

2nd International Conference on**Influenza**

September 12-13, 2016 Berlin, Germany

Electrochemical genosensors based on redox active monolayers: Characterization and applications

Jerzy Radecki

Polish Academy of Science, Poland

Here we report on electrochemical genosensors devoted for detection of influenza virus H5N1 gene sequence. Using ssDNA decorated with redox active units such as Co(II)-porphyrin or 3-iron bis (dicarbiollide), the detection limit in the fM range has been achieved. The strategies based on dipyrromethene Cu(II) redox active monolayer or phenanthroline-Epoxy-Fe(III) complexes have been also applied for the development genosensors destined for detection of DNA as well for RNA derived from Avian Influenza viruses. They have been working based on the new “ion barrier switch-off” mechanism of analytical signal generation. To face of the need of systems for simultaneous determination of few markers of one disease coming from medical diagnosis, we have developed a novel dual DNA electrochemical sensor with “signal-off” and “signal-on” architecture for simultaneous detection of two different sequences of DNA derived from Avian Influenza Virus type H5N1 by means of one electrode. Two sequences of ssDNA characteristic for hemagglutinin decorated with ferrocene and characteristic for neuraminidase decorated with methylene blue were immobilized covalently together on the surface of one gold electrode. Taking into account the excellent analytical parameters of genosensors presented such as good sensitivity, selectivity and very low sample consumption, they could be recommended for future wide application for medical diagnostic as well as environmental control.

Biography

Jerzy Radecki is the Professor of Analytical Chemistry and currently working as Head of Department of Biosensors of IARFR PAS in Olsztyn. His research interest concerns the developing of new sensors and biosensors based on the intermolecular recognition processes occurring at the border of the aqueous and organic phase. Particularly, he is interested in functionalization of surface of solid electrodes with “host” molecules, which are responsible for “guest” molecules (analytes) recognitions. He is working on not only analytical aspects of developed sensors but on the elaboration of the mechanism of analytical signal generation as well.

j.radecki@pan.olsztyn.pl**Notes:**