

## ZEISS Microscopy Symposium of the Microverse Cluster Jena

Jena Volksbad | November 24<sup>th</sup>, 2020

### Description Workshops

#### Workshop 1:

##### Round Table Discussion

##### Microscopy in the Life Sciences – Where are we Going? Upcoming Trends and Challenges

Dr. Bernhard Zimmermann, Head of Business Sector Life Sciences, Carl Zeiss Microscopy GmbH

Ralf Wolleschensky, Head of Advanced Development, Carl Zeiss Microscopy GmbH

Meet the ZEISS experts and discuss about latest trends in life sciences. Present your current challenges and requirements. Get technical insides on latest product developments from ZEISS.

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#### Workshop 2

##### Practical Aspects of Widefield Light Microscopy

Dr. Aurélie Jost, Microverse Imaging Center, Friedrich Schiller University Jena

Dr. Michael Zöllffel, Carl Zeiss Microscopy GmbH

##### The Widefield Light Microscopy workshop is divided into two independent parts.

**Part 1:** Aurélie Jost will explain the basic concept of a simple microscope. Practically it is shown in an interactive way, using UC2, a user-friendly, „lego-like“, optical toolbox. In just a few minutes we will build a simple microscope that fits inside of an incubator. We will acquire microscopy images with a smartphone, and even construct a light sheet microscope.

**Part 2:** Michael Zöllffel illuminates the most important aspects of practical widefield light microscopy. Practically, the proper illumination concept in transmitted light (Koehler Illumination), chromatic aberration (achromat, semi-apochromat and apochromat) as well as the impact of the sample conditions on image quality (spherical aberration) are demonstrated.

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#### Workshop 3

##### Powerful Image Analysis and Processing: Enabling Simple Answers to Complex Questions

Dr. Volker Döring, Xianke Shi, Carl Zeiss Microscopy GmbH

This workshop will discuss how biologists extract meaningful and quantitative information from their microscopic images, using software based image processing and image analysis. We will focus on topics such as fundamentals of digital imaging, image segmentation using conventional “histogram thresholding”, as well as segmentation using innovative “machine learning” algorithms. We also want to have a discussion with the participants on what is the ideal image analysis workflow, and how to balance between ease-of-use and feature-rich.

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#### Workshop 4

##### From Animals to Subcellular Structures: Understanding the Sample with a Multi-scale and Multi-modality Workflow

Dr. Alexandra Ellie, Dr. Martin Kuttge, Carl Zeiss Microscopy GmbH

##### This workshop will consist of two parts:

**Part 1:** An introduction to sample-centric and multi-modal workflows, showing a few examples from light microscopy and mixed light- and electron microscopy applications

**Part 2:** An interactive session using the ZEN software to work with and connect data sets that span a wide range of imaging techniques and magnifications. At the end we will discuss how connecting data and images will result in an increased information gain from the sample, and there will be enough time to answer your questions about correlative and connected microscopy.