

## Impacting Medicine with Microfluidic Innovations: Advancing Medicine and Diagnostics

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### Abstract

Micro and nanoscale technologies can have a significant impact on medicine and biology in the areas of cell manipulation, diagnostics and monitoring. At the convergence of these new technologies and biology, we research for enabling solutions to real-world problems at the clinic. Emerging nanoscale and microfluidic technologies integrated with biology offer innovative possibilities for creating intelligent, medical, microfluidic lab-chip devices that could transform diagnostics and monitoring, microrobotics, tissue engineering and regenerative medicine. We will present interesting applications of microfluidic technologies in IVF, applications of extracellular vesicles in cancer.

### Short Biography

Dr. Utkan Demirci, UofM'99, Stanford'01'05'05, is a Professor of Radiology (with tenure) and of Electrical Engineering (by courtesy) at the Canary Center at Stanford for Cancer Early Detection, Stanford University School of Medicine, where he leads a productive researcher group. Dr. Utkan Demirci is a tenured professor at Stanford University School of Medicine. Prior to joining Stanford in 2014, he held the position of Associate Professor at the Brigham and Women's Hospital-Harvard Medical School and also served at the Harvard-MIT Health Sciences and Technology division. Over the past decade, his research group is focused on the early detection of cancer and has made significant contributions to the development of microfluidic platforms for sorting rare cells and exosomes and point-of-care biosensing technologies. Utkan leads a productive and impactful research group focused on addressing problems from the clinic with innovations including cell sorter for IVF, optical technologies for detecting viruses, portable point of care technologies for diagnostics in global health, smart robots in vivo, extracellular vesicle based early detection approaches for cancer. He is an elected fellow of the American Institute of Medical and Biological Engineering and The Academy for Radiology & Biomedical Imaging Research Distinguished Investigator. He has published over 250 peer-reviewed articles, 300 abstracts and proceedings, 24 book chapters and editorials, and 7 edited books. He also serves on the editorial board of various journals. He holds 15 patents (11 of which are translated into biomedical products) and co-founded multiple companies. Dr. Demirci's pioneering work in microfluidic cell sorting has resulted in CE certified and FDA approved microfluidic devices used in over 500,000 clinical cases and readily accessible in over 1000+ IVF clinics serving patients globally.