

Elena Zocchi

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CURRENT POSITION Full Professor of Clinical Biochemistry (BIO/12), School of Medical and Pharmaceutical Sciences, Department of Experimental Medicine (DIMES, University of Genoa)

WORK EXPERIENCE

Since 1982 (as a Research fellow) E. Zocchi has held annual courses at the University of Genova, Faculties of Pharmacy and of Medicine, on Applied Biochemistry and Biochemistry. Since 2000 (as Assistant Professor) she has tutored 21 graduate students (in Pharmacy, Medicine, Chemistry and Pharmaceutical Technologies) and 18 post-graduate (Ph.D.) students for their experimental theses. Since 2001, she has held annual courses on Applied Biochemistry for Master students at the University of Manado, Indonesia: Professor of Applied Biochemistry at the Master in "Knowledge and Management of the Bio-diversity in Indonesian coral reefs" (three consecutive Master courses, 2001-03); Professor of Applied Biochemistry at the Master in "Marine Tropical Biodiversity and Bioactive Molecules" (2004-05).

Since 2007 (as Full Professor) she teaches in the courses of Biochemistry and Clinical Biochemistry for students of Medicine, Clinical Biochemistry for students of Natural Sciences, medical course, and Clinical Biochemistry in several courses of the Medical professions.

EDUCATION AND TRAINING **Education / Professional Studies:**

Institution: School of Medicine, University of Genova, Italy

Date: 1978-1983

Degree: Medical Doctor

Institution: University of Pavia, Italy

Date: 1985-1989

Degree: Ph.D. in Biochemistry

University positions:

1992-2000 Research fellow, Faculty of Pharmacy, University of Genova

2000-2003 Associate Professor of Biochemistry, Faculty of Medicine, University of Genova

2004-present Full Professor of Biochemistry at the same Faculty. Head of the Biochemistry laboratory, at the Dept. of Experimental Medicine, Section Biochemistry, University of Genova.

PERSONAL SKILLS

Organisational/managerial skills

Coordinator of Research Projects:

Coordinator of research projects funded by the Italian Ministry of the University and Research (MIUR)

1998-2000 PRIN#9805634227

2000-2002 PF#01.00364.49; PF#99.00518.49

Coordinator of the project "Effects of thermal stress on the ADP-ribosyl cyclase of Porifera" during the XVIII Italian Antarctic Expedition (December 2002-January 2003).

2003-2005 PRIN#2003059297
 2005-2007 PRIN#2005059350
 2005-2006 Italian Association for Cancer Research (AIRC)
 2004-2007 Coordinator of a joint Italian-Indonesian research and development project "Coral-associated micro-organisms as a source of new bio-active compounds" (Indonesian partner: Dr. Ocky Radjasa, Semarang).
 Coordinator of two successive research projects funded by the Regione Liguria (LIMONTE): 2008-2010

 Head of research unit:
 2007-2009 PRIN#2007BZ4RX3_005
 2007-2010 FIRB RBIP06LSS2_002
 2008-2010 Ministero Salute RF-LIG-2007-647513
 Cassa di Risparmio di Genova e Imperia (CARIGE). Mesenchymal stem cells from amniotic fluid. Nov. 2008-Nov. 2010.
 2010-2012 Coordinator of a Vigoni/DAAD exchange program
 2012-2014 Compagnia di S. Paolo Abscisic acid, a new human hormone modulating insulin release and glucose uptake.
 2011-2014 PRIN#2010MCLBCZ_004
 2011-2014 Key personnel Unit: FP7 "Special"

SCIENTIFIC SKILLS

E. Zocchi has a long-term interest in molecular mechanisms of signal transduction, particularly regarding the biochemistry of the ADP-ribosyl cyclase (ARC)/cyclic ADP-ribose (cADPR) system in Metazoa. She has significantly contributed to the present understanding of the role of ARCs, the enzymes responsible for synthesis of cADPR, a universal calcium mobilising second messenger, in the regulation of pivotal calcium-controlled cell functions in lower and higher Metazoa (from marine sponges and hydroids to mammalian cells). She was coordinator of the project "Effects of thermal stress on the ADP-ribosyl cyclase of Porifera" during the XVIII Italian Antarctic Expedition (December 2002-January 2003). Her research on the role of the ARC/cADPR system in human hemopoietic progenitors has led to the discovery of cADPR as a novel hemopoietic growth factor. Her studies on the role of the plant hormone abscisic acid (ABA) in the physiology of lower Metazoa (sponges and hydroids) have been instrumental in her discovery that ABA is a new endogenous hormone in humans and in the identification of its receptor and of its signalling pathway (through ARC/cADPR). ABA is uniquely endowed with the ability to stimulate several functional activities of cells of the innate and adaptive immune response and also to stimulate insulin release from pancreatic beta cells and glucose uptake by adipose and muscle cells. The most recent results obtained by the Zocchi group in vivo on rodents and on humans indicate that ABA is a key mammalian hormone responsible for glycemic homeostasis. ABA is the first example of conservation of a hormone, of its role as a stress signal and of its transduction pathway from plants to mammals. This discovery will likely lead to the development of new therapeutic strategies for inflammatory diseases and type 2 diabetes and the metabolic syndrome.

During her studies, Prof. Zocchi acquired a decades-long experience in molecular biology, particularly in the techniques for protein knockdown by gene silencing (siRNA and shRNA). The results of her research activity are summarized in 114 publications in refereed international journals and in three ABA-related international patents. She is member of a University spinoff derived from her ABA-related research.

Bibliometric indices

Her Scopus H-index is 41. Total citations: 4620

List of publications

<https://www.scopus.com/authid/detail.uri?authorId=7003441674>

ADDITIONAL INFORMATION

Honours, awards and patents

Invited speaker at national and international meetings

FASEB Summer Conference: Recent Advances in CD38 and Related Molecules. Saxtons River, Vermont, 11-16 July 1998. Internalization of CD38 results in intracellular Ca²⁺ mobilization. Role of NAD⁺ transport across membranes.

3rd International Workshop on Ecto-ATPases and Related Ectonucleotidases. Woods Hole, Massachusetts, 15-20 September 2002. Ectocellular cyclic ADP-ribose generation by CD38 improves human hemopoietic engraftment into NOD/SCID mice.

6th International Sponge Conference, Rapallo, Italy, Sept. 29-Oct. 5, 2002 ADP-ribosyl cyclases from lower to higher Metazoa: an emerging central role in environmental signal transduction.

Unusual adenylic dinucleotides produced by ADP-ribosyl cyclases: effect on calcium homeostasis in 3T3 fibroblasts. 49th National Congress of the Italian Society of Biochemistry and Molecular Biology, Riccione, September 28-October 1, 2004

CD38 meeting. Torino, Italy, 8-10 June 2006 The phytohormone Abscisic acid is an endogenous cytokine stimulating granulocyte function through the second messenger cyclic ADP-ribose.

Abscisic acid signalling via the second messenger cyclic ADP-ribose. 52nd National Congress of the Italian Society of Biochemistry and Molecular Biology, Riccione, September 26-28, 2007

The functional effects of the human hormone abscisic acid on animal cells are mediated by the second messenger cyclic ADP-ribose. 53rd National Congress of the Italian Society of Biochemistry and Molecular Biology, Riccione September 23-26, 2008

NAD 2008. Hamburg, Germany, September 14-17, 2008 The functional effects of the human hormone abscisic acid are mediated by the second messenger cyclic ADP-ribose.

University of Edinburgh, UK, July 7-9, 2009 The functional effects of the new human hormone abscisic acid on animal cells are mediated by the second messenger cyclic ADP-ribose.

FEBS Congress Torino, Italy, June 26-30, 2011. Abscisic acid and cyclic ADP-ribose are first and second messenger in inflammatory cells, hemopoietic progenitors and pancreatic beta-cells.

Exam commissioner for positions of full professor in Clinical Biochemistry and for the National Scientific Abilitation (ASN) in the Clinical Biochemistry disciplinary sector.

Patents

1. EP08161825, 05/07/2008 "Screening Assay for the Identification of Agonists /Antagonists of Abscisic Acid". Laura Sturla, Chiara Fresia, Lucrezia Guida, Santina Bruzzone, Sonia Scarfi, Floriana Fruscione, Enrico Millo, Mirko Magnone, Giovanna Basile, Antonio De Flora and Elena Zocchi.
2. Synthetic analogues of abscisic acid with anti-inflammatory and insulin release stimulation effects on human cells. Elena Zocchi, Antonio De Flora, Enrico Millo, Santina Bruzzone, Lucrezia Guida, Alessia Grozio, Annalisa Salis, Mirko Magnone (EP20120001973 20120321 19/09/2014)
3. PCT/IB2006/053669 "Fluridone as an anti-inflammatory agent" Elena Zocchi, Lucrezia Guida, Santina Bruzzone, Sonia Scarfi, Mirko Magnone, Giovanna Basile, Umberto Benatti, Antonio De Flora, Iliana Moreschi, Luisa Franco, Annalisa Salis. Dep. 06/10/2006; US patent filing accepted 04/19/2010

Editorial and reviewer activities

Editorial Board Member: Messenger (since January 2012)

Reviewer for several international journals of biochemistry and molecular biology and for national and international funding agencies.