POINT OF CARE BIOMEDICAL SENSING AND IMAGING FOR ENHANCING HEALTH IN UNDERSERVED COMMUNITIES

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LECTURE ABSTRACT

Although tremendous strides have been made in health care over the years, over one billion people still lack access to health care systems. The global health challenges of today include chronic medical conditions and infectious diseases. Chronic diseases such as diabetes and cardiovascular disease (CVD) are a leading cause of morbidity and mortality. These chronic diseases are particularly devastating in underserved communities in the US due to higher prevalence and reduced access to care. Further, malaria is a life threatening infectious disease that includes high mortality rates, especially in children. The burden of chronic and infectious diseases requires cost-effective point of care (POC) technologies to enhance life quality and reduce mortality rates, emergency room visits, and hospitalizations, which disproportionately drive up healthcare costs. In this presentation a transformative NSF funded Engineering Research Center for developing POC technologies and systems will be described for addressing chronic health conditions in the underserved populations in the US but the technical focus the presentation will be the description of a multimodal fluorescent/white light/polarization microscopic imaging system being developed for detecting malaria at the POC.

SPEAKER BIOSKETCH

Gerard L. Coté is the Director of the Center for Remote Health Technologies and Systems, Director of the NSF PATHS-UP ERC, holder of the Texas A&M Regents Professor and of the James J. Cain Professor I in Biomedical Engineering at Texas A&M University. His research focuses on biomedical sensing for diagnostic and monitoring applications. Specifically, he develops innovative hand-held and wearable point-of-care technologies and systems using optics, electronics, microfluidics, paper fluidics, nanoparticles, and assays. The applications include glucose sensing methods for diabetes management, point-of-care detection of cardiac biomarkers to diagnose myocardial infarction (heart attack), salivary biomarkers for diagnosing oral cancer detection, detection of infectious disease such as malaria at the point-of-care, and detection of toxicants such as BPA and PCBs in blood. His recent focus has been the development of wearable and hand-held medical devices for underserved populations. He has coauthored over 300 publications, proceedings, and abstracts, leading to him being named Fellow of four societies (IEEE, SPIE, BMES, and AIMBE). Dr. Coté has also been recognized Texas A&M Association of Former Students for the Distinguished Achievement Award for Research and Distinguished Achievement Award for Teaching. He was also awarded the 2018 IEEE Sensors Council Technical Achievement Award in the area of Sensors for pioneering research and a distinguished career of service to the profession. Beyond fundamental research, Dr. Coté performs translational research and is an entrepreneur. He holds several U.S. patents, works with large and small companies, and has co-founded four medical device companies namely; DexNeo, BioTex, BasePair BioTechnologies, and Visualase (acquired by Medtronic).

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