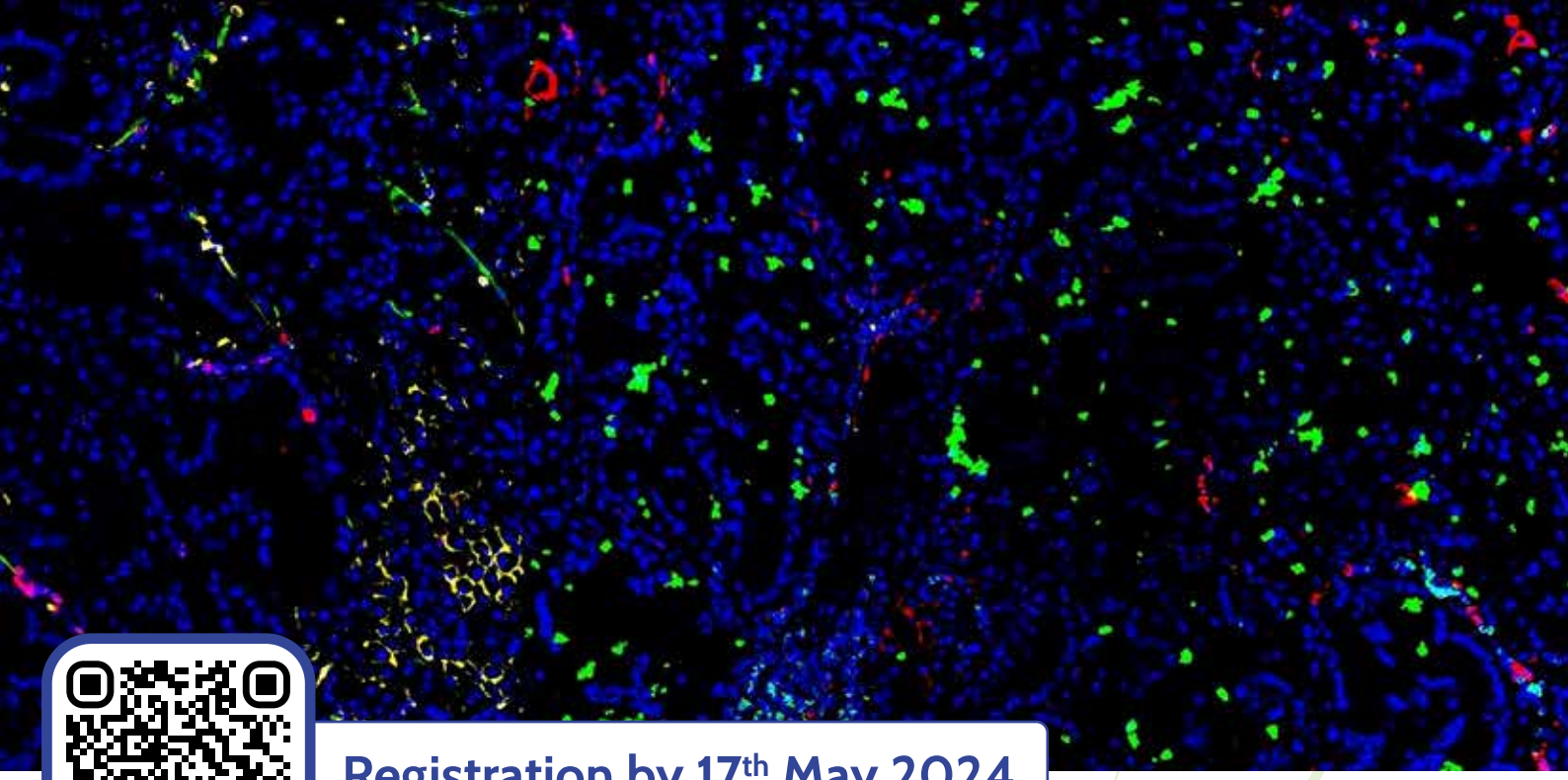

Scan or click

Registration by 17th May 2024

17th-21st June 2024

University of Milano-Bicocca (IT)

Advanced Training

The power of advanced multiplexed imaging: cost-effective strategies for benchtop spatial biology

practical course

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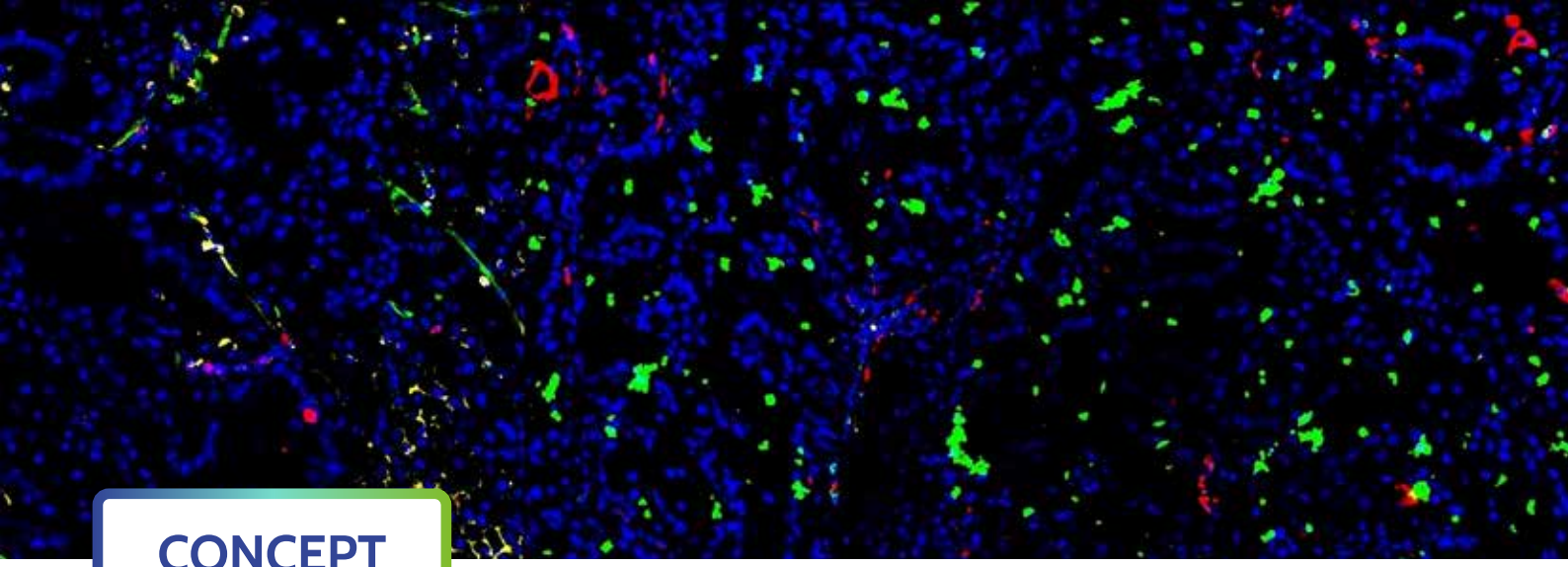

CONCEPT

COURSE OVERVIEW

The primary objective of this course is to ensure that each participant, at the end of the training experience, **acquires the critical competence** and necessary **independence** to apply the two main multiparametric immunofluorescence techniques proposed, namely **Iterative Bleaching EXtends multiplexity (IBEX)** and **Multiple Iterative Labeling by Antibody Neodeposition (MILAN)**, dedicated respectively to the analysis of biological samples from murine and human histological sections.

Particular attention will be devoted to the acquisition of a **complete mastery** of both methodologies, in order to enable students to use these approaches with **confidence** and **precision**. Theoretical and, above all, practical insights will be detailed and enriched by **laboratory sessions**, enabling participants to develop **operational and manual skills** in the use of instruments and the accurate execution of techniques. The acquired skills will enable the individual participant to carry out the methodologies **autonomously**, developing a **high critical sense** and **problem-solving ability** to ensure the reproducibility of these complex methodologies even in contexts and fields of investigation different from those presented in the course. In addition, a key element of the training programme will be to guarantee access to **advanced image analysis methodologies**, thus enabling course participants to independently manage all stages of the multi-parametric image acquisition and analysis process.

REQUIREMENTS AND TARGET AUDIENCE

The proposed course is intended for **University graduates**, **PhD students** and **post-doctoral researchers** working in the fields of biology and medicine, from all regions of Italy, who wish to learn more about advanced multiplexed imaging. In order to ensure an optimal learning experience and for logistical reasons related to the use of specialised scientific instrumentation, the **maximum number** of participants will be **limited to 16**.

To this end, a careful selection will be made in order to ensure that the teaching provided has the greatest possible impact. In order to take part in the course, in addition to a university degree, a **motivational letter** will be required, which highlights the link between the candidate's field of research and the course content.

PRE-VALIDATED ANTIBODY PANELS

In this practical course, depending on the student's needs, on the type of tissue and cell population, *ad-hoc* antibody panels will be provided to stain for **B cells**, **T cells** and **macrophages**.

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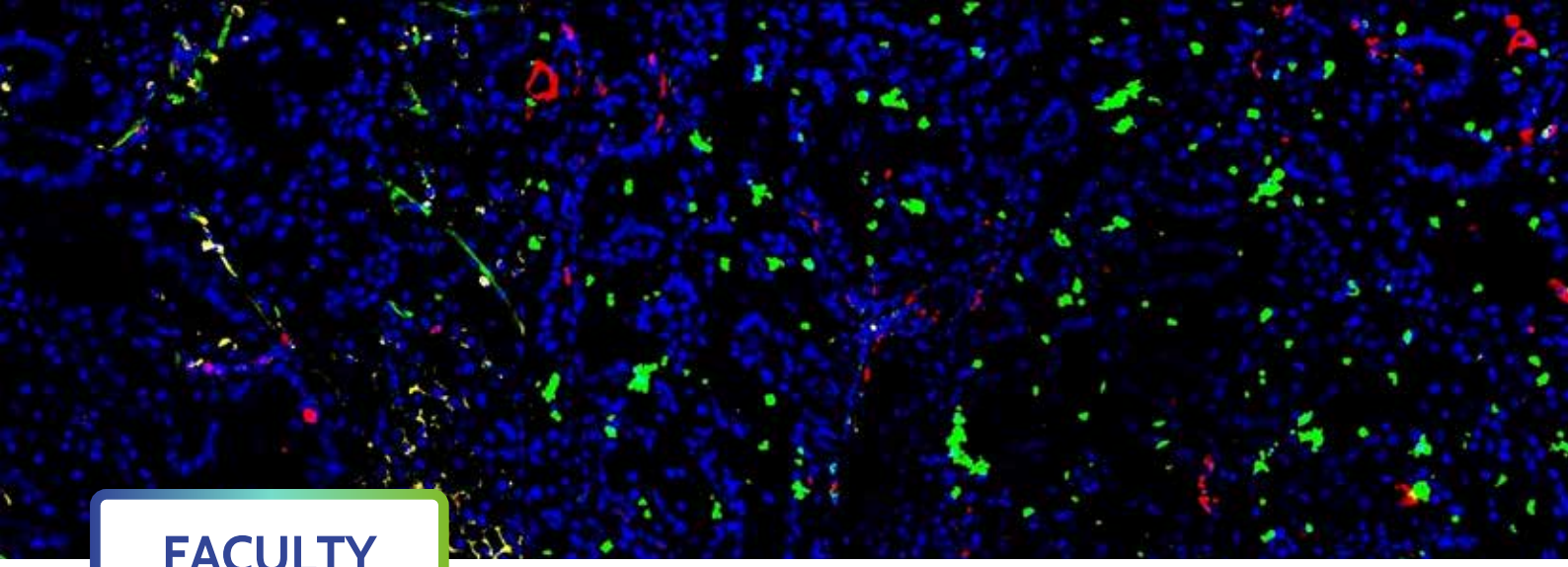


FACULTY

SCIENTIFIC ORGANIZERS

FRANCESCA GRANUCCI
(Head, Department of Biotechnology and Biosciences, UniMiB; Full Professor of General Pathology)

LAURA MARONGIU
(PhD, Assistant professor of General Pathology, UniMiB, Milan, Italy)

METELLO ENZO INNOCENTI
(PhD, Assistant professor of Biochemistry, UniMiB, Milan, Italy)

GIULIA STUCCHI
(Junior Post-Doc, UniMiB, Milan, Italy)

GIUSEPPE ROCCA
(III year PhD Student, Dimet Program, UniMiB, Milan, Italy)

MARCO GALLI
(Research Fellow, UniMiB, Milan, Italy)

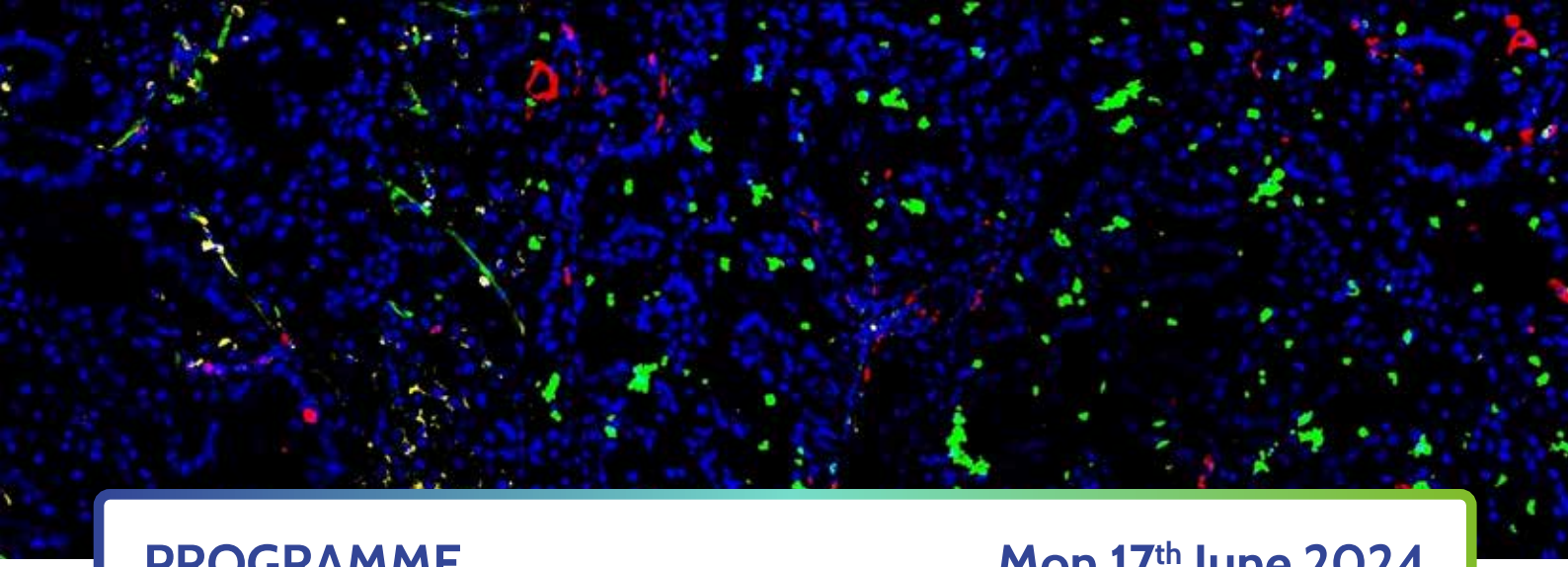
STEFANO COZZI
(PhD Candidate, UniMiB, Milan, Italy)

ANNA CELANT
(PhD Candidate, UniMiB, Milan, Italy)

INVITED SPEAKERS

COLIN CHU
Wellcome Trust Clinical Research Career Development Fellow at University College London, Institute of Ophtalmology, United Kingdom

LAURA SIRONI
Associate Professor in Applied Physics
Physics Department "Giuseppe Occhialini", UniMiB, Milan, Italy



PROGRAMME

Mon 17th June 2024

8:30 - 9:00 **REGISTRATION**

9:00 - 9:15 Greetings and Welcome to UniMiB - Room U3-10
prof. Francesca Granucci, Head of Department of Biotechnology and Biosciences

9:15 - 10:15 Lecture: Optic Microscopy and Image Acquisition
prof. Laura Sironi, Department of Physics "Giuseppe Occhialini", Room U3-10

10:15 - 10:45 Sponsor Talks - Room U3-10
Thermo Fisher Scientific, Cyanagen

10:45 - 11:00 Coffee Break

11:00 - 12:20 Lecture: Choice of Cyclic Immunofluorescence Technique - Room U3-10

12:20 - 13:00 Sponsor Talks - Room U3-10
Biolegend, Navinci

13:00 - 14:00 Lunch Break

14:00 - 16:00 Lecture: Sample Preparation and Processing - Room U3-10

16:00 - 18:00 Start of Practical session - lab. U3 1011-1013-1015
Group I: MILAN - Deparaffinization of sample and antigen retrieval
Group II: IBEX - Tissue sectioning with cryostat

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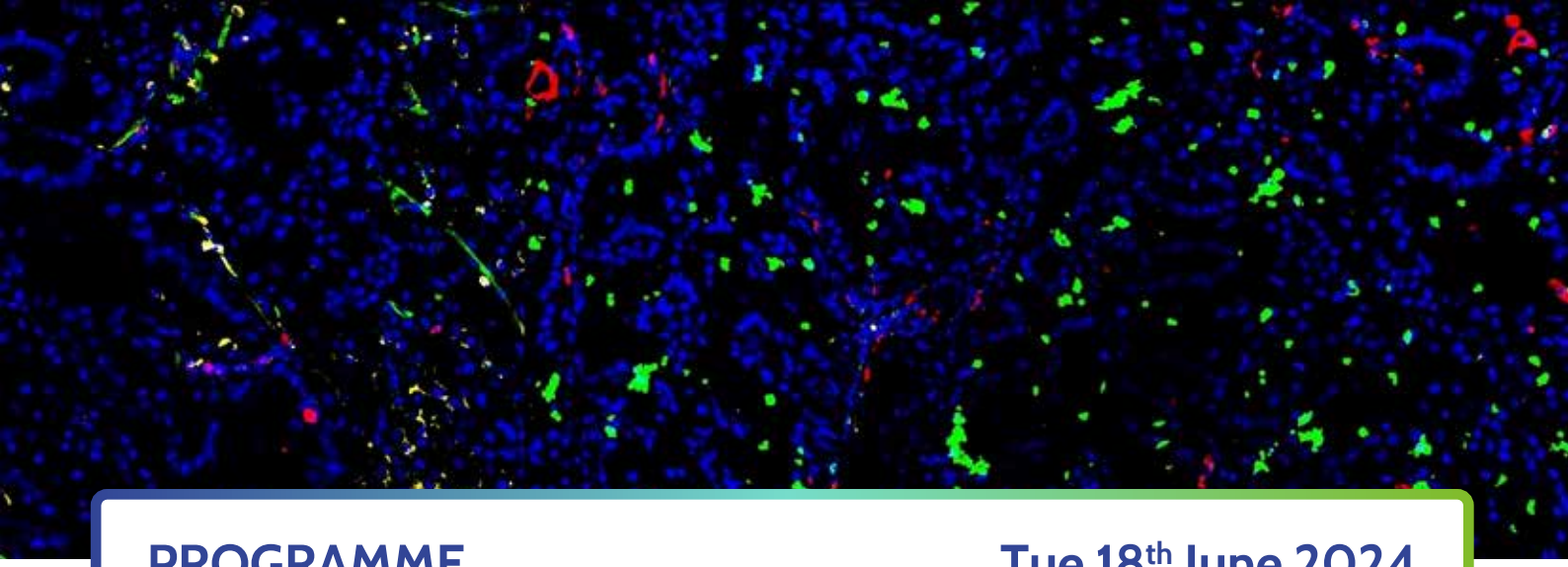


PROGRAMME

Tue 18th June 2024

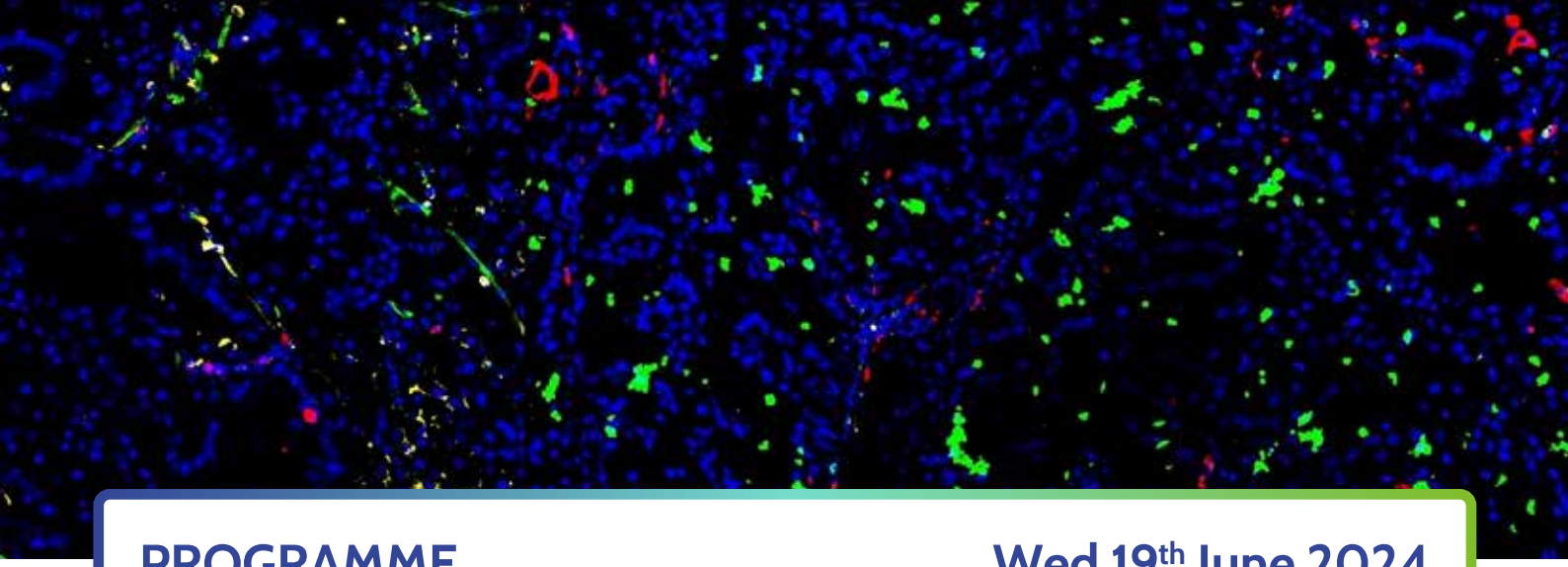
9:00 - 10:30 Practical session - lab. U3 1011-1013-1015
Group I: MILAN - Secondary Antibodies and Slide Acquisition
Group II: IBEX - Slide Acquisition and Bleaching

10:30 - 10:45 Coffee Break

10:45 - 13:00 Practical session - lab. U3 1011-1013-1015
Group I: MILAN - Secondary Antibodies and Slide Acquisition
Group II: IBEX - Slide Acquisition and Bleaching

13:00 - 14:00 Lunch Break

14:00 - 18:00 Practical session - lab. U3 1011-1013-1015
Group I: MILAN - Slide Stripping and Antibody Neodeposition
Group II: IBEX - Slide Acquisition & MILAN - Deparaffinization of sample and antigen retrieval



PROGRAMME

Wed 19th June 2024

9:00 - 10:30 Practical session - lab. U3 1011-1013-1015
Group I: MILAN - Secondary Antibodies and Slide Acquisition
Group II: MILAN - Secondary Antibodies and Slide Acquisition

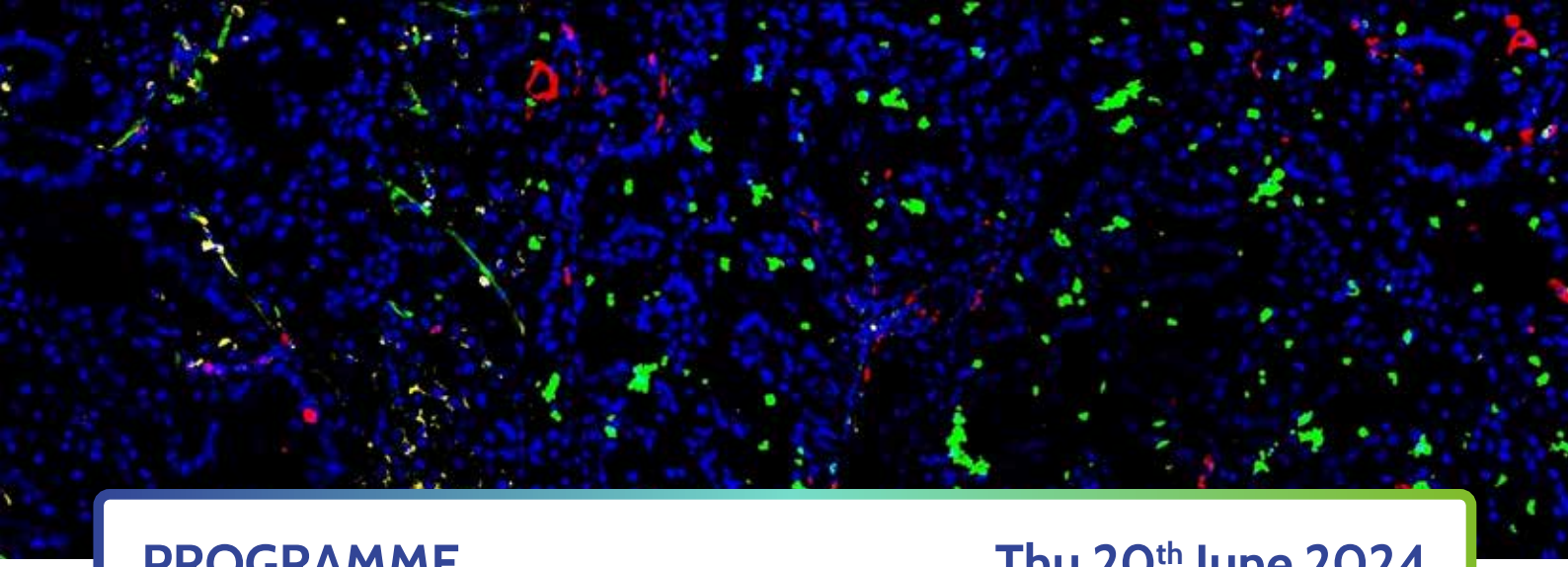
10:30 - 10:45 Coffee Break

10:45 - 13:00 Practical session - lab. U3 1011-1013-1015
Group I: MILAN - Secondary Antibodies and Slide Acquisition
Group II: MILAN - Secondary Antibodies and Slide Acquisition

13:00 - 14:00 Lunch Break

14:00 - 16:00 **Scientific Seminar - Room U3-10**
Dr. Colin Chu, Institute of Ophtalmology, University College London, UK
Co-Author of IBEX technique

14:00 - 18:00 Practical session - lab. U3 1011-1013-1015
Group I: IBEX - Tissue sectioning with cryostat
Group II: MILAN - Stripping and Antibody Neodeposition



PROGRAMME — Thu 20th June 2024

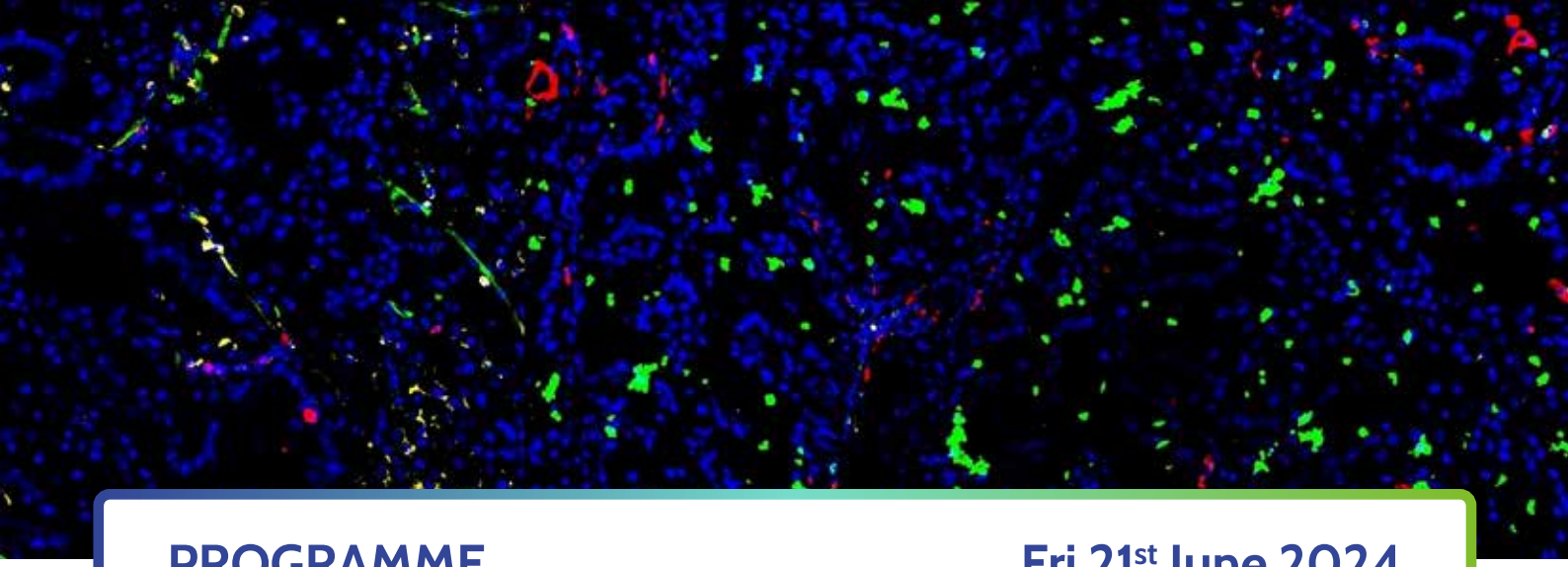
9:00 - 10:30 Practical session - lab. U3 1011-1013-1015
Group I: IBEX- Slide Acquisition and Bleaching
Group II: MILAN - Secondary Antibodies and Slide Acquisition

10:30 - 10:45 Coffee Break

10:30 - 13:00 Practical session - lab. U3 1011-1013-1015
Group I: IBEX- Slide Acquisition and Bleaching
Group II: MILAN - Secondary Antibodies and Slide Acquisition

13:00 - 14:00 Lunch Break

14:00 - 18:00 Practical session - lab. U3 1011-1013-1015
Group I: IBEX - Slide Acquisition
Group II: MILAN - Slide Acquisition



PROGRAMME

Fri 21st June 2024

9:00 - 9:30 Technical Talk - lab. U4 4A1 (P-1)
Leica, AIVIA Software

9:30 - 10:30 Image Analysis - lab. U4 4A1 (P-1)
Registration and Alignment - AIVIA

10:30 - 10:45 Coffee Break

10:45 - 13:00 Image Analysis - lab. U4 4A1 (P-1)
Nuclei Detection and Cell Segmentation - AIVIA

13:00 - 14:00 Lunch Break

14:00 - 15:45 Image Analysis - lab. U4 4A1 (P-1)
Population Identification - AIVIA

15:45 - 16:00 Coffee Break

16:00 - 18:00 Image Analysis - lab. U4 4A1 (P-1)
Spatial Analyses - AIVIA

20:00 - 23:00 **Social Dinner**