between V1 and V2, and (iv) determine levels of antibiotic resistance in the population. I have (i) used gradient PCR and gel electrophoresis to optimize the efficiency and specificity of the reaction conditions, (ii) used known MG-positive samples from a previous study to determine the limits of quantitation for the assay, and (iii) added an internal positive control to test for the presence of polymerase inhibitors in the samples. In the coming weeks, I plan to use this method to test our archived clinical samples and determine the effect of MTZ treatment on MG between V1 and V2. This study is clinically important as it will inform if MTZ is a promising antibiotic to treat MG. This study could also be continued to observe levels of antibiotic resistance in MG for our New Orleans high risk cohort.