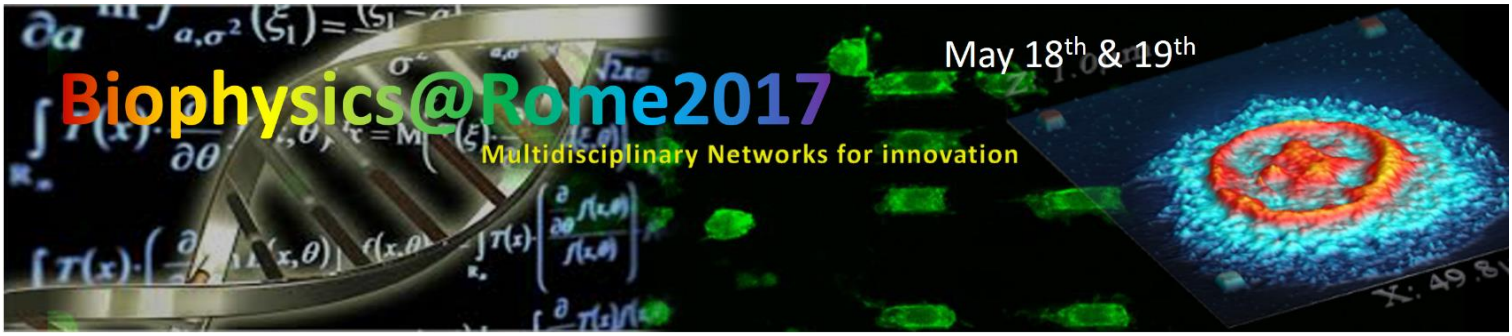

18 May

I SESSION: Biocomplexity

Registration from 9.00

9.30 Institutional Greetings

- Prof. **Massimo Inguscio**, President of CNR
- Dott.ssa **Valentina Mussi**, Tech4Bio Virtual Laboratory
- Dott.ssa **Velia Minicozzi**, Directory Board of the Italian Society of Pure and Applied Biophysics (SIBPA)
- Dott.ssa **Allegra Via**, ELIXIR-IIB Training Coordinator, IBPM-CNR
  Anna Tramontano: passion, drive and bioinformatics

10.00-10.30 Invited, ***Piero Angela***
10.30-11.00 Invited, ***Giorgio Parisi***, Phys. Dept. Univ. Rome "Sapienza"
Complexity in biology from a physicist view point

11.00-11.30 Coffee break
free poster session (posters can be visualized using the touch screen displays)

11.30-12.30 4 Contributions (12+3 min.)

- **M. Chinappi**, Dept Industrial Engineering Univ. Rome Tor Vergata
  Swimming and rafting of E. coli microcolonies at air-liquid interfaces
- **F. Pittorino**, Univ. Parma
  Chaos and correlated avalanches in excitatory neural networks with synaptic plasticity
- **F. Parente**, SAIMLAL Dept. Univ. Rome "Sapienza"
  The role of negative links in brain networks
- **F. Giove**, Centro Fermi, Fondazione Santa Lucia IRCSS
  Whole Brain Mapping of the Hemodynamic Response Function

12.30-14.00 Lunch

II SESSION: Nanomaterials and Nano-biophotonics

14.00-14.30 Invited, ***Miguel A. Correa-Duarte***, Team Nano Tech, Dept. of Phys. Chem., University of Vigo, Spain
The Potential of Hierarchical Plasmonic Nanostructured Materials in Bio-related Applications

14.30-15.30 4 Contributions (12+3 min)

- **F. Bomboi**, ISC-CNR
  Unconventional DNA hydrogels as smart biomaterials

- **A. Convertino**, IMM-CMR
  Gold coated silicon nanowires for near-infrared thermal treatment of cancer cells and in-situ Raman monitoring of the process evolution
- **M. Lambreva**, IC-CNR
  On the interaction of carbon nanotubes and microalgae
- **A. Sinibaldi**, Univ. Rome "Sapienza"
  High-sensitivity screening of soluble ERBB2 in different cell lines using a combined label-free and fluorescence biosensing platform

15.30-16.00 Coffe Break

16.00-16.35 1 Contribution (12+3 min.) + 4 flash presentations (5 min.)

- **R. Carcione**, Dept. Chem. Sci. Tech. Univ. Rome Tor Vergata
  Conducting polymers and composite hydrophilic biopolymers: new approaches to produce biomimetic systems
- **V. Nigro**, ISC-CNR, Phys. Dept. Univ. Rome "Sapienza"
  Flash: Behaviour of multi-responsive soft microgels
- **S. Orlanducci**, Dept. Chem. Sci. Tech. Univ. Rome Tor Vergata
  Flash: Studying the internalization of SWCNTs in microalgal cells: positive side-effects of the charge transfer
- **E. Ciotta**, Dept Industrial Engineering Univ. Rome Tor Vergata
  Flash: Sensitivity to heavy-metal ions of cage-opening fullerene quantum dots
- **S. Sennato**, ISC-CNR
  Flash: Multivariable reentrant condensation of microgel-polyelectrolyte complexes

16.40-18.00 Poster session 1 Nanomaterials and Nano-biophotonics

During the poster session, free draft beer will be available.
The documentary "*Una notte con Adone*" by Antonio Bianconi, Piera Mattei e Luigi Di Gianni will be projected in the conference room. This movie, filmed in 1981, describes the pioneering work of Italian biophysicists working on XANES spectroscopy of proteins at the Frascati synchrotron light source.

19 May

III SESSION: Biomedical applications

9.00-9.30 Invited, ***Valentina C. Dinca***, NILPRP, National Institute for Lasers, Plasma, and Radiation Physics - Magurele, Romania
Bioinstructive multiscaled interfaces engineering by laser direct texturing for tailoring the mesenchymal stem cells response in vitro

9.30-11.00 5 Contributions (12+3 min.) + 2 flash presentations (5 min.)

- **M. Fratini**, NANOTEC-CNR, Fondazione Santa Lucia IRCSS
  X-ray Phase-Contrast multiscale-Tomography for the 3D quantitative investigation of the spinal cord neuronal arrangements for preclinical application
- **L. Maugeri**, Fondazione Santa Lucia IRCSS
  Study of the spinal cord and brainstem functional activation in response to a controlled motor task using fMRI
- **S. Capuani**, ISC-CNR

Assessment of cancellous bone quality through NMR diffusion measurement of water in trabecular bone microstructure and bone marrow fatty acids quantification

- **R. Piacentini**, Inst. Human Phys. Univ. Cattolica
  Reduced gliotransmitter release from astrocytes mediates tau-induced synaptic dysfunction in cultured hippocampal neurons
- **S. Visentin**, Dept. Mol. Biotech. Health Sci. Univ. Torino
  Airway mucus microenvironment modelling to be applied on cystic fibrosis drug discovery
- **M. G. Di Trani**, CNR-ISC, Phys. Dept. Univ. Rome "Sapienza"
  Flash: Non-Gaussian Diffusion NMR discriminates between low- and high-risk prostate cancer
- **A. Caporale**, CNR-ISC, SAIMLAL Dept. Univ. Rome "Sapienza"
  Flash: The anomalous diffusion of biological water provides microstructural and physiological information of brain tissue

11.00-12.00 Coffe Break + Poster session 2 Biomedical Applications and Tissue Engineering

IV SESSION: Molecular Biophysics

12.00-13.10 4 Contributions (12+3 min.) + 2 flash presentations (5 min.)

- **A. Carpaneto**, IBF-CNR
  The plant vacuole as a biological model system to study the functional properties of intracellular channels and transporters
- **S. Signorelli**, Univ. Tuscia, Viterbo
  Characterization of the interaction between the Amphipathic Cell Penetrating Peptide p28 and the Wild Type and Mutated p53 by Raman and Atomic Force Spectroscopies combined with Surface Plasmon Resonance
- **M. C. Castrovilli**, ISM-CNR
  Ion induced fragmentation of 5BrU pure and hydrated clusters: role of the environment in radiosensitising mechanisms and resulting mutagenesis
- **M. Sette**, Dept. Chem. Sci. Tech. Univ. Rome Tor Vergata
  The interaction of H-NS with its target DNA
- **I. D'annessa**, ICRM-CNR
  Flash: Design of allosteric stimulators of the HSP90 ATPase as novel anticancer leads
- **S. Rinaldi**, ICRM-CNR
  Flash: Tuning the molecular mechanism of Hsp70 via a new allosteric network

13.10-14.00 Lunch

V SESSION: Tissue Engineering

14.00-14.30 Invited, ***Giuseppe Remuzzi***, IRCCS-Mario Negri, Bergamo; Dept. Med., Unit of Nephrology and Dialysis, ASST—Papa Giovanni XXIII, Bergamo; Dept. of Biom. and Clin. Scien., Univ. Milano
Can we really create organs in the lab?

14.30-15.30 4 Contributions (12+3 min.)

- **G. Forte**, Center for Transl. Med. (CTM), Intern. CliniC. Res. Center (ICRC), St Anne's Univ. Hospital, Brno Czech Republic, DepT. Biomaterials Sci., Inst. Dentistry, Univ. Turku, Finland
  YAP regulates cell mechanics by controlling cell-matrix interaction strength
- **E. Malucelli**, Dept. Pharm. Biotech. Univ. Bologna
  Ultrastructural study of biomineralization process in human bone marrow mesenchymal stem cells during the osteoblastic differentiation

- **A. Rainer**, Tissue Engineering Lab, Univ. Campus BioMedico Rome
  Engineering functional skeletal muscle networks by microfluidic bioprinting
- **F. Mochi**, Dept Industrial Engineering, INSTM Univ. Rome Tor Vergata
  Simple 3D direct laser writing for tissue engineering

15.30-16.30 Coffe Break + Poster session 3 Computational and Molecular Biophysics

VI SESSION: Computational Biophysics

16.30-17.45 5 Contributions (12+3 min.)

- **L. Guidoni**, Dept. Phys. Chem Sci. Univ. L'Aquila
  Molecular details of the first steps in photosynthesis
- **D. Di Marino**, Dept. Informatics, Inst. Comput. Sci Univ. Svizzera Italiana
  A Comprehensive Description of the Homo and Heterodimerization Mechanism of the Chemokine Receptors CCR5 and CXCR4
- **A. Paladino**, ICRM-CNR
  Differential Modulation of αvβ3 dynamics upon RGD-ligands
- **P. Calligari**, Univ. Padova, Univ. Rome Tor Vergata
  Time-correlated networks of motions in proteins: a basis for spectroscopy-related models of internal dynamics
- **F. Stellato**, Dept. Phys. Univ. Rome Tor Vergata, INFN
  First principle calculation of X-ray absorption spectra

17.45-18.15 Awards and Closing Remarks

POSTER SESSIONS

18 Maggio

Poster session 1 Nanomaterials and Nano-biophotonics

1. **S. Sennato**, CNR-ISC (**flash**)
Multivariable reentrant condensation of microgel-polyelectrolyte complexes

2. **V. Nigro,** University of Rome 'Sapienza'; ISC-CNR (**flash**)
Behaviour of multi-responsive soft microgels

3. **B. Petra Rosi**, CNR-ISC
Study of colloidal suspensions of multi-responsive microgels

4. **M. Daniele**, University of L'Aquila, University of Rome 'Sapienza'
Investigation of gel behavior in FmocF-Fn polipeptides

5. **M. Venanzi**, University of Rome Tor Vergata
Peptide aggregation in 2D: the relevance of peptide secondary structure and dynamics

6. **A. Scipioni**, University of Rome 'Sapienza'
Self-assembling hexapeptide-polymer conjugates to be used as drug carriers

7. **F. Ciranna-M. Picano**, University of Rome 'Sapienza'
Inclusion of antioxidants in mitochondriotropic core-shell drug delivery systems

8. **L. Digiacomo**, University of Rome 'Sapienza'
Protein corona affects cellular uptake and intracellular trafficking of lipid nanoparticles

9. **G. Caracciolo**, University of Rome 'Sapienza'
Image Mean Square Displacement: a powerful tool for the characterization of intracellular dynamics of nanoparticles

10. **S. Palchetti**, University of Rome "Sapienza"
Microfluidic Manufacture of Cationic Lipid/DNA complexes

11. **S. Battista**, University of L'Aquila
Detection of tumours biomarker enzymes by using polydiacetylenic liposomes

12. **M. Ledda**, CNR-IFT
In vitro biocompatibility study of sub-5 nm silica-coated magnetic iron oxide fluorescent nanoparticles for potential biomedical application

13. **L. Burratti**, University of Rome Tor Vergata
Ethanol sensor based on self-assembled polystyrene photonic crystal

14. **S. Orlanducci**, University of Rome Tor Vergata; Institute of Crystallography, National Research Council of Italy, 00015 Monterotondo Scalo (**flash**)
Studying the internalization of SWCNTs in microalgal cells: positive side-effects of the charge transfer

15. **E.Ciotta**, University of Rome Tor Vergata, Rome (**flash**)
Sensitivity to heavy-metal ions of cage-opening fullerene quantum dots

16. **J. Chiarinelli** CNR -SM e università RomaTre, Dipartimento di Scienze
ElectroSpray Ionisation Deposition for biosensor application

19 Maggio

Poster session 2 Biomedical Applications and Tissue Engineering

1. **M. G. Di Trani**, CNR-ISC and University of Rome "Sapienza" (**flash**)
Non-Gaussian Diffusion NMR discriminates between low- and high-risk prostate cancer

2. **A. Caporale**, CNR-ISC (**flash**)
The anomalous diffusion of biological water provides microstructural and physiological information of brain tissue

3. **G. Silvani**, University of Rome 'Sapienza'; CLNS@Sapienza Istituto Italiano di Tecnologia
Cavitation enhanced permeability in a bio-inspired micro device

4. **D. Caprini**, University of Rome 'Sapienza'
Pressure Field Around Bubble Break-Up in a T-Junction microchannel From Experimental Velocity Field

5. **E. Nichelatti**, ENEA
Bragg curve imaging of 6.75 MeV protons with lithium fluoride crystals and fluorescence microscopy

6. **F. Caselli**, University of Rome Tor Vergata
A novel coplanar layout enabling accurate microfluidic impedance cytometry

7. **C. Gramaccioni**, University of Cosenza and CNR-Nanotec c/o University of Rome 'Sapienza'
Nanotomography and X-Ray Fluorescence Microscopy for quantitative Iron concentration map in inflamed cells

8. **E. Minelli**, Università Cattolica del Sacro Cuore
Nano-mechanical characterization of human brain tumor

9. **E. Illiano**, NANOFABER s.r.l
Nanofaber Recombinant E6 oncoproteins of different human papillomaviruses: novel tools for HPV tumor diagnosis

10. **S. Grasso**, UniCampus Biomedico
Biosensors for endogenous lipids

11. **E. Lenzi**, University of Rome Tor Vergata
Principal Component Analysis of Raman spectra of red blood cells to study biochemical signature of ageing process

12. **F. Colasuonno**, University Roma Tre
Use of focused ion beam/scanning electron microscopy (FIB/SEM) to study senescent features of pluripotent stem cells

13. **G. Sacco**, University of Rome 'Sapienza'
Measurement results and improvements on an open EPR system

14. **F. Craciun**, CNR-ISC
Biocompatible flexible piezoceramic thin films for biomedical applications

15. **A. Ordinelli**, University of Teramo - Unit of Basic and Applied Biosciences
Human sperm Interactome network

Poster session 3: Computational and Molecular Biophysics

1. **I. D'Annessa**, CNR-ICRM Istituto Chimica riconoscimento molecolare (**flash**)
Design of allosteric stimulators of the HSP90 ATPase as novel anticancer leads

2. **S. Rinaldi**, CNR-ICRM Istituto Chimica riconoscimento molecolare (**flash**)
Tuning the molecular mechanism of Hsp70 via a new allosteric network

3. **M. Capone**, University of L'Aquila
Characterization of vibrational fingerprints along the Kok-Joliot's cycle by means QM/MM ab-initio molecular dynamics

4. **G. Rogati**, University of L'Aquila
Modeling Ru-based dendrimers: inorganic photosensitizers for artificial photosynthesis

6. **F. Pitari**, University of L'Aquila
Characterization of the Sr(2+) and Cd(2+) -Substituted Oxygen-Evolving Complex of Photosystem II by Quantum Mechanics/Molecular Mechanics Calculations

7. **E. L. Bonome**, University of Rome 'Sapienza', CNR-ISC, University of Rome Tor Vergata
Current-voltage relation and electroosmotic flow in alpha-hemolysin nanopore via all-atom molecular dynamics simulations

8. **F. Cardamone**, University of Rome Tor Vergata
Study of the hSAMHD1 self-assembly process by coarse grained molecular dynamics simulation approach

9. **G. Ripani**, University of Rome Tor Vergata
In silico structural and dynamic study of Laminin111

10. **A. De Marino**, University of Rome Tor Vergata
Optimisation of a bioinformatic pipeline to study microbial communities through 16S amplicons

11. M. **Dilucca**, University of Rome 'Sapienza'
Essentiality, conservation and codon bias in bacterial genes

12. **A. Di Venere-E. Nicolai**, University of Rome Tor Vergata
New insight into the interaction of TRAF2 C-terminal domain with lipid rafts microdomains

13. **G. Ferri**, Nest - Scuola Normale Superiore, Istituto Nanoscienze CNR-NANO (Pisa, Italy)
Probing the dynamic fingerprint of insulin secretory granules in living cells by spatiotemporal fluctuation spectroscopy

14. **M. Carbonaro**, CREA Centro Ricerche per Alimenti e Nutrizione
H-D exchange kinetics in β-lactoglobulin-(-)epicatechin complexes revealed by FTIR spectroscopy and PCA methods.

15. **F. Savini**, University of Rome Tor Vergata
Cell-Density
Dependence of Host-Defense Peptide Activity and Selectivity in the Presence of Host Cells

16. **A. Bortolotti**, University of Rome Tor Vergata
Fluorescence studies of the mechanism of action of host defense peptides