GRANAT
GRADUATE SCHOOL
OF NATURAL SCIENCES

Leibniz Universität Hannover

SoSe 2023

Online Live-Workinar: „Editing, Processing and Analysis of Scientific Images - for Academic Publications"

Target Group are doctoral students, postdocs and scientific staff of natural sciences
(duration: 3.5-days and in total a duration of 20 hours, for 15 participants)

Dates:	04.07. - 06.07.2023, each 9:00 am – 3:00 pm, plus 07.07.2023, 9:00 am – 1:00 pm
Lecturer:	Dr. rer. nat. Jan Brocher (BioVoxxel)
Venue:	ZOOM

Description:

The online live-workinar aims to teach how to handle and process digital images starting from e.g. microscopic image acquisition until the incorporation into the final publication figure. Important theory will be provided about preserving high quality in digital images, a broad spectrum of methods for scientifically correct image editing and processing as well as specific analytical purposes according to high scientific standards. Participants learn how to extract different types of information from their images and how to quantify objects and intensities. Many hands-on sessions are included and methods to automate repetitive tasks to decrease time investment while reducing user bias. Do's and don'ts as well as a practical guideline will be provided regarding publication figure preparation.
The workinar content is generally of importance for scientists working with digital images but it has a strong focus on microscopy, general analysis workflows as well as scientific correct adjustment! Optional topics will be adjusted to meet the participants' needs as good as possible. Specific participant's questions will be discussed in a 0.5 day Call4Help session, if communicated beforehand. In the practical parts of the workinar we exclusively use the professional and free software Fiji/ ImageJ. Prior software knowledge is not necessary, but helpful. All necessary software will be provided (open source).

Tuesday, 04.07.2023, 9am – 3pm — including one-hour lunch break

- Introduction basic handling and tools in Fiji
- File types, the digital image content and metadata (bit-depth and histogram)
- Lighting correction for visualization and analysis
- Different background subtraction methods
- Correct contrast adjustments

Wednesday, 05.07.2023, 9am – 3pm — including one-hour lunch break

- Correct image size changes, rotations, image scaling and the scale bar
- General guidelines regarding figure preparation (Do's and don'ts)
- Image processing – insight into problems and basic image filters
- Image segmentation - extracting data by reliable intensity thresholds

Thursday, 06.07.2023, 9am – 3pm — including one-hour lunch break

- Post-processing for increased measurement reliability
- Tools for counting, measurements and automatic selections (ROIs)
- Introduction to automation of image analysis via ImageJ macros

Friday, 07.07.2023, 9am – 1pm — Call4Help session

- Selected own analysis tasks/problems from participants will be discussed together to learn the application of the learned from the first 3 days. The trainer will additionally try to provide tips and potential solutions or starting points for the tasks presented in a 5-10 min short presentation (slide templates will be provided).

Registration until 24.05.2023
http://go.lu-h.de/granat-EPASI