Thinking about the human microbiome as a source of benefit and risk

Tuesday, September 24
1:30 - 2:30 p.m.  MRGN 121

The diversity and intimacy of our relationships with the communities of microbes that live in and on our body is nothing short of breathtaking. Recent findings raise questions about how these relationships get started early in life, the ways in which they contribute to human health and disease, and how these relationships are maintained in the face of disturbance, especially the major disturbances produced by modern health care and lifestyle. Given the known and suspected benefits that humans derive from their microbiota, the stability and resilience of this ecosystem are critical properties that deserve attention. We have undertaken longitudinal studies in human subjects, some of whom are monitored before and after a standardized pulse, or acute disturbance, with the goals of describing the temporal dynamics of the human microbiome, and identifying features that are associated with stability in the face of disturbance as well as recovery of a prior state. A predictive understanding of the microbiome and the mechanisms that underlie resilience will inform effective strategies for its manipulation, so as to maintain or restore health, and avoid or mitigate disease. At the same time, these same strategies could be exploited to cause harm; awareness and oversight of these emerging capabilities are critical.