

Point-of-Care Molecular Detection for Pathogen Testing, Nader Pourmand, PhD

Abstract: Any pandemic poses critical challenges to clinical testing, demanding real-time results with high level of accuracy and portability of electronic detection and readouts. With their high selectivity, sensitivity and rapid response, nanotechnology-based tools hold great promise for biochemical sensing and microbial detection. During my talk I will compare the shortcomings of current immunoassays and available techniques for microbial detection with the capabilities of nanotechnology. I'll share present results showing the rapid and reversible response of our nanosensors to various analytes, including Covid-19 antigen. If time permits, I will explain our strategy for proteomics technology based on our nanotechnology platform to simultaneously analyze multiple analytes, including antigens, antibodies, proteins and other small molecules.

Bio: Nader Pourmand, PhD, is Professor of Biomolecular Engineering at the Baskin School of Engineering at the University of California at Santa Cruz and Pinpoint's Chief Scientist. The Pourmand lab is focused on developing biological and electrical technologies that aid in the study of genes and proteins. Pourmand's lab has generated over 20 issued patents with several pending. He has been published in more than 90 scientific journals, Dr. Pourmand received his PhD at the Karolinska Institute, Stockholm, Sweden. During his time at Stanford, his lab developed the science underlying Ion Torrent, a benchtop next-gen sequencing system (acquired by Life Technologies, then by Thermo-Fischer). Dr. Pourmand has been a cofounder of innovative startups, including Pinpoint Science, BioStinger, MagArray, Xagros Technologies, and contributed to others including HiPic, Nvigen, Ion Torrent, Bioprobix, and Pathogenix. Dr. Pourmand's research falls into interrelated areas at the interface of bioelectronics and DNA sequencing to advance studies in the field of nanogenomics. He has developed innovative technology based on functionalized nanopipettes, which can be used to study genomics and proteomics of individual living cells at nanoscale. This nanopipette technology was recently described in Nature Nanotechnology as a major advance in Single Cell Genomics and was recognized by the NIH as 2017 First Prize winner of the NIH's "Follow that Cell Challenge" for the development of this technology for interrogating single living cells. This same nanopipette technology is the basis for Pinpoint's rapid, handheld diagnostic platform for detecting microbial pathogens.