Computational Biology, Protein Engineering and Biomimicking Approaches: a Close Cooperation for Biosensor Technology

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The combination of computational analyses, molecular biology and biomimicking tools makes possible the realization of more stable, sensitive, selective and specific bi mediators for the creation of effective biosensors. The improvement of these parameters is of outstanding relevance for biosensor reliability, and strongly attracts the interest of commercial companies accelerating the acceptance of this technology. Nowadays, genetic engineering allows the modification of specific nucleotide sequences of an organism genome to obtain proteins with novel improved properties and innovative biotechnological approaches make it possible to integrate these systems or their functional sub-structures, into artificial assemblies for specific applications such as environmental monitoring.

In the context of the photosynthesis-based biosensors, activities in different research areas allow the design and development of engineered photosynthetic microorganisms and synthetic peptides mimicking parts of the photosynthetic apparatus, with improved sensitivity and stability features used as bio-recognition elements for the detection of environmental contaminants.

References