



Stefano Giovannardi

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Biography

1996-present Research associate at University of Insubria, DBSF, Varese Italy

1996 Human Frontier short term fellowship at King's College London, Department of Physiology, learning confocal microscopy techniques and studying molecular mechanisms of nociception.

1991-94 PhD course in Physiological Sciences at the Department of Biochemistry and Physiology, University of Milan, working on image analysis of subcellular calcium in normal and tumorigenic cell lines following growth factors stimulation.

1990-91 Postdoctoral Fellowship at the University of Rochester, Department of Physiology, Rochester N.Y. U.S.A. studying gap junctions regulation operated by pH and calcium.

1990 Degree in Biological Sciences, specialisation Molecular Cell Biology, score 110/110.

1989-90 Attended the electrophysiology laboratory at the Department of Biochemistry and Physiology, University of Milan, working on measurement of electrical properties and of cytosolic calcium in fibroblasts upon growth factors stimulation; the techniques used were the patch-clamp and microfluorimetry.

1983 high school diploma in electrotechnics and technical chief

Research interests

My research interests are focused on the structure-function relationships and regulation in amino acids and neurotransmitter cotransporters. We use heterologous expression of these proteins in *Xenopus* oocytes and cell line, coupled to electrophysiology and fluorescence microscopy to analyse structural data involved in specific aspects of the transport function. Recently we have introduced new techniques to correlate the quaternary structure of these protein to functional data. In particular working with FRET (Fluorescence Resonance Energy Transfer) and chimeric and concatenated constructs heterologously expressed in cell line and *Xenopus* oocytes we want to investigate on role of oligomerisation in transporter functionality and regulation. Our future goals are to use these methodologies to investigate a possible role of transporters in neurodegenerative disease. The rat GABA transporter GAT1 and an insect homologous, the lepidopteran intestinal amino acid transporter KAAT1, are at

present our main objects of study; more recently we are also focusing on the glutamate transporter GLT1. The techniques used include molecular biology, microinjection, patch and voltage-clamp, site-specific mutagenesis, uptake measurements and immunocytochemistry, confocal microscopy and FRET.

Teaching experience and appointments

1999/00-today: Cellular Physiology (Biology)

2003/04-today: Integrated Physiological Systems (Biology)

1995/96-2000/01: Laboratory of Experimental Biology (Biology)

2002/03: General Physiology (Biology)

2001/02: Structural and Functional Biology (Biology)

1999-today: member of the Computer Science board (DBSF)

2002- today: member of the department board (DBSF)

2001- today: member of the school board of the PhD course in molecular and cellular biology (DBSF)

2003-2004: erasmus coordinator for the school of Biotechnology

2003- today: erasmus coordinator for the school of Biology

2004- today: member of the international relationships board

Representative publications

1. Soragna A, Bossi E, Giovannardi S, Pisani R and Peres A Functionally independent subunits in the oligomeric structure of the GABA cotransporter rGAT1. *Cell. Mol. Life Sci.* (2005) in Press

2. Soragna A, Bossi E, Giovannardi S, Pisani R, Peres A. Relations between substrate affinities and charge equilibration rates in the rat GABA cotransporter GAT1. *J Physiol.* 2005 Jan 15;562(Pt 2):333-45. Epub 2004 Oct 28.

3. Giovannardi S and Haardt F. EOS. Enhanced Compact Disk, published by ELETTRON, (c) (p) Dec 2004.

4. Peres A, Giovannardi S, Bossi E, Fesce R. Electrophysiological insights into the mechanism of ion-coupled cotransporters. *News Physiol Sci.* 2004 Apr;19:80-4. Review.

5. Giovannardi S, Fesce R, Bossi E, Binda F, Peres A. Cl⁻ affects the function of the GABA cotransporter rGAT1 but preserves the mutual relationship between transient and transport currents. *Cell Mol Life Sci.* 2003 Mar;60(3):550-6.

6. Fesce R, Giovannardi S, Binda F, Bossi E, Peres A. The relation between charge movement and transport-associated currents in the rat GABA cotransporter rGAT1. *J Physiol.* 2002 Dec 15;545(Pt 3):739-50.

7. Bossi E, Giovannardi S, Binda F, Forlani G, Peres A. Role of anion-cation interactions on the pre-steady-state currents of the rat Na⁽⁺⁾-Cl⁽⁻⁾-dependent GABA cotransporter rGAT1. *J Physiol.* 2002 Jun 1;541(Pt 2):343-50.

8. Binda F, Bossi E, Giovannardi S, Forlani G, Peres A. Temperature effects on the presteady-state and transport-associated currents of GABA cotransporter rGAT1. *FEBS Lett.* 2002 Feb 13;512(1-3):303-7.

9. Giovannardi S, Forlani G, Balestrini M, Bossi E, Tonini R, Sturani E, Peres A, Zippel R. Modulation of the inward rectifier potassium channel IRK1 by the Ras signaling pathway. *J Biol Chem.* 2002 Apr 5;277(14):12158-63. Epub 2002 Jan 23.

10. Forlani G, Bossi E, Ghirardelli R, Giovannardi S, Binda F, Bonadiman L, Ielmini L, Peres A. Mutation K448E in the external loop 5 of rat GABA transporter rGAT1 induces pH sensitivity and alters substrate interactions. *J Physiol.* 2001 Oct 15;536(Pt 2):479-94.
11. Forlani G, Bossi E, Perego C, Giovannardi S, Peres A. Three kinds of currents in the canine betaine-GABA transporter BGT-1 expressed in *Xenopus laevis* oocytes. *Biochim Biophys Acta.* 2001 Apr 23;1538(2-3):172-80.
12. Peres A, Bossi E. Effects of pH on the uncoupled, coupled and pre-steady-state currents at the amino acid transporter KAAT1 expressed in *Xenopus* oocytes. *J Physiol.* 2000 May 15; 525 Pt 1:83-9.