

Guest lecture

"Seeing Single Transcription Factor Molecules in their Microenvironment"

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10 AM in BMB seminar room

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Abstract: Increasing evidence suggests that the time that a transcription factor resides at a DNA response element plays an important role in regulating the amount of transcript produced. To measure residence times on chromatin *in vivo*, we have been involved in the development of five different complementary methods. Here I will focus on single molecule tracking in live cells and the evidence that this can measure residence times of transcription factors at site-specific response elements. In addition to the information about binding, the tracks followed by transcription factors inside the nucleus suggest complex diffusive properties. To visualize the nuclear microenvironment through which this diffusion occurs, we have also been involved in the development of methods for X-ray microscopy. This approach can visualize native cells in 3D at ~30 nm resolution subject only to cryo-preservation but without the need for chemical fixation, staining or physical sectioning. I will illustrate the capabilities of X-ray imaging of cellular nuclei and cytoplasm, and discuss future developments to achieve isotropic 10 nm resolution in 3D of cells and native tissue.

Hosts: Professor Susanne Mandrup and Associate professor Daniel Wüstner, Department of Biochemistry and Molecular Biology, SDU.