



University of Stuttgart

Stuttgart Research Center Systems Biology (SRC SB)

Systems Biology Seminar Talk

**„Uncovering Receptor
Oligomerization States in CD95
Signaling with Super-Resolution
and Multiparametric Image
Spectroscopy“**

Prof. Dr. Cornelia Monzel
Experimental Medical Physics,
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**Thursday
June 22, 2023
4 p.m. – 5 p.m.**

**Lecture Hall 0.106
Allmandring 31
Stuttgart**

Abstract:

CD95 oligomerization state can decide a cell's fate. CD95 (Cluster of Differentiation 95) is a membrane receptor initiating the signaling cascade for controlled cell death (apoptosis) after ligand-induced activation. Some types of cancer show a deregulation of this CD95 apoptosis mechanism leading to proliferation rather than cell death¹. As the switch from signaling for death to life is hypothesized to occur via different CD95 activity states, we here investigate mechanism of molecular oligomerization of CD95 on the cell membrane.

Multiparametric imaging approach. Measuring the structural state of proteins at the single-molecule level remains challenging, in particular when molecular oligomerization states are to be distinguished². For this reason, we use a multiparametric spectroscopic approach to provide quantitative insights. Time-resolved FRET live-cell experiments are used to measure the supramolecular state of CD95. As an orthogonal measure, super-resolved STED images and FCS measurements reveal the supramolecular size and diffusion characteristics, respectively. Recently, we are moving to the single molecule level and develop EGFP-bleaching step analyses using a confocal setup. We report on the CD95 oligomerization states as well as on novel experimental/analytical methodologies.

CV:

since 2019 Prof: Heinrich-Heine University, Düsseldorf
2018-19 Jun.-Prof and Freigeist-Fellow of VolkswagenFoundation:
Heinrich-Heine University, Düsseldorf
2015-17 2nd Postdoc: Institut Curie, Paris, France (with Maxime Dahan)
2012-15 1st Postdoc: University of Heidelberg (with Motomu Tanaka)
2009-12 French-German PhD: Research Centre Jülich & Université Aix-Marseille II, France (with Rudi Merkel and Kheya Sengupta)
2009 Physics Diplom: University of Bonn
2006 M.Sc. Studies in Physics: University of Cambridge, UK