LIVE- AND FIXED-CELL SUPER-RESOLUTION MICROSCOPY ENABLED BY OPEN-SOURCE ANALYTICS IN IMAGEJ

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ImageJ is one of the main platforms for algorithms enabling super-resolution microscopy approaches that depend on an analytical step. In this tutorial, I will give an overview of how ImageJ-based image analysis is being employed to generate, qualify and quantify super-resolution microscopy data. I will then focus on super-resolution methods that are purely enabled by analysis of imaging data without the optical modification of microscopes, such as Single Molecule Microscopy methods (e.g.: PALM, STORM and DNA-PAINT) and the recently developed Super-Resolution Radial Fluctuations (SRRF) approach [1] (Fig. 1) developed by our laboratory. Throughout the tutorial, I will give walkthrough examples of how to acquire and analyse data with these methods, as well as discuss how to optimise image quality [2] and discuss pitfalls. The tutorial will be setup so that participants will be able to quickly translate the discussed approaches into their own research.

![Figure 1](image.png)

Fig 1. Three-dimensional structure of the stably-formed division ring in *S. pombe*. Widefield and SRRF imaging of LifeAct-GFP labelled actin division ring viewed from three different angles. Scale bars = 5 um.