

Curriculum Vitae

Federico Benetti

Current Position:

Research Scientist, ECSIN-European Center for the Sustainable Impact of Nanotechnology, Veneto Nanotech S.C.p.A., Rovigo, Italy

Education

April 2008, PhD degree in Molecular Physiology and Structural Biology at the University of Padova with a thesis entitled "Structural Studies on the C-terminal Domain of Human PMCA1b". Supervisor prof. Mariano Beltramini

October 2004, degree in Biological Sciences at the University of Padova with a thesis entitled "Copper Dys-metabolism and Degenerative Diseases". Supervisor prof. Benedetto Salvato

Courses of study, workshops and symposia

2013 Tossicologia e Cellule Staminali: Nuove Frontiere, Brescia, Italy

2012 XVI School of Pure and Applied Biophysics on "Multimodal Methods for Cell Imaging and Tracking", Venice, Italy

2011 XV School of Pure and Applied Biophysics on "Protein Stability and Pathways of Self-Assembly", Venice, Italy

2010 1) XIV School of Pure and Applied Biophysics on "Molecular Mechanisms of Neurodegeneration", Venice, Italy. 2) First NeuroIITScience Workshop IIT, Genova, Italy

2009 1) Summer School on Dopaminergic Neurons, Trieste, Italy. 2) 5th Summer School on Personalized Medicine "Nutrition and Health", Trieste, Italy. 3) 3rd International Symposium on "The New Prion Biology: Basic Science, Diagnosis and Therapy", Venice, Italy

2008 1) 4th Summer School on "Advanced topics in Biomedicine III", Trieste, Italy. 2) 1st International Workshop "Human and Animal TSE", Grado, Italy

2007 1) Symposium "New Challenges in Protein Science", Parma, Italy. 2) 1st International Workshop "Proteins at Work", Perugia, Italy. 3) XI School of Pure and Applied Biophysics on "Advanced Optical Microscopy Methods in Biophysics", Venice, Italy

2006 School on "The Stochastic Processes and their Applications to Biology", Padova, Italy

2005 1) School P2P on "Predicting the structure and function of proteins", Padova, Italy. 2) Synchrotron Light National School (8th course), Rome, Italy. 3) EMBL course on "BioXAS on metalloproteins and organism tissue", Hamburg, Germany. 4) VI Mass Spectrometry course, IPSO, Vitorchiano, Italy

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Career history

2011-present, Senior Researcher at ECSIN-European Center for the Sustainable Impact of Nanotechnology, Veneto Nanotech S.C.p.A., Rovigo, Italy

2008-2011, Research assignment at Neurobiology Sector at the Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste, Italy

2005-2007, PhD student at the Department of Biology at University of Padova, Italy

Professional Activities

2013 **1)** Lecturer for the course “Metals in Biology” at SISSA. **2)** Reviewer for Journal of Hazardous Materials, American Journal of Biochemistry, Nanoscience and Nanotechnology, Research in Neuroscience and Research in Cell Biology

2012 **1)** Organizer of the International Workshop on “Essential metals in brain development and neurodegeneration”, Trieste, Italy. **2)** Responsible for the FTIR project “FTIR microspectroscopy study of lipids and myelin lipids in the central nervous system of mice lacking PrP^C”

2011 **1)** Reviewer for Neuroscience Letters. **2)** Measurements of Differential Scanning Calorimetry and Circular Dichroism on mouse prion protein at Department of Chemical Sciences, University of Catania, Catania, Italy. **3)** Responsible for the SAXS project “A SAXS study of recombinant prion protein oligomers” at Elettra Synchrotron, Trieste, Italy

2010 **1)** Measurements of Differential Scanning Calorimetry and Electron Paramagnetic Resonance on mouse prion protein at Department of Chemical Sciences, University of Catania, Catania, Italy. **2)** Chairman for the “Neurobiology of disease” session at 14th Young Neuroscientist meeting, Trieste, Italy. **3)** Scientific Organizer of the International Workshop on “Fermentation Technology for Large Scale Protein Production”, Trieste, Italy

2009 **1)** Responsible for the SAXS project “A SAXS study of recombinant prion protein oligomers” at Elettra Synchrotron, Trieste, Italy. **2)** XAS measurements at the European Synchrotron Radiation Facility (ESRF) for the project, Grenoble, France

2008 Crystallization experiments on the human prion protein 90-231 at Blackett Laboratory of Imperial College, London, Great Britain

2007 SANS measurements at the Laboratoire Leon Brillouin for the project “Contrast variation SANS study of the conformation of C-terminal calcium ATPase upon interaction with allosteric effectors”, Saclay, France

2006 Responsible for the SAXS project “SAXS analysis of the oligomerization process in the human Ca²⁺-ATPase” at Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany

Teaching Experience

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2008-present co-supervisor of PhD students in Functional and Structural Genomics towards experimental thesis on molecular biology, biochemistry, biophysics and physiology projects

2006-present co-supervisor of bachelor degree and master degree students towards experimental thesis on molecular biology, biochemistry and biophysics projects

2005-2006 lecturer at the laboratory of integrated course of Physiology for Biology at University of Padova, Padova, Italy

Achieved Grants

2011-2012 Young SISSA Scientists Grant with the project “Transition metals and metal-binding proteins in neuroscience: from brain development to neurodegeneration” based on the following criteria: original and innovative contribution to the scientific knowledge of the Sector; scientific importance of the research project; technical or scientific merit of the methodology proposed and their congruity with respect to the objectives of the project. (35,000 €)

2008 SIBPA Grant to attend the Symposium “New Challenges in Protein Science”, Parma, Italy

2007 Grant to attend the 1st International Workshop “Proteins at Work”, Perugia, Italy

2006 Financial support for the SAXS project at DESY-Synchrotron, Hamburg, Germany

2005 1) SIBPA financial support to attend at Synchrotron Light National School (8th course), Rome, Italy. 2)

EMBO financial support to attend the “BioXAS on metalloproteins and organism tissue course”, Hamburg, Germany

Conferences

2012 1) International Conference “NanotechItaly 2012”, Venice, Italy. 2) 6th International Conference on Nanotoxicology “Nanotoxicology 2012”, Beijing, China. 3) Prion2012 International Congress, Amsterdam, The Netherlands

2011 4th International Conference “NanotechItaly 2011”, Venice, Italy

2010 Prion2010 International Congress “Form Agent to Disease”, Salzburg, Austria

2009 Prion2009 International Congress “Transmissible Spongiform Encephalopathies”, Chalkidiki, Greece

2007 14th Congress on “Calcium Binding Protein and Calcium Function in Health and Disease”, La Palma, Spain

Selected contributions in workshops and conferences

2013 1) SAXS structural study of PrP^{Sc} reveals ~11 nm diameter of basic double intertwined fibers and sets constraints to possible PrP^{Sc} architectures (Faro, Portugal)

2012 1) Toward the Identification of the Structural Determinants of Prion Conversion. First Iberian Congress on Prions (Santiago de Compostela, Spain). 2) *In vitro* cytotoxicity cobalt nanoparticles. NanotechItaly2012

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(Venice, Italy). **3)** Size-dependent effects of uncoated silver nanoparticles on human alveolar basal epithelial cell line A549. NanotechItaly2012 (Venice, Italy). **4)** ECSIN and the research project Silver Nanoparticles: a set of in vitro assays for the evaluation of the nanotoxicological effects induced by exposure to Silver Nanoparticles. Nanotoxicology 2012 congress (Beijing, China) and XI National Congress of Biotechnology (Varese, Italy). **5)** Effects of the pathological Q212P mutation on human prion protein non-octarepeat copper binding site. Prion2012 congress (Amsterdam, The Netherlands). **6)** Cellular Prion Protein: Role in Excitotoxicity and Metal Ions Homeostasis. Prion2012 congress (Amsterdam, The Netherlands) and International Symposium on "Biology and Translational Aspects of Neurodegeneration" (Venice, Italy). **7)** Role of Prion Protein Accumulation in Lipid Rafts During Aging. KEYSTONE SYMPOSIA on Molecular and Cellular Biology (Tokyo, Japan)

2011 **1)** Description and Characterization of a Highly Stable Enthalpic Intermediate State in Mouse Prion Protein Folding. Prion2011 congress (Montreal, Quebec, Canada). **2)** NMR Structures of the Human Prion Protein with Pathological Mutations: Insights Into Molecular Basis of Prion Disease. Prion2011 congress (Montreal, Quebec, Canada). **3)** Folding and Stability of Mouse Prion Proteins. XV School of Pure and Applied Biophysics (Venice, Italy)

2010 **1)** Insights into prion protein stability. Prion2010 congress (Salzburg, Austria). **2)** Structural insights into prion protein stability and their implications for prion formation. First NeuroIITScience Workshop IIT (Genova, Italy). **3)** Gene expression profiling to identify druggable targets in prion diseases. FENS Forum 2010 (Amsterdam, The Netherlands)

2009 **1)** Insights on neurotoxicity mechanism of Cuprizone. International Symposium on "The New Prion Biology: Basic Science, Diagnosis and Therapy" (Venice, Italy). **2)** A structural characterization of recombinant mouse prion protein amyloid fibers. International Symposium on "The New Prion Biology: Basic Science, Diagnosis and Therapy" (Venice, Italy). **3)** Molecular properties of the C-terminal domain of human plasma membrane Ca^{2+} -ATPase. Neutrons in Biology congress (Lund, Sweden). **4)** Insights on neurotoxicity mechanism of Cuprizone. **5th** Summer School on Personalized Medicine "Nutrition and Health" (Trieste, Italy)

2008 Is the oligomerization of Plasma Membrane Calcium ATPase a reversible process? (A new approach to study the oligomerization phenomena). **4th** Summer School on "Advanced topics in Biomedicine III" (Trieste, Italy)

2007 Effect of Sodium Dodecyl Sulphate on the aggregation state of PMCA1b C-terminal domain. **14th** Congress on "Calcium Binding Protein and Calcium Function in Health and Disease" (La Palma, Spain)

2006 Expression and structural characterization of the C-terminal domain of Plasma Membrane Calcium ATPase 1b. **57th** Conference of Italian Society of Physiology (Ravenna, Italy)

Invited oral presentations

2013 Methodological approaches in nanotoxicology. Thematic workshop in Toxicology Related Topics (eco-, nano-) (Nova Gorica, Slovenia)

2010 Prions seen with SAXS. Small Angle XmaS Workshop (Trieste, Italy)

2009 SAXS Analysis Of PrP^{Sc} And Oligomeric Recombinant Mouse PrP(89-230). Prion2009 congress (Chalkidiki, Greece)

2009 Insights on neurotoxicity mechanism of Cuprizone. 5th Summer School on Personalized Medicine "Nutrition and Health" (Trieste, Italy)

2008 Small Angle Neutron Scattering; a new approach to study the oligomerization phenomena in multiphasic systems. 4th Summer School on "Advanced topics in Biomedicine III" (Trieste, Italy)

2007 Are acidic phospholipids the trigger for the increase of intracellular calcium concentration after a stimulus? 1st International Workshop "Proteins at Works" (Perugia, Italy)

Prizes and Awards

2009 Registered in the Gold Book of I.T.I.S. Primo Levi (Venice, Italy)

Rovigo, 02/11/2013

Jadeico Beretti