

Bern, September 13, 2019

### MIC Research Day 2019

The “MIC Research Day 2019” took place on July 3 and was attended by more than 120 scientists of the University of Bern and some industry partners. This yearly event is dedicated to scientific lectures from experts in specific microscopy applications of the University of Bern to improve the visibility of microscopy expert knowledge amongst us. This year, Christian Zuppinger, Stefan Tschanz, Coralie Dessauges, Ana Stojiljkovic, Josue Page and Giuseppe Locatelli gave these valuable scientific talks. Further important input was provided by the keynote speaker Nicolas Thomas, Space Research and Planetary Sciences, who explained the role of automated imaging for sampling by the Mars rover. Fabian Blank and Guillaume Witz informed about the services available at the Live Cell Imaging facility at DBMR and the support in image analysis and data management provided by SCITS, respectively. Industry talks by Rafael Kurtz, LaVision BioTec, and Oggie Golub, ThermoFisher Scientific, provided useful information on latest technology developments in the areas of light sheet and 2P microscopy and on fluorescent probes. All participants bid farewell to Marlene Wolf, the past coordinator of the PhD program Cutting Edge Microscopy (CEM) and head of the Graduate School for Cellular and Biomedical Sciences (GCB), and Marisa Moser, former administrative assistant of the MIC. Finally, two PhD students were awarded with their CEM PhD certificates. As usual, the MIC Research Day provided many opportunities for networking during the coffee break and the final apéro. We thank the CEM students for their help in the organization and acting as well-prepared chairpeople, all the participants for their interest in microscopy and the company sponsors for the generous financial support of the MIC Research Day 2019.

### MIC Summer School 2019

The 3<sup>rd</sup> MIC Summer School was a joint event for the PhD students of the PhD program Cutting Edge Microscopy (CEM) of the University of Bern and the PhD students of the European innovative training network [4D Heart](#). The 4D Heart program is dedicated to 4D analysis of heart development and regeneration using advanced light microscopy. Nadia Mercader Huber, who is the scientific coordinator of both PhD programs, initiated this fruitful liaison.

The MIC Summer School started with the MIC Research Day on July 3 and was followed by the Students' Day on July 4 and a Career Day on July 5. The Students' Day took place at Schloss Bümpliz and was mentored by Nadia Mercader Huber, Ruth Lyck, Yury Belyaev, Fabian Blank and Guillaume Witz. After a short foreword by Nadia Mercader, all the students introduced themselves and their projects in flash presentations. In two sessions, the advanced PhD students gave detailed presentations about their projects followed by in-depth discussions with their peers. The Career Day started with four different career track presentations of scientists with expert knowledge in microscopy. Then, students and presenters met in rotating round table discussions.

The MIC Summer School 2019 was very well perceived by all participants. Everyone benefitted from the scientific discussions and personal exchange, sharing ideas and getting to know each other better.



## Swiss Microscopy Core-Facility Day 2019

The 7<sup>th</sup> Swiss microscopy core facility day this year took place on August 28, 2019 in Lausanne and was organised by the [BIOP imaging platform of EPFL](#). About 50 members of Swiss imaging facilities and representatives of microscopy companies convened for a day to discuss different aspects of microscopy facility operation. Subjects of the presentations were the (1) [Advanced Lightsheet Imaging facility \(ALiCe\)](#) of the WYSS Center, (2) improved quality control of the microscopy equipment and (3) career options in industry. After lunch, round table discussions addressed the usage of high-end technology in core facilities, the implementation and support of machine learning in microscopy and the feasibility of quality control to monitor microscope performance. Ruth Lyck and Yury Belyaev represented MIC at this meeting. In August 2020, the Swiss core facility day will be organized by the MIC in Bern. All MIC commission members are encouraged to provide their suggestions for topics to be discussed; any active participation will be highly appreciated.

## New microscopes at the University of Bern

### Exchange of electron microscope at the Institute of Anatomy

A second-hand scanning electron microscope, [Zeiss Evo 40](#), has been installed at the institute of Anatomy. It replaces the Philips XL-30, which was decommissioned after 26 years of use. Support for the XL-30 was no longer warranted due to outdated software and lack of hardware maintenance. The Zeiss Evo 40 was initially purchased in 2007 by the Institute of Geography and the Oeschger Center for Climate Change Research of the University of Bern. It was used by the group of Prof. Martin Grosjean to characterize the microorganism populations in lake sediments. These data were fundamental for the computation of annual winter/spring temperature series in various locations for the last 1000 years. After completion of this project, the microscope became less used by the Oeschger Center. Prof. Grosjean kindly offered the transfer of the microscope to the Institute of Anatomy and its integration into the MIC instrument pool. In the meantime, the Evo 40 has been upgraded with an up-to-date steering computer and the latest version of operating software. The Evo 40 is a robust and easy-to-use microscope. It may be operated in high vacuum mode for optimal resolution and in low vacuum mode for non-conductive samples and is equipped with secondary electron and back scattered electron detectors.

### New near-infrared (NIR) fluorescence zoom microscope at the Theodor-Kocher-Institute

The new NIR microscope is a [Zeiss AxioZoom.V16 fluorescence microscope](#), equipped with a Photometrics Prime BSI CMOS camera and a CoolLED pE4000 illumination system. Imaging is possible with DAPI, GFP, RFP, Cy5 and Cy7 filter sets. The particular configuration optimizes this microscope for the in vivo fluorescence imaging in the NIR spectrum to minimized tissue autofluorescence and to increase penetration depth. Special applications include tissue-level measurement of blood vascular leakage in skin tissue, the functionality of collecting lymphatic vessels and the evaluation of cerebrospinal fluid flow and clearance. The working distance of the objective allows dissection and isolation of tissues from fluorescent reporter mice for further evaluation using whole-mount tissue staining or FACS.

### Services of the MIC

The MIC has acquired a powerful [image processing station](#) which is made available to the imaging community. The station, located at the [MIC office](#), Theodor Kocher Institute, has 8 cores, 128GB of RAM and an NVIDIA Quadro P4000 graphics card, which makes it an ideal tool for processing and visualizing large imaging datasets. The commercial software Imaris as well as standard open-source software such as Fiji are available on the station. Additional software can be installed upon request. Any research group can ask for access to the computer either to test software, e.g. in planning the purchase of a station, or for projects requiring high computing power only occasionally. Access requests should be addressed directly to Guillaume Witz ([guillaume.witz@math.unibe.ch](mailto:guillaume.witz@math.unibe.ch)) who will evaluate them and provide support to users.

## Resources

The European Light Microscopy Initiative (ELMI) has changed its website location (see <https://elmi.embl.org/home/>)



## Highlights and important dates of the MIC

- MIC Retreat: September 18, 2019  
For MIC commission members only.
- MIC Symposium: November 29, 2019  
**Machine Learning in Imaging**  
see program attached to this newsletter and don't forget to register.  
**Registration [here](#).**
- MIC Commission meeting: December 12, 2019

## Call for communication of events and presentations

The MIC aims to improve collaborations between researchers of the University of Bern. Please announce lectures of team members or guests to the [MIC coordinator](#) for publication on the MIC homepage and the MIC newsletter!

## MIC Presentations, Trainings, Workshops, Demonstrations – upcoming events at the University of Bern

### From September 20, 2019

Lecture Series on Advanced Microscopy, organized by the MIC. Further information on the [MIC webpage](#) and on [ILIAS](#). Registration via [KSL](#).

### October, 21 – 22, 2019

Workshop: Vascular imaging using contrast-enhanced a microCT approach (= microangioCT) jointly provided by Ruslan Hlushchuk and Valentin Djonov, both Institute of Anatomy, and Britta Engelhardt, Theodor-Kocher-Institute. Registration for students in [KSL 457126](#), for external attendees [here](#). More information [here](#).

### November 11 - 15, 2019

Workshop: Advanced histology and immunolabeling for paraffin and cryo-embedded and non-embedded cell cultures. Provided by Fabian Blank. Registration for students in [KSL 454901](#), external attendees please contact [Fabian.Blank@dbmr.unibe.ch](mailto:Fabian.Blank@dbmr.unibe.ch). More information [here](#).

### November 19 – 20, 2019

Workshop: Automated microscopy with [Nikon JOBS](#), which is a module of the Nikon NIS elements software package. Location: University of Bern, Mittelstrasse 43, room 216, 3012 Bern, more information [here](#).

### November 28, 2019

Seminar by [Robert Prevedel](#), EMBL, Heidelberg. Title: Visualising dynamic biological processes using light-field microscopy. Where & when: Theodor Kocher Institute, 2<sup>nd</sup> floor, club room, Freiestrasse 1, 3012 Bern, at 4.00 pm.

## Trainings, Workshops, Demonstrations – further events in Switzerland and abroad

### September 17 – 20, 2019, York, UK

Confocal Microscopy+ 4-Day Hands-On course. Provided by [ELMI](#), further information see [here](#).

### September 19 - 20, 2019, Heidelberg, Germany

Microscopy Image Analysis Course. Provided by [ELMI](#), more information see [here](#).

### October 1 – 4, 2019, Engelberg, Switzerland.

Symposium on "3D microscopy". Co-organized by MIC member Dimitri Vanhecke and administered by the Swiss Society for Optics and Microscopy ([SSOM](#)). Further information see [here](#).

### October 14 – 17, 2019, Porto, Portugal.

NEUBIAS, the Network of European BioImage Analysts ([www.neubias.org](http://www.neubias.org)), provides two Training Schools on BioImage Analysis: [TS12 for Early Career Investigators](#) (life scientists and facility staff) and [TS13 for Facility Staff](#) (staff only, already comfortable with analysis workflows; focus is scripting with FIJI & Python).



**October 7 – 16, 2019**, Amsterdam, the Netherlands  
Functional Imaging course. Provided by [ELMI](#). Further information see [here](#).

**October 16, 2019**, Leuven, Belgium  
Inauguration Symposium of the Nikon Center of Excellence, jointly organized by the VIB - KU Leuven Center for Brain & Disease Research, VIB Bio Imaging Core and Nikon. More information [here](#).

**October, 16 – 17, 2019**, Basel, Switzerland  
Zeiss on your campus workshop: A new chapter in superresolution microscopy, Workshop at the Imaging Core Facility - Biozentrum, University of Basel, presenting the new [ZEISS ELYRA 7](#) with Lattice SIM, further information [here](#).

**November 4 - 6, 2019**, Lyon, France.  
10<sup>th</sup> 'Imaging The Cell' Symposium by the French Society for Cell biology ([sbcf](#)). More information see [here](#).

**November 4 – 7, 2019**, Freiburg, Germany  
MIAP Workshop: Expanding the ZEISS Microscopy Platform – Automation and Image Analysis Solutions based on OAD and APEER. Provided by the Microscopy and Image Analysis Platform ([MIAP](#)) More information [here](#).

**November 21 - 22, 2019**, Vienna, Austria  
Conference on Multimodality Imaging in Life Sciences. Offered by the Cost initiative Correlated Multimodal Imaging in Life Sciences ([COMULIS](#)) and [BioImaging Austria/CMI](#). More information [here](#).

**November 25 – 27, 2019**, Prague, Czech Republic  
Superresolution in Light Microscopy; IMG CAS Prague. Provided by [ELMI](#). Further information see [here](#). Application deadline: 21 October 2019

**January 20 – 24, 2020**, Heidelberg, Germany  
Deep Learning for Image Analysis. Provided by [EMBL](#) Heidelberg. More information see [here](#).  
Registration deadline: 20 September 2019

**February 29 – March 6, 2020**, Bordeaux, France  
4<sup>th</sup> conference of the Network of European BioImage Analysts (NEUBIAS). More information [here](#).

**Previous MIC newsletters are available to you for download [here](#).**

