

The ubiquitin-proteasome system in yeast, plant and human. Hypotheses for new anti-cancer therapies

Sala Odeion (Museo dei Gessi)

Sapienza Università di Roma, Piazzale Aldo Moro 5

FEBRUARY 13th, 2017

- 9:30-10:00 Welcome
- 10:00-10:30 Michael Glickman, Haifa University, Israel
Proteasome associated deubiquitination, friend or foe? And the unique fate of Tetra-ubiquitin signals!
- 10:30-11:00 Maria Teresa Petrucci, Dipartimento di Biotecnologie Cellulari ed Ematologia, Sapienza Università di Roma
Multiple myeloma: have proteasome inhibitors changed the prognosis of our patients?
- 11:00-11:30 coffee break
- 11:30-12:00 Claus Schwechheimer, Technical University of Munich, Germany
Protein degradation regulation through neddylation and deneddylation
- 12:00-12:30 Simona Polo, IFOM, The FIRC Institute for Molecular Oncology and DIPO, University of Milan
Targeting HECT-type E3 ligases: catalysis, regulation and inhibitors
- 12:30-13:00 Andrea Graziani, Università Vita e Salute San Raffaele, Milano, Italy
Ghrelin and other novel mechanisms regulating muscle mass and metabolism in muscle wasting: implications for cancer cachexia
- 13:00-14:00 Speakers Lunch
- 14:00-14:30 Mattia Mori, Istituto italiano di Tecnologia, CLNS@Sapienza, Sapienza Università di Roma
in silico identification of inhibitors of the cullin deneddyating enzyme Csn5
- 14:30-15:00 Dieter Wolf, Sanford Burnham Institute, USA and Xiamen University, China
The making and breaking of cullin-RING ubiquitin ligases
- 15:00-15:30 Maurizio Muscaritoli, Dipartimento di Medicina Clinica, Sapienza Università di Roma
TBA
- 15:30-16:00 Round table with other ZOMES IX participants, the local scientific community and other stakeholders in the field
- 16:00-16:15 Closing Remarks
- 20:00 Speakers dinner

Attendance is free. Please register by february 10 at simposioubiquitinaproteasoma17@gmail.com

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SPEAKERS PROFILES

Michael Glickman

CV

Michael Glickman studied chemistry at Hebrew University in Jerusalem, Israel and obtained his PhD degree from the University of California at Berkeley in 1994. From there he went to Harvard Medical School in Boston. In 1999 he became Senior Lecturer (assistant Professor) at the Technion – Institute of Technology in Haifa, Israel, where he has been full professor since 2009. He has been Visiting Scientist/Visiting Professor in the U.S.A. at the National Cancer Institute (NCI) in Bethesda, Maryland and at the University of Maryland as well as in France at the Institute Jacques Monod and the University Paris Diderot in Paris. Professor Michael Glickman of Technion, the Israel Institute of Technology in Haifa, has been named to receive the Friedrich Wilhelm Bessel Research Award of the Alexander von Humboldt Foundation (AvH) for his outstanding research achievements. With the award, Professor Glickman will intensify his long-standing collaboration with the Max Delbrück Center for Molecular Medicine (MDC) Berlin-Buch, and he will also conduct research at the MDC.

Research Interest

Professor Glickman hopes to gain insight into the cellular system that degrades proteins in a controlled manner. This system ensures that superfluous or defective proteins are marked with a molecular tag, the protein ubiquitin, and are disposed of in the cellular shredding machine, the proteasome. The ubiquitin-proteasome system is one of the organism's most complex cellular systems and protects the body against serious diseases. For example, defective proteins that elude this system trigger serious diseases such as Alzheimer's, Parkinson's, Huntington's, cystic fibrosis or diabetes. Dr Glickman's lab is interested in Proteasome structure and function, using yeast as a model system. One active research line is the analysis of the importance of proteolysis in homeostasis and regulation of the proteome and the specific recognition of ubiquitin and ubiquitin-like proteins. A separate yet related project looks at the biology of mitochondria membrane fusion and fission. More specifically, the lab what to understand how does ubiquitination and proteasome-dependent-degradation participate in mitochondria function and dynamics.



Maria Teresa Petrucci

CV and Research Interest

Maria Teresa Petrucci is a clinical physician in the Hematology Division at the "Sapienza" University of Rome. She received her medical degree from the University of Rome and completed a fellowship in hematology at the University of Arkansas for Medical Sciences in Little Rock, USA. She is a member of the Italian Myeloma Network GIMEMA board and of several scientific societies including the European Hematology Association, American Society of Hematology and International Society of Amyloidosis. She has published numerous articles and book chapters and her primary areas of interest include multiple myeloma and other monoclonal gammopathies.

Claus Schwechheimer

CV

Prof. Schwechheimer studied biology and biotechnology at the Universities of Heidelberg and Strasbourg. He completed his doctorate at the University of East Anglia's John Innes Centre (Norwich, UK). Thanks to a German Research Foundation (DFG) grant, he spent three years doing postdoctoral research at Yale University. In 2001, he became independent research group leader at the University of Tübingen's Center for Plant Molecular Biology. In 2008, he accepted a professorship at Technische Universität München, where he is Head of the Department of Plant Systems Biology. Prof. Schwechheimer's research has been published in prestigious journals such as *Science*, *Nature Communications*, *Elife* and *Developmental Cell*.

Research Interest

Prof. Schwechheimer explores the basic principles of plant growth, primarily using the model plant *Arabidopsis thaliana*. He focuses in particular on the processes controlled by the small protein ubiquitin and its homolog Rub1/Nedd8. Using genomic and proteomic approaches, he comes up with working hypotheses, which he then investigates using genetic, biochemistry and cell biology methods. His research is focused on gaining an understanding of the gibberellic acid signal path and the deubiquitinating and deneddylating enzymes of the MPN+ protein family.

Simona Polo

CV and Research Interest

Simona Polo, a molecular and cell biologist expert, directs the Ubiquitin and Signal



Transduction research program at IFOM since 2005. Polo studied Biological Sciences at the University of Milan, Her thesis on bacteriophage P4 received the price for the best thesis in genetics for 1991 from the AGI association. Thanks to a collaboration with LePetit Research Center, she then moved to Streptomyces biology working with Prof. Gianni Deho' at the University of Milan.

From 1996 to 1999 she conducted postdoctoral research at San Raffaele scientific Institute under the guidance of Prof. Paolo Lusso who discovered the chemokine receptor CCR5, responsible for the HIV entry. In that period, she made important contributions studying the molecular determinants of the receptor-binding and HIV-inhibitory functions of chemokines that act as natural antagonists of HIV. In 1999 she joined the group of Prof. Pier Paolo Di Fiore at the European Institute of Oncology (IEO) Milan as staff scientist, acquiring a strong expertise in the field of endocytosis. At that time she discovered and defined the role of ubiquitin in the internalization of the epidermal growth factor receptor, EGFR. In 2005, she left the IEO, accepting the opportunity to develop her own line of research at IFOM studying ubiquitin as a signaling device with a particular focus on cancer biology.

Work of her lab in the last ten years has led to significant breakthroughs in the ubiquitin system. She was among the first to hypothesize and then provide evidence that ubiquitin is a signaling device, using the epidermal growth factor receptor (EGFR) pathway as a model system. To name but a few her first paper published in the field (Polo et al., Nature 2002) and the first one signed as last author (Sigismund et al PNAS 2005) received more than 400 citations/each. In recognition of her studies she received the prestigious EMBO Young Investigator award in 2009. In 2016 she was appointed a member of the EMBO, the prestigious European Organization for Molecular Biology.

Andrea Graziani

CV

- 1982: Degree in Biological Science, Dept. of Genetics, Biophysics and Biochemistry of the University of Pisa, Pisa
- 1983-86: Ph.D. fellow of the School of Pharmacology at the Mario Negri Institute Pharmacological Research, Milano
- 1986-90: post-doctoral fellow at the Dept. of Cellular and Molecular Physiology (Lewis C. Cantley group), Tufts University Medical School, Boston, USA 1990-1995:
- 1991-95 Research Associate, Dept. of Biomedicine and Oncology (Paolo Comoglio group), University of Torino Medical School, Torino.
- 1996-99: Ricercatore Universitario of Biochemistry, Dept. of Genetics, Biology and Biochemistry (Federico Bussolino group), University of Torino Medical School.
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- 2000-06: Associate Professor of Biochemistry, Dept. of Medical Sciences, University of Piemonte Orientale Medical School, Novara
- 2006-14 Full professor of Biochemistry, Dept. of Clinical and Experimental Medicine, of the University of Piemonte Orientale Medical School, Novara
- 2015-present Full professor of Biochemistry, Medical School, University Vita-Salute San Raffaele, Milan and Division of Experimental Oncology, Ospedale San Raffaele, Milano.
- Author of more than 60 publications. Total citations: 6.910; H index: 30, i-10 index: 46

Mattia Mori

Mattia Mori studied medicinal chemistry at the University of Florence, where he got the degree in 2004. He completed the doctorate in Structural Biology at the Magnetic Resonance Center of the University of Florence in 2009 under the supervision of Prof. Ivano Bertini. After postdoctoral studies at the university of Siena and the Sapienza University of Roma, he is currently working at the Italian Institute of Technology, Center for Life Nano Science@Sapienza. He is author of more than 40 publications, a book chapter and a granted patent.

The research activity of Dr. Mori focuses on medicinal chemistry and drug discovery with natural products, with a particular interest in the use of computer simulations to discover and develop bioactive small molecules, and to study the conformational space of target proteins.

Dieter A. Wolf

CV

Dr. Wolf studied medicine at the Ludwig-Maximilians University in Munich, Germany. After postdoctoral work at the Department of Clinical Molecular Biology and Tumor Genetics of the Helmholtz Center Munich, the Department of Cell Biology at Harvard Medical School, and the Department of Pathology at Stanford University School of Medicine, he joined the Department of Cancer Cell Biology (later Department of Genetics of Complex Diseases) at Harvard School of Public Health as an Assistant Professor in 1998, advancing to Associate Professor in 2003. In 2007, Dr. Wolf joined Sanford Burnham Prebys Medical Discovery Institute as Professor and Director of Proteomics. Since 2015, Dr. Wolf holds an appointment as "Foreign 1000 Talent Professor" at the School of Pharmaceutical Sciences at Xiamen University, China. Dr Wolf research has been recently featured in journals such as Cell Reports, Oncotarget, Cancer Cell, Nature communications.



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