

## WHAT HAPPENS WHEN YOU CONTACT THE USR ADVANCED LIGHT MICROSCOPY CORE –

We have many instruments with overlapping capabilities and we strive to identify the most appropriate and cost-effective selection based on your experiment's needs, your experience, and your location.

This manual walks you through what happens when you contact us about using our services. We describe three interactions with us — *Pilot Phase*, *Training*, and *Full Service Imaging Request*—in somewhat chronological order. We also offer other services as outlined in the final section (What's next?). Words in italics can be found in the glossary.

### PILOT PHASE

We begin assessment of your needs as soon as you contact us. This *Pilot Phase* is highly collaborative and flexible— you should expect to work with us as we match your experiment with one of our instruments and/or staff members. The length of this phase depends entirely on the user and their experiment. We often match people through a few email exchanges or a short meeting, but it's also not uncommon for us to talk things through within our team and/or do pilot imaging sessions with user samples. The pilot phase is normally followed by *Training* or by a *Full Service Imaging Request*.

What we need to know:

- Previous microscopy experience
- Experimental design
  - Specimen preparation (fixed or live samples? Cells or tissues? Whole mount or sections?)
  - Mounting strategy (slides? dishes?)
  - Fluorophores
- Experimental goals
  - Necessary resolution? (E.g., for counting cells? Subcellular localization? Protein co-localization?)
  - Intended measures? (E.g., counting objects based on presence/absence of signal or quantifying intensity?)
  - Specialized imaging techniques?

We will also instruct you to register an account in iLab, a web-based platform we use to manage core-facility instrument and staff reservations.

Based on the information you share, it may or may not be clear which of our instruments would best suit your needs. If it is clear, we can start considering how to get you trained on the system (training) or whether it would be best for you to hire us to do your imaging (imaging request).

If it is not clear, we might suggest that ALMC staff do some initial test imaging on different instruments, or on one instrument but using different *modalities*. The goal is to establish what will work best for your sample. These pilot sessions can occur with you or without you in the room (can be virtual), dependent on what works best for everyone, and will only incur *instrument costs*, *staff costs* are waived.

At the end of the pilot phase, we should know which instrument to direct you toward. In cases where we have worked with you on an instrument, we will type up a summary for you of the imaging parameters that we discovered together. At this point, we go on to either training or direct you to submit an imaging request.

### TRAINING

All of our training occurs in either one-on-one or very small group settings with an ALMC staff member. We have several goals when we are training you to use our microscopes. The most obvious one is to show you how to operate our instruments safely and competently. However, we also want to empower you to troubleshoot your

imaging and data collection, and this requires an understanding of the concepts underlying the technology driving the microscope. We will spend time going over hardware techniques, such as how to properly mount your slide onto the microscope stage, and operation of the microscope through the associated software. We may also discuss imaging theory, for example, how fluorophores are excited and how their emission light is detected. All of this will be tailored to the instrument, your experiment, and your level of knowledge.

In addition, the core facility is a communal space, so we will spend time discussing etiquette and how to be a good core citizen. This will include how to treat the microscopes, how to reach out to ALMC staff, and how to contact other users if necessary.

Training is instrument-specific and proficiency is not transferable across instruments, even for instruments capable of the same modality. Status as a trained user is granted at our discretion and only trained users are allowed to schedule during *off-peak hours*.

For details of our 3-part training series, please see our [List of Services](#), which also has a table of estimates for training costs. Training costs differ widely based on the complexity of the imaging modality, the particular samples, and previous microscopy experience of the user.

### **FULL SERVICE IMAGING REQUEST**

Our team's experience easily adds up to over five decades and we use our advanced microscope systems every day. If your project is limited in scope, or if you are on a short timeline, it will be faster, more efficient, and even more cost effective to have us capture images for you.

To hire us, you fill out a form in iLab. The form will ask for information from the summary we provide you at the end of the pilot phase. Sessions where we image for you will incur staff cost and instrument cost.

Please see our [List of Services](#) for full details.

### **WHAT'S NEXT?**

After you are trained, ALMC staff are still available to help! If your experiment changes or if you want to learn how to use a new modality or instrument, reach out and book more time with us. We are also available for urgent help if something goes wrong during your reservation.

Once you have your data, either captured by yourself or after we've completed your imaging request, you may find you need help with image analysis. ALMC staff support several commercial image analysis platforms. Specifically, we use Zeiss ZEN for analysis of 2D images, and Bitplane Imaris for analysis of 3D to 5D data.

When you reach out for image analysis help, we will go through much the same process as when you reach out for imaging help. After an initial planning and pilot phase you can either be trained in our image analysis software platforms or you can request that we execute your image analysis for you.

For full details about what we offer, including solutions for data transfer and storage, please see our [List of Services](#).

## **GLOSSARY**

**Full Service Imaging Request:** Hire our expert staff to do the imaging for you. Imaging requests normally occur after the assessment in the Pilot phase. Imaging requests incur both staff and instrument charges.

**Instrument cost:** Each of our microscopes has hourly charges that go toward instrument upkeep. Charges vary depending on the cost of the service contract for the instrument. Costs are higher during peak business hours, and lower during off-peak hours. **Staff cost:** Hiring core facility staff incurs an assisted use charge that offsets staff salary costs. **Pilot phase:** Initial assessment to match a user's needs with the appropriate core facility resources. During this assessment, staff costs are waived and only instrument costs will be charged.

**Modalities:** Several of our microscopes are able to image samples using different techniques, or modes. We will sometimes refer to these as a "modality," which is used here as a synonym for mode.

**Peak hours:** Regular workday hours when hourly instrument costs are high. **Off-peak hours:** Times of day during which hourly instrument costs are lower. These may differ by instrument, but are often evenings, early mornings, and weekends.

**Pilot Phase:** Sometimes assessment of how your needs can be met by our instruments requires a test experiment. Work with us as we try out your desired fluorophores and/or imaging modalities. Pilot phase experiments incur instrument charges, but not staff charges.

**Training:** We work with you until you are ready to independently operate the microscope effectively. Training occurs after the assessment in the Pilot phase. Training sessions incur both staff and instrument charges.