

LagLivLab annual report 2024

2024 is the fourth year of student activities in LagLivLab. The year began with a large intake of students at the start-up meetings, several of whom went on to form a new microfluidics group. Much of the year was spent collecting and systematising the documentation of the electrorotation and bioactuator groups: concluding experiments were carried out, and the leading students completed their master's theses while preparing their results for possible publication. The electrorotation group obtained enough from its cell experiments that the supervisors — Ørjan Grøttem Martinsen, Oliver Pabst and Dag Kristian Dysthe — are now working with former students on a manuscript. The cell lab acquired its own fluorescence microscope, assembled from parts contributed by laboratories at the Department of Physics and the Department of Biosciences together with newly purchased components. At the beginning of 2025 the main challenges are:

- Complete and submit the first scientific manuscript from LagLivLab
- Move the documentation off the UiO wiki before it is shut down
- Put supervision and administration on a sustainable footing
- Carry the new microfluidics group through to its own projects
- Develop the collaboration with Ignite and iHub

Student board 2024

The student board consists of students that are responsible for being the main contact between the staff, other members of LagLivLab and all new students that wish to join the makerspace. The student board in 2024 was:

- Catherine Hughes
- Latifa Aitannour
- Tony Khoa Nguyen

Report from the project groups

The microfluidics group

The microfluidics group started in 2024 and has worked steadily to learn the full range of techniques, from photolithography through to droplet experiments with cells. The group has

now built up the skills needed to begin substantial life science projects using microfluidics, and plans to continue through the summer of 2025 and into the following semester.

The electrorotation group

The group carried out its concluding experiments during the year, and its leading students completed their master's theses while preparing the results for publication. Enough came out of the cell experiments that the supervisors are working with former students on a manuscript. Whether a first scientific manuscript from LagLivLab is finished in 2025 will be an interesting measure of how far the model can be taken.

The bioactuator group

As with electrorotation, the year was largely given over to concluding experiments and to gathering and systematising the group's documentation, with its leading students finishing their master's theses.

Infrastructure

The LagLivLab cell lab now has its own fluorescence microscope, built from parts drawn from laboratories at the Department of Physics and the Department of Biosciences, together with newly purchased components including a scientific sCMOS camera. Students can now use phase contrast, fluorescence and quantitative phase imaging (QPI) to study cell cultures across their various projects.

Documentation and the closure of the UiO wiki

UiO has decided to close its wiki service. This is a problem for LagLivLab, which holds much of its documentation there, and we are now paying a student to transfer that content into another format. A significant part of the 2025 funds will have to go towards this if we are not to lose what has been built up.

Documentation has been a persistent difficulty in another sense as well. The students' main motivation is practical work in the lab and learning from one another and from their supervisors, and systematic documentation has not always been a priority. What has been recorded has been spread across Notion, Slack and other platforms rather than kept on the LagLivLab wiki.

Supervision

Activity in LagLivLab is at its greatest, most intensive and most productive when students

receive substantial supervision and follow-up. A number of PhD students and researchers gave a great deal of their time to this during 2024, in particular Oliver Pabst, Ali Aslan Demir and Thomas Combriat, along with several students from Dysthe's research group.

During 2024 we began paying some master's students to contribute to supervision and administration. If the activity is to be sustained over time we will need to employ one or two students in somewhat larger positions for this work.

Outreach and collaboration

In 2024 we began collaborating with Ignite, the MN Faculty's makerspace at the Science Library, taking part in planning microscope building and other experiments. We intend to contribute life science exercises to their Thursday evenings, and so build a bridge between drop-in activities at Ignite and the larger projects run at LagLivLab.

We have also begun discussions with iHub, and with the students, about how LagLivLab might connect to the range of innovation activities in Forskningsparken.

Economy

The funds for 2024 were spent on consumables and on the parts and time required to build the fluorescence microscope. We expect the funds from UiO:LifeScience to be fully utilised in 2025.