Abstract:

Imaging flow cytometry (IFC) combines the speed, sensitivity, and phenotyping abilities of flow cytometry with the detailed imagery and functional insights of microscopy. Due to the high-throughput, high-content nature of IFC, this technology improves upon the statistical robustness and rare event identification capabilities of conventional cytometry by the addition of high resolution imagery. The features and benefits of the Amnis® ImageStream® X MK II and FlowSight® imaging flow cytometers will be explored. Quantitative image analysis and high fluorescence sensitivity of both instruments can expand the research capabilities beyond the use of traditional flow cytometry or microscopy alone. A wide variety of applications have been adapted or developed for IFC, and some of these including measuring cell signaling, cell interactions and DNA damage assessment will be discussed in the context of cancer biology, immunology and radiation biology disciplines.