David **Scherer**

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Education

M.Sc. in Nano Science

Tübingen

Eberhard Karls Universität

Oct. 2016 - Nov. 2019

- Master thesis: Improving the adherence of lipid-DNA nanoparticles via targeting aptamers by examining their cell surface interactions

B.Sc. in Nano Science

Tübingen

Eberhard Karls Universität

Oct. 2013 - Dec. 2016

- Bachelor thesis on the interaction of the antiNoro nanobody with its epitope and sorting signals in plant cells

Experience

Observing aptamer and nano particle interactions with different cell surfaces

7 months

- Harvest and cultivation of different mammalian cell types
- Cryo-cutting, staining and fixing of sample tissue
- Preparation of different aptamer and nanoparticle combinations
- Epifluorescence and Apotome microscopy analyzing the adsorption of the fluorescently labeled aptamer/NP
- Inhibition of multiple endocytosis processes affecting the aptamer/NP treatment

Internship working on the expression of micro RNA 2111 in plant cells

4 months

- Introduced YFP reporter genes susceptible to inhibition by endogenous miR2111 to lotus roots
- Root sections imaged using confocal microscopy
- Analyzed expression of a RNA complementary to the miR2111 by fusing its promoter to a reporter, and replacing the endogenous promoter with an over expression promoter

Internship working on the motion of Motor proteins on microtubules

4 months

- Purification of the POK2 motor domain labeled with GFP
- Building of small flow chambers to grow MT in and flow over the motor protein
- Observation of single microtubules carrying moving motor proteins using TIRF microscopy

Internal vesicle trafficking using nanobody/epitope fusion proteins

6 months

- Constructing signal protein or amylase fusions with RFP/GFP and either the nanobody or its epitope
- Extracting primary tobacco protoplasts and transforming them with multiple plasmids using electroporation
- Using immunoprecipitation, amylase assay and confocal microscopy to analyze the strength of the nanobody epitope interaction in the plant cells

References

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