

PhD thesis or Postdoc position:

### Molecular mechanism of transcription and transcription regulation

The aim of this research is to gain insight into the molecular mechanism of eukaryotic transcription by examining the function of the yeast RNA polymerase II (Pol II) and its regulation.

We will use single-molecule fluorescence, a novel technique that eliminates averaging over time and/or ensembles of molecules, to study conformational changes and interactions of Pol II elongation bubbles in real-time. While structural studies have given us a great insight into the molecular architecture behind the transcription process, details of the dynamics of this process are currently not well understood. Single-molecule experiments therefore complement the structural studies by providing real-time, dynamic information.

Furthermore the complex behavior of the elongation process, where phases of rapid transcription are interrupted by distinct pauses, can be investigated directly by single-molecule force spectroscopy. Changes in transcription velocities and effects of transcription factors can be examined with unprecedented detail, allowing for the test of current models of transcription elongation and termination. A better understanding of the molecular details of the transcription process can lead to important insight on how transcription is regulated in vivo.

We are looking for a skilled and motivated Ph.D student or postdoctoral researcher with a background in biochemistry, biophysics or related fields. If you are interested in fast-paced interdisciplinary research at the border of physics, chemistry and biology and would like to work in an international research atmosphere, send your applications including the name and address of two references to: [Jens.Michaelis@uni-ulm.de](mailto:Jens.Michaelis@uni-ulm.de)