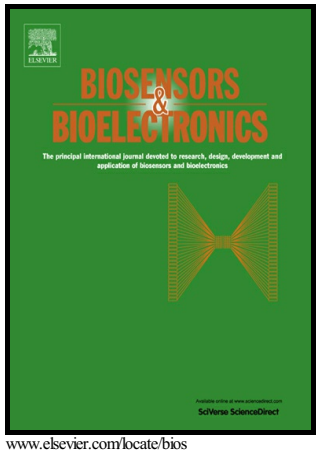

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Abstract

The early diagnosis of breast cancer is crucial for the successful treatment and recovery phases of the patients suffering from the disease. Although mammography is considered the gold standard for diagnosis, it fails to detect some cancers in high-density breasts. In this work, we propose for the first time a tridimensional biosensor platform, to be used on an electrochemical point-of-care device. The bioconjugated platform is constructed on a series of covalent linkages between lectin molecules and a cysteine layer immobilized over gold-coated TiO_2 butterfly-like tridimensional nanomembranes. Through the use of vegetal lectins, we managed to take advantage of the markedly atypical glycomic profile of the cancerous mammalian cell membrane and successfully made a distinction between highly invasive (T47D) and less invasive (MCF7) cancer