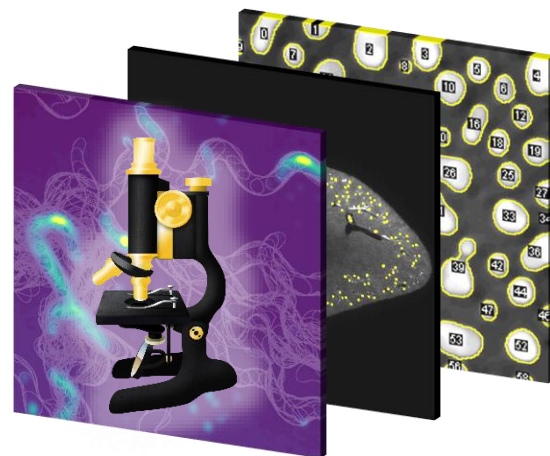


# OIAC 2023

## ONLINE IMAGE ANALYSIS COURSE



**Date:** 27.3.2023-31.3.2023

**Time:** 9:00-12:00 and 14:00-17:00

**Presenters** Dr. Zoltan Cseresnyes, Dr. Ruman Gerst; Prof. Dr. Marc Thilo Figge (course master)

**Affiliations:** Leibniz Institute for Natural Product Research and Infection Biology Hans Knöll Institute Jena (ZC, RG, MTF); Institute of Microbiology, Faculty of Biological Sciences, Friedrich-Schiller-University Jena (MTF).

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### Details:

**What will you need:** access to PC with Windows 8/10/11, Linux, or MacOS<sup>1</sup>

**What will be covered:** introduction to optics, basic and advanced microscopy techniques; introduction to image analysis, basic and advanced image processing with ImageJ<sup>2</sup> and JIPipe<sup>3</sup>

Time	Subject	Presenter
Monday	Principles of optics, basic and advanced light microscopy	Cseresnyes
Tuesday	Introduction to image analysis; image processing with Fiji and JIPipe, visual workflow building, batch processing	Gerst
Wednesday	Homework assignment	NA
Thursday	Homework assignment	NA
Friday	Homework discussion, Q&A session	Cseresnyes/ Gerst

**Microscopy:** the main principles of optics; the basics of light microscopy; confocal microscopy; super-resolution techniques; deep-tissue imaging with light-sheet and multi-photon intravital microscopy; label-free imaging, tomography-

**Image analysis:** the basics of image science; image processing with ImageJ and Fiji; batch analysis of large number of images with Fiji; macro writing. The principles of visual programming; introduction to the new visual image analysis language “JIPipe”. Workflow building in JIPipe, organization with compartments and nodes. Basic image analysis examples; simplified transition to batch processing with JIPipe.

**Homework:** two days will be provided to complete a set of microscopy and image analysis tasks. The latter will require access to a PC, where the ImageJ and JIPipe frameworks will have to be available. Installation packages of ImageJ and JIPipe will be provided.

<sup>1</sup> Not the preferred option due to the differences between MacOS and other operating systems

<sup>2</sup> <https://imagej.net/>

<sup>3</sup> <https://www.jipipe.org/>