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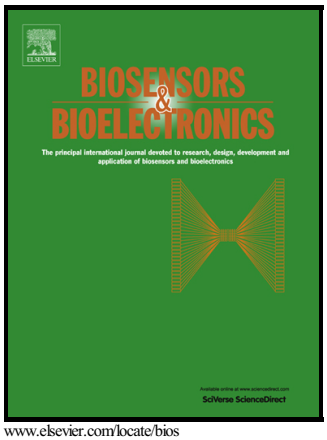

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ABSTRACT: In the diagnosis of genetic diseases and disorders, nanomaterials-based gene detection systems have significant advantages over conventional diagnostic systems in terms of simplicity, sensitivity, specificity, and portability. In this review, we describe the application of nanomaterials for disease-related genes detection in different methods excluding PCR-related method, such as colorimetry, fluorescence-based methods, electrochemistry, microarray methods, surface-enhanced Raman spectroscopy (SERS), quartz crystal microbalance (QCM) methods, and dynamic light scattering (DLS). The most commonly used nanomaterials are gold, silver, carbon and semiconducting nanoparticles. Various nanomaterials-based gene detection methods