

PERSONAL INFORMATION

Family name, First name: **Szabo Ildiko**

Researcher unique identifier(s)Orcid 0000-0002-3637-3947, Research K-5344-2016

Family status: Married, has 1 child

URL for web site: <http://www.bio.unipd.it/iicg/>

• EDUCATION

1994 PhD in Molecular and Cellular Biology and Pathology (4-year Ph.D. course)
Faculty of Medicine/Department of Biomedical Sciences/ University of Padova/ Italy

1988 Master in Biology and Chemistry (5-year education)
Faculty of Sciences/University Eotvos Lorand/ Hungary

• CURRENT POSITION(S)

From 2017 Full Professor in Biochemistry
Faculty of Sciences/ Department of Biology/University of Padova/ Italy

• PREVIOUS POSITIONS

2005 – 2016 Associate Professor in Biochemistry
Faculty of Sciences/ Department of Biology/University of Padova/ Italy

1998 – 2004 Assistant Professor
Faculty of Sciences/ Department of Biology/University of Padova/ Italy

• FELLOWSHIPS AND AWARDS

2015 Human Frontiers Science Program Award
Award received from HFSP, I. Szabo is coordinator of the HFSP grant (Other members:
Prof. Toshiharu Shikanai, Giovanni Finazzi, Chris Chang)

2013 Associate of Iontrac and pHIonic International Marie-Curie Training Network
(Coordinator: Prof. Albrecht Schwab)

2014 Habilitation for Full Professorship in Plant Physiology and in Biochemistry

From 2014 Associate Member of the National Research Council, Institute of Neurosciences

2002 EMBO Young Investigator Program Award

2000 National Research Council (CNR) Young Investigator Grant

1997-1998 Postdoctoral fellowship of the University of Padova/Italy

1995 – 1997 EMBO Long Term postdoctoral fellow
Faculty of Medicine / Institute of Physiology /University of Tuebingen/ Germany

1992-1993 Fellowship of the University of Padova reserved to East European citizens

1992 Sept- EMBO Short Term fellow

1992 Dec Biozentrum /Basel /Switzerland

1990 – 1991 Scholarship from Glaxo Welcome, Verona/Italy

• SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

From 1998 Number of Postdocs: 13/ PhD: 11/ Master Students: 65
Faculty of Sciences/ Department of Biology /University of Padova/ Italy

• TEACHING ACTIVITIES

From 2005 Teaching position as Associate and Full professor, Topics: Advanced Biochemistry Course
(1st year Master Students in Molecular Biology) and Biochemistry of metabolism (Bachelor
students) each year, 120 hours of frontal lecture/year
Faculty of Sciences, University of Padova

1998 – 2004 Teaching position as Assistant Professor, – Topics: Biochemical methodologies and
Structural biochemistry (1st year Master Students in Biology), 60 hours of frontal
lecture/year + 30 hours/year laboratory practice
Faculty of Sciences, University of Padova

• ORGANISATION OF SCIENTIFIC MEETINGS

2019 Local organizing committee member of SBI-SIBV, Padova, Italy

2017 Chair of the 2nd Gordon Research Conference (GRC) on “Organellar Channels and
Transporters, Mount Snow, VT/USA

2016 Co-Chair with T. Morosinotto of the International Biophysics School on Photosynthesis,
Venice/Italy

2015 Vice-Chair and proponent together with Haoxing Xu and Enrico Martinoia of the 1st Gordon
Research Conference on “Organellar Channels and Transporters, Bentley College, Waltham
/USA

2013 Co-Organizer of the Italian Biomembrane and Bioenergetics group meeting in Padova/Italy

2005 Co-Organizer (together with three other YIPs) of the Ph.D. school course for Ph.D. students

from EMBO Young Investigator (YIP) labs, EMBL, Heidelberg/Germany

• INSTITUTIONAL RESPONSIBILITIES

- From 2017 Coordinator of the Ph.D. School in Biosciences (45 Ph.D. students)
From 2014 Head of the Committee for laboratory safety of the Department of Biology, University of Padova/Italy
From 2013 Member of the Scientific Committee of the University of Padova for Life Sciences
From 2012 Member of the Teaching Coordination Committee for Molecular Biology Course
2009-2011 Vice-director of the Ph.D. School in Biosciences and Biotechnologies
From 1998 Faculty member of Faculty of Sciences, University of Padova/ Italy

• COMMISSIONS OF TRUST

- 2021 Co-Editor with Peter Hajdu, Heike Wulff and Barbara Niemeyer for *Frontiers in Physiology and Pharmacology*
2021 Co-Editor with Luigi Leanza and Vanessa Checchetto of an SI for *Cancers*
2020 Editorial Board Member for *Cancers*
2019 Evaluation panel member for ERA-Chair applications (EU projects) and ERC grants
From 2017 Member of the Scientific Committee of the Italian Association for Cancer Research
From 2017 Editorial Board Member of *Frontiers in Physiology and of Cell Stress*
2015 Co-Editor with Cornelia Spetea and Henning Kunz of an SI of *Frontiers in Plant Sciences*.
2015 Co-Editor with Haoxing Xu and Enrico Martinola of SI of *Cell Calcium*
From 2012 Editorial Board Member of *Scientific Reports (NPG)*
From 2017 Scientific evaluator for projects of the Polish Ministry, Poland, MRC, UK
From 2017 Scientific evaluator for projects of the French Ministry (AAPG ANR project), France
From 2015 Scientific evaluator for Austria-Belgium joint projects of the respective Ministries
From 2014 Scientific evaluator for projects of the DFG, Germany
2010, 2013 Scientific evaluator for the Paracelsus Medical University in Salzburg, Austria
2015 external Ph.D. examiner in Lille, France.
2015, 2017 external Ph.D. examiner in Barcellona, Spain.
2014 external Ph.D. examiner in Gothenburg, Sweden.
From 2003 Evaluator of short term and long term EMBO fellowships
From 2004 Review Panel Member for evaluation of Marie-Curie postdoctoral fellowships (EU projects)
From 2000 Ad hoc reviewer for *Plant Cell*, *New Phytologist*, *Cell Metabolism*, *Nature Communications*, *Cell*, *Cell Metabolism*, *Plant Physiology*, *EMBO J.*, *PNAS*, *J. Gen. Physiology*, *Oncotarget*, *BBA Bioenergetics*

• MEMBERSHIPS OF SCIENTIFIC SOCIETIES

- From 1990 Italian Society of Bioenergetics and Biomembranes
From 1992 American Biophysical Society
From 2000 Italian Society of Pure and Applied Biophysics
From 2002 EMBO Young Investigator Program
From 2005 Italian Society of Biochemistry
From 2014 American Physiological Society
From 2014 CNR Institute of Neurosciences
From 2015 Italian Society of Plant Biology

MAJOR COLLABORATIONS:

National; Padova: *Mario Zoratti, Cristina Paradisi, Paolo Bernardi, Rosario Rizzuto, Diego De Stefani, Andrea Mattarei, Luigi Leanza, Lucia Biasutto, Vanessa Checchetto, Lorella Navazio, Fiorella Lo Schiavo, Elide Formentin, Laura Cendron, Livio Trentin, Carlo Viscomi, Massimo Zeviani, Rodolfo Costa, Cristiano de Pittà, Chiara Romualdi, Gianpaolo Fadini, Paolo Gallo, Alessandro Alboresi; Milano:* *Alex Costa; Catania:* *Vito De Pinto.*

International; Essen: *Erich Gulbins, Katrin Becker, Alexander Carpinteiro; Cincinnati:* *Michael Edwards, Syed Ahmad, Sameer Patel; Bonn:* *Ute Vothknecht; Goteborg:* *Cornelia Spetea; Grenoble:* *Giovanni Finazzi; Kyoto:* *Toshiharu Shikanai; Warsaw:* *Adam Szewczyk, Piotr Koprowski; Barcelona:* *Antonio Felipe*

PUBLICATIONS

I.S. has published more than 150 papers in international peer reviewed journals, H-index = 60
(<http://scholar.google.com/citations?user=9i8nfO0AAAAJ&hl=it>), citations = 16631, i10-index: 141

Selected publications (* corresponding authors)

- 1) Zoratti, M. and Szabo I. The mitochondrial permeability transition *Biochim. Biophys. Acta*, **1995**, 1241: 139-176.
- 2) Szabo I*, Lepple-Wienhues A, Kaba KN, Zoratti M, Gulbins E, Lang F. Tyrosine kinase-dependent activation of a chloride channel in CD95-induced apoptosis in T lymphocytes. *Proc Natl Acad Sci USA*. **1998** 95:6169-74.
- 3) Szabo I, Bock J, Grassmé H, Soddemann M, Wilker B, Lang F, Zoratti M, Gulbins E. Mitochondrial potassium channel Kv1.3 mediates Bax-induced apoptosis in lymphocytes. *Proc Natl Acad Sci U S A*. **2008** 105:14861-6.
- 4) De Stefani D, Raffaello A, Teardo E, Szabo I, Rizzuto R. A forty-kilodalton protein of the inner membrane is the mitochondrial Ca²⁺ uniporter. *Nature*. **2011**, 476:336-40.
- 5) Leanza L, Henry B, Sassi N, Zoratti M, Chandy KG, Gulbins E, Szabo I*. Inhibitors of mitochondrial Kv1.3 channels induce Bax/Bak-independent death of cancer cells. *EMBO Mol Med*. **2012**,
- 6) Checchetto V, Segalla A, Allorent G, La Rocca N, Leanza L, Giacometti GM, Uozumi N, Finazzi G, Bergantino E*, Szabo I*. Thylakoid potassium channel is required for efficient photosynthesis in cyanobacteria. *Proc Natl Acad Sci U S A*. **2012**, 109:11043-8.
- 7) Carraretto L, Formentin E, Teardo E, Checchetto V, Tomizoli M, Morosinotto T, Giacometti GM, Finazzi G*, Szabo I*. A thylakoid-located two-pore K⁺ channel controls photosynthetic light utilization in plants. *Science*. **2013**, 342:114-8.
- 8) Leanza L, Trentin L, Becker KA, Frezzato F, Zoratti M, Gulbins E, Szabo I*. Clofazimine, Psora-4 and PAP-1, inhibitors of the potassium channel Kv1.3, as a new and selective therapeutic strategy in chronic lymphocytic leukemia. *Leukemia*, **2013**, 27: 1782-1785
- 9) Patron M, Checchetto V, Raffaello A, Teardo E, Vecellio Reane D, Mantoan M, Granatiero V, Szabo I, De Stefani D, Rizzuto R. MICU1 and MICU2 finely tune the mitochondrial Ca²⁺ uniporter by exerting opposite effects on MCU activity. *Mol Cell*. **2014**, 53:726-37
- 10) Szabo I*, Zoratti M. Mitochondrial channels: ion fluxes and more. *Physiol Rev*. **2014**, 94:519-608 (JCR IF 2016: 27,3)
- 11) Teardo E, Carraretto L, Wagner S, Formentin E, Behera S, De Bortoli S, Larosa V, Fuchs P, Lo Schiavo F, Raffaello A, Rizzuto R, Costa A, Schwarzländer M, Szabo I*. Physiological Characterization of a Plant Mitochondrial Calcium Uniporter in Vitro and in Vivo. *Plant Physiol*. **2017** 173:1355-1370.
- 12) Leanza L, Romio M, Becker KA, Azzolini M, Trentin L, Managò A, Venturini E, Zaccagnino A, Mattarei A, Carraretto L, Urbani A, Kadow S, Biasutto L, Martini V, Severin F, Peruzzo R, Trimarco V, Egberts JH, Hauser C, Visentin A, Semenzato G, Kalthoff H, Zoratti M, Gulbins E*, Paradisi C*, Szabo I*. Direct Pharmacological Targeting of a Mitochondrial Ion Channel Selectively Kills Tumor Cells In Vivo. *Cancer Cell*. **2017** , 31:516-531
- 13) Teardo E, Carraretto L, Moscatiello R, Cortese E, Vicario M, Festa M, Maso L, De Bortoli S, Cali T, Vothknecht UC, Formentin E*, Cendron L, Navazio L*, Szabo I*. A chloroplast-localized mitochondrial calcium uniporter transduces osmotic stress in Arabidopsis. *Nature Plants*. **2019** Jun;5(6):581-588
- 14) Costa R, Peruzzo R, Bachmann M, Montà GD, Vicario M, Santinon G, Mattarei A, Moro E, Quintana-Cabrera R, Scorrano L, Zeviani M, Vallese F, Zoratti M, Paradisi C, Argenton F, Brini M, Cali T, Dupont S, Szabo I*, Leanza L*. Impaired Mitochondrial ATP Production Downregulates Wnt Signaling via ER Stress Induction. *Cell Reports*. **2019** Aug 20;28(8):1949-1960
- 15) Paggio A, Checchetto V, Campo A, Menabò R, Di Marco G, Di Lisa F, Szabo I, Rizzuto R, De Stefani D. Identification of an ATP-sensitive potassium channel in mitochondria. *Nature*. **2019** Aug;572(7771):609-613
- 16) Urbani A, Giorgio V, Carrer A, Franchin C, Arrigoni G, Jiko C, Abe K, Maeda S, Shinzawa-Itoh K, Bogers JFM, McMillan DGG, Gerle C*, Szabo I*, Bernardi P*. Purified F-ATP synthase forms a Ca(2+)-dependent high-conductance channel matching the mitochondrial permeability transition pore. *Nature Commun*. **2019** Sep 25;10(1):4341.
- 17) Costa R, Peruzzo R, Bachmann M, Montà GD, Vicario M, Santinon G, Mattarei A, Moro E, Quintana-Cabrera R, Scorrano L, Zeviani M, Vallese F, Zoratti M, Paradisi C, Argenton F, Brini M, Cali T, Dupont S, Szabo I*, Leanza L*. Impaired Mitochondrial ATP Production Downregulates Wnt Signaling via ER Stress Induction. *Cell Reports* **2019** 28:1949-1960
- 18) Peruzzo R, Mattarei A, Azzolini M, Becker-Flegler KA, Romio M, Rigoni G, Carrer A, Biasutto L, Parrasia S, Kadow S, Managò A, Urbani A, Rossa A, Semenzato G, Soriano ME, Trentin L, Ahmad S, Edwards M, Gulbins E, Paradisi C, Zoratti M, Leanza L, Szabo I*. Insight into the mechanism of cytotoxicity of membrane-permeant psoralenic Kv1.3 channel inhibitors by chemical dissection of a novel member of the family. *Redox Biology* **2020** 37:101705
- 19) Peruzzo R, Corrà S, Costa R, Brischiigliaro M, Varanita T, Biasutto L, Rampazzo C, Ghezzi D, Leanza L, Zoratti M, Zeviani M, De Pittà C, Viscomi C, Costa R, Szabo I.* Exploiting a small molecule to treat mitochondrial disease due to respiratory complex III dysfunction, in press

Granted patents: PD2015A000006 entitled: “*Psoralen derivatives as selective tumor-killing agents*”.

INVITED PRESENTATIONS TO INTERNATIONAL CONFERENCES AND ADVANCED SCHOOLS (from 2009) **2009** International School of Biophysics, Venezia, Italy // European Biophysical Congress EBSA, Genova, Italy // European Physiology Congress (FEPS), Ljubljana, Slovenia. **2010** European Bioenergetics Conference (EBEC) Warsaw, Poland **2012** 3rd Ion channels and Cancer Meeting, Wurzburg, Germany // International Ion Channel Conference, Jeju, South Korea **2013** Ion channel and cancer workshop, Barcellona, Spain **2014** American Biophysical Society Meeting, San Francisco, USA. // Gordon Conference on Mitochondria and Chloroplasts, Lucca, Italy // European Bioenergetics Conference, Lisbona, Portugal // 25th Ion Channel meeting, Oleron, France **2015** FISV (Federazione Italiana Scienze della Vita), Pisa, Italy // *Keynote lecture* at FEBS Workshop on Plant organellar signalling, Primosten, Croatia. // German Physiological Society Meeting, Magdeburg, Germania. // European Ca²⁺/Society Ca²⁺ workshop, Domaine de Seillac, France. // 4th Ion channels and Cancer Meeting, London, UK. **2016** 6th European Bioenergetics Conference, Riva del Garda, Italy. // International Workshop of Plant Membrane Biology, Maryland, USA // Photosynthesis Satellite Meeting, Leuven, Belgium. **2017** European Biophysical Congress

EBSA, Edinburgh, UK. // Sphingolipid Conference, Jackson Hole, USA. // 58th Annual Meeting of the Japanese Society of Plant Physiologists, Kagoshima, Japan. // Plant Ca²⁺signalling conference, Norwich, UK. // **2018** International School of Biophysics, Venezia, Italy//COST Action BM1406 Meeting “Ion Channels and Immune Response” in Dublin, Ireland //7th World Congress of Oxidative Stress, Ca²⁺Signalling and TRP channels **2019** FEBS Conference, Krakow, Poland // American Biophysical Society Meeting, Baltimore // HFSP meeting, Tokyo, Japan // MAC2019, Prague, Czech Republic // Cold Spring Harbour Conference Asia on Mitochondria in health and disease, Shouzhou, China **2020** EMBO workshop on Calcium signaling, Bangalore, India // for the rest of the year all conferences cancelled

INVITED TALKS to Research Institutes and Universities

2010 University of Osnabrueck, Germany (Prof. R. Wagner) **2012:** University of Essen, Germany (Prof. E. Gulbins). **2013:** CEA di Grenoble, France (Dr. G. Finazzi) // University of Kiel, Germany (Prof. H. Kalthoff). **2015:** University of Trento, Italy (Prof. C. Musio) // University of Gotheburg, Sweden (Prof. C. Spetea) **2016:** University Irvine, USA (Prof. M. Cahalan) // Nencki Institute Warsaw, Poland (Prof. A Szewczyk) **2018:** University of Cincinnati (Prof. M. Edwards), **2019:** University of Trento (L. Fava)

INTERNATIONAL RECOGNITION

- EMBO Young Investigator Award 2002
- EMBO Long term fellowship 1995-1997
- Human Frontiers Science Program Award, project coordinated by I. Szabo, 2015

GRANTS AS PRINCIPAL INVESTIGATOR

1999: Young Investigator Program of the University of Padova.
2000: CNR (National Research Council) grant for Young Investigators.
2001, 2008: Start-up projects of the University of Padova.
2002: EMBO Young Investigator Award/project.
2005, 2008, 2011, 2015: Research programs of the Italian Ministry for Education and Research.
2007, 2011, 2014, 2017: Investigator Grants of Italian association for cancer research (AIRC) for 3 years each except 2017 (for 5 years).
2015: Human Frontiers Science Program as international team coordinator (3+1-year project).
2019: Italian Association for Multiple Sclerosis (2-year project).
2019: Telethon (3-year project).