INNOVATOR SPOTLIGHT

Dr. Dan Janies
Professor – Bioinformatics and Genomics

"UNC Charlotte, especially CCI, has a very strong entrepreneurial spirit. We are allowed to take chances and have access to the resources necessary to do so. At CCI, we have been able to start fresh with bioinformatics and visualization and be part of creating a whole new, truly innovative field called molecular epidemiology."

Janies' work, which earns funding from the National Science Foundation (NSF) and Center for Disease Control (CDC), applies an innovative approach to the study of diseases and their origins. Historically, epidemiologists focus on the rise and fall of diseases looking more for cures than causes.

"Often, cases are defined only by shared symptoms," says Janies, "but the issue is that diseases caused by different pathogens can exhibit the same symptoms.

"By using computing to combine genetics and visualization we have started to understand diseases through the biology of the pathogen," he says.

For this, Janies has created what many call his "disease weather map," which offers a visual representation of the data to show how diseases form and spread, like storms across a land mass.

"By identifying which pathogens are genetically similar to each other we can connect the cases over time and space to understand how a specific strain originated, where the strain is moving, and how the strain changing as it moves and becomes resistant to drugs," says Janies.