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“The human virome in health and disease”

Abstract: The numerically most abundant biological entities on Earth are viruses. Vast populations prey on the cellular microbiota in all habitats, including the human microbiome. The lecture will review approaches for studying the human virome, and some recent results on movement of viral sequences between cells and multicellular hosts. The lecture will overview biochemical and bioinformatic methods, emphasizing that specific choices in the methods used can have strong effects on the results obtained. The lecture will then review studies characterizing the virome of the healthy human gut, which reveal that most of the viruses detected are typically uncharacterized phage - the viral dark matter - and that viruses that infect human cells are encountered only rarely. In summary, methods for studying the human gut virome are improving, yielding exciting data on movement of viral genes between cells and host organisms.

Biography: Frederic Bushman is the W. M. Measey Professor and Chair of Microbiology at the Perelman School of Medicine at the University of Pennsylvania. Dr. Bushman received his bachelor’s degree in Biology and English at Amherst College, and his PhD in Cellular and Developmental biology at Harvard University. His research centers on host/microbe interactions, with specific projects focusing on the human microbiome, HIV pathogenesis, and human genome modification. Dr. Bushman served as a Principal investigator for the Human Microbiome Project, and is a founding Principal Investigator of the PennCHOP Microbiome Program. Dr. Bushman has also been named a Pioneer in Human Gene Therapy. Dr. Bushman has published over 290 research papers (cited over 35,000 times; ISI h factor of 87) and two books.