

## Joint Colloquium

CEF „Macromolecular Complexes“,  
CRC 902 „Molecular Principles of RNA-based Regulation“,  
CRC 807 „Transport & Communication across Biological Membranes“



Friday, 31st August 2018,  
12:30 h s.t.



Dr. Lukas Sušac

Dept Chemistry and Biochemistry,  
University of California, Los Angeles / USA

## Structure of Telomerase with Telomeric DNA

Venue:  
Campus Riedberg  
Biocenter N100 / Seminar Room 015  
Max-von-Laue-Str. 9, 60438 Frankfurt/M.



Guests are welcome!



Host: Prof. Dr. Robert Tampé  
tampe@em.uni-frankfurt.de



## Structure of Telomerase with Telomeric DNA

Dr. Lukas Sušac

Dept Chemistry and Biochemistry  
University of California, Los Angeles, CA, USA

Telomerase is an RNA-protein complex (RNP) that extends telomeric DNA at the 3' ends of chromosomes using its telomerase reverse transcriptase (TERT) and integral template-containing telomerase RNA (TER). Its activity is a critical determinant of human health, affecting aging, cancer, and stem cell renewal. Lack of atomic models of telomerase, particularly one with DNA bound, has limited our mechanistic understanding of telomeric DNA repeat synthesis. This joint seminar reports the 4.8 Å resolution cryoelectron microscopy structure of active *Tetrahymena* telomerase bound to telomeric DNA. The catalytic core is an intricately interlocked structure of TERT and TER, including a previously structurally uncharacterized TERT domain that interacts with the TEN domain to physically enclose TER and regulate activity. This complete structure of a telomerase catalytic core and its interactions with telomeric DNA from the template to telomere-interacting p50-TEB complex provides unanticipated insights into telomerase assembly and catalytic cycle and a new paradigm for a reverse transcriptase RNP.

Ref: Jiang et al. (2018) Cell 17, 1179

