

CEM Summer School 2026 – Recap

July 2–3, 2026, Hostellerie am Schwarzsee

The CEM Summer School 2026 took place on July 2–3 at the Schwarzsee, bringing together PhD students from the Cutting Edge Microscopy program for two days of scientific exchange, networking, and summer activities by the lake. The program combined student presentations, invited talks, hands-on activities, and time to enjoy the surroundings.

The first day started with the arrival from Bern, followed by coffee and the opening session. After the welcome and introduction, the first group of CEM students presented their PhD projects. **Dominic, Gil, and Pau** introduced their research topics and shared their ongoing work with the group. Their presentations showed the diversity of microscopy approaches within the program, ranging from Cryo-EM to MicroCT, and highlighted the different biological questions that can be addressed using advanced imaging techniques, from studying protein structure to histopathological analysis. The presentations included:

- Dominic Schneiter: “Temperature-dependent ligand relocation reveals plasticity of TRPM4 inhibition”.
- Gil Coelho & Pau Altur: “Phase-Contrast Computed Tomography for 3D Histopathology”.

The morning session followed with a presentation by the honorary guest, **Urs Ziegler** from the Center for Microscopy and Image Analysis at the University of Zurich. His presentation provided an external perspective on microscopy infrastructure, imaging expertise, and the role of centralized microscopy platforms in supporting biological and biomedical research, as well as his personal path and insights into future opportunities for students pursuing careers in microscopy.

The afternoon continued with more CEM student presentations. **Aida, Elliot, Petr, and Tangtang** presented their work, each sharing their research progress, experimental approaches, and microscopy methods ranging from fluorescence microscopy to X-Ray microtomography, including *in vivo* and *ex vivo* imaging approaches applied to the study of the central nervous system. The topics of their presentations were:

- Aida Muñoz: “Two-photon intravital imaging of the spinal cord”.
- Elliot Norris: “Targeting lymphatic cerebrospinal fluid drainage following hemorrhagic stroke”.
- Tangtang Xiang: “Distribution of extravasated red blood cells around the mouse transverse sinus of the dura mater following two subarachnoid hemorrhage models”.
- Petr Pleskač: “*In vivo* SR μ CT imaging of cerebrospinal fluid outflow in mice”.

Later in the afternoon, **Dario, Robin, and Ekaterina** gave presentations, covering topics from phase separation in gene regulation to multimodal imaging of microorganisms and other biological systems, as well as the PhD project of newly joined CEM student.

- Dario Bernasconi: “Phase separation in X-linked gene regulation in *C. elegans*”.
- Robin Eberle: “Combining image modalities in *Trypanosoma brucei*”.
- Ekaterina Sedykh: “3D Cancer Pathology Using Light Sheet Microscopy”

In the evening, participants gathered for dinner, followed by a relaxed evening at the lake. Away from the presentation sessions, the informal setting provided the opportunity to continue discussions, exchange ideas, and get to know each other beyond the scientific program.



Figure 1. Dinner time.

The second day started with the final block of student presentations. **Daniel, Ashish, and Pragya** presented their PhD projects. Their talks covered different biomedical applications, from craniofacial regeneration and biomaterials-based tissue engineering to neuro-urology, highlighting how imaging approaches are integrated into diverse research fields.

- Daniel Toneatti: “Application of degradable osteosynthesis systems in the craniofacial region”.
- Ashish Kumar: “Biomimetic composite hydrogel using hyaluronic acid, collagen type II and silk fibres for nucleus pulposus regeneration”.
- Pragya Nagar: “Targeting PARP-1 Signalling to alleviate Detrusor Overactivity following Spinal Cord Injury”.

After the morning talks, participants took part in the **VIBE** platform testing. The **Virtual Imaging at UniBE** (VIBE) is a virtual microscopy and bioimage analysis platform jointly developed by the Data Science Lab and the Microscopy Imaging Center at the University of Bern. It aims to support microscopy users by providing access to computational resources, image analysis tools, and more centralized workflows for handling microscopy data. The VIBE testing activity gave the participants a practical perspective on how VIBE could be used by researchers at UniBE. This topic connected well with the broader goals of the summer school, as many CEM projects rely on advanced imaging, large datasets, and reproducible image analysis pipelines.



Figure 2. VIBE testing activity.

The summer school program concluded with a quiz based on the scientific presentations. Participants had been warned beforehand that any detail from the talks could become a question, ranging from scientific concepts, such as the best strategies to speed up live-cell imaging acquisition, to more unexpected details, such as whether a presenter was wearing colourful socks during their talk. The quiz was a fun way to revisit the presentations, with chocolate waiting as the prize for the winners, and brought the two days of scientific discussions to a relaxed and enjoyable end before departure.

Beyond the scientific program, the summer school also gave participants time to enjoy the summer weather at Schwarzsee. During the free time, participants could swim in the lake,

take a pedalo boat, walk around the lake, or simply relax outside. Since the summer school was held at the same location as the previous year, the setting felt familiar while still providing a great opportunity to spend time together and enjoy a more relaxed atmosphere outside the formal program.



Figure 3. Free time activities: swimming, taking pedalo, walking around the lake and just enjoying the views.

Overall, the CEM Summer School 2026 combined student presentations, platform-focused activities, and informal exchange in a beautiful lakeside setting. It was a nice opportunity to learn more about each other's research, discuss microscopy and image analysis, and strengthen connections within the CEM program.



Figure 4. Group picture before departure.