

XXV Congresso Nazionale SIBPA 2021



28 June - 1 July 2021

General Program

Monday June 28

10.00-11.00 live session

Welcome Addresses:

Cristiano Viappiani (Università di Parma, Presidente SIBPA)

Chair: Carlo Musio (Istituto di Biofisica, CNR, Trento)

Keynote lecture: **Gerhard Thiel** (TU Darmstadt, Germany); abstract K5.

Ion channel function of E-protein from SARS-CoV2 and its impact on cellular signaling cascades.

11.00-13.00 live session: **Optical and spectroscopic methods applied to biology and medicine**

Chair: Silvia Caponi (Istituto Officina dei Materiali, CNR)

11.00-11.30 Invited lecture: **Dario Polli** (Politecnico di Milano); abstract I6.

Non-linear label-free microscopy of cells and tissues based on broadband coherent raman scattering and artificial intelligence.

11.30-11.45: **Margaux Bouzin** (Università degli Studi di Milano-Bicocca); abstract O24.

Imaging the melanin distribution in murine melanoma biopsies by label-free super-resolution thermography.

11.45-12.00 **Morgana D'Amico** (Università di Catania); abstract O25.

Oncogene-induced alterations of chromatin organization investigated by confocal microscopy.

12.00-12.15 **Martina Alunni Cardinali** (Università di Perugia); abstract O23.

Chemo-mechanical characterization of human bone and cartilage tissues by Brillouin and Raman microspectroscopy in physiological and pathological conditions.

12.15-12.30 **Giulia Pinto** (Università di Genova); abstract O27.

Label-free molecular investigation via spectroscopic ellipsometry: optical detection of a SARS-CoV-2 gene region.

12.30-12.45 **Valeria Libera** (IOM-CNR e Università di Perugia); abstract O26.

A multi-techniques approach to investigate the conformational changes of human telomeric G-quadruplex complexed with ligands.

12.45-13.00. **Stefania Abbruzzetti** (Università di Parma); abstract O22.

A plant gene encoding one- and two-heme hemoglobins with extreme reactivities toward diatomic gaseous ligands.

15.15-16.15 live session: **Systems biophysics/environmental biophysics**

Chair: Vincenzo Martorana (Istituto di Biofisica, CNR, Palermo)

15.15-15.45 Invited lecture: **Chiara Santinelli** (Istituto di Biofisica, CNR, Pisa); abstract I7.

When the biophysics meets the sea: a fascinating trip into marine carbon cycle.

15.45-16.00 **Fabio Lauria** (Istituto di Biofisica, CNR, Trento); abstract O28

Exploring Ribosome heterogeneity at high resolution by next generation sequencing.

16.00-16.15 **Simona Retelletti Brogi** (Istituto di Biofisica, CNR, Pisa); abstract O29

SENSOR project: a fluorescence sensor to detect organic matter contamination in drinking water.

15 minute break

16.30-17:15 live session

Chair: Cristiano Viappiani (Università di Parma)

Keynote lecture: **Martin Chalfie**, 2008 Nobel laureate (Columbia University, New York, USA); abstract K1.

The continuing need for useless information.

Tuesday June 29

9.00-12.10 live session **Molecular Biophysics**

Chairs: Valeria Maria Rondelli (Università di Milano) and Lorenzo Stella (Università di Roma "Tor Vergata")

9.00-10.10 Keynote lecture: **Gaia Pigino** (Human Technopole and MPI Dresden, Germany); abstract K3.
Towards a mechanistic understanding of motile and primary cilia with CLEM and cryo-electron tomography.

10.10-10.25 **Andrea Saponaro** (Università di Milano); abstract O20.
Gating movements and ion permeation in HCN4 pacemaker channel.

10.25-10.40 **Armando Carpaneto** (Università di Genova and Istituto di Biofisica, CNR); abstract O16.
The patch-clamp technique and beyond: characterization of non-electrogenic vacuolar NHX proton/potassium antiporters and inhibition by phosphoinositides.

10.40-10.55 **Rocco Zerlotti** (Università di Parma and Nanion Technologies GmbH); abstract O21.
Oxygen diffusion pathways in mutated forms of a LOV photoreceptor from methylobacterium radiotolerans: a molecular dynamics study.

10.55-11.10 **Matteo de Rosa** (Istituto di Biofisica, CNR, Milano); abstract O17.
The interface between domain G4 and G5 is a novel hotspot of gelsolin instability, toxicity and amyloid propensity.

11.10-11.25 **Maria Grazia Ortore** (Università Politecnica delle Marche); abstract O19.
Dimer-monomer equilibrium of SARS-COV-2 main protease as affected by small molecule inhibitors. A biophysical investigation.

11.25-11.40 **Velia Minicozzi** (Università di Roma "Tor Vergata"); abstract O18.
The odd faces of oligomers: the case of TRAF2.

11.40-12.10 Invited lecture: **Luca Monticelli** (CNRS, University of Lyon, Lyon, FR); abstract I5.
Lipid droplet biogenesis: insight from molecular dynamics simulations.

14.30-16.15 live session: **Applied Biophysics**

Chairs: Antonella Sgarbossa (Istituto Nanoscienze, CNR, Pisa) and Francesco Spinozzi (Università Politecnica delle Marche, Ancona)

14.30-15.00 Invited lecture: **Giovanni Romano** (Università di Firenze); abstract I1.
Innovative light sources in applied biophysics.

15.00-15.15 **Miriam Grava** (Università di Milano); abstract O3.
Internalization of extracellular vesicles in model membranes.

15.15-15.30 **Estella Rao** (Istituto di Biofisica e Cell-Tech HUB, CNR, Palermo); abstract O5.
Extracellular vesicles from microalgae: a renewable and scalable bioprocess.

15.30-15.45 **Samuele Raccosta** (Istituto di Biofisica e Cell-Tech HUB, CNR, Palermo); abstract O4.
Extracellular vesicles from microalgae: biophysical/biochemical characterization.

15.45-16.00 **Ines Delfino** (Università della Toscana); abstract O2.
Raman micro-spectroscopy and multivariate analysis for monitoring X-rays exposed neuroblastoma and human epithelial cells.

16.00-16.15 **Giulia Borile** (Università di Padova); abstract O1.
DIY platform for optogenetic stimulation.

15 minutes break

16.30-17.15 live session

Chair: Alberto Diaspro (Università di Genova and Istituto Italiano di Tecnologia)

Keynote lecture: **Catherine Royer** (Rensselaer Polytechnic Institute, Troy, USA); abstract K4.
Probing the commitment to division in budding yeast by quantitative imaging of the G1/S transcription factors.

Wednesday June 30

9.00-11:25 live session: Cell and tissue Biophysics

Chair: Massimo Vassalli (University of Glasgow, UK)

9.00-9.40 Keynote lecture: **Luciano Conti** (Università di Trento); abstract K2.

In vitro modelling of human neocortex using pluripotent stem cells.

9.40-10.10 Invited lecture: **Sirio Dupont** (Università di Padova); abstract I4.

Unraveling new mechano-transduction pathways linking extracellular matrix mechanics to cell function.

10.10-10.25 **Michael Pusch** (Istituto di Biofisica, CNR, Genova); abstract O14.

Gating defects of endosomal ClC-3 exchangers involved in neurodevelopmental disorders.

10.25-10.40 **Beatrice Senigaglia** (SISSA e Elettra, Trieste); abstract O15.

Extracellular vesicles as modulators of biomechanical properties in target cells.

10.40-10.55 **Paola Brocca** (Università di Milano); abstract O12.

Mucin based hydrogels as model of mucus tissue covering lungs: structure, dynamics and interaction with nanoparticles.

10.55-11.10 **Antonella Battisti** (Istituto di Nanoscienze, CNR, e Scuola Normale Superiore, Pisa); abstract O11.

Endogenous photosensitizing molecules in antibacterial photodynamic therapy.

11:10-11:25 **Perego Eleonora** (Istituto Italiano di Tecnologia, Genova); abstract O13.

Fluorescence fluctuation spectroscopy with a SPAD array detector to unravel molecular processes in living cells.

11.30-14.30 Poster Session

15:00-16.30 SIBPA Social Assembly

Thursday July 1

9.00-11.15 live session: **Biophysics at the nanoscale**

Chair: Paolo Bianchini (Istituto Italiano di Tecnologia, Genova)

9.00-9.30 Invited lecture: **Aleksandra Radenovic** (Laboratory of Nanoscale Biology - EPFL, Lausanne, CH); abstract I3.

From cells to ions.

9:30-09.45 **Ranieri Bizzarri** (Università di Pisa); abstract O7.

Spatio-temporal image correlation spectroscopy and single molecule localization reveal elusive membrane organization of Ace2, the receptor of SARS-Cov-2.

09.45-10.00 **Pietro Delcanale** (Università di Parma); abstract O9.

Aptamers with tunable affinity for single receptor imaging on living cells.

10.00-10.15 **Patrizia Andreozzi** (Università di Firenze); abstract O6.

Novel core-shell polyamine phosphate nanoparticles self-assembled from pegylated poly(allylamine hydrochloride) with low toxicity and increased in vivo circulation time.

10.15-10.30 **Isotta Cainero** (Istituto Italiano di Tecnologia, Genova); abstract O8.

Novel approaches to reconstruct and analyze structured illumination microscopy.

10.30-10.45 **Chiara Peres** (Institute of Biochemistry and Cell Biology, CNR, Monterotondo, RM); abstract O10.

A commercially-derived multimodal microscope for 2P-STED, 2C-2PE, SHG and CARS imaging.

10.45-11.15 Invited lecture: **Silvia Galiani** (Weatherall Institute of Molecular Medicine, University of Oxford, Oxford, UK); abstract I2.

Exploring the distribution, the diffusion and interaction dynamics of the cytosolic peroxisomal import receptor PEX5 via advanced microscopy techniques.

15 minutes break

11.30-13.00 live session: **SIBPA awards ceremony**

Chairs: Enrico Di Cera (Saint Louis University), Settimo Termini (Università di Palermo)

11:30-11:45 - Introduction to the "Marina Diana Mercurio - SIBPA award" 2020

11.45-12.15 - **Nicoletta Berardi** (Università di Firenze); abstract A1.

Environment and brain plasticity.

Chairs: Carlo Musio (Trento), Cristiano Viappiani (Parma)

12.15-12:30 "Antonio Borsellino award" 2020 - **Caterina Ricci** (Università Politecnica delle Marche); abstract A4.

Study of amyloid proteins aggregation process in presence of active biomolecules.

12.30-13.00 "Gianfranco Menestrina award" 2020 -

Mario Marini (Università di Milano Bicocca); abstract A2.

Photo-activated raster scanning thermal imaging at sub-diffraction resolution.

Alessia Pepe (Università Politecnica delle Marche); abstract A3.

G/GMP hydrogels for drug delivery: structure and stability in the presence of intercalating and polymerizing agents.

13:00 - Concluding remarks and farewell