



SOKA UNIVERSITY OFFICE OF ACADEMIC AFFAIRS PRESENTS

Disease and Disease Control in Eras of Globalization Conference

Friday | Sept 22 | 4:45 - 7:00 PM
Saturday | Sept 23 | 9 AM - 1 PM
Soka University of America Athenaeum

Zahra Afrasiabi: Gold Nanoparticle-Based Nanosensors for Detection of Foodborne Pathogens

Abstract:

Foodborne illnesses pose a significant health-risk worldwide, affecting upwards of 600 million people every year (World Health Organization, 2016). One of the most common foodborne pathogens is Escherichia coli (E. coli) strain O157:H7, a Shiga toxin-producing strain, which is most commonly found in raw meats, vegetables, and dairy products. While generally treatable, if not detected early, E. coli O157:H7 can cause hemolytic uremic syndrome, end-stage renal disease, hemorrhagic colitis, and in extreme cases, death. Moreover, foodborne pathogens can be especially dangerous for populations in resource-poor areas, which may have limited access to treatment or diagnostic equipment. Recent outbreaks of foodborne pathogens have highlighted the need for improved detection methods to minimize serious outbreaks. Currently, each gold standard detection approach suffers from certain limitations. A simple, low-cost, sensitive, and efficient method of detection are needed. One of the most robust point-of-care diagnostic devices is the paper-based lateral-flow immunoassay (LFA). Our research team has demonstrated the use of gold nanoparticle-based nanosensors to detect a variety of different biomarkers relating to pathogenic diseases. In our most recent work, we improved on the ease-of-use and time-to-detection of the traditional spot immunoassay with a novel method for detecting E. coli O157:H7.