
BIOGRAPHICAL SKETCH

NAME		POSITION TITLE	
Silvia Sacchi, PhD		Associate Professor of Molecular Biology, Dept. of Biotechnology and Life Sciences, University of Insubria	
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of Milan (Italy)	B.S. with Honor	1997	Biology
University of Insubria (Italy)	Ph.D.	2003	Developmental and Evolutionary Biology
University of Insubria (Italy)	Postdoctoral training	2003-2008	Biochemistry, Neurobiology, Neurochemistry.

Positions and Memberships:Professional Positions:

1999	Adviser for the pharmaceutical company ACS DOBFAR SpA
2001	Adviser for the chemical/pharmaceutical company Antibioticos SpA
2005	Visiting Researcher in Laboratoire de Neurobiologie Cellulaire et Moléculaire, Istitute Fédératif de Neurobiologie Alfred Fessard, Gif-sur-Yvette (France)
2006 – present	Assistant Professor of Protein Engineering, School of Sciences, University of Insubria (Italy)
2009 - 2017	Research Fellow, Dept. of Biotechnology and Life Sciences, University of Insubria (Italy)
2015	National Scientific Qualification for Associate Professor in General Biochemistry and Clinical Biochemistry (05/E1) and Molecular Biology (05/E02)
2017- present	Associate professor of Molecular Biology, Dept. of Biotechnology and Life Sciences, University of Insubria (Italy)

Memberships:

2005-present	Member of the Italian Society of Biochemistry and Molecular Biology (SIB)
2012-present	Member of the European Society of Neurochemistry (ESN) and of the International Society for Neurochemistry (ISN)

Awards and prizes:

2003	National Research Award for the best PhD thesis on Protein Structure and Function from the Italian Biochemical and Molecular Biology Society
2004	“Young Researcher” Award 2004 from the Consorzio Interuniversitario Biotecnologie
2009	“Best Young Researcher” Award 2009 from Centro Insubre di Biotecnologie per la salute Umana, University of Insubria

Research topics:

The scientific career of Silvia Sacchi focused on the investigation of the functional and structural properties of the flavoenzyme D-amino acid oxidase (DAAO), a model protein in enzyme biochemistry. She investigated the structure-function relationships of DAAO from different sources, by using methodological approaches: site-directed mutagenesis; kinetic and protein stability studies; flavin reactivity and redox properties analyses; and she carried out structural investigations. Furthermore, she exploited her experience in molecular biology and protein expression in the field of enzyme biotechnology by “evolving” improved enzymatic activities using rational and directed evolution methods.

More recently, Silvia Sacchi has been investigating the molecular mechanisms involved in the regulation of the catabolism of the atypical neuromodulators D-serine and D-aspartate in the brain, which is mediated by DAAO and D-aspartate oxidase (DDO). D-serine is an essential activator of the N-methyl-D-aspartate receptors (NMDAr); it acts as a receptor co-agonist while D-aspartate is an alternative agonist. Alterations in their metabolism might affect the NMDAr functionality and have been implicated in several pathologies of the

central nervous system, among which schizophrenia. In the frame of this project, Silvia Sacchi was responsible of the biochemical characterization of human DAAO and its regulatory protein pLG72. She is currently committed to the investigation of the effect of mutations in DAAO and pLG72, of the structural details of DAAO-pLG72 interaction, and of the mechanisms involved in the regulation of the complex formation (both in vitro and in a cellular systems). Moreover, she is studying processes affecting D-aspartate levels through the modulation of DDO activity in physiological and pathological condition.

Along the years, Silvia Sacchi established a network of national and international collaborations with researchers interested in studying D-amino acids (mainly D-serine and D-aspartate) metabolism and their biological role as neuromodulators.

Silvia Sacchi is author of 42 papers on International peer-review journals, of 6 invited publications on books and of 59 symposium proceedings. She gave a total of 9 oral communications at national and international meetings (she was invited-speaker in 4 of them) and acts as a reviewer for 6 international peer-review journals. IF total: 188.991; Citation: 1184; H index: 19 (WoS); i10-index: 31

Most representative 10 peer-reviewed publications

1. Punzo D, Errico F, Cristino L, Sacchi S, Keller S, Belardo C, Luongo L, Nuzzo T, Imperatore R, Florio E, De Novellis V, Affinito O, Migliarini S, Maddaloni G, Sisalli M J, Pasqualetti M, Pollegioni L, Maione S, Chiariotti L, Usiello A (2016). Age-related changes in D-aspartate oxidase promoter methylation control extracellular D-aspartate levels and prevent cell death during brain aging. *J Neurosci.* 36:3064-3078.
2. Sacchi S, Binelli G, Pollegioni L (2016). G72 primate-specific gene: a still enigmatic element in psychiatric disorders. *Cell Mol Life Sci.* 73:2029-2039.
3. Cappelletti P, Piubelli L, Murtas G, Caldinelli L, Valentino M, Molla G., Pollegioni L, Sacchi S. (2015). Structure-function relationships in human d-amino acid oxidase variants corresponding to known SNPs. *BBA.* 1854:1150-1159.
4. Le Bail M, Martineau M, Sacchi S, Yatsenko N, Radzishevsky I, Conrod S, Ouares K A, Wolosker H, Pollegioni L, Billard J-M, Mothet J-Pierre, Snyder S H. (2015). Identity of the NMDA receptor coagonist is synapse specific and developmentally regulated in the hippocampus. *PNAS USA.* 112: E204-E213
5. P. Cappelletti, P. Campomenosi, L. Pollegioni, S. Sacchi (2014). The degradation (by distinct pathways) of human D-amino acid oxidase and its interacting partner pLG72--two key proteins in D-serine catabolism in the brain. *FEBS J.* 281: 708-723
6. Li Y, Sacchi S, Pollegioni L, Basu AC, Coyle JT, Bolshakov VY. Identity of endogenous NMDAR glycine site agonist in amygdala is determined by synaptic activity level. 2013. *Nat. Commun.* 4:1760.
7. Curcio L, Podda MW, Leone L, Piacentini R, Mastronardo A, Cappelletti P, Sacchi S, Pollegioni L, Grassi C, D'Ascenzo M. Reduced D-serine levels in the nucleus accumbens of cocaine-treated rats hinder the induction of NMDA receptor-dependent synaptic plasticità. 2013. *Brain.* 136:1216-1230.
8. Sacchi S, Caldinelli L, Cappelletti P, Pollegioni L, Molla G. Structure-function relationships in human D-amino acid oxidase. 2012. *Amino Acids.* 43:1833-1850.
9. Sacchi S, Cappelletti P, Giovannardi S, Pollegioni L. Evidence for the interaction of D-amino acid oxidase with pLG72 in a glial cell line. 2011. *Mol Cell Neurosc.* 48:20-28.
10. Sacchi S, Bernasconi M, Martineau M, Mothet JP, Ruzzene M, Pilone MS, Pollegioni L, Molla G. pLG72 modulates intracellular D-serine levels through its interaction with D-amino acid oxidase: Effect on schizophrenia susceptibility. *J Biol Chem.* 2008. 28332:22244-22456.