

12 SEPTEMBER

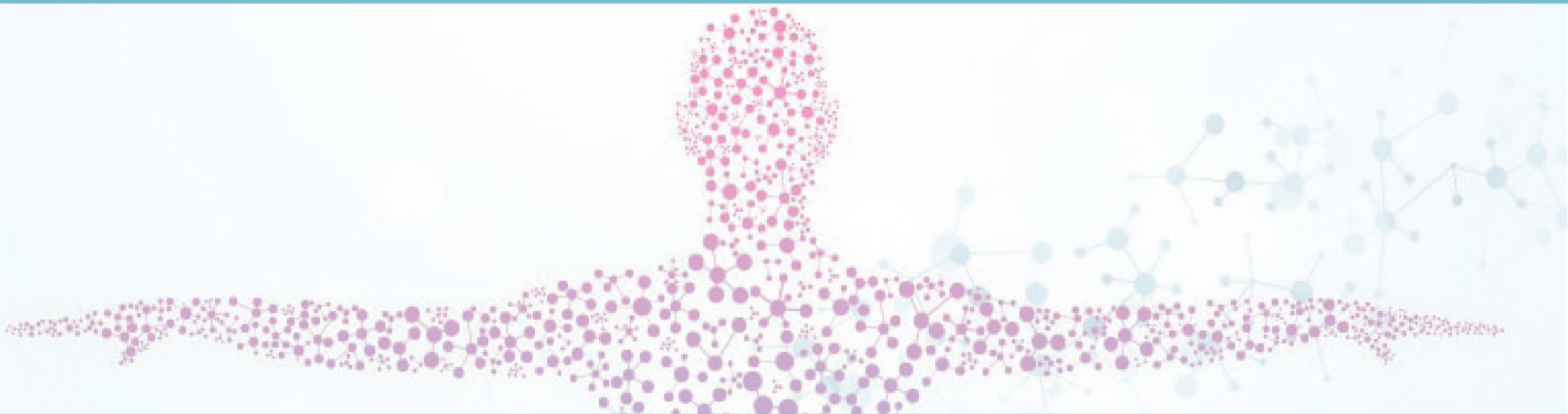
MODERN STATISTICS IN HUMAN GUT MICROBIOME RESEARCH

- LEO LAHTI -

12.00-13.00

LOCATION: RADBOUDUMC NICOLAES TULP ZAAL, ROUTE 606

This talk provides an overview of the contemporary statistical challenges and solutions in data-intensive research of the human microbiome. With the expansion of human microbiome research, the demand for dedicated computational techniques has been rapidly increasing. The context and interpretation of the taxonomic, metagenomic, metabolomic and other high-throughput methods that are used to characterize microbial communities across body sites differ substantially from other areas of molecular biology that employ similar techniques. We consider cross-sectional, prospective, and longitudinal aspects in population-level studies, and demonstrate how large background cohorts provide the essential context for understanding individual variation in microbial community composition and temporal dynamics. Whereas the high complexity of these systems poses serious challenges for deterministic analysis, we show how stochastic and non-parametric models provide the means to quantify and predict key aspects of microbiome dynamics even when the underlying ecological and molecular mechanisms are poorly understood and challenging to measure directly. The talk will conclude by considering the role of collaborative methods development in accelerating the development and adoption of best practices in contemporary microbiome research.



Dr. Leo Lahti is an Adjunct Professor in applied mathematics at the University of Turku, Finland, focusing on computational aspects of microbiome research. He obtained a doctoral degree in statistical machine learning and bioinformatics in Aalto University, Finland in 2010, followed by postdoctoral periods in Wageningen, The Netherlands, and VIB/KU Leuven, Belgium. His current research focus is on the development and application of dedicated statistical techniques in population cohort studies of the human microbiome.

