Introduction

Biosensing devices have been utilized for years, but as they can only process one input,

The concept of biosensors with built-in logic challenges those restrictions for good and aims for applications in revolutionary bio-medical processes.

Common biosensors have helped to analyse and detect certain single substances. One popular example for an application is the diabetes therapy, where a biosensor measures the concentration of insulin of diabetes patients.

In contrast to recent biosensors, those with a !!!!!!!!!!! logic promise a higher fidelity, a greater range of processable inputs, more complex applications such as sense-act-treat loops and rapid assessment of the respective substances.

With the usage of enzymes to create !!! devices, the new concept allows to process multiple substances at once, which are narrowed down to a single binary output. This possibility is mostly anticipated in the field of medical treatment development, where the yet to be realized concept of bio-molecular biosensors could contribute to the development of devices, that analyse certain body-parameters and immediately induce the correct treatment.

introduction

In the medical field Biosensors are elementary for analytic purposes for example the observation of medical conditions by processing different biomarkers.

While common biosensing devices are limited to only one input, this article concentrates on the possibility to create devices that can process multiple biochemical signals.

* Through based on biochemical logic systems

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%1.Context: what problem is being solved, why relevant or interesting, benefit, possible applications

%2.innovation: described technique completely new or does it improve earlier approcahes? what is improved

%3.thesolution: how does the presented technique work, core idea of the solution

While common Biosensors, analytic devices to convert a biological response into a electrical signal, are based on single inputs, this report concentrates solely on biosensors processing multiple biochemical signals.

\begin{itemize}

\item common biosensing devises are based on a single input

\item high-fidelity compared

\item closed loop/feedback loops possible (sense/act/treat)

\item rapid and reliable assessment of overall physiological condition

\item could initiate optimal timely therapeutic intervention

\item application og biomolecular logic systems for analystic purposes could yield a novel class of biosensors: many input signals and binary outputs

\item logically processed feedback between drug appl. and physiological conditions can signifacntly imprive drug targeting and efficiency

\end{itemize}

\begin{itemize}

\item Biosensors + enzymes

\end{itemize}

\section{motivation}

\begin{itemize}

\item high-fidelity

\item rapid and reliable assessment of overall physiological condition

\item optimal timely therapuetic intervention

\item feedback-loops

\item biomedical monitoring(example, closed-loop-> patient tailored timely therapy, personalized medicine= sensing devices + delivery devices)

\begin{itemize}

\item closed-loop -> patient tailored timely therapy possible

\item sensing devices + delivery devices = personalized medicine

\item example feedback-loop: diabetes: electrochemical glucose sensing element + insulin-delivery feedback loop

\item fast delivery in emergencies

\end{itemize}

\item environmental monitoring

\item national defense

\item food safety

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\end{itemize}

Considerations