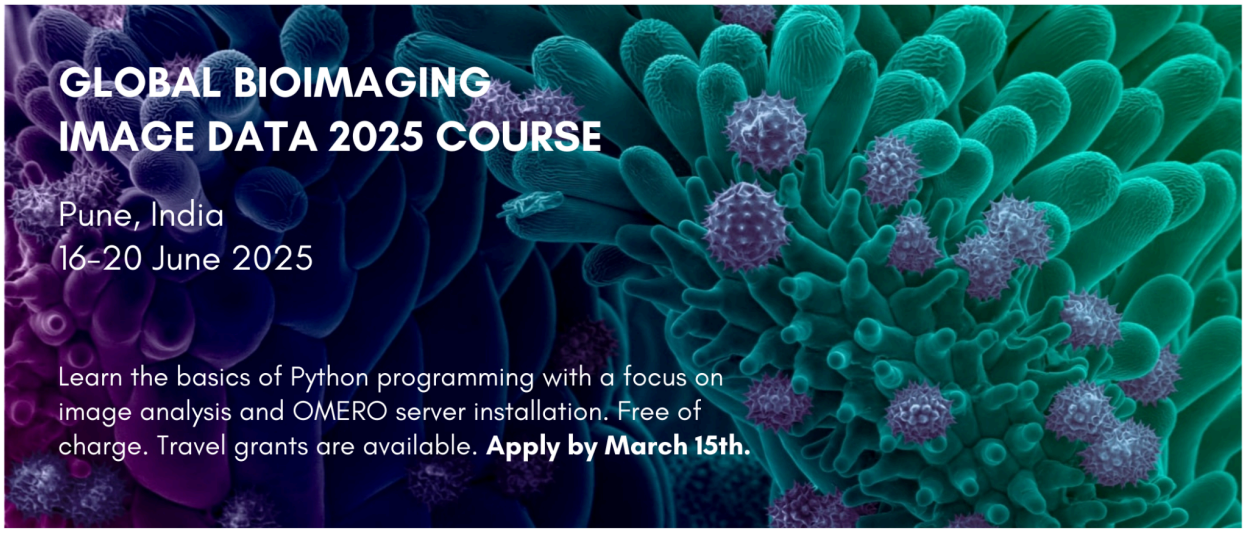
Global BioImaging Image Data 2025 Course

Course Program



Overview of the course: *The Global BioImaging Image Data 2025 Course is jointly organized by Global BioImaging and India BioImaging, a Global BioImaging partner organization in India. The course will be hosted at IISER Pune research institute. The course will feature an overarching topic of image data focusing on image analysis and data management. The image analysis component will include theoretical and practical sessions over the duration of three days in fundamentals of image analysis with an emphasis in Python programming. The data management component will focus on OMERO client-server software platform for visualizing, managing, and annotating scientific image data over the duration of two days. The course will provide opportunities for the participants and the faculty to network with each other, strengthening the imaging community in India and beyond.*

When: *16-20 June 2025 (5 full days)*

Where: *Pune, India*

Venue: *IISER Pune (opens in Google Maps)*

Information pack: *available here*

Monday, 16th of June

8:45 - 9:00	**Registration at IISER Pune**
9:00 - 9:15	**Welcome by the host and an overview of India BioImaging**[1] *Richa Rikhy/Aurnab Ghose/Santosh Podder (India BioImaging)*
9:15 - 9:30	**Overview Global BioImaging**[2]**: open, international network of imaging infrastructures and communities** *Gleb Grebnev (Global BioImaging, European Molecular Biology Laboratory)*
9:30 - 10:30	**Data analysis in imaging core facilities** *Cameron Nowell (Monash University, Australia)*
10:30 - 11:00	**Coffee break**
11:00 - 13:00	**General introduction to bioimage analysis** *Antoine Ruzette (Harvard University, United States)* *Ranit Karmakar (Harvard University, United States)*
13:00 - 14:00	**Networking lunch**
14:00 - 15:30	**Python programming (installation, environment, jupyter, variables, types & data structures)** *Antoine Ruzette (Harvard University, United States)* *Ranit Karmakar (Harvard University, United States)*
15:30 - 15:45	**Coffee break**
15:45 - 17:15	**Python programming (conditions, loops & functions)** *Antoine Ruzette (Harvard University, United States)* *Ranit Karmakar (Harvard University, United States)*
17:15 - 17:30	**Wrap up of the first day**

[1] https://microscopy.iiserpune.co.in/about-3-1
[2] https://globalbioimaging.org/

Tuesday, 17th of June

9:00 - 10:30 **Image processing with Python (Session #1)**

Antoine Ruzette (Harvard University, United States)
Ranit Karmakar (Harvard University, United States)

10:30 - 11:00 **Coffee break**

11:00 - 13:00 **Image processing with Python (Session #2)**

Antoine Ruzette (Harvard University, United States)
Ranit Karmakar (Harvard University, United States)

13:00 - 14:00 **Networking lunch**

14:00 - 15:30 **Introduction to Napari[3]**

Antoine Ruzette (Harvard University, United States)
Ranit Karmakar (Harvard University, United States)

15:30 - 15:45 **Coffee break**

15:45 - 17:15 **Image segmentation using Gauss-Otsu thresholding and watershed-based methods.**

Antoine Ruzette (Harvard University, United States)
Ranit Karmakar (Harvard University, United States)

17:15 - 17:30 **Wrap up of the second day**

17:30 **Group photo**

All participants

[3] https://napari.org/stable/

Wednesday, 18th of June

9:00 - 10:30 **Image segmentation with deep learning (Cellpose, StarDist – object-based approaches)**

Antoine Ruzette (Harvard University, United States)
Ranit Karmakar (Harvard University, United States)

10:30 - 11:00 **Coffee break**

11:00 - 12:00 **Quality control of segmentation results**

Ranit Karmakar (Harvard University, United States)

12:00 - 13:00 **Feature extraction (intensity, morphological and spatial features)**

Antoine Ruzette (Harvard University, United States)
Ranit Karmakar (Harvard University, United States)

13:00 - 14:00 **Networking lunch**

14:00 - 15:45 **Building bioimage analysis workflows (ZeroCostDL, Bioimage Zoo)**

Antoine Ruzette (Harvard University, United States)
Ranit Karmakar (Harvard University, United States)

15:45 - 16:00 **Coffee break**

16:00 - 17:00 **Image data management workflows at Institute for Molecular Bioscience, Australia**

Nicholas Condon (Institute for Molecular Bioscience, The University of Queensland, Australia)

Thursday, 19th of June

9:00 - 10:30 **OMERO[4] installation and configuration (Session #1)**

Jean-Marie Burel (University of Dundee, United Kingdom)
Petr Walczysko (University of Dundee, United Kingdom)

10:30 - 11:00 **Coffee break**

11:00 - 12:30 **OMERO installation and configuration (Session #2)**

Jean-Marie Burel (University of Dundee, United Kingdom)
Petr Walczysko (University of Dundee, United Kingdom)

13:00 - 14:00 **Networking lunch**

13:30 - 15:00 **OMERO installation and configuration workshop (Session #3)**

Jean-Marie Burel (University of Dundee, United Kingdom)
Petr Walczysko (University of Dundee, United Kingdom)

15:00 - 15:30 **Coffee break**

15:30 - 17:00 **OMERO imaging workflows (Session #1)**

Jean-Marie Burel (University of Dundee, United Kingdom)
Petr Walczysko (University of Dundee, United Kingdom)

[4] https://www.openmicroscopy.org/omero/

Friday, 20th of June

9:00 - 10:30 **OMERO[5] imaging workflows (Session #2)**

Jean-Marie Burel (University of Dundee, United Kingdom)
Petr Walczysko (University of Dundee, United Kingdom)

10:30 - 11:00 **Coffee break**

11:00 - 12:30 **OMERO imaging workflows (Session #3)**

Jean-Marie Burel (University of Dundee, United Kingdom)
Petr Walczysko (University of Dundee, United Kingdom)

13:00 - 14:00 **Networking lunch**

13:30 - 15:00 **OMERO imaging workflows (Session #4)**

Jean-Marie Burel (University of Dundee, United Kingdom)
Petr Walczysko (University of Dundee, United Kingdom)

15:00 - 15:30 **Coffee break**

15:30 - 17:00 **Workshop on advanced image analysis with OMERO**

Jean-Marie Burel (University of Dundee, United Kingdom)
Petr Walczysko (University of Dundee, United Kingdom)

[5] https://www.openmicroscopy.org/omero/