

06 January 2017 (Fri), 3.30pm
The Auditorium (Level 1)

Hosted by: Dr Greig Jamie Alan

Phase transition - an emerging principle in cytoplasmic organization and neurodegeneration



Photo by Tristan Vostry

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The cytoplasm is not a homogenous solution but instead consists of compartments that arise from transient molecular interactions. Recent data shows that some of these compartments, such as P granules of nucleoli, form by liquid-liquid de-mixing from the cytoplasm. I will discuss the consequences of such de-mixing for cell polarity, and the onset of neurodegenerative disease.

Prof. Dr. Anthony Hyman is Director and Group Leader at the Max Planck Institute of Molecular Cell Biology and Genetics. In 1984 he received his BSc first class in Zoology from the University College in London, where he had also been working as research Assistant in 1981.

From 1985 to 1987 he wrote his PhD about "The establishment of division axes in early *C.elegans* embryos" under the supervision of Dr. John White at the Laboratory of Molecular Biology, MRC in Cambridge, England. After that he moved to San Francisco where he did his postdoctoral research in the lab of Prof. Tim Mitchison at the University of California investigating the mechanism of chromosome movement studied in vitro. 1993 he became Group Leader at the European Molecular Biology Laboratory in Heidelberg, before he moved to Dresden in 1999 as one of the founding directors of the Max Planck Institute of Molecular Cell Biology and Genetics. 2002 he was named honorary Professor of Molecular Cell Biology at the Technical University Dresden. The year after he was awarded the EMBO Gold Medal. In 2007 he was elected as a Fellow of the Royal Society and was awarded the Leibniz Prize in 2011.

His research covers the mitotic spindle assembly and function, focusing on centrosomes; distribution of force generating mechanisms necessary for the first asymmetric division; establishment of cortical polarity. He primarily works in *C.elegans* embryos, but is also studying aspects of these problems in Human cells using the emerging techniques of BAC transgenesis.

Recent Publications:

1. Fischer-Friedrich E, Toyoda Y, Cattin CJ, Müller DJ, **Hyman AA**, Jülicher F. Rheology of the Active Cell Cortex in Mitosis. *Biophys J*. 2016 Aug 9;111(3):589-600.
2. Boke E, Ruer M, Wühr M, Coughlin M, Lemaitre R, Gygi SP, Alberti S, Drechsel D, **Hyman AA**, Mitchison TJ. Amyloid-like Self-Assembly of a Cellular Compartment. *Cell*. 2016 Jul 28;166(3):637-50.
3. Leaver M, Kienle S, Begasse ML, Sommer RJ, **Hyman AA**. A locus in *Pristionchus pacificus* that is responsible for the ability to give rise to fertile offspring at higher temperatures. *Biol Open*. 2016 Jul 18. pii: bio.018127.