

CRYO-ELECTRON MICROSCOPY IN STRUCTURAL BIOLOGY:

paving the way towards precision biomedicine and biotechnology

A conference in memory of Emilia Chiancone

10th October 2019

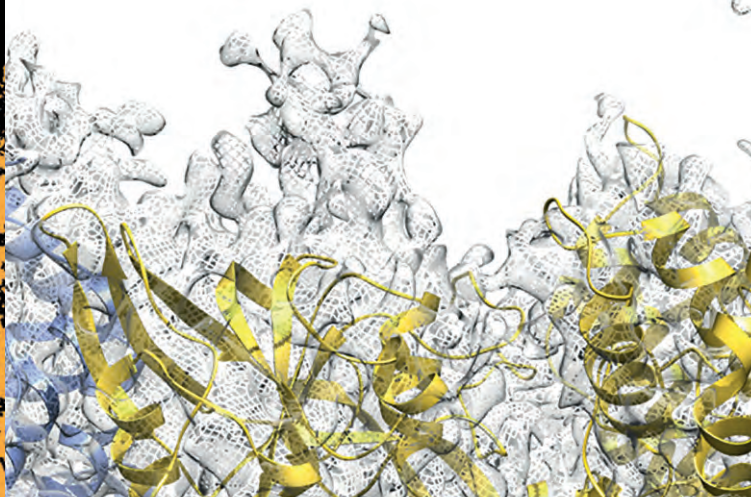
Sapienza University of Rome, Sala Odeion

11th October 2019

CNR, Sala Convegni

Cryo-electron microscopy is revolutionizing the understanding of physiology and pathology and it will allow us to design therapies with an unprecedented insight of biological targets.

We wish to honor the memory of Prof. Emilia Chiancone, who championed an integrative approach to biomedicine through excellent biochemistry and integrative structural biology in a synergy between Academia and CNR.



SAPIENZA
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DAY 1

October 10th, 2019

Sapienza University of Rome, Sala Odeion

9.30 - 10.00 OPENING CEREMONY

Prof. Eugenio Gaudio · Rector of Sapienza University of Rome

Prof. Maurizio Brunori · Accademia Nazionale dei Lincei and Sapienza Emeritus Professor

Session: CryoEM and biomedicine Part I

Chair Dr. Patrizia Lavia · IBPM-CNR, Rome - Italy

10.00 - 10.30

Prof. Ben F. Luisi · Dept. of Biochemistry · Cambridge University (Cambridge, UK)

Structure and Mechanism of Bacterial Multi-Drug Efflux Pumps - The EMBO Keynote Lecture

10.30 - 11.00 · Coffee Break

11.00 - 11.30

Prof. Daniela Rhodes · Inst. of Structural Biology · Nanyang Technological University (Singapore)

Telomere Structure: A Combined EM Approach

11.30 - 12.00

Dr. Giovanna Scapin · Merck (Kenilworth, NJ, USA)

Insights into the Insulin Receptor Activation Mechanism from Single Particle CryoEM Analysis

12.00 - 12.30

Prof. Martino Bolognesi · Dip. di Bioscienze · Università di Milano (Milan, Italy)

Insight into Casg Allosteric Inhibition by the anti-CRISPR Protein AcrIIA6

12.30 - 13.30 · Lunch Break

Session: CryoEM and biomedicine Part II

Chair Dr. Andrea Ilari · IBPM-CNR, Rome - Italy

13.30 - 14.00

Prof. Filippo Mancía · Dept. of Physiology and Cellular Biophysics · Columbia University (NYC, USA)

Membrane Protein Structural Biology with a Focus on Infectious Diseases

14.00 - 14.30

Prof. Beatrice Vallone · Dip. di Scienze Biochimiche · Sapienza Università di Roma (Rome, Italy)

The Ferritin-CD71 Complex Maps Crucial Sites for Cell Entry

14.30 - 15.00

Prof. Alessandro Vannini · The Institute of Cancer Research (London, UK)

Unveiling RNA Polymerase III (Extra)Transcriptional Complexes with EM

15.00 - 15.30 · Coffee Break

Session: CryoEM sheds light on dynamical processes Part I

Chair Prof. Maurizio Brunori · Accademia nazionale dei Lincei and Sapienza Emeritus Professor, Rome - Italy

15.30 - 16.00

Dr. Max Wilkinson · Lab. of Molecular Biology of the Medical Research Council (Cambridge, UK)

How the Spliceosome Removes Introns from mRNA Precursors

16.00 - 16.30

Prof. Gebhard Schertler · Dept. of Biology and Chemistry · Paul Scherrer Institute (Villigen, CH)

Cryo-EM Structure of the Light-Sensitive GPCR Rhodopsin in Complex with Heterotrimeric Gi

16.30 - 17.00

Prof. Giuseppe Zanotti · Dip. di Scienze Biomediche · Università degli Studi di Padova (Padua, Italy)

Nearly Atomic CryoEM Structure of a Flexible Filamentous Virus

DAY 2

October 11th, 2019

CNR, Sala Convegna

9.30 - 10.00 **Welcome by the CNR president Prof. Massimo Inguscio**
Eulogy of Prof. Emilia Chiancone by Prof. Alberto Boffi
Director of the Dip. di Scienze Biochimiche · Sapienza Università di Roma (Rome, Italy)

Session: CryoEM sheds light on dynamical processes Part II

Chair **Dr. Alberto Luini** · IBP-CNR, Naples - Italy

10.00 - 10.30 **Prof. Jürgen M. Plitzko** · Electron Microscopy Group · Max Planck Institute for Biochemistry (Munich, Germany)
In Situ Structural Biology – Cryo-Electron Tomography of Cells and Tissue at Molecular Detail

10.30 - 11.00 **Dr. Peter Rosenthal** · The Francis Crick Institute (London, UK)
Imaging Viruses and Membrane Events by Cryomicroscopy

11.00 - 11.30 · Coffee Break

11.30 - 12.00 **Prof. Bram J. Koster** · Leiden University Medical Centre (Leiden, The Netherlands).
Multi-Scale Light and Electron Microscopic Imaging in Biomedical Applications from Molecules to Microtissues

12.00 - 12.30 **Prof. Andrea Mattevi** · Dip. di Biologia e Biotecnologie · Università di Pavia (Pavia, Italy)
Structural Mechanisms of Nucleosome Recognition and Demethylation

12.30 - 13.30 · Lunch Break

Session: The methodology and its developments

Chair **Prof. Filippo Mancía** · Columbia University, NYC - USA

13.30 - 14.00 **Prof. Amédée Des Georges** · Structural Biology Initiative · CUNY Advanced Science Research Center (NYC, USA)
Harnessing the Power of Single-Particle Cryo-EM to Study Motion and Allostery in Ion Channels

14.00 - 14.30 **Dr. Edoardo D'Imprima** · Max Planck Institute of Biophysics (Frankfurt, Germany)
Emerging Challenges in High Resolution CryoEM: Interfaces Phenomena and Protein Denaturation

14.30 - 15.30 Talks from
ThermoFisher - Dr. Marc M.H. Storms
JEOL - Dr. Bartosz Marzec
Gatan - Dr. Andreas Kastenmüller

15.30 - 16.00 · Coffee Break

Round table on CryoEM: development of networks and infrastructures

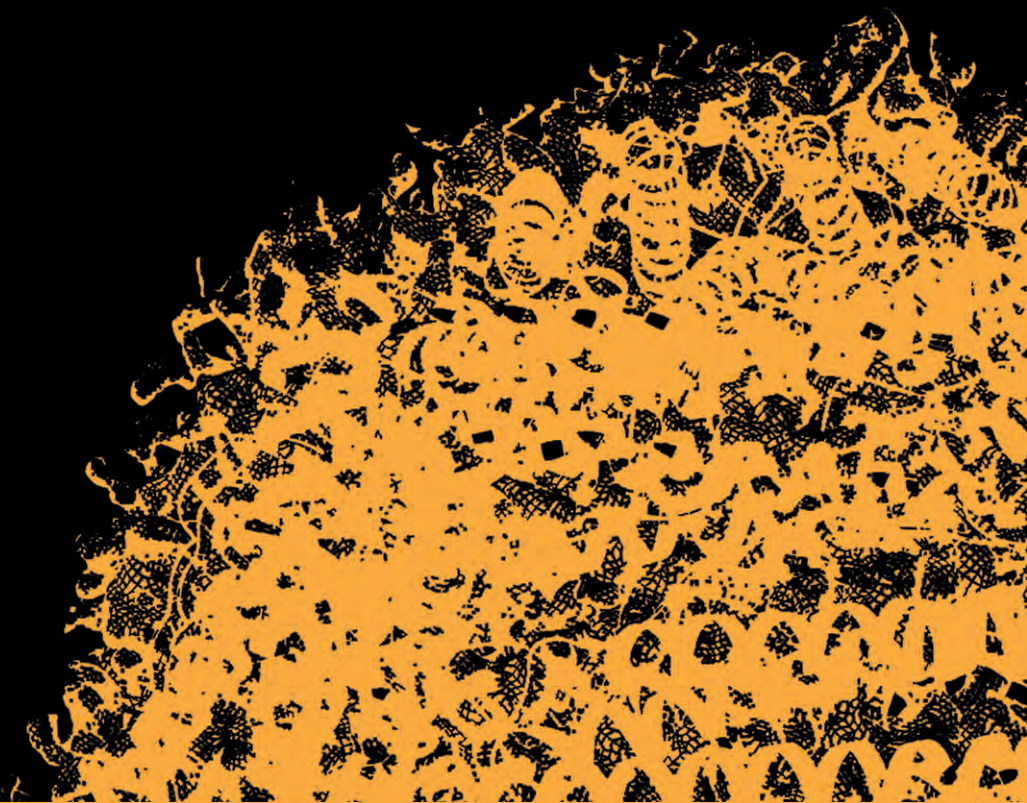
Chair **Dr. Willa Appel** · New York Structural Biology Center NYSBC, NYC - USA

16.00 - 17.30 **Panelists:** Willa Appel, Martino Bolognesi, Giuseppe Cannone, Andrea Mattevi, Daniela Rhodes, Marco Rossi, Giovanna Scapin, Giancarlo Tria, Alessandro Vannini.

The Conference is intended to increase the awareness of the Sapienza, CNR and Italian scientific community of the most recent development in the determination of macromolecular and supramolecular complexes in precision medicine and rational drug design.

The methodology of single particle cryo-electron microscopy is revolutionizing the understanding of physiology and pathology: the determination of the structure of the insulin-insulin receptor complex, of the telomere and of the ryanodine receptor, just to name a few, will allow us to design therapies with an unprecedented insight of their biological targets.

It is of crucial importance that the Italian larger public and scientific community achieve awareness of this scientific revolution, awarded the Nobel Prize in 2017.



Scientific Committee: A. Boffi, B. Botta, L. Federici, A. Ilari, P. Lavia, F. Mancia, A.E. Miele, D. Rhodes, B. Vallone.

Organizing Committee: F. Angelucci, G. Boumis, A. Di Matteo, C. Exertier, L. Federici, A. Fiorillo, G. Giardina, A. Ilari, L.C. Montemiglio, C. Savino, B. Vallone.

Chair: W. Appel, M. Brunori, A. Ilari, F. Mancia, P. Lavia, A. Luini.