ISSN: 2155-9872

Journal of
Analytical & Bioanalytical Techniques

Editorial Open Access

Biosensors are finding diverse applications and gradually becoming an integral part in a variety of analytical applications such as; clinical diagnosis, environmental monitoring, *etc.* since the introduction of glucose biosensors by Clark and Lyons in 1960 [1]. This was followed by the inception of the first enzyme-based glucose sensor developed by Updike and Hicks in 1967. Since then, extensive researches have been done towards biosensor designing due to its specificity, fast detection time, and high selectivity to detect analytes (DNA/RNA, proteins, cells), within the miniaturized settings [2]. A biosensor typically consists of a transducer in combination with a biologically active molecule that converts the biochemical response into a quantifiable signal. In general, a biosensor is comprised of three basic components *viz.* (i) a detector, (ii) a transducer, and (ii) a signal processor. The transducer can be electrochemical, optical, acoustic, or calorimetric type depending upon the diagnosis and the physiochemical character of the analyte [3]. Biosensors have been broadly studied based on various detection principles such as; conductometric, amperometric, potentiometric, and voltameteric [4]. The selection of the biomaterial for designing a biosensing element is an important issue. Among these, enzymes [5], DNA/RNA [6], aptamers [7,8], antibodies [9], receptors [10], organelles [11] and animal cells/tissues [12] have been extensively utilized to develop various types of sensing systems. Studies have been reported on glucose biosensors [13], sensors for cancer detection [14,15], sensors for detection of various drugs such as kanamycin [16], daunomycin [17], and acetaminophen [18] using different types of biomaterials.

While designing a biosensor, the major considerations that should be followed are: (i) it should work in a wide range of pH and temperature conditions, (ii) it should involve facile fabrication steps, and (iii) it should have a wide dynamic range and high sensitivity [19]. The second step after selection of a biomaterial is its immobilization and its capability to retain its biological activity and detect the target molecules. Recently, the *in vivo* [20,21] and *in vitro* [7,22] design of biosensors to detect disease-specific biomarkers have earned great interest since it offers monitoring real-time biological signals.

The introduction of biosensors have emerged since it provides a miniaturized approach to solve the problems related to sensitivity, rapidity, selectivity, and high cost which the ELISA or the previously used genomic and proteomic based conventional methodologies involved. A major advantage of biosensor is to reduce the complexities faced by a common man offering them a point-of-care medical device for personalised diagnosis.

Over the years, remarkable efforts have been done to develop

Citation:

design biosensors. For example, researchers have developed a hydrogen peroxide biosensor using CNTs and electrospun collagen polymer [24]. e electrospun nano bres helped design biosensors with good biocompatibility and high speci city due to the integration of collagen bres and CNTS, respectively.

Despite of the fact that the studies mentioned above clearly indicates that extensive research have been done and are still on-going