

# Großes Physikalisches Kolloquium an der Universität zu Köln

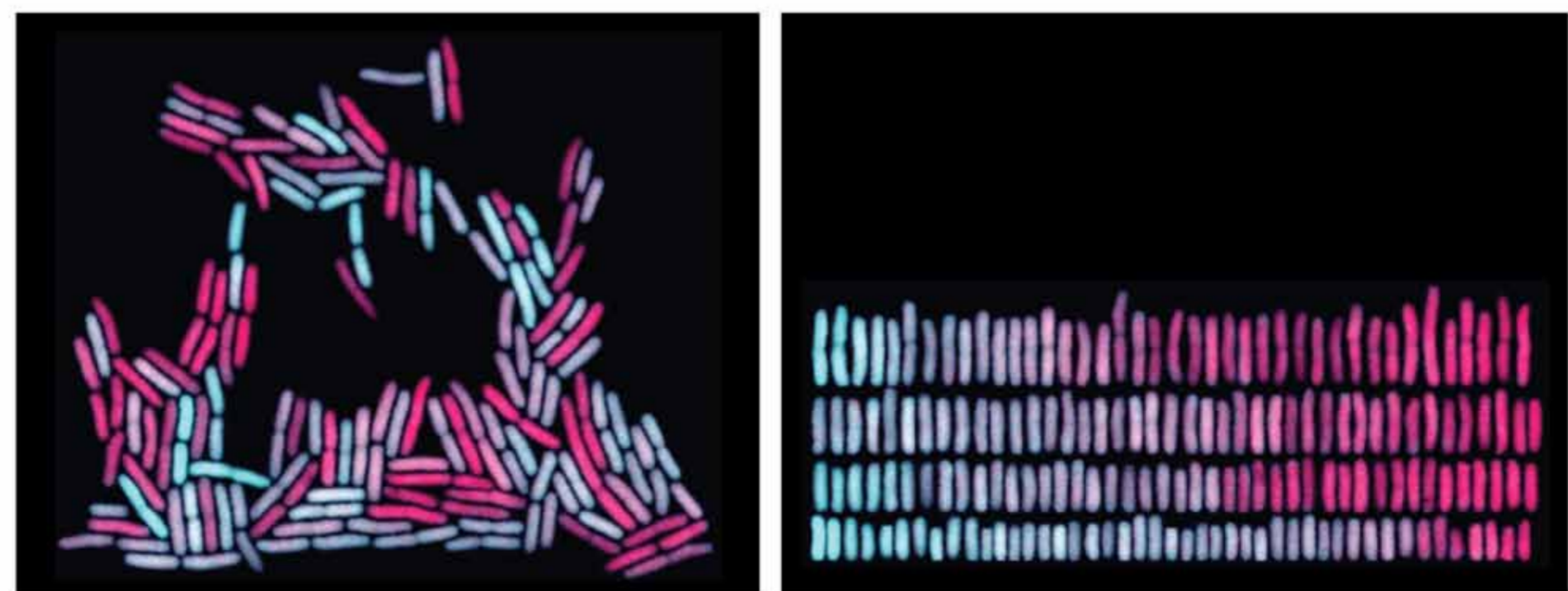
## Prof. Dr. Sander Tans

FOM Institute for Atomic and Molecular Physics,  
the Netherlands



### *Zooming in on bacterial adaptation, from individual cells to populations*

My lab is interested in a range of cellular dynamics questions. We have used time-resolved microscopy of bacterial cell size and enzyme expression to reveal the inherent stochasticity of metabolic networks (Nature 2014) and how cells compensate for such variability during their cell cycle (Sci. Rep. 2015, BMC Biology 2016). Recently, we found that bacteria not only monitor length added during one cell cycle, but can also directly measure absolute size, using spatio-temporal protein oscillations of the Min proteins (Current Biology 2018). If time allows, I will discuss one of the following on evolutionary adaptation. Using genetically engineered signal transduction cascades and a novel theoretical framework, we found that knowledge only about the hierarchy with such cascades predicts certain types of epistasis (Nature communications, accepted). In another study, we have used time-lapse microscopy to identify a novel type of selective pressure on bacterial motility, which acts on the population rather than on the individual.



12.06.2018

16<sup>45</sup> Uhr / HS III

