

Electrochemical methods for ultrasensitive biomarker detection and the diagnosis of disease

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Biomarkers can be defined as any compound that can be objectively measured or evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacologic processes to a therapeutic intervention. Biomarkers are used for the diagnosis of diseases and also for evaluate the effects of treatments and interventions in patients. Currently, few proteins and DNA are used as biomarkers in routine clinical tests and a large number of new compounds that includes as cited proteins and DNA but also microRNAs, circulating tumor cells, and small metabolites have been studies as new potentials biomarkers. The protein and DNA/RNA detection are based in the techniques of enzyme-linked immunosorbent assay (ELISA) and polymerase chain reaction (PCR), respectively, that evolves complex operations, relative expansive equipment, and trained personnel. As a way to disseminate the use of biomarker for diagnosis new simple, fast, and low-cost methodologies are highly desired. Electrochemical methods have the potential to overcome these limitations as demonstrated by the commercially successful glucose meter. In this talk, strategies for the development of ultrasensitive electrochemical method for detection of protein biomarker for diseases as cancer and Alzheimer and even in diseases in cultivar will be presented and discussed.

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