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Optoelectronic Tweezers – A New Optofluidic Platform for Digital Cell Biology

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Abstract:
Recent success stories of treating cancer with immunotherapy has generated tremendous excitement in the last few years. The remarkable treatment of former President Jimmy Carter's cancer was widely publicized. Immunotherapy uses the antibodies produced by white blood cells, or the cells themselves, to boost the immune response of patients to fight cancer cells. The discovery and production of such "biological drugs" require efficient screening and analysis of a large number of individual white blood cells. In this talk, I will discuss an optofluidic technology developed at Berkeley several years ago called "optoelectronic tweezers" (OET). OET enables cloning of single cells in sub-nanoliter compartments in a microfluidic chip. Antibodies produced by individual cells can be measured in hours. The fully automated OET instruments are now helping pharmaceutical industries speed up drug discovery and production process.

Biography:

Ming Wu is Nortel Distinguished Professor of Electrical Engineering and Computer Sciences at UC Berkeley. He received his Ph.D. from the same department in 1988, and joined the faculty in 2004 after doing research at AT&T Bell Labs and UCLA. Professor Wu is best known for his research in Optical MEMS and optoelectronic tweezers. He received the 2016 William Streifer Scientific Achievement Award from IEEE Photonics Society and the 2017 C.E.K. Mees Medal from the Optical Society of America. He co-founded Berkeley Lights in 2011 to make optoelectronic tweezers-based instruments widely accessible to researchers and industry.