High throughput single-molecule analysis of human telomeres

Speaker: Harold Riethman, Ph.D.
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Where: 1st floor conference room, IRP II

Abstract:
Telomeres consist of stretches of (TTAGGG)n repeat DNA and their associated proteins at the ends of chromosomes. Both their dysfunction and subsequent aberrant repair/maintenance contribute to cancer, aging, and stem cell biology. Individual telomere lengths and stabilities are both subtelomere-dependent and heritable; some telomeres are shorter and less stable than others. Incomplete human subtelomeric reference sequence assemblies and structural variants have precluded the global analysis of single human telomeres. We have developed a technology using high-throughput mapping of large DNA molecules labeled using CRISPR/Cas9 to overcome this obstacle, and will discuss recent novel results from our analysis of senescing cells, cancer cells, and stem cells.

Biosketch:
Dr. Harold Riethman received his BS and MS from the University of Cincinnati, and his PhD from the University of Missouri. Following postdoctoral fellowships in Genetics at Washington University in St. Louis, he began his independent career at The Wistar Institute in Philadelphia, with adjunct appointments in Genetics and Biology at the University of Pennsylvania. His laboratory has played key roles in the DNA sequencing and analysis of human telomeres, complex genetic regions near the tips of chromosomes. Dr. Riethman joined ODU in August 2015 as Associate Chair of MDTS; his current research is focused on the genetics and biology of telomeres as they relate to human cancer, aging, and stem cell biology.