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Project	Oriented immobilization of antibodies on biosensor surfaces
Fields of interest	Surface chemistry, organic chemistry, bioanalytical chemistry
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Introduction

The project aims at developing a biosensor which would allow the diagnosis of depression, based on the detection of biomarkers such as brain-derived neurotrophic factor (BDNF).[1]

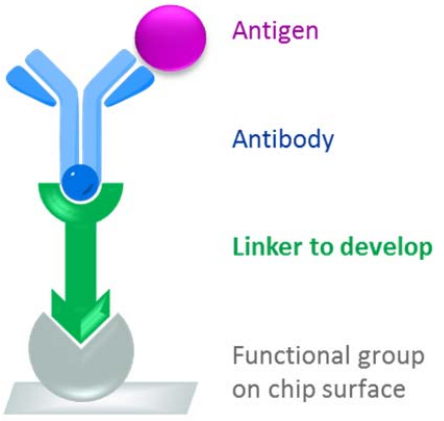
Several sensing techniques are available, but the principle is similar for all of them: “Capture antibodies” are immobilized on a chip. The sample to be analyzed is added, target antigens (e.g. BDNF) bind to the capture antibodies. The binding event results in a signal which can be translated into the antigen concentration.

Goal

Our part of this project is to develop a suitable surface chemistry for the immobilization of capture antibodies on the sensor chips. Very low concentrations (around 1 pM) of biomarkers need to be detected, therefore a maximum number of binding sites should be available for binding the biomarkers.

Progress achieved

The binding of a model antibody to protein A/G and to simple boronic acids on a sensor chip was examined by surface plasmon resonance. Boronic acids showed a similar behavior as protein A/G, and a potential for antibody immobilization. The drawback of these ligands is the reversibility of their binding with antibodies.



Further research

The aim of the current research is to develop linkers which would allow an irreversible and oriented antibody immobilization. Later on we will use the same chemistry for the development of a biosensor for the diagnosis of depression.

Acknowledgement

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References

1. E. A. J. Arnoldussen et al., WO2011/002292