Our ability to respond to and repair damage to DNA in our cells from environmental stressors is critical to maintaining health and preventing diseases, including cancers, neurological conditions, and immune-related diseases. It is highly likely that individuals have varying capacity for DNA repair, depending on age, underlying genetics, and exposure histories, resulting in differential susceptibility to exposures to DNA damaging agents. New approaches to determine DNA Repair Capacity (DRC) at the level of the individual will greatly enhance efforts in Precision Medicine and Precision Prevention. Such technologies can be applied, for example, to risk stratifying individuals for cancer screening initiation and predicting how patients will respond to cancer therapies, but also to characterizing risk from environmental exposures for individuals or subpopulations. This half-day workshop will cover several new approaches for characterizing DRC from research groups consisting of experts in mechanisms of DNA repair, epidemiologists, and clinicians. This will also be an opportunity to discuss...
practical considerations for application and scale-up of these new methods, including optimal collection and storage conditions for blood-based assays, cost and throughput, variation in DRC within and between individuals over time, and interpretation of assay results in clinical and public health studies for prevention and intervention efforts.