Silvia Onesti - Curriculum Vitae

Higher Education

1982-1987 Laurea in Chimica (Chemistry Master degree),
University of Pavia:110/110 cum laude. Alumnus of Collegio Ghislieri.

1987-1990 PhD in Biophysics, Imperial College, Physics Dept, under the supervision of Peter Brick & David Blow.

Appointments

1991-1994 Post-doctoral research fellow in Prof. David Blow's group at Imperial College.

1994-1995 CNR Research Scientist, University of Pavia.

1995-2001 Lecturer, Department of Physics, Imperial College.

2001-2004 Lecturer, Department of Biological Sciences, Imperial College.

2004-2008 Senior Lecturer, Department of Biological Sciences, Imperial College.

2008-present Teaching Structural Biology at SISSA

2008-present Head of Structural Biology, Sincrotrone Trieste

http://www.sissa.it/phdgenomics/index.php/about-us
http://www.elettra.trieste.it/PEOPLE/index.php?n=SilviaOnesti.HomePage

Other activities

EMBO Short Term Fellowship to carry out a months project a l'Ecole Polytechnique Palaiseau (Paris) in collaboration with Sylvain Blanquet and Pierre Plateau (1996).

Member of the Biological Structures Group (BSG) Committee of the British Crystallographic Association (BCA), 1997-2000.

Maitre de Conference at the Ecole Polytechnique (Palaiseau, Paris), March 1999 □□ June 1999.

Chairman of the of INSTRUCT Italian Working Group on Complementary Techniques (http://www.cerm.unifi.it/about-cerm/italian-users-of-instruct).

Member of the Editorial Board of Scientific Reports, a new open access publication from Nature Publishing Group, covering all areas of natural sciences (http://www.nature.com/srep/about/index.html).

Member of the Commission on Biological Macromolecules (CBM) of the International Union of Crystallography (IUCr, http://www.iucr.org/iucr/commissions/cbm.html)

Organization of Conferences and Workshops

Winter meeting of the Biological Structure Groups of the BCA on "Protein-Nucleic Acids Interactions", London (UK), December 1998.

Microsymposium "Enzymes and allostery" for the XXth Congress and General Assembly of the International Union of Crystallography, Florence (Italy), August 2005 (with A. Wlodlaver).

Workshop on "Emerging application of synchrotron radiation to the life sciences", Trieste (Italy), 25-26 November 2008.

Scientific Committee of the meeting "Bio&medical sciences with new light sources", British Embassy, Rome (Italy), 12-13 March 2009.

Workshop "Thermodynamically unstable proteins: chance or necessity?", Trieste (Italy), 14-16 Dec 2009.

Workshop "R3: DNA replication, recombination and repair", San Miniato (Pisa, Italy), 30 June - 2 July 2010.

Director of an ICTP Advanced School "From genes to atomic structures: an introduction to synchrotron-based structural biology". Trieste (Italy), 23-27 April 2012.

Director of an ICTP Advanced School “Synchrotron radiation techniques and nanotechnology: a synergic approach to life sciences and medicine”. iThemba Laboratories, Cape Town (South Africa), 11-22 November 2013.

Member of the Scientific Committe for the Conference Proteine 2014, to be held in Padua (Italy) 31st March - 1st April 2014.

Member of the 2014 International Programme Committee (IPC) for the organization of the XXIII IUCr Congress and General Assembly, to be held in Montreal (Canada), 5-12 August 2014. (http://www.iucr2014.org/side_organization/international_program_committee_e.shtml).

Director of an ICTP Advanced School “Structural Biology: using Synchrotron Radiation to Visualise Biological Molecules” to be held in Trieste (Italy), 15-19th December 2014.

Member of the Programme Committee for the organization of the meeting 2014: Crystal (cl-)Year to celebrate the International Year of Crystallography to be held in Turin (Italy), 16-17 October 2014.

Member of the Programme Committee for the organization of the 29th European Crystallographic Meeting (ECM29) to be held in Rovinj (Croatia), 23-28 August 2015.

Organiser of the workshop “New synchrotron radiation and optical techniques for nanoscale microscopy of biological systems: from single molecules to cells”, to be held in Trieste, 9-10 December 2015.

Director of an ICTP Advanced School “Imaging, Structural and Single Molecule Approaches to Biology: Understanding Life at Higher Resolution”. Jawaharla Nehru Centre for Advanced Scientific Research (JNCASR), to be held in Bangalore (India), 15-19 January 2016.

Conference Talks - since 2000

2014: Crystal (cl)Year, Turin, 16-17 October 2014 (**Keynote Speaker**).

2nd joint AIC-SILS Conference, Florence, 15-18 September 2014 (**Keynote Speaker**).

4th Neurobiology Summer School: From Electrophysiology to Imaging and Bionanotechnology, 14-25 July 2014, Trieste (**Lecturer**)

Roadshow: il CNR e le infrastrutture Elettra, ESRF, ILL e ISIS, 5 June 2014, Napoli (**Invited speaker**).

iThemba Laboratories, ICTP Advanced school, 11-22 November 2013, Cape Town, South Africa (**Organizer & Speaker**)

Iranian Light Source Facility 5th User meeting, 27-28 February 2013, Qazvin, Iran (**Invited Speaker**)

One-day workshop in protein crystallography. Institute for Research in Fundamental Science (IPM), Niavaran, Tehran, Iran (**Invited Speaker & Workshop organiser**)

Science@C-ERIC workshop, 11 December 2012, Trieste (**Invited Speaker**)

SESAME 10th User meeting, 7-9 November 2012, Amman, Jordan (**Invited Speaker**)

TAC Light Sources User Meeting, 6-7 October 2012, Ankara, Turkey (**Invited Speaker**)

SESAME 9th User meeting/JSPS School, 11-16 November 2011, Amman, Jordan (**Invited Speaker**)

Nanotechnology for Biological and Biomedical Applications, joint ICTP-KFAS conference, 10-14 October 2011, ICTP, Trieste (**Invited Speaker**)

Molecular aspects of cell biology: a perspective from computational physics, 11-15 October 2010, ICTP, Trieste (**Invited Speaker**).

Nov2K retreat, Novum , Karolinska Institute, 7 – 8 October 2010, Stockholm, Sweden **(Invited speaker**)

R3: DNA replication, repair, recombination, 30 June – 2 July 2010, San Miniato (PI) (**Organiser & Speaker**)

Il ruolo emergente delle Nanotecnologie nelle Scienze della Vita, TASC Workshop, 21 June 2010, Trieste, Italy (**Invited speaker**)

CIPKeBIP Startup Conference, 15-16 March 2010, Ljubljana (**Invited speaker**)

IISc Workshop, Synchrotron Radiation for Basic and Applied Research, 23-25 November 2009, Bangalore, India (**Invited Speaker**)

AIC - XXXVIII Congresso, 20-23 September 2009, Salerno, Italy (**Invited Speaker**)

SIBBM Seminar, Frontiers in Molecular Biology, 4-6 June 2009, Naples, Italy (**Speaker**).

EMBO Conference, Helicases and NTP-Driven Nucleic Acid Motors: Structure, Function, Mechanism and Roles in Human Disease, 27 June-2 July 2009, Les Diablerets, Swizerland (**Invited Speaker**)

The 6th 3R Symposium, 27-30 Oct 2008, Kakegawa, Shizuoka, Japan (**Speaker**)

7th Meeting on AAA+ proteins, 9-13 Sept 2007, Cirencenster, UK (**Speaker**)

Proteins 2006, 1-3 Jun 2006, Novara, Italy (**Invited Speaker**)

Mechanism of DNA Replication, November 2003, Naples, Italy (**Invited Speaker**)

RNA Polymerase workshop, March 2003, Birmingham (**Invited Speaker**)

RNA Polymerase workshop, March 2002, Nottingham (**Invited Speaker**)

Crystallography of Biological Macromolecules, May 2000, Como, Italy (**Speaker**)

Invited Seminars - since 2000

Sabanci University – 9 October 2012 (Host: Z. Sayers)

Istituto di Genetica e Biologia Evoluzionistica – 3 February 2012 (Host: G. Biamonti)

Istituto di Biochimica delle Proteine, CNR, Napoli – 16 March 2012 (Host: F. Pisani)

Fondazione San Raffaele, Milano -– 31 January 2011 (Host: M. Degano)

IISc, Bangalore, Dept of Molecular Biophysics – 26 November 2009 (Host: B. Gopal)

IISc, Bangalore, Dept of Cell Biology – 27 November 2009 (Host: P. Sadhale)

University of Padova – P2P Seminars 13 November 2009 (Host: R. Battistutta)

CNIO, Madrid – 16 October 2009 (Host: J. Mendez)

CNB, Madrid – 15 October 2009 (Host: J.M. Carazo)

SISSA Colloquim – 25 September 2009 (Host: S. Raugei, M. Bertolini)

IBBM-FORTH, Heraklion, Crete – 13 July 2009 (Host: K. Petrakos)

National Hellenic Research Foundation, Athens – 12 July 2009 (Host: S. Zographos)

University of Milan – 22 February 2009 (Host: M. Bolognesi)

Cancer Research UK, Clare Hall – 22 February 2008 (Host: D. Wigley)

Kings College, London – 11 December 2007 (Host: R. Steiner)

CEINGE, Naples – 10 June 2005 (Host: F. Salvatore)

Biomedical Centre, Uppsala University – 22 March 2005 (Host: T. Gariani)

The Cell Club, Imperial College London – 15 September 2004

Centre for Structural Biology Open Day, Imperial College London – 12 May 2004

University of Milano, Italy – 20 February 2004 (Host: M.A. Vanoni)

Gene Expression Laboratory, Manchester University, March 2003 (Host: S. Roberts)

CEA Centre d'Etudes de Saclay, Gif sur Yvette – October 2002 (Host: P. Thuriaux)

London Structural Biology Club, University College London – October 2002 (Host. L. Pearl)

Birkbeck College, University College London – July 2000 (Host: N. McDonald)

PhD student supervision

- Gianluigi Desogus: 1997-2000, Imperial College, Marie Curie Research Training Grant (European Community).
- Christina Paraskevopoulou: 1999-2003, Imperial College.
- Nathan Robertson: 2001-2004, Imperial College,, MRC studentship.

- Matthew Bailey: 2003-2007, Imperial College, BBSRC Committee studentship.
- Alessandro Costa: 2004-2007, Imperial College, Departmental studentship.
- Marta Carroni: 2006-2010, Imperial College, Studentship from the Sardinia region.
- Barbara Medagli: 2007-2011. Universita' degli Studi di Napoli, Studentship from Elettra.
- Francesca Marino: 2009-2012 (supervision shared with A. Vindigni), Scuola Normale Superiore di Pisa
- Aditya Mojumdar: 2012-2015, PhD School in Molecular Medicine, Trieste
- Patrizia Di Crescenzio: 2012-2015, PhD School in Molecular Medicine, Trieste
- Amna Abdalla Mohammed Khaled: started in 2013 (supervison shared with L. Casalis), PhD School in Nanotechnologies, Trieste

Shared supervison of:

- Raheem Ullah, PhD at NIBGE, Faisalabad, Pakistan
- Majid Ali Shah Akhun, PhD at NIBGE, Faisalabad, Pakistan

who spend 4 months/year in my laboratory through the ICTP STEP scheme.

Grants - since 2000

Funding body	Title	months	start date	amount
AFM Telethon	Structure and function of TRIM32, the ubiquitin ligase mutated in Limb Girdle Muscular Dystrophy 2H	24	1/06/2014	€ 80,000
Associazione Italiana per la Ricerca sul Cancro (AIRC)	The human CMG helicase in 3D: structural and functional studies on the single components and the assembly of complex.	36	31/12/2013	€ 220,000
INTERREG program, Italy-Slovenia	PROTEO, The cross-border proteins centre for cancer, diagnostic and research	30	15/10/2012	€ 500,000
Associazione Italiana per la Ricerca sul Cancro (AIRC)	Elucidation of the structure and function of human MCM helicases	36	31/12/2010	€ 195,000
Imperial College Faculty Research Initiative	Initiation of DNA replication: EM studies of DNA polymerase α-primase	12	1/10/2004	£ 20,000
Wellcome Trust	Structural and functional studies of the RNA polymerase subunits RPB4/RPB7 and their homologues.	36	1/3/2004	£ 180,618
Wellcome Trust	Structural studies of the middle and head domain of the *Saccharomyces cerevisiae* Mediator complex	36	1/2/2003	£ 159,100
Wellcome Trust	Initiation of DNA replication: structural and biochemical studies of eukaryotic and archaeal primases	36	21/5/2001	£ 175,742
Wellcome Trust	Crystallographic studies of eukaryotic and archaeal RNA polymerase subunits	36	1/4/1999	£ 171,192

Selected publications - since 2000 (*corresponding author)

Medagli B., De Crescenzio P., De March M. and **Onesti S.*** (2015). Structure and activity of the Cdc45-Mcm2-7-GINS (CMG) complex, the replication helicase *Adv. Exp. Med. Biol.* [In press].

Napolitano L.M.R., Bisha I., De March M., Marchesi A., Arcangeletti M., Demitri N., Mazzolini M., Rodriguez A., Magistrato A., **Onesti S.***, Laio A. and Torre V. A structural, functional, and computational analysis suggests pore flexibility as the base for the poor selectivity of CNG channels. (2015). *Proc. Natl. Acad. Sci. USA.* [Epub ahead of print]

Lausi A., Polentarutti M., **Onesti S.**, Plaisier J.R., Busetto E., Bais G., Barba L., Cassetta A., Campi G., Lamba D., Pifferi A., Mande S.C., Sarma D.D., Sharma S.M., Paolucci G. (2015). *Eur. Phys. J. Plus* 130: 43.

Wiedemann C., Ohlenschläger O., Medagli B., **Onesti S.** and Görlach M. (2014). 1H, 15N and 13C chemical shift assignments for the winged helix domains of two archeal MCM C-termini. *Biomol NMR Assign.* 8, 357-360.

Marino F., Vindigni A. and **Onesti S.*** (2013). Bioinformatic analysis of RecQ4 helicases reveals the presence of a RQC domain and a Zn knuckle. *Biophys. Chem.* 177-178, 34-39.

Onesti S. and MacNeill S.A. (2013). Structure and evolutionary origins of the CMG complex. *Chromosoma* 122, 47-53.

Medagli B. and **Onesti S.*** (2013). Structure and mechanism of hexameric helicases. *Adv. Exp. Med. Biol.* 767, 75-95.

Krastanova I., Sannino V., Amenitsch H., Gileadi O., Pisani F.M. and **Onesti S.*** (2012). Structural and functional insights into the DNA replication factor Cdc45 reveal an evolutionary relationship to the DHH family of phosphoesterases. *J. Biol. Chem.* 287, 4121-4128.

Costa A. and **Onesti S.*** (2009). Structural biology of MCM helicases. *Crit. Rev. Biochem. Mol. Biol.* 44, 326-342.

Bae B., Chen Y.-H., Costa A., **Onesti S.**, Brunzelle J.S., Lin Y., Cann I.K.O. and Nair S.K. (2009). Crystal Structure of an Archaeal MCM Homolog Provides Insights into the Architecture of the Replicative Helicase. *Structure* 17, 211-222.

Jenkinson, E.R., Costa A., Leech, A.P., Patwardhan A., **Onesti S.** and Chong, J.P (2009). Mutations in sub-domain B of the MCM helicase affect DNA binding and modulate conformational transitions. *J. Biol. Chem.* 284, 5654-5661.

Sampath V., Balakrishnan B., Verma-Gaur J., Onesti S. and Sadhale P.P. (2008). Unstructured N terminus of the RNA polymerase II subunit Rpb4 contributes to the interaction of Rpb4·Rpb7 subcomplex with the core RNA polymerase II of *Saccharomyces cerevisiae*. *J. Biol. Chem.* 283, 3923-3931.

Costa A. and **Onesti S.*** (2008). The MCM complex: (Just) a replicative helicase? *Biochem. Soc Trans.* 36, 136-140.

Costa A., Van Dujinen G., Medagli B., Chong J., Sakakibara N., Kelman Z., Nair S.K., Patwardhan A. and **Onesti S.*** (2008). Cryo-electron microscopy reveals a novel DNA binding site on the MCM helicase. *EMBO J.* 27, 2250-2258.

Costa A., Pape T., van Heel M., Brick P., Patwardhan A. and **Onesti, S.*** (2006). Structural basis of the *Methanobacter thermautotrophicus* MCM helicase activity. *Nucleic Acid Res.* 34, 5829-5838.

Costa A., Pape T., van Heel M., Brick P., Patwardhan A. and **Onesti, S.*** (2006a) Structural studies of the archaeal MCM complex in different functional states. *J. Struct. Biol.*, 156, 210-219.

Paraskevopoulou C., Fairhurst S.A., Lowe D.J., Brick P. and **Onesti, S.*** (2006). The Elongator subunit Elp3 contains a Fe4S4 cluster and binds S-adenosylmethionine. *Mol. Microbiol.* 59, 795-806.

Palmieri G., Casbarra A., Fiume I., Catara G., Capasso A., Marino G., **Onesti S.** and Rossi M. (2006). Identification of the first archaeal oligopeptide-binding protein from the hyperthermophile *Aeropyrum pernix*. Extremophiles, 10, 393-402.

Meka H., Werner F., Cordell, S., **Onesti, S.** and Brick P. (2005). Crystal structure and RNA binding of the Rpb4/Rpb7 subunits of human RNA polymerase II. *Nucleic Acid Res.* 33, 6435-6444.

Pucci, B. De Felice, M., Rossi, M., **Onesti, S.*** & Pisani, F. (2004). Amino acids of the Sulfolobus solfataricus mini-chromosome maintenance-like DNA helicase involved in DNA binding/remodeling. *J. Biol. Chem.* 279, 49222-49228.

Pape T., Meka H., Chen S., Vicentini G., van Heel M. and **Onesti, S.*** (2003). Hexameric ring structure of the full-length archaeal MCM complex. *EMBO Rep*. 4, 1079-1083.

Meka H., Daoust G., Bourke-Arnvig K., Werner F., Brick P. and **Onesti, S.*** (2003). Structural and functional homology between the RNAPI subunits A14/A43 and the archaeal RNAP subunits E/F. *Nucleic Acid Res*. 31, 4391-4400.

Todone F., Brick P., Werner, F., Weinzierl R.O.J and **Onesti, S.*** (2001). Structure of an archaeal homologue of the eukaryotic RNA polymerase II RPB4/RPB7 complex. *Mol. Cell*, 8, 1137-1143.

Todone F., Weinzierl R.O.J, Brick P. and **Onesti, S.*** (2000). Crystal structure of RPB5, a universal eukaryotic RNA polymerase subunit and transcription factor interaction target. *Proc. Natl. Acad. Sci. USA*, 97, 6306-6310.