



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY, POWAI, MUMBAI
IRCC Confocal Laser Scanning Microscopy Central Facility,
Department of Biosciences and Bioengineering
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Training Policy

Students from different departments are invited for the TAship of the instrument. Interested candidate can apply for the TAship and training is provided with proper protocol and test are conducted. Only PhD students are considered for the TAship.

The Q&A are as follows

Frequently asked questions:

Q1. I need to use the confocal microscope. Do I need to train as a TA?

Ans. If your usage is infrequent (i.e. once every few months), one of the operators or the existing TAs can do the imaging for you. If your research project heavily depends on the use of the confocal facility, you should train as a TA.

Q2. What does being a TA involve?

Ans. The job of a TA is to help us run the facility smoothly by imaging other people's samples. You will have to do 6 hours of work per week. If you are a first year PhD student, we suggest that you come back to us after you finish your coursework. The upside of being a TA is that you will become proficient in using a state-of-the-art confocal microscope by imaging many different kinds of samples. You will also be able to book slots during 'off' hours (between 6 pm and 9 am as well as weekends) for yourself. On the whole, it should be an excellent learning opportunity for you.

Q3. I believe I need to train as a TA. What should I do?

Ans. The first thing you should do is to check with your advisor that both of you agree with the time commitment. If you are a non-BSBE student, you need to contact the TA coordinator of your department to see if you could formally be assigned as a TA in this central facility. If the answer to both the questions is 'yes', send an email to [<ismconfocal@iitb.ac.in>](mailto:ismconfocal@iitb.ac.in).

Q4. What does training involve?

Ans. You will need to attend a few lectures on microscopy and confocal imaging, followed by hands-on training sessions. After this, you will practice on the microscope by imaging some standard samples. Once you are confident, you will have to take a two-part exam. The theory viva will be conducted by Prof. Santanu Ghosh, while the practical test will be conducted by one of the operators. You will get access to the facility after you pass both exams. If you don't pass at the first attempt, you will get another chance to take the tests again.

Q5. I have finished two years as a TA. What happens now?

Ans. We thank you for being a TA with us. You are welcome to continue beyond two years if you prefer to retain your access to the microscope during off hours. If you don't wish to continue, you can still book slots during regular hours through the existing TAs or the operator.

Q6. I have more questions. Who do I ask?

Ans. Send an email to Prof. Santanu Ghosh <santanughosh@iitb.ac.in>, Department of Biosciences and Bioengineering.

Note: If the student fails to complete the TAship for 2 years and quits in between, no other student from their lab will be considered for the TAship for the next 2 years.

This FAQ deals with the operational aspects of the facility. If you would like to suggest a question, do feel free to drop an email to lsmconfocal@iitb.ac.in

1. I need to do simple slide imaging. Which confocal microscope should I use?

You could use either as long as you image up to three fluorophores (red, green, and blue). If you want to image Far-red (Cy5), you have to use the laser scanning confocal microscope. There is no laser for Far-red (Cy5) excitation in the spinning disc system. If you want to image more than three fluorophores, you need to use the scanning probe confocal microscope.

2. What consumable items should I bring with me? What items will be provided at the facility?

The facility will only provide the immersion oil for the objectives and the lens cleaning tissues. Everything else that you may need during imaging (e.g. gloves, pipettes, tips, regular tissue rolls, aluminium foil to cover NDDetc.) you will have to bring yourself. If you are in doubt, please speak to the operators or one of the conveners in advance.

3. I need to use the confocal microscope. Do I need to train as a TA?

If your usage is infrequent (less than twice per month), one of the operators or the existing TAs can do the imaging for you. If your research project heavily depends on the use of the confocal facility, it would be better if you trained as a TA. Do remember, training as a TA comes with certain duties, such as, imaging other people's samples.

4. What does being a TA involve?

The job of a TA is to help us run the facility smoothly and image other people's samples. You will have to do a minimum of 4 hours of TA duty per week just like the TAs allotted to other central facility equipment. This is non-negotiable. If you are a first year PhD student with loads of coursework, we suggest that you come back after a year. The upside is that you will get really proficient in using a state-of-the-art confocal microscope. You will also be able to book slots during 'off' hours (between 6pm and 9am) to run samples for yourself or your research group. On the whole it should be a very useful learning experience for you.

5. I think I need to train as a TA. What should I do?

The first thing you should do is to check with your advisor on whether both of you agree with the time commitment. If you are a non-BSBE student, you need to contact the TA coordinator of your department to see if you could be assigned as a TA in the central facility. If the answer to both questions is 'yes', send an email to the convener of the microscope where you want to train. We will take over from there.

6. I booked a slot, but my sample is not ready. What should I do?

This can happen once in a while, so don't worry. Send an email to lsmconfocal@iitb.ac.in and call the operator on his mobile phone as soon as you realize that you cannot make it to your slot. This is a matter of courtesy to ensure that other people can use your slot. If this

happens too many times, clearly you are not planning your experiments very well and we will take a strict view of it.

7. I need to do live cell imaging. Which microscope should I go for?

If you are imaging swimming bacteria, sperm cells, etc. you should definitely choose the spinning disc system. If your live cell imaging involves four or more fluorophores (unlikely though!), you have to choose the scanning probe confocal system. If your sample is tagged with a single fluorophore (green or red) and you want to image for an hour or so, you can choose either. If you want to do longer experiments (e.g. exploring the motility of a mammalian cell), we will assign you the spinning disc system unless there is a compelling reason to use the other microscope. Such experiments should be scheduled at night (after 6pm). If they need to run longer than 12 hours, you should plan to do these experiments over the weekend. In case of an initial overnight operation, you (or the TA) will need to check on your sample every couple of hours.

8. I need to book more than one consecutive slot. Can I get it?

Sure, you can have two back to back slots if you can justify why. Having ~20 odd samples to image at one go is not a good enough reason. We need to be fair to every user while assigning slots. We will give you as many slots as you need to image all your samples, but they will be distributed over several days.

9. I don't have any fluorophores in my sample. Can I still use the confocal system?

That depends. If you are doing live cell imaging (with CO₂ and temperature) in brightfield/DIC mode for a long enough time, you certainly can use the system, as there is currently no other microscope in IITB that has this facility. Just remember that it won't be confocal imaging, i.e. you won't be blocking the out-of-plane light. In such a case, the Definite Focus feature will be very useful to you to ensure that at least one of the Z-stack images remains in focus throughout.

10. Can I request a particular TA to image my sample?

No. All TAs have done the same training and it should not matter who images your sample. The conveners have framed this policy to ensure that no single lab/TA monopolizes the use of the facility. If you have any apprehensions about any TA, feel free bring it to the notice of the convener immediately.