Hochschule Kaiserslautern
University of Applied Sciences

Applied Research Center
Integrated Miniaturised Systems

IMS

MultiSensE - Multiparametric sensors for real-time analysis of inflammatory processes

Release of proteases plays a central role in many inflammatory processes both in peripheral organs and in the central nervous system (CNS). Important aspects of the time- and site-dependent effects of the proteases released are still insufficiently understood at the cellular and subcellular level. Therefore, there is a large need for new time- and space-resolved assay methods and technology platforms that allow highly parallel non-invasive analysis of protease activity at the cellular and subcellular level.

A synchronous recording of further parameters such as morphology, electrical activity or oxidative stress in real time would be helpful to open up new fields of application in diagnostics and therapy through an even more precise understanding of cell type-specific reactions.

In our research project, we want to develop such a new type of platform technology. Our aim is to develop a biosensor platform with transparent electrodes for the analysis of cells.

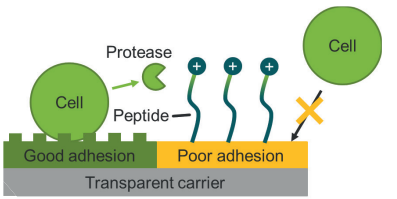

Figure 1: Cells release proteases which separate charged signal groups at a specific interface of the peptides.

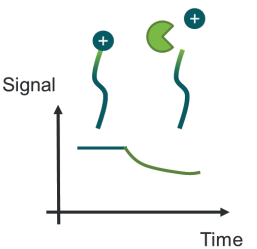

Figure 2: The separation of charged groups lowers the sensor signal.

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Project management:
Prof. Dr. Alexey Tarasov
Hochschule Kaiserslautern
University of Applied Sciences
Amerikastr. 1
66482 Zweibrücken
Germany

phone: +49 631/3724-5388
e-mail: Alexey.Tarasov@hs-kl.de

Principal Investigators:
Prof. Dr. Bernd Bufe (HS KL)
Prof. Dr. Monika Saumer (HS KL)

Prof. Dr. Christiane Ziegler (TUK)

PD Dr. Kristina Endres (JGU)
Dr. Christian Kersten (JGU)
Prof. Dr. Tanja Schirmeister (JGU)

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Project partners:
Technische Universität Kaiserslautern (TUK)
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