

SUMMER SEMESTER 2024

RTG 2756 CYTAC SEMINAR SERIES

TUESDAY, APRIL 23  
17:00 IN HS5

CYTAC

RTG 2756

## DR. ANDREA CANDELLI

Chief Scientific Officer & Founder  
LUMICKS

### SINGLE-MOLECULE BIOLOGY

#### REVEALING THE MOLECULAR MECHANISMS OF HEALTH AND DISEASE

*Biological processes performed by proteins interacting with DNA or cytoskeletal filaments are key to cell metabolism and life. In fact, detailed insights into these processes provide essential information for understanding the molecular basis of life and the pathological conditions that develop when such processes go wrong. To validate current biological models and enable the next scientific breakthroughs direct, real-time observations of individual protein complexes in action is*



*required. Single-molecule technologies enable scientists to manipulate and visualize individual biomolecules and observe their interactions with unprecedented detail, pushing the frontiers of single-molecule biology. Here, we present an overview of the key advancements in the field of single-molecule biology and biophysics- especially in the fields of DNA binding proteins, protein folding and dynamics, cellular structure and phase separation using the combination of optical tweezers with correlative fluorescence microscopy (widefield, TIRF, confocal and STED) and label-free interference reflection microscopy (IRM).*