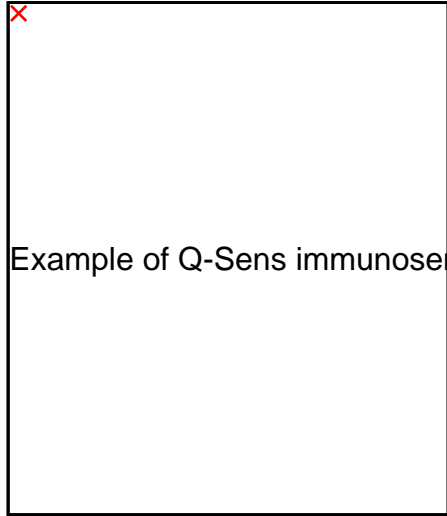


# Protein Detection on Chip

## Immunosensors

A current research focus is to establish immunoassay based screening biosensors that can be used for rapid on-site analysis. Immunoassays are most commonly used as analytical tools in clinical and pharmaceutical sciences. These are usually biochemical tests that measure the concentration of a substance in a biological liquid using the reaction of an antibody or antibodies to its antigen. The assay takes advantage of the specific binding of an antibody to its antigen.



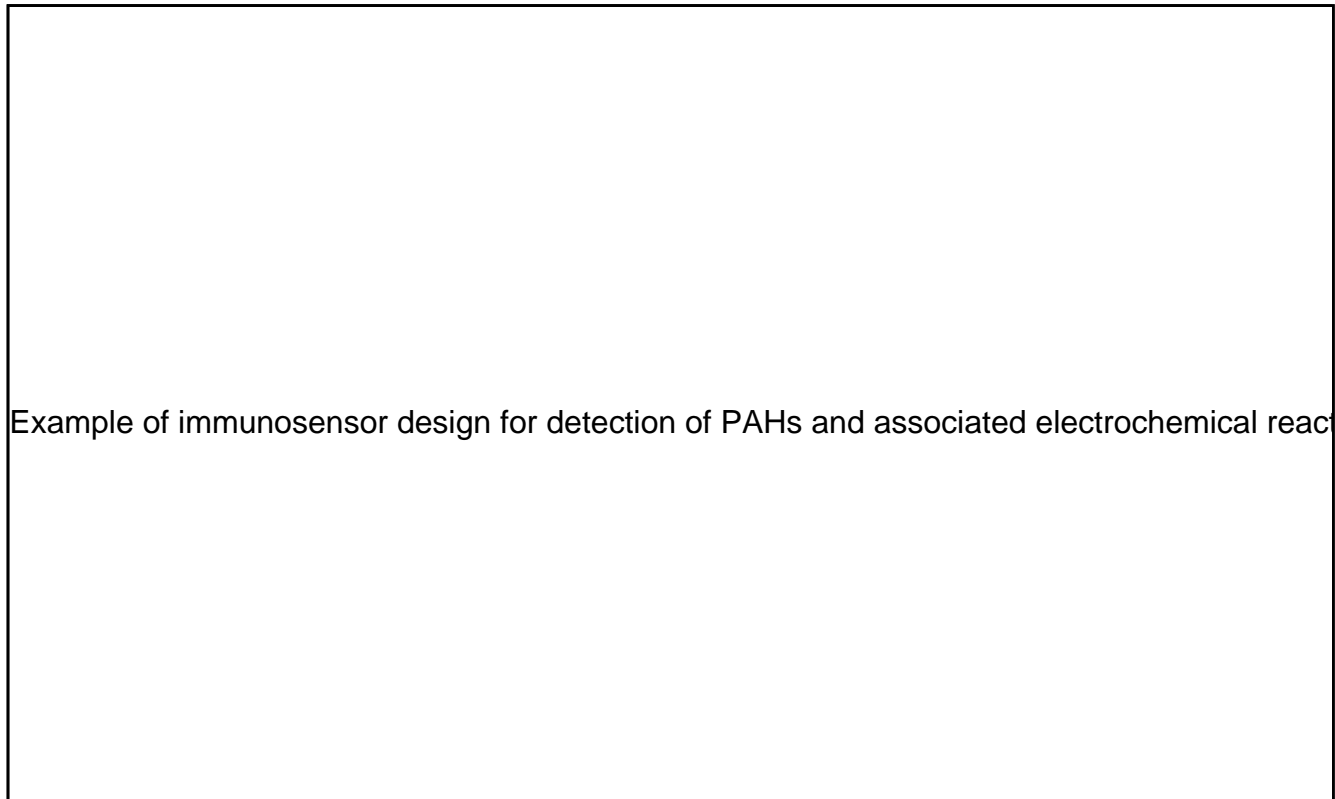
Example of Q-Sens immunosensor in H2020 project SMARTER-Si. This immunosensor is being used for water quality monitoring.

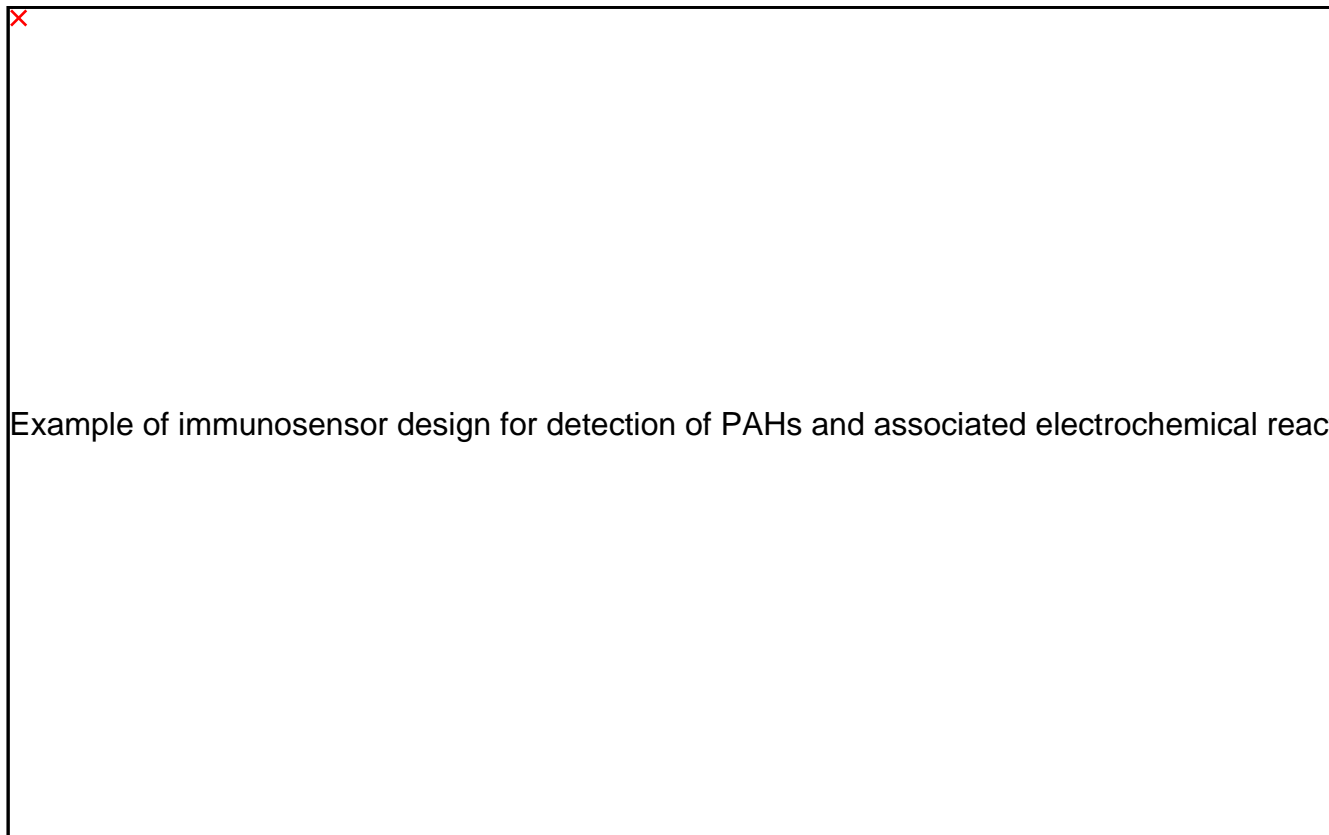
Biosensors are analytical devices incorporating a specific sensing system, which is biological in nature. The response that is observed is converted into an easy to detect form. The part of the device that does this conversion is called a transducer. It translates the response of the biological component into a signal that can be easily detected.

In the case of an immunosensor, the sensing element is formed by immobilised antibodies or antigens and an electrochemical signal is produced through reaction of a substrate with an enzyme labelled bioconjugate. A biosensor typically consists of a bio-recognition component, transducer component, and electronic system which include a signal amplifier, processor, and display.

The recognition component, often called a bioreceptor, uses biomolecules from organisms or receptors modeled after biological systems to interact with the analyte of interest. This interaction is measured by the transducer which outputs a measurable signal proportional to the presence of the target analyte in the sample.

The general aim of the design of a biosensor is to enable quick, convenient testing at the point of concern or care where the sample was procured. This technology is inherently flexible, making it nearly universally applicable. It is also difficult to compete with its sensitivity and selectivity.





of immunosensor design for detection of PAHs and associated electrochemical reaction.

Example

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