

## Monday 16<sup>th</sup> September

### 1. Nanotechnology for Medicine

*Prof. R. Bartolino and Prof. G. Gigli*

	13:30 - 14:00	Registration
<b>Session I</b> <b>AULA CONVERSI</b>	14:15 - 14:45	Welcome addresses: <b>Prof. P. Mataloni</b> , <i>Department of Physics, Sapienza University, Director</i>  <b>Prof. M. Inguscio</b> , <i>CNR, President</i>
	14:45 - 15:00	<b>Dr. A. Cedola</b> , <i>CNR Nanotec Rome</i>  <i>Introduction and motivation of the workshop</i>
	15:00 - 15:15	<b>Prof. G. Gigli</b> , <i>CNR Nanotec - Università del Salento (Italy)</i>  <i>Precision Medicine @ CNR-NANOTEC</i>
	15:20 - 15:40	<b>Dr. L. Sancey</b> , <i>Institute for Advanced Biosciences, Grenoble (France)</i>  <i>Exploring nanomedicine for cancer theranostic investigations</i>
	15:45 - 16:00	<b>Dr. A. Quarta</b> , <i>CNR Nanotec, Lecce (Italy)</i>  <i>Inorganic nanoparticles in medicine: the nano-bio interface</i>
	16:05 - 16:35	Coffee break
	16:35 - 16:55	<b>Prof. L. Moroni</b> , <i>Maastricht University, MERLN Institute for Technology-Inspired Regenerative Medicine, Maastricht (The Netherlands)</i>  <i>Additive manufacturing or bioprinting? Where materials and biology complexity meet</i>
	17:00 - 17:20	<b>Dr. A. Rainer</b> , <i>Università Campus Bio-Medico di Roma</i>  <i>In vitro platforms for understanding cardiac mechanobiology</i>
	17:25 - 17:40	<b>Dr. B. Cortese</b> , <i>CNR Nanotec, Rome (Italy)</i>  <i>Cellular microenvironment modulates the electrotaxis of glioblastoma cells</i>
	17:45 - 18:00	<b>Question time</b>
	18:05 - 18:20	<b>Dr. R. Angelini</b> , <i>Istituto dei Sistemi Complessi del Consiglio Nazionale delle Ricerche (ISC-CNR), Rome (Italy)</i>  <i>Microgels: From responsive colloids to biomaterials</i>
	18:25 - 18:40	<b>Dr. I. Viola</b> , <i>CNR Nanotec, Rome (Italy)</i>  <i>Advanced technologies for medicine</i>
	19:00 - 21:00	<i>Welcome party on the Terrace</i> <i>A highlight of ATOM, STAR and Tecnomed projects</i>

## Tuesday 17<sup>th</sup> September

### 2. X-Rays and PET for Medicine

*Dr. A. Bravin and Prof. N. Saini*

<b>Session II</b> <b>AULA CONVERSI</b>	09:00 – 09:20	<p><b>Prof. A. Uccelli</b>, Full Professor in Neurology, Scientific Director, Ospedale Policlinico San Martino(IRCCS). Dipartimento di Neuroscienze, Riabilitazione, Oftalmologia, Genetica e Scienze Materno-infantili (DINOEMI) - Università di Genova (Italy)</p> <p><i>Mesenchymal stem cells for the treatment of neurodegenerative diseases</i></p>
	09:20 - 09:40	<p><b>Prof. A. Olivo</b>, Department of Medical Physics and Biomedical Engineering, University College London (United Kingdom)</p> <p><i>Enhanced sensitivity to soft biological tissues through fast and dose-efficient laboratory-based phase contrast CT</i></p>
	09:40 - 10:00	<p><b>Dr. N. Kerlero de Rosbo</b>, University of Genoa (Italy)</p> <p><i>Use of XPCT to study the implication of the gut/brain axis in the pathogenesis of experimental autoimmune encephalomyelitis, murine model for multiple sclerosis</i></p>
	10:00 - 10:20	<b>Question time</b>
	10:20 - 10:50	Coffee break
	10:50 - 11:10	<p><b>Dr. C. Balducci</b>, Istituto Mario Negri IRCCS, Milano (Italy)</p> <p><i><math>\beta</math>-amyloid oligomers, neuroinflammation and the gut microbiota: the multi-factorial nature of Alzheimer's disease</i></p>
	11:10 - 11:30	<p><b>Tomalab</b>, CNR-Nanotec, Rome (Italy)</p> <p><i>X-ray Phase Contrast applied to neurodegenerative diseases</i></p>
	11:30 - 11:45	<b>Question time</b>
	11:45 - 12:05	<p><b>Dr. G. Tromba</b>, Elettra-Synchrotron, Trieste (Italy)</p> <p><i>Synchrotron radiation for biomedical imaging: Status and prospects</i></p>
	12:05 - 12:25	<p><b>Prof. P. Coan</b>, Munich Universitat, Munich (Germany)</p> <p><i>The role of multi-scale phase contrast CT in neuro-imaging and – radiotherapy</i></p>
	12:25 - 12:45	<p><b>Dr. M. Reichardt</b>, Universität Göttingen (Germany)</p> <p><i>X-ray Phase Contrast Tomography of neuronal tissue</i></p>
	12:45 - 13:05	<b>Question time</b>
	13:05 – 13:25	<p><b>Prof. J. Prior</b>, PhD MD, Lausanne University Hospital and University of Lausanne, Lausanne, (Switzerland)</p> <p><i>State of the art digital PET technology and its current clinical applications</i></p>

	13:25 – 13:45	<b>Prof. M. Conti</b> , PET Physics R&D, Siemens Molecular Imaging, Knoxville, Tennessee, USA <i>State of the art of PET technology and current challenges</i>
	13:45 – 14:00	<b>Question time</b>
	14:00 -15:30	<b>Buffet lunch and poster session</b>

<b>3. Magnetic resonance imaging</b> <i>Dr. M. Fratini and Dr. M. Moraschi</i>		
<b>Session III: AULA CONVERSI</b>	15:30 – 15:50	<b>Prof. M. Inglese</b> , DINOGMI, University of Genoa (Italy) <i>Clinical applications of 23Na MRI</i>
	15:50 - 16:10	<b>Dr. C. Voena</b> , INFN -Sezione di Roma (Italy) <i>Development of 19F MRI</i>
	16:10 - 16:25	<b>Question time</b>
	16:25 - 16:40	Coffee break
	16:40 – 17:00	<b>Prof. R. Wise</b> , CUBRIC, Cardiff University (UK) & ITAB, University of Chieti-Pescara (Italy) <i>Multi-parametric MRI of brain physiology: Developing fMRI to quantify brain function</i>
	17:00-17:20	<b>Prof. P. Summers</b> , Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena (Italy) <i>MRI at the service of research and clinical application</i>
	17:20 - 17:35	<b>Question time</b>
	17:35 - 17:50	<b>Dr. F. Giove</b> , Museo storico della fisica e Centro studi e ricerche “Enrico Fermi”, Rome (Italy) <i>Scale-invariant rearrangement of resting state networks in the human brain under sustained stimulation</i>
	17:50 - 18:10	Coffee break
	18:10 - 18:25	<b>Dr. S. Capuani</b> , Istituto dei Sistemi Complessi (ISC), Rome(Italy) <i>Anomalous diffusion by NMR to increase the intrinsic resolution of MRI investigations</i>
	18:25 - 18:45	<b>Prof. O. Grohn</b> , A.I. Virtanen Institute, University of Eastern Finland, Kuopio (Finland) <i>Simultaneous EEG/fMRI and brain stimulation in awake rat - promises, challenges and solutions</i>
	18:45 - 19:00	<b>Prof. G. Iannetti</b> , Center for Life Nano Science, Fondazione Istituto Italiano di Tecnologia (IIT), Rome (Italy); Department of Neuroscience, Physiology and Pharmacology, University College London, (United Kingdom)

		<i>The search for pain biomarkers in the human brain (tentative)</i>
	19:00-19:15	<b>Question time</b>
	21:00	<i>Social dinner</i>

<b>Wednesday 18<sup>th</sup> September</b>		
<b>4. Advanced 2D/3D Techniques for biomedicine</b>		
<i>Dr. A. Cedola and Dr. F. Bardelli</i>		
	09:00 - 09:20	<b>Prof. G. Ruocco</b> , <i>Center for Life Nano Science, Fondazione Istituto Italiano di Tecnologia (IIT); Department of Physics, Sapienza University of Rome (Italy)</i>  <i>From super-resolution to high throughput Brillouin microscopy at CLNS</i>
<b>Session IV AULA CONVERSI</b>	09:25 - 09:45	<b>Dr. A. Sierra Lopez</b> , <i>A.I. Virtanen Institute, University of Eastern Finland, Kuopio (Finland)</i>  <i>Multiscale imaging of the brain</i>
	09:50 - 10:10	<b>Dr. E. Micotti</b> , <i>Istituto di Ricerche Farmacologiche, Istituto Mario Negri IRCCS, Milan (Italy)</i>  <i>High Field MRI in murine models</i>
	10:10 - 10:45	<b>Question time</b>
	10:45 - 11:15	Coffee break
	11:15 - 11:35	<b>Dr. M. Mastrogiacomo</b> , <i>Dipartimento di Medicina Interna e Specialità Mediche (DIMI), University of Genoa, Genoa (Italy)</i>  <i>Inside the bone: Tissue engineering and regenerative medicine applications in orthopedics (tentative)</i>
	11:40 - 12:00	<b>Dr. G. Campi</b> , <i>Institute of Crystallography, CNR, Rome (Italy)</i>  <i>Synchrotron x-ray diffraction imaging of heterogeneous biological matter</i>
	12:00 - 12:20	<b>Question time</b>
	12:20 - 12:40	<b>Zeiss, Italy</b>  <i>Products and novelties</i>
	12:45 - 13:45	Light lunch
	13:50 - 14:10	<b>Imagine Optic</b>  <i>Products and novelties</i>
	14:10 - 14:30	<b>Dr. R. Hlushchuk</b> , <i>Institute of Anatomy, University of Bern (Switzerland)</i>  <i>MicroangiOCT: State-of-the-art ex vivo microvascular imaging</i>

## 5. Theoretical Physics for Bio-Medicine

Dr. I. Bukreeva and Dr. L. Leuzzi

<b>Session V</b> <b>AULA CONVERSI</b>	14:30 - 14:50	<b>Dr. E. Cinquemani</b> , INRIA Grenoble- Rhône Alpes , Grenoble (France) <i>Enhanced production of heterologous proteins by a synthetic microbial consortium: Conditions and tradeoffs</i>
	14:55 - 15:15	<b>Prof. C. Bosia</b> , Politecnico di Torino & IIG <i>Extrinsic microRNA noise as a driver of bimodal gene expression</i>
	15:15 - 15:40	Coffee break
	15:40 - 16:00	<b>Dr. T. Gili</b> , IMT School for Advanced Studies, Lucca (Italy) <i>Functional brain network topology in psychiatric disease</i>
	16:05 - 16:25	<b>Dr. A. De Martino</b> , CNR Nanotec, Rome (Italy) <i>From carbon overflow to the Warburg effect: Insights from mathematical models</i>
	16:30 - 16:50	Question time and Conclusions <b>Dr. A. Bravin</b>