

Immunoassay Based Electrochemical Biosensor for Quantitative Detection of BAM in Ground Water



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Outline

- Background
- Aim
- Current Status
- Future Works

Background

BAM – 2,6-dichlorobenzamide



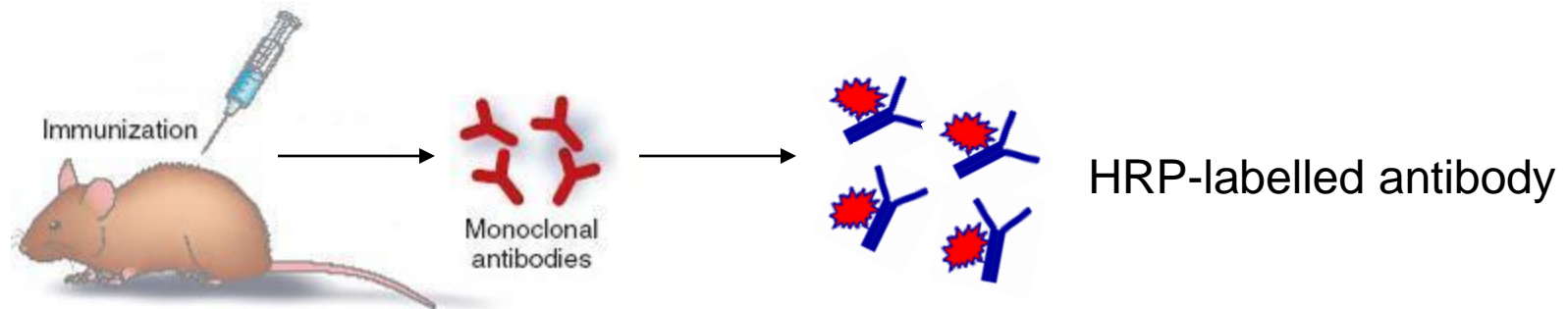
- Degraded product of Dichlobenil, a herbicide
- Not degradable anymore
- Easily soluble in water
- Potential contaminant
- 0.1 µg/L (European Community, 1980)

Dichlobenil

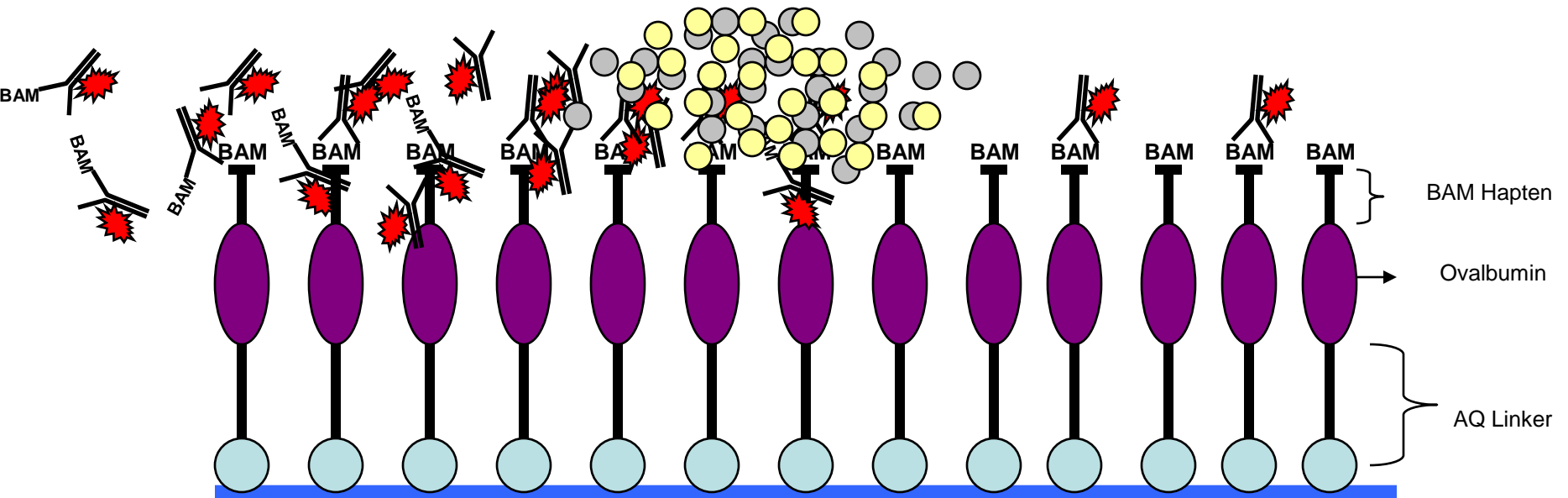
Background

Leif Bruun *et al.* *Journal of Immunological Methods* 240 (2000) 133–142

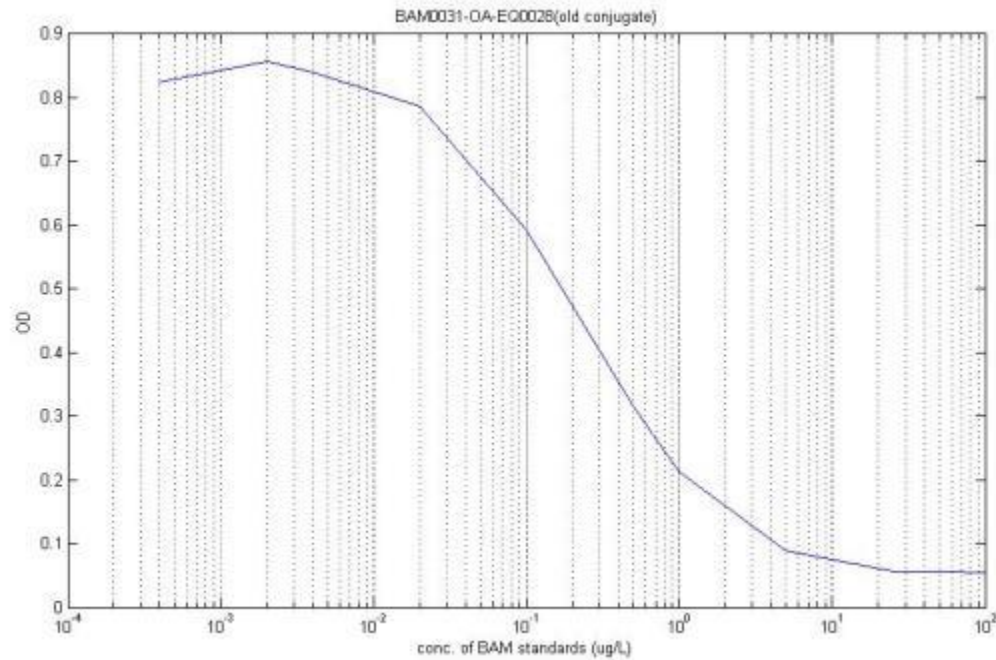
Developed an Immunoassay for BAM detection (PhD Project)



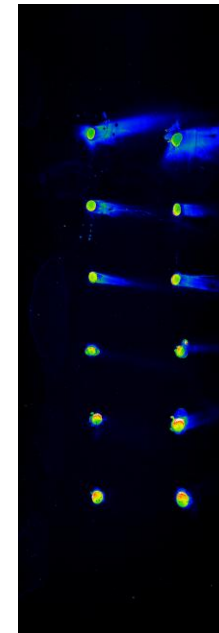
Competitive Immuno chemistry



Current Status



Micro-array



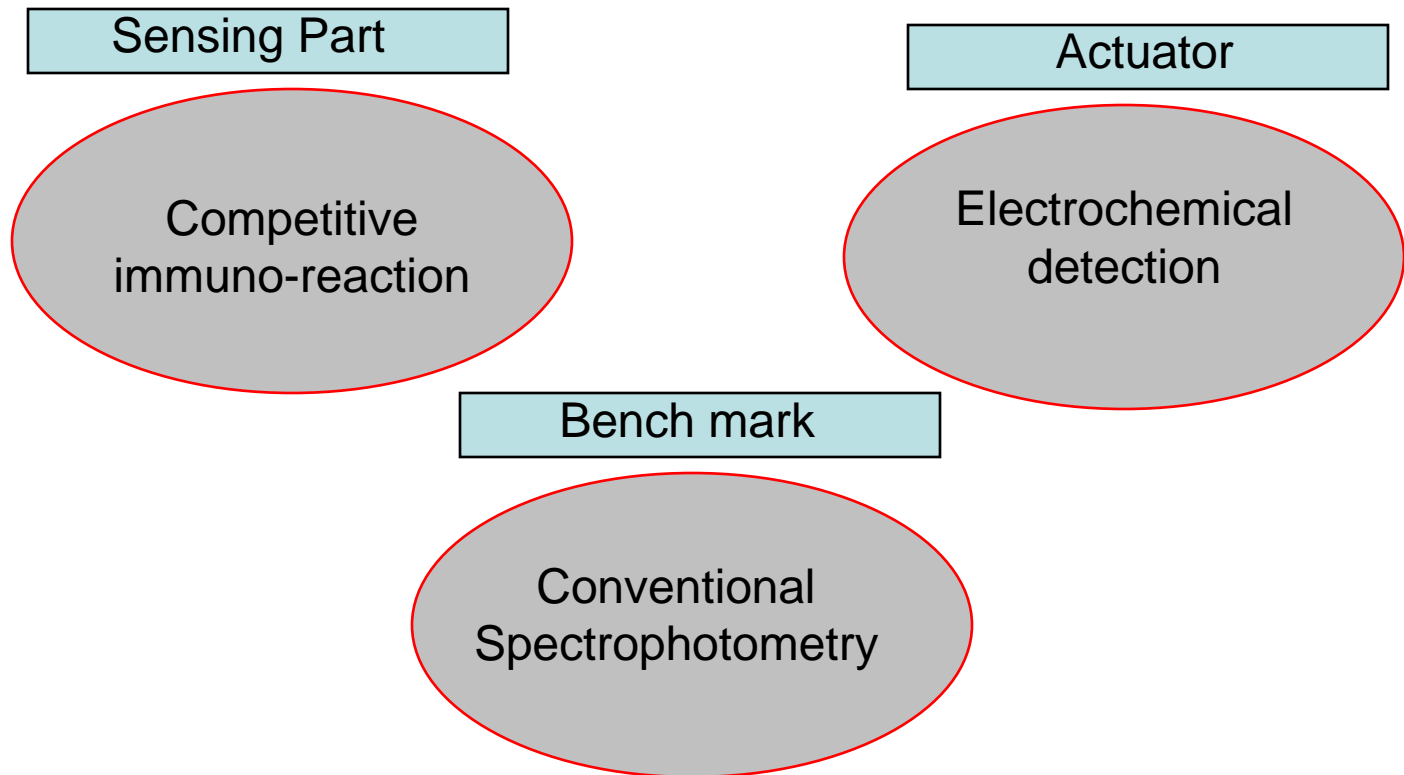
By hand



By robot

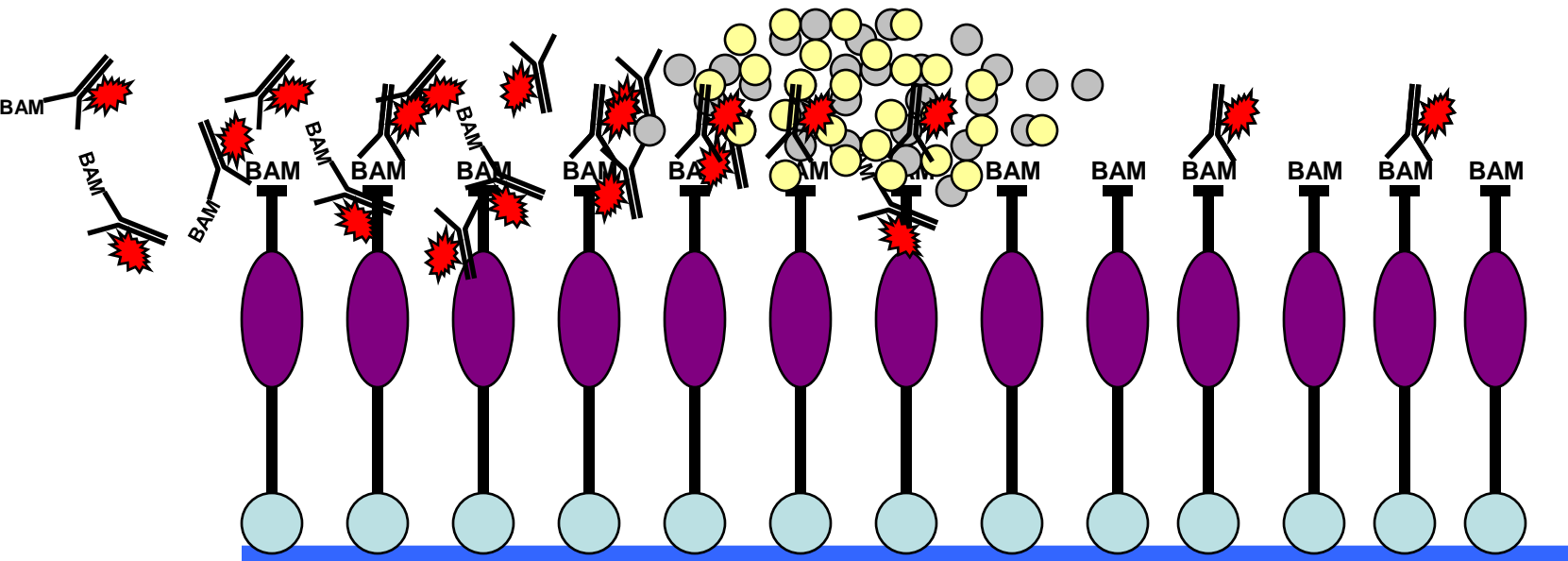
Aim of my project

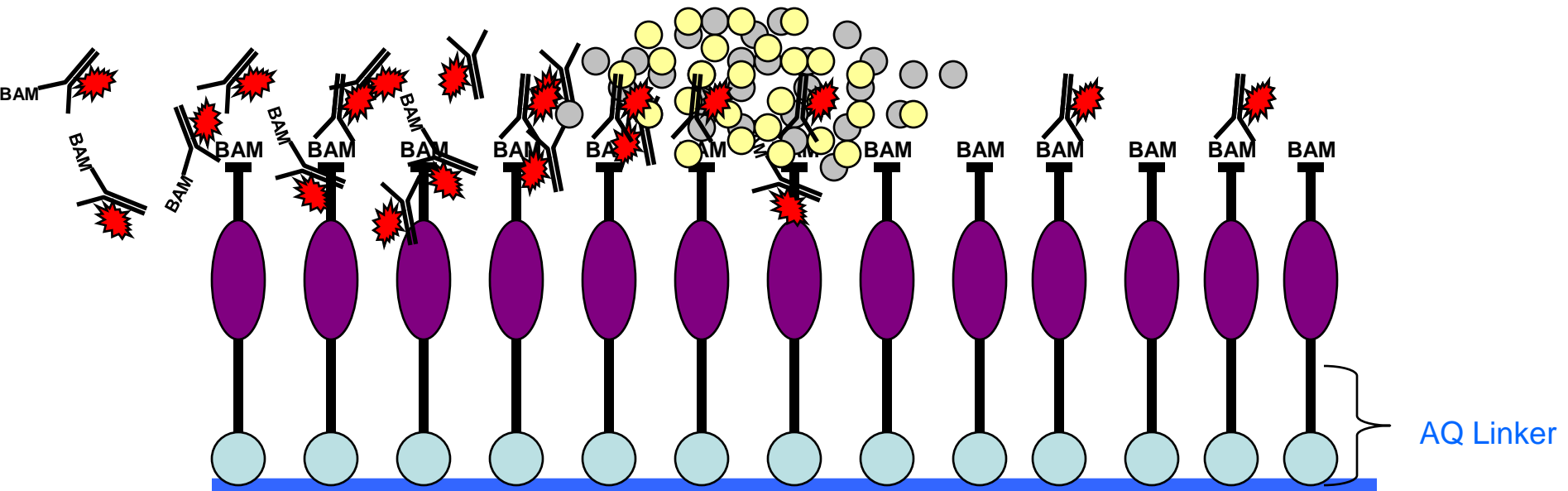
Develop an inline sensor for quantitative detection of BAM in ground water



Inline sensor

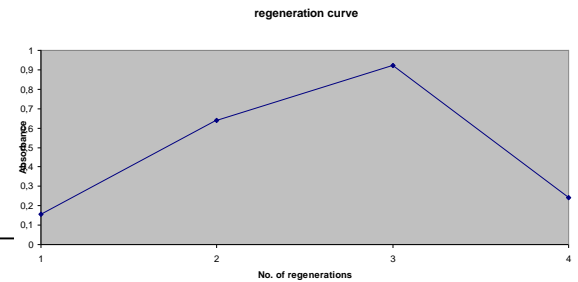
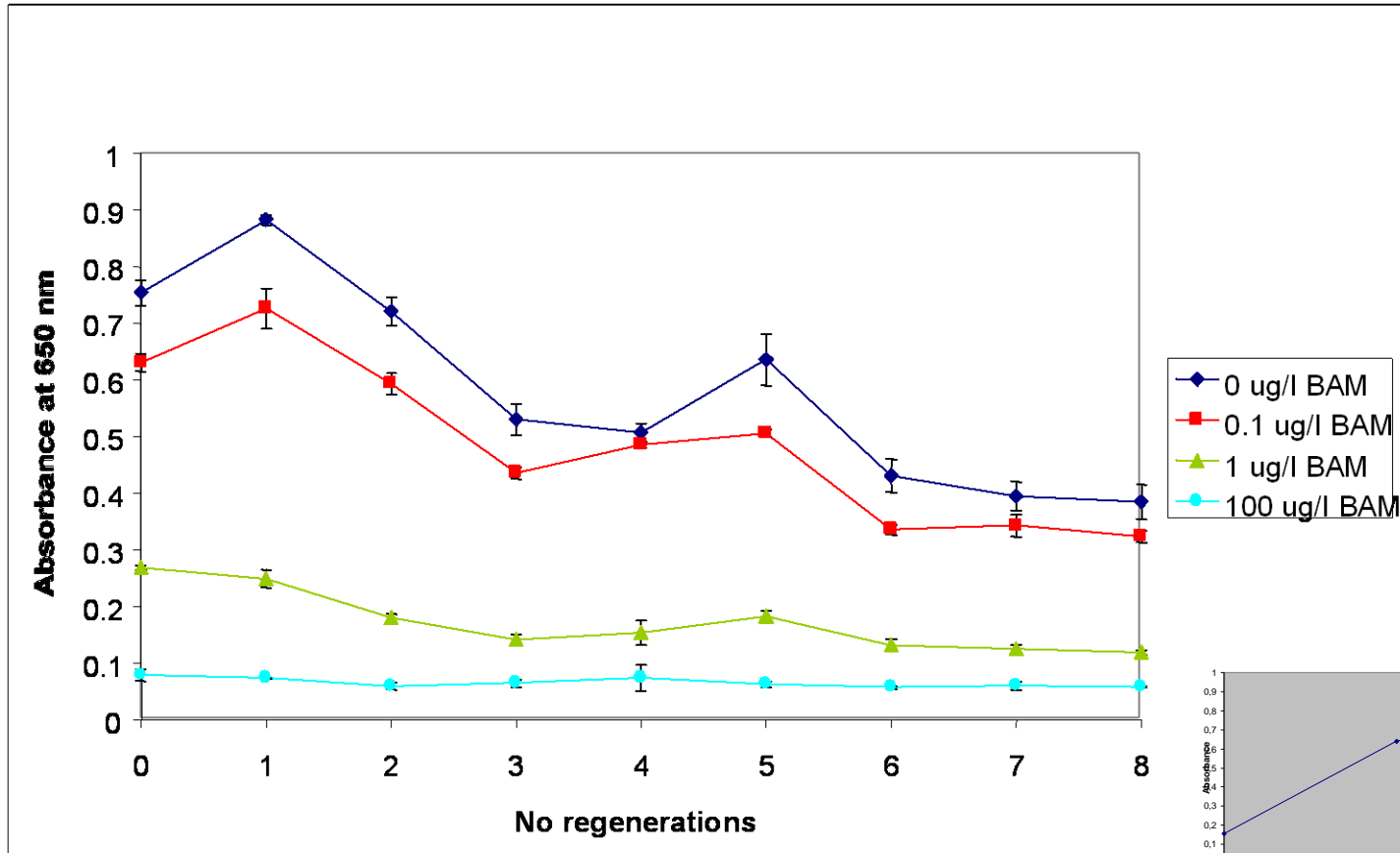
- Repeatability
- Calibration
- Reproducibility
- Regeneration of the surface





- Photochemical reaction
- Covalently bonded

Bottle neck

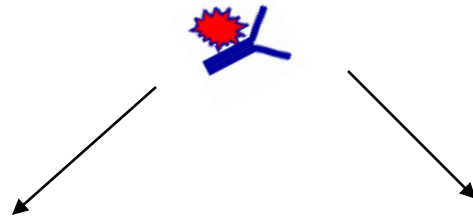


Regeneration

Should be

- many times
- under mild conditions
- easy to carry out

Competition



Vs

BAM in water sample

Immobilized BAM hapten

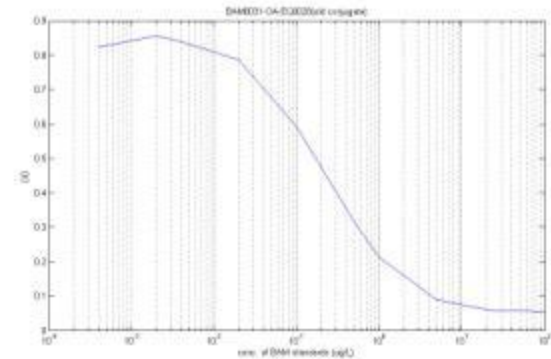
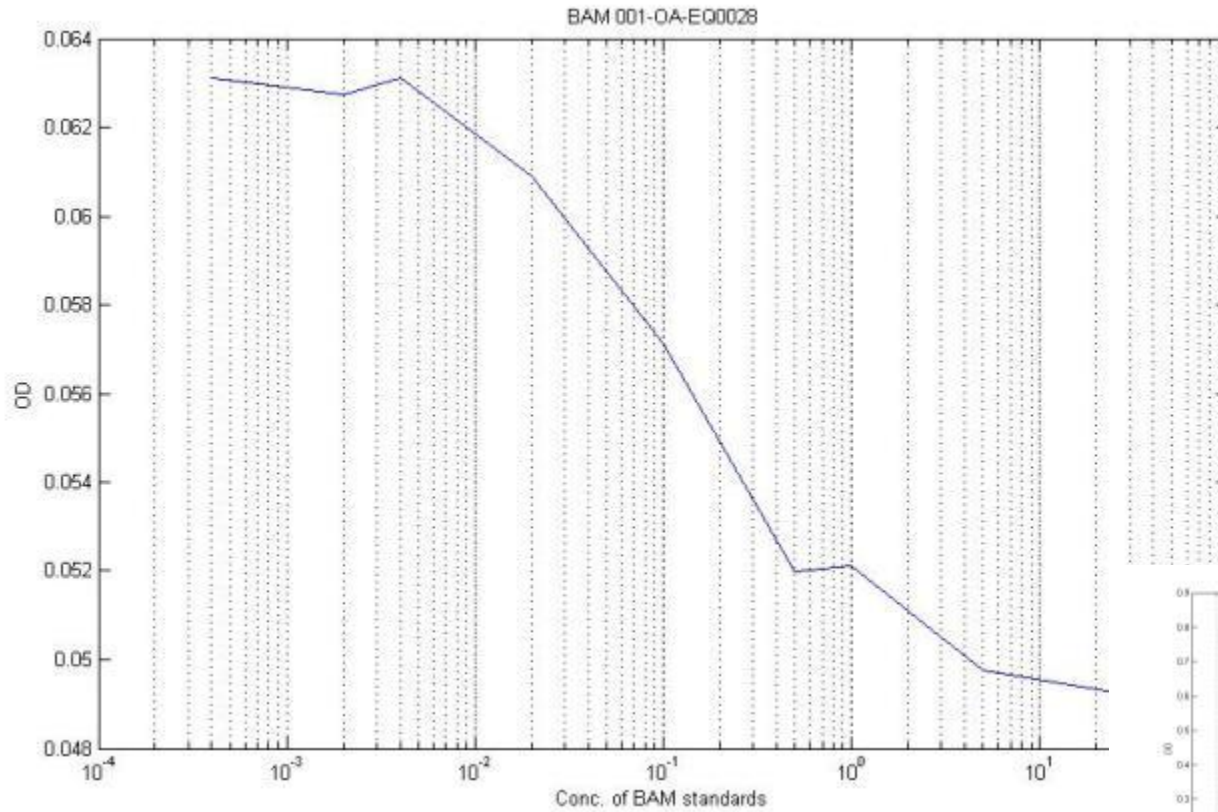
Hapten Library

- For tuning the surface activity
- For efficient surface-regeneration

3 Stage Synthesis

N
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Current Status



Future Works

- Characterization of new haptens, NMR and mass spectrometry
- Necessary ELISAs with new hapten conjugates
- Regeneration experiments in a flow system
- Designing electrochemical detection system
- Automation of the complete system
- Sensor for multiple analytes

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THANK YOU