



Position available for Master Thesis project on Mitochondrial structure and dynamics



Brief description of the project

Mitochondria are highly versatile organelle that are essential for energy conversion and many other important cellular processes. As opposed to standard textbook figure of a bean shaped static structure containing baffled shaped cristae, the view about the mitochondrial shape and form has been changed considerably due to the advent of many state-of-the-art technologies and imaging techniques. Mitochondria in a cell are arranged as a huge network of long tubules and short fragments that constantly undergo dynamics in form of fusion and fission (Figure 1). We recently showed that within a mitochondrion, cristae membranes are undergoing the continuous cycle of remodelling at the timescale of seconds. We used Live super-resolution techniques of STED nanoscopy to visualize cristae at a high spatial and temporal resolution. Our current study provides a major paradigm shift about how the mitochondrial cristae has been observed so far. Aberrant mitochondrial morphology and form has been associated with several human diseases. We are interested to find the mechanism of mitochondrial dynamics and cristae at cellular and organellar level. In this project, we will mainly use the techniques for high resolution microscopy to determine the factors that are required for mitochondrial dynamics.

The project would provide opportunity to work in an international environment and to address the cutting-edge questions about mitochondrial structure and dynamics.

Methods to be used

Confocal microscopy and imaging techniques with image analysis, western blots, molecular cloning, RT-PCR, biochemical assays to monitor mitochondrial function

How to apply?

Please apply for the position by sending email to Dr. Ruchika Anand (anand@hhu.de) providing details of CV and brief motivation letter for working on mitochondrial dynamics. For initial query please feel free to contact by telephone.

Contact details:

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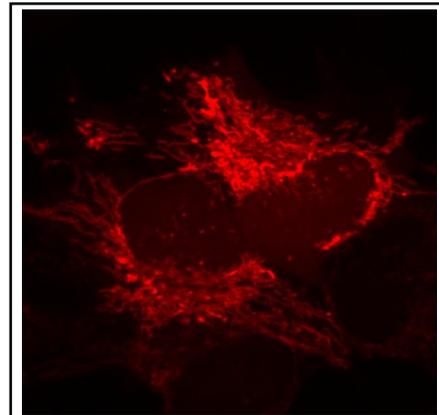


Figure 1. Mitochondrial morphology. Fluorescent image shows the arrangement of mitochondria as huge network of long tubules in cells.