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 death. 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 distinguished. 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.

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