MOLECULAR SCIENCES
biochemie chemie pharmazie

Research Internship

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

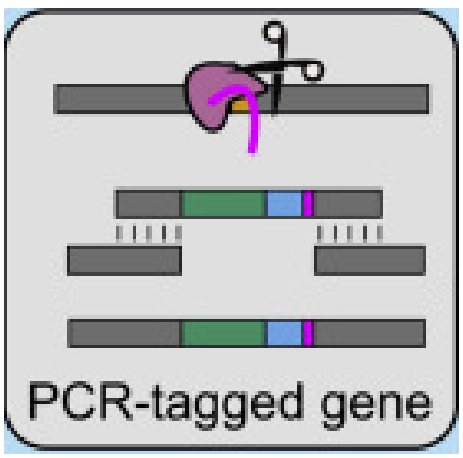
Analysis of stable EGFR-mEos4b cell lines

Motivation

The epidermal growth factor receptor (EGFR) belongs to the transmembrane receptor tyrosine kinase family and is involved in cellular processes like cell differentiation. It is involved in many types of cancer, e.g. if overexpressed or mutated. For studying the activation of EGFR upon ligand binding and its oligomeric state, single molecule localization microscopy methods like photoactivated localization microscopy (PALM) can be used. Quantitative PALM requires stoichiometric fusion of the protein of interest to a fluorescent protein. Genetic fusion on a genomic level can be accomplished by CRISPR/Cas editing.

Task Description

We have used the recently developed CRISPR/Cas12a-assisted PCR tagging method for the generation of a stable cell line expressing EGFR tagged with the photoconvertible fluorescent protein mEos4b. Your task will be the analysis of clones generated with this method. For this you will work in the cell culture and use methods like PCR, DNA sequencing, western blot, and single particle tracking to study the tagging efficiency and the effect of the ligand binding on the mobility of EGFR.



Key References

1. Ran et al. (2013) Nature Protocols 8, 2281, DOI: 10.1038/nprot.2013.143
2. Fueller et al. (2020) J. Cell Biol. 219, e201910210, DOI: 10.1083/jcb.201910210
3. Sauer and Heilemann (2017) Chem. Rev. 117, 7478, DOI: 10.1021/acs.chemrev.6b00667

Work Area

Laboratory	■■■■□
Microscopy	■□□□□
Data Analysis	■■□□□
Programming	□□□□□

Time

Possible Start

Sept. 2020

Duration

4 weeks

Contact

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Language German, Englsh