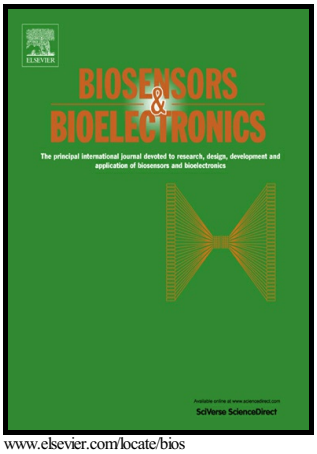

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Antifouling aptasensor for the detection of adenosine triphosphate in biological media based on mixed self-assembled aptamer and zwitterionic peptide

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Abstract

Direct detection of targets in complex biological media with conventional biosensors is an enormous challenge due to the nonspecific adsorption and severe biofouling. In this work, a facile strategy for sensitive and low fouling detection of adenosine triphosphate (ATP) is developed through the construction of a mixed self-assembled biosensing interface, which was composed of zwitterionic peptide (antifouling material) and ATP aptamer (bio-recognition element). The peptide and aptamer (both containing thiol groups) were simultaneously self-assembled onto gold electrode surface electrodeposited with gold nanoparticles. The developed aptasensor possessed high selectivity and sensitivity for ATP, and it showed a wide linear response range towards ATP from 0.1 pM to 5nM. Owing to the presence of peptide