Daniel Mogollon

University of Calgary
Fellowship Award

I am a Bioinformatics Scientist and Microbiologist with a PhD in Microbiology and Infectious Diseases and over 10 years of experience at the intersection of computational biology, infectious disease research, and microbiome science. My expertise spans the development of diagnostic tools, comparative genomics, statistical modeling, and multi-omics analysis of pathogens and microbiomes across global and clinical settings.

Currently a Postdoctoral Associate at the University of Calgary, I lead projects exploring the gut microbiome's role in Parkinson's disease and type-1 diabetes, and coordinate provincial bioinformatics initiatives across Alberta. I have authored and co-authored over a dozen peer-reviewed publications, collaborated with national and international institutions, and contributed to major grants and translational projects involving Plasmodium falciparum, SARS-CoV-2, Clostridioides difficile, and beyond.

Parkinson disease (PD) is a progressive brain disorder that affects movement and quality of life. It is one of the fastest-growing neurological conditions worldwide, and yet, its cause is still unknown. Whilst genetics and environmental factors are known to play a critical role in the disease trigger and progression, a growing body of evidence suggests that the gut microbiome – the bacterial communities colonizing the gastrointestinal tract – is also involved.

The overarching goal of this project is to grow and study beneficial bacteria in the gut found in healthy individuals, but depleted or at a low proportion in individuals with Parkinson's. As a result, we will carefully design a bacterial community that could help restore the gut balance and potentially slow disease progression. This will be the first study carried out focused on an Alberta-based Parkinson's population, and one of the largest gut microbiome studies of PD in Canada. This work will also lead to the development of new tools for early detection, pave the road for future clinical trials, and shed new light on the gut and brain mechanisms involved in neurodegenerative disorders.