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PRESENTATION TITLE: Hereditary Cancer Surveillance Using Cell-free DNA Sequencing

ABSTRACT: Carriers of hereditary cancer syndromes are at heightened risk for malignancy and therefore undergo annual clinical screening for a host of cancers. As cancers are now well-known to shed cell-free DNA into the blood stream, we founded the CHARM consortium (Cell-free DNA in Hereditary and High-risk Malignancies, www.charmconsortium.ca) to assess whether regular genome and methylome profiling of blood plasma can detect the earliest cancers in this population. In this talk, I will discuss findings from multiple different types of hereditary cancer syndromes utilizing a combination of mutational, fragmentomic, and epigenetic approaches to cell-free DNA analysis. I will also introduce data sharing and analytic strategies to increase the sensitivity and impact of these techniques. I will also provide an update on the current activities and future directions of the CHARM consortium.

BIOGRAPHY: Dr. Trevor Pugh, PhD, FACMG is a cancer genomics researcher, board-certified molecular geneticist, and holder of the Canada Research Chair in Translational Genomics. He is Director of the Joint Genomics Program of the University Health Network and Ontario Institute for Cancer Research which delivers basic, translational, and clinically-accredited genomics services. He is also appointed as Associate Professor in the University of Toronto Department of Medical Biophysics, Senior Scientist at the Princess Margaret Cancer Centre, and Senior Investigator at the Ontario Institute for Cancer Research. His research lab is focused on understanding clinical implications of clonal shifts in cancer and non-cancerous cell populations during treatment, most recently using cell-free DNA, immune repertoire, and single cell RNA-seq sequencing. Most recently, he was recognized by Canada's Top 40 Under 40 and the Canadian Cancer Society Bernard and Francine Dorval Prize.