

Unravelling the Complexity of Biological Systems by Electron Microscopy

Lake Como School of Advanced Studies, 2-6 May 2022

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Thanks to the exceptional perspectives of Electron Microscopy an increasing number of molecular events are being positioned and understood within their detailed cellular context. Additionally, the possibility to investigate the molecular aspects of living matter at high resolution has recently come into reach thanks to Cryo-electron Microscopy.

This Advanced Course addresses early stage researchers and young scientists, exposing them the most advanced ultrastructural methods and techniques applied to the different branches of life sciences. The Course final aim is to advance the participants' understanding on the potentials of Electron Microscopy as a new essential tool for their research.

Topics

- Unravelling the complexity of biological systems by electron microscopy
- Integrating structure and function: Correlative Microscopy in cell biology studies
- Cryo-EM and structural cell biology
- Tomography and Volume electron microscopy to explore tissue architecture

LAKE COMO SCHOOL OF ADVANCED STUDIES

UNRAVELLING THE COMPLEXITY OF BIOLOGICAL SYSTEMS BY ELECTRON MICROSCOPY

2-6 May 2022

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Topics	Speakers
<i>Unravelling the complexity of biological systems by electron microscopy</i> <i>Integrating structure and function: Correlative Microscopy in cell biology studies</i> <i>Cryo-EM and structural cell biology</i> <i>Tomography and Volume electron microscopy to explore tissue architecture</i>	Galina Bezruzenko (Campus IOM-ICFO, I) Pedro Machado (King's College London, UK) Jemima Burden (MRC-LMCC, UK) Giulia Mizzon (University of Heidelberg, D) Ruben Bosnaidio (Georg-August Universität, D) Rob Parton (University of Queensland, AU) Lucy Collinson (The Francis Crick Institute, UK) Gola Pignoli (Human Technopole, I) Matteo Ferroni (Università di Brescia, I) Anna Sartori (Institut Pasteur – Paris, F) Christel Genoud (UNIL – Lausanne, CH) Tom Sharp (UWMC, Leiden, NL) Helmut Gruegi (DIATOME, CH) Nico Sommerled (Radboudumc, NL) Paolo Ronchi – EMBL-Heidelberg, D Anneke Kiemer (VIB, Ghent, B) Carlo Tacchetti (Università Vita Salute San Raffaele, I) Paul Verkade – University of Bristol, UK

For Applications and further details: <https://achs.lakecomoschool.org> **REGISTRATION DEADLINE: 15 April 2022**

The Organiser

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Organisers

- Elena Donetti, Maura Francolini, Nadia Santo – Università degli Studi di Milano, I
- Andrea Raimondi – Ospedale San Raffaele , I
- Paolo Ronchi – EMBL-Heidelberg, D
- Paul Verkade – University of Bristol, UK



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Speakers

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- Jemima Burden (MRC-LMCCB, UK)
- Ruben Busnadio (Georg-August Universitat, D)
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Programme

click on the image to download the pdf of the programme

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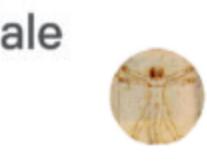


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SIAI Società Italiana di Anatomia e Istologia



SISM
Italian Society for Microscopical Sciences



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DIPARTIMENTO DI BIOTECNOLOGIE MEDICHE E MEDICINA TRASLAZIONALE



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2021

About the course

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Topics

Unravelling the complexity of biological systems by transmission electron microscopy

Integrating structure and function
Correlative Microscopy in cell biology studies

The cryo-EM resolution revolution

Tomography and Volume electron microscopy to unravel tissue architecture

Nanotechnology and other potential EM applications



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Speakers 2021

- Francesca Coscia** (MRC Cambridge, UK and Human Technopole – Milano, IT)
Edoardo D'Imprima (EMBL European Molecular Biology Laboratory – Heidelberg, DE)
Mauro Gemmi (IIT – Pisa, IT)
Christel Genoud (UNIL – Lausanne, CH)
Graham Knott (EPFL – Lausanne, CH)
Roberto Marotta (IIT – Genova, IT)
Gaia Pigino (MPI-CPG – Dresden, DE and Human Technopole – Milano, IT)
Paolo Ronchi (EMBL European Molecular Biology Laboratory – Heidelberg, DE)
Jurgen Plitzko (MPIB Max Planck Institute of Biochemistry – Martinsried, DE)
Roman Polishuchk (TIGEM – Napoli, IT)
Paul Verkade (University of Bristol, UK)



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Programme 2021

Programme

Day 1 (19 April 2021)

Advanced electron microscopy techniques: correlative and 3DEM (I) (14:00 – 15:45):

- Paul Verkade: *An introduction to Correlative Light Electron Microscopy*
- Roman Polishuck: *Use of Targeted Labelling in Pre-embedding CLEM*
- Christel Genoud: *The benefits and challenges offered by visualization of large volume with SEM Light Electron Microscopy*

Virtual Coffee break and A virtual tour at **NOLIMITS** (with Prof. Alex Costa, Facility Scientific Director of NOLIMITS) and **CryoEM-lab** – Two of the technological platforms of Università degli Studi di Milano (15:45 – 16:15)

Advanced electron microscopy techniques: correlative and 3DEM (II) (16:15 – 18:00): ge volume with SEM

- Graham Knott: *Correlating light and scanning electron microscopy to study brain connectivity*
- Paolo Ronchi: *Fluorescence-based 3D targeting of FIB-SEM acquisition of small volumes in large samples*
- Gaia Pigino: *Towards a mechanistic understanding of cellular processes by cryoEMand CLEM*

Day 2 (20 April 2021)

CryoEM (14:00 – 15:45):

- Jurgen Plitzko: *Behind the scenes of cryo-electron tomography or how can structural biology be carried out in situ?*
- Francesca Coscia: *The structure of human thyroglobulin*
- Edoardo D'Imprima: *Continuum resolution: from isolated protein complexes to organoids*

Virtual Coffee break / Delmic + ZEISS+ FEI (15:45 – 16:30)

Nanotechnology (16:30 – 18:00):

- Mauro Gemmi: *3D electron diffraction: the nanocrystallography revolution. Applications to pharmaceutics and macromolecules*
- Roberto Marotta: *The transmission electron microscope as a key tool in nanobiotechnology*

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Social Events

Tuesday, May 3rd

7.00 p.m. String concert

