RUDOLF VIRCHOW CENTER

RVZ Colloquium

via zoom
Meeting-ID: 955 1948 1676
Password: 719108

Prof. Dr. Hugo Sanabria

Single Molecule Biophysics Lab / Clemson University (SC, USA)

"Dynamic Organization in the Supertertiary Structure of PSD-95 Scaffold Protein"

PSD-95, a member of the membrane-associated guanylate kinase (MAGUK) family, is a scaffold protein responsible for clustering ionotropic glutamate receptors and ion channels at the postsynaptic membrane of the excitatory synapse. The interdomain organization within the supertertiary structure of PSD-95 reveals two independent supramodules, the PDZ1-PDZ2 tandem and the PDZ3-SH3-GuK core. A similar supramodule organization is present within members of the synaptic MAGUK family. Therefore, uncovering the intra- and inter-module structural dynamics is crucial for elucidating the functional role of PSD-95 and other similar scaffolding proteins. Here, we present a hybrid/integrative study revealing the supertertiary structural dynamics of PSD-95 by combining replica-exchange discrete molecular dynamics simulations (rxDMD), single-molecule FRET (smFRET) experiments in Multiparameter Fluorescence Detection mode, and disulfide mapping gel assays. We find that *in silico* accessible volume simulations using the structures from the rxDMD trajectories help us identify structural clusters consistent with our experimentally determined inter-dye distances. Also, we use disulfide mapping to validate and refine structural models for the two supramodules. Our results highlight the hybrid/integrative approach's predictive power in deciphering the dynamic organization of the supertertiary structure of PSD-95.

Thursday, 19th Nov 2020, 17:00

Everybody is welcome to attend.

Invited by Prof. Katrin Heinze

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