

# Recent electrochemical biosensors with nanomaterials based applications: Biointeractions to Diagnostics

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## Abstract

Biosensors are analytical tools developed for sensitive and selective detection of different analytes; nucleic acids, proteins, drugs and pathogens [1-4]. The fields of genomics, biomedical diagnostics, proteomics, and drug discovery may be greatly impacted by the development of advanced biosensors based on nanomaterials because of the advantages of numerous nanomaterials with distinct mechanical, optical, electrical, and catalytic capabilities [2,3,5,6].

Different nanomaterials including carbon based nanomaterials, metallic nanoparticles and their nanocomposites with conductive biopolymers and numerous biomaterials have been applied for design and development of advanced electrochemical biosensors [2,3,7-12].

In order to study sequence-selective nucleic acid hybridization and as well as the interaction of nucleic acids with drugs, proteins, and DNA-targeted compounds, electrochemical nucleic acid biosensors combine the intrinsic specificity of biorecognition reactions with the high sensitivity of physical transducers. Recent applications of electrochemical biosensors based on nanomaterials have been overviewed herein, and discussed along with their future directions.

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