***E. coli*, *E. coli*, Everywhere!**

Have you ever thought to yourself, I would to love to learn more about the bacteria *E. coli* and how it is fed in the large intestine? Honestly, me neither, that is, until I had the chance to catch up with Dr. Tyrrell Conway, the Department Head of the Microbiology and Molecular Genetics Department at Oklahoma State University. You may be asking yourself, why would anyone want to study the bacteria, *E. coli*? For Dr. Conway, the answer is simple—“to understand how living cells work” and with that, Dr. Conway states that *E. coli* is the “model organism”.

As we sit down to start our interview, I get some background information on Dr. Conway—which he proudly states that he is an Oklahoma State University graduate—class of 1984. Before settling down here as Department Head, Dr. Conway has been to many different places—Florida, Nebraska, Ohio State, The University of Oklahoma, and finally coming back to his Alma Mater. After this, Dr. Conway and I dive right into his research—where his enthusiasm picks up and his face lights up.

Currently, Dr. Conway is doing research on “the physiological state of colonized bacteria in the mammalian large intestine” [1]. Dr. Conway goes on to explain that he has been doing this type of research since about the year two thousand in conjunction with Dr. Paul S. Cohen from the University of Rhode Island (now retired) and with funding from the NIH (National Institutes of Health), this research project has been able to be continued. As the excitement grows, we get down to the nitty gritty—what exactly is the research that Dr. Conway and his lab are doing here at OSU? This is what Dr. Conway has to say about that!

 Essentially, when put into simple terms, the bacteria *Escherichia coli* colonizes in the mucus layer of the large intestine. In taking that information into consideration, Dr. Conway and his team want to figure out what exactly feeds *E. coli* and causes it to grow into a colony. In the research conducted thus far, it has been found that different types of *E. coli* essentially compete with one another for different types of sugars in the intestine. What has also been found is that *E. coli* must be able to inhale and exhale oxygen in order to be in the intestine. What Dr. Conway and his team do is this—his lab utilizes mice as lab models. The mice are given the antibiotic Streptomycin to see if pre-existing *E. coli* can be used to prevent any invading *E. coli* from growing in the large intestine. So far, in this research the possibility has been raised that different *E. coli* pathogens may also use different forms of glucose nutrients to contribute to their ability to colonize in the face of different *E. coli* strains. However, at this point, more research is required and has been funded by the NIH (look out for more interviews as the research is continued)!

As our interview comes to a close, I ask Dr. Conway one last question. Where does he see this research heading and if there are any upcoming or current research that we could look forward to seeing. With a wide smile on his face he says that yes! Research is a continuous job, he states that now, he looks forward to researching what these interactions look like in the intestines and how they form their populations! Dr. Conway walks me out of his office with a smile and a wave as I thank him for taking time out of his busy schedule to meet with me.

**RESOURCES**

[1] Conway, T. and Cohen, PS. 2015. Commensal and Pathogenic Escherichia coli Metabolism in the Gut. Microbiol Spectr. 3(3) doi: 10.1128/microbiolspec.MBP-0006-2014. PMID: 26185077

[2] <https://microbiology.okstate.edu/14-news/125-dr-conway>

[3] <https://microbiology.okstate.edu/faculty-staff#Faculty>