

Exploring the Frontier Within

Microbes are minute one-cell life forms, millions of which live within our bodies in what science has termed the “microbiome.” As science uncovers more about this microbial world within us, those who study it are finding that the composition and balance of microbes in the gastrointestinal tract, or gut, influences health, affects drug metabolism and may even be associated with disease. So the CFIDS Association is optimistic about exploring this frontier of science through its grant to research microbiologist **Sanjay Shukla, PhD**, to investigate microbial markers in CFS following an exercise challenge.

By studying the gastrointestinal microbiome, Shukla’s work will determine if the ratio of normal to pathogenic (illness-causing) bacteria is off-kilter in CFS patients and if exercise causes harmful bacteria to travel into the body from the gut, creating the postexertional symptoms that are such a prominent feature of the illness. To do this, Shukla’s team will use metagenomics—a novel technique that involves sampling the genome sequence of a community of organisms inhabiting a common environment. The results have the potential to yield microbial biomarkers for CFS as well as targeted treatments aimed at rebalancing the ratio of bacteria.

As with many of the other studies the Association is funding in this cycle of grants, Shukla’s study is unique in several ways. It’ll be the first to use metagenomics for microbial investigation in CFS. It also applies cutting-edge science to synthesize several common characteristics of the illness—specifically, postexertional relapse, gut disturbance and chronic inflammation.



Sanjay Shukla, PhD

Study: Metagenomics approach to study chronic fatigue syndrome patients

Institution: Marshfield Clinic Research Foundation

Collaborators: Dane Cook, PhD, Dan Frank, PhD, Steve Yale, MD

Perspective
from our scientific director
Suzanne Vernon, PhD

“This study is exciting not only because it will be the first to carefully examine the gastrointestinal microbiome in CFS but also because of the remarkable team Shukla has assembled. Because the study explores microbes, exercise-induced reactions and gut disturbances, Shukla will conduct the study with the help of a clinical researcher, an exercise physiologist and a microbial ecologist—all of whom are highly skilled in their respective fields. This multidisciplinary strength will bring enormous rigor and insight to the investigation.”