

Curriculum vitae

SILVIA COCO

Actual position: Researcher/Assistant professor, University of Milano-Bicocca

Date of birth : 23/11/1969, Ivrea (Torino), Italy

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Dr. Silvia Coco graduated in 1994 in Biological Sciences at the University of Milano (Dept. Medical Pharmacology, Toxicology and Chemotherapy, under the supervision of Dr. Michela Matteoli), where she also obtained the title of Specialist (Scuola di Specializzazione) in Pharmacology (1997) and Doctor of Research (PhD in Pharmacology and Toxicology, 2001), at the CNR Institute of Neuroscience (Milano Section). During her period at the University of Milano/CNR she was awarded with a few fellowships and awards. In particular between Apr. 03-Aug. 04 she was a young researcher contractor (COCOCO, awarded by FIRB); between Jan. 01-Mar. 03 she was granted with fellowships (Assegni di Ricerca) by CNR-ASI (Azienda Aerospaziale Italiana), CNR-HFSP (Human Frontier Science Program), CNR-EC (European Comunity); she was granted with a fellowship by MURST and Pharmacia & Upjohn (1996) and by the Human Frontier Science Program (HFSP, 1995).

She also spent a period, as PhD visiting student, at Yale University (CT, USA), in Dr. De Camilli's lab, Dept. of Cell Biology (June 97-Feb.98)

Since 1 March 2005 Dr. Coco is a permanent Researcher at the Department of Medicine and Surgery, University of Milano-Bicocca, after a short period (Sept. 2004- Feb. 2005) as a non-permanent researcher at the same University, following a research program entitled "Study of the role of caveolin in neuronal migration", under the supervision of Prof. Marco Parenti.

RESEARCH INTERESTS

Currently Dr. Coco's main research interest concerns the investigation of the molecular mechanisms underlying the therapeutic effects of mesenchymal stem cells (MSC) on CNS cells. In particular, the lab aims at studying the paracrine action exerted by MSCs through the release of bioactive molecules including soluble factors and microvesicles/exosomes (i.e. extracellular vesicles) able to influence the activity of target cells, in particular in the context of neurodegenerative diseases (e.g. Alzheimer's Disease, Traumatic Brain Injury).

Past research interests concerned the characterization of the mechanisms of synaptogenesis in primary cultured hippocampal neurons: structural and functional analysis of the pre- and postsynaptic compartments during the formation of synaptic contacts; study of the mechanisms of neurotransmitter release; study of the mechanisms of secretion in primary cultures of astrocytes.

ACADEMIC ASSIGNMENTS

Since 2012 she is a Member of the Commission of career counselling (Commissione Orientamento di Ateneo, last designation assigned by Rectoral Decree 0015386/18, 06/03/2018; and for the Department of Medicine and Surgery). For this reason she recently (2016) attended to a course entitled "Lavorare in rete. Dai servizi di orientamento di Ateneo buone pratiche, bisogni, risultati" (25 February, 1 April, 29 April, 9 June 2016).

Since 2015 she is also coordinator of the Job Placement Commission for the Dept. of Medicine and Surgery.

In addition to carry out research projects, Dr. Coco exerts teaching tasks at the University of Milano-Bicocca. In particular:

Since 2011 she is being Coordinator of the integrated courses of Pharmacology at the following Degree courses

- Biomedical Laboratory Techniques
- Dental hygiene

She is also Lecturer in Pharmacology at the following Degree courses

- School of Medicine and Surgery
- Childhood Neuro and Psychomotricity
- Techniques of Medical Radiology for Imaging and Radiotherapy

Since 2016 she is lecturer in Pharmacology at the Nursing's Faculty, University of Milano-Bicocca

She is tutor for thesis of students of Medical Biotechnology and Biological Sciences Degree Courses (Master degrees).

Since 2011 she is being the coordinator of the course of Pharmacology for the MIX MODE course at the International College of Osteopathic medicine (ICOM) Cinisello Balsamo, Milano.

From 2005 to 2008 she was lecturer in Pharmacogenomics, Biotechnology Faculty, University of Milano-Bicocca; and Lecturer in Pharmacology at the Medicine and Surgery Faculty, University of Milano-Bicocca.

From 2002 to 2003 she was Teacher (Cultore della materia) in Pharmacology, at Educatori professionali, University of Milano; from 1994 to 1996 she was teacher, for the primary culture section in the "Molecular Biology of receptors and methods for their structural and functional characterization" course organized by Consorzio Siena Ricerche, Dept. of Medical Pharmacology, Chemiotherapy and Tossicology, University of Milano. Finally, in 1994 she was a teacher of Videomicroscopy, Dept. of Medical Pharmacology, Chemiotherapy and Tossicology, University of Milano.

MEMBERSHIPS:

Dr. Coco is member of the Italian Society for Neuroscience (SINS), the Milan Center for Neuroscience (NEUROMI), member of the Federation European Neuroscience Societies (FENS); the Forum of Italian Researchers on Mesenchymal Stromal Stem Cells (FIRST). She is a member of the Register of Expert Peer Reviewers For Italian Scientific Evaluation (REPRISE)

She is also reviewer for the following journals: PLOSONE, Cellular and Molecular Neurobiology, Neural Regeneration Research (NRR), Journal of Neuroscience Methods, Histology and Histopathology, Neuroscience, Stem Cells, Cellular and Molecular Neuroscience, Behavioural Neurology, Annals of Hematology.

She is also grant reviewer for the Futuro in Ricerca (FIRB), by MIUR (Ministero dell'Istruzione, dell'Università e della Ricerca).

RECENT ORAL COMMUNICATIONS/SEMINARS AS INVITED SPEAKER:

-**UNISTEM DAY**, giornata europea dedicata alla divulgazione sulle cellule staminali, "The long and fascinating trip of stem cell research" Varese, March 16, 2018

-University of Verona Scuola di Dottorato di SCIENZE DELLA VITA E DELLA SALUTE "**Mesenchymal stem cell Extracellular Vesicles: a new challenge for brain diseases?**" **November 28, 2017- Aula E – Istituti Biologici.**

-**UNISTEM** "The long and fascinating trip of stem cell research" Varese, March 17, 2017

-**SINS XVI congress**, Cagliari, October 8-11, 2015 Symposium "Emerging role of extracellular vesicles in the brain: implications for intercellular communication, biomarker development and therapy.

PUBLICATIONS

Dr. Coco is authors of 26 peer reviewed publications, reaching 21 h-index and 1761 of total citations and 3 book chapters (SCOPUS, February 2018).

Peer reviewed publications:

- 1) Desiato G., Losurdo M., Elia C., Saccomano A. and Coco S. *Mesenchymal Stem Cell Signature In Regenerative Medicine*, **accepted** for the publication in eBook series "Frontiers in Stem Cell and Regenerative Medicine Research", Bentham Science Editor. *Peer reviewed*
- 2) Lonati E, Sala G, Tresoldi V, Coco S., Milani C, Farina F, Botto L, Salerno D, Palestini P, Bulbarelli A. Unconventional secretion of mis-processed tau after ischemia: a prion-like propagation mechanism to Alzheimer's disease onset. *Submitted.*
- 3) Botto L, Cunati D, Coco S., Sesana S, Bulbarelli A, Biasini E, Colombo L, Negro A, Chiesa R, Masserini M, Palestini P. Role of Lipid Rafts and GM1 in the Segregation and Processing of Prion Protein. **PLoS One**. 2014 May 23; 9(5):e98344. doi: 10.1371/journal.pone.0098344
- 4) Bossio C, Mastrangelo R, Morini R, Tonna N, Coco S., Verderio C, Matteoli M, Bianco F. (2013). A Simple Method to Generate Adipose Stem Cell-Derived Neurons for Screening Purposes. **J. Mol. Neurosci**. 2013 Oct;51(2):274-81. doi: 10.1007/s12031-013-9985-8
- 5) Mauri M, Lentini D, Gravati M, Foudah D, Biella G, Costa B, Toselli M, Parenti M, Coco S. (2012) Mesenchymal stem cells enhance GABAergic transmission in co-cultured hippocampal neurons. **Mol Cell Neurosci**. 49:395-405.
- 6) Biagini G, Torsello A, Marinelli C, Gualtieri F, Vezzali R, Coco S., Bresciani E, Locatelli V. (2011) Beneficial effects of desacyl-ghrelin, hexarelin and EP-80317 in models of status epilepticus. **Eur J Pharmacol**. 670:130-6.
- 7) Lentini D., Guzzi F., Pimpinelli F., Zaninetti R., Cassetti A., Coco S., Maggi R. and Parenti M. (2008) Polarization of caveolins and caveolae during migration of immortalized neurons. **J. Neurochem**. 104:514-523.
- 8) Verderio C, Grumelli C, Raiteri L, Coco S., Paluzzi S, Caccin P, Rossetto O, Bonanno G, Montecucco C and Matteoli M. (2007) Traffic of Botulinum Toxins A and E in Excitatory and Inhibitory Neurons. **Traffic**. 8:142-153.
- 9) Frassoni C., Inverardi F., Coco S., Ortino B., Grumelli C., Pozzi D., Verderio C. and Matteoli M. (2005) Analysis of SNAP-25 immunoreactivity in hippocampal inhibitory neurons during development in culture and in situ. **Neuroscience** 131:813-23.
- 10) Matteoli M., Coco S., Schenk U. and Verderio C. (2004) Vesicle turnover in developing neurons: how to build presynaptic terminals. **Trends in Cell Biol**. 14:133-140.
- 11) Verderio C., Pozzi D., Pravettoni E., Inverardi F., Schenk U., Coco S., Proux-Gillardeaux V., Galli T., Rossetto O., Frassoni C. and Matteoli M. (2004). SNAP-25 Modulation of Calcium Dynamics Underlies Differences in GABAergic and Glutamatergic Responsiveness to Depolarization. **Neuron**. 41:599-610.
- 12) Coco S., Calegari F., Pravettoni E., Taverna E., Rosa P., Matteoli M. and Verderio C. (2003). Storage and release of ATP from astrocytes in culture. **J. Biol. Chem**. 278:1354-1362.
- 13) Armano S., Coco S., Bacci A., Pravettoni E., Schenk U., Verderio C., Varoqui H., Erickson J.D. and Matteoli M. (2002) Localization and functional relevance of system A neutral amino acid transporters in cultured hippocampal neurons. **J. Biol. Chem**. 277:10467-10473.
- 14) Bacci A.°, Coco S.°, Pravettoni E., Schenk U., Armano S., Frassoni C., Verderio C., De Camilli P. and Matteoli M. (2001) Chronic blockade of glutamate receptors enhances presynaptic release and downregulates the interaction between synaptophysin-synaptobrevin-vesicle-associated membrane protein 2.° double first authorship. **J. Neurosci**. 21: 6588-6596.
- 15) Martinez-Arca S.°, Coco S.°, Mainguy G., Schenk U., Alberts P., Bouille P., Mezzina M., Prochiantz A., Matteoli M., Louvard D., Galli T. (2001) A common exocytotic mechanism mediates axonal and dendritic outgrowth. ° double first authorship. **J. Neurosci**. 21: 3830-3838.
- 16) Pravettoni E., Bacci A., Coco S., Forbicini P., Matteoli M. and Verderio C. (2000) Functional distribution of L-type and N-type calcium channels in cultured hippocampal neurons during synaptogenesis. **Dev. Biol**. 227: 581-594.

- 17) Coco S., Raposo G., Fontaine J.J., Takamori S., Zharaoui A., Jahn R., Matteoli M., Louvard D. and Galli T. (1999) Subcellular localization of TI-VAMP in neuronal cells: evidence for a novel membrane compartment. **J. Neurosci.** 19: 9803-9812.
- 18) Verderio C., Coco S., Pravettoni E., Bacci A. and Matteoli, M. (1999) Synaptogenesis in hippocampal cultures. **Cell. Mol. Life Sci.** 55: 1448-1462.
- 19) Calegari F., Coco S., Taverna E., Bassetti M., Verderio C., Corradi N., Matteoli M. and Rosa P. (1999) A regulated secretory pathway in cultured hippocampal astrocytes. **J. Biol. Chem.** 274: 22539-22547.
- 20) Verderio C., Coco S., Bacci A., Rossetto O., De Camilli P., Montecucco C. and Matteoli M. (1999) Tetanus toxin blocks the exocytosis of synaptic vesicles clustered at synapses, but not of synaptic vesicles in isolated axons. **J. Neurosci.** 19: 6723-6732.
- 21) Verderio C., Bacci A., Coco S., Pravettoni E., Fumagalli G. and Matteoli M. (1999) Astrocytes are required for the oscillatory activity in hippocampal neurons. **Eur. J. Neurosci.** 11: 2793-2800.
- 22) Verderio C., Coco S., Rossetto O., Montecucco C. and Matteoli M. (1999) Internalization and proteolytic action of botulinum toxins in CNS neurons and astrocytes. **J. Neurochem.** 73: 372-379.
- 23) Coco S., Verderio C., De Camilli P., Matteoli M. (1998) Calcium dependence of synaptic vesicle recycling before and after synaptogenesis. **J. Neurochem.** 71: 1987-1992.
- 24) Coco S., Verderio C., Trotti D., Rothstein J.D., Volterra A. and Matteoli M. (1997) Non-synaptic localization of the glutamate transporter EAAC1 in cultured hippocampal neurons. **Eur. J. Neurosci.** 9: 1902-1910.
- 25) Matteoli M., Verderio C., Rossetto O., Iezzi N., Coco S., Schiavo G. and Montecucco C. (1996) Synaptic vesicle endocytosis mediates the entry of tetanus neurotoxin into hippocampal neurons. **Proc. Natl. Acad. Sci.** 93: 13310-13315.
- 26) Matteoli M., Verderio C., Krawzeski K., Mundigl O., Coco S., Fumagalli G. and De Camilli P. (1995) Mechanisms of synaptogenesis in hippocampal neurons in primary culture. **J. Physiol. (Paris)**: 89: 51-55.
- 27) Verderio C., Coco S., Fumagalli G. and Matteoli M. (1995) Calcium-dependent glutamate release during neuronal development and synaptogenesis: different involvement of ω -Aga-IVa and ω -Ctx-GVla sensitive channels. **Proc. Natl. Acad. Sci.** 96: 6449-6453.
- 28) Verderio C., Coco S., Fumagalli G. and Matteoli M. (1994) Spatial changes in calcium signaling during the establishment of neuronal polarity and synaptogenesis. **J. Cell Biol.** 126: 1527-1536.

Abstracts published in journals:

- 1) Elia C.A., Marchetti S., Losurdo M., Saccomano A., Filipello F., Rasile M., Tamborini M., Matteoli M., Coco S. Extracellular Vesicles Isolated From Bone Marrow Mesenchymal Stem Cells Induce An Anti-Inflammatory Phenotype In Microglia Exposed To Human Abeta 1-42 **J Alzheimers Dis.** 2016 Jun 24;53 Suppl 1:S1-S74. doi: 10.3233/JAD-169002. Abstracts for the Second International Meeting of the Milan Center for Neuroscience (Neuromi): Prediction and Prevention of Dementia: New Hope (Milan, July 6-8, 2016).
- 2) E. Lonati, G. Sala, V. Tresoldi, S. Coco, C. Milani, A. Restelli, F. Farina, L. Botto, D. Salerno, P. Palestini, A. Bulbarelli. Ischemic injury elicits the unconventional secretion of protein hallmarks of Alzheimer's disease onset as seeds for interneuronal propagation. **J Alzheimers Dis.** 2016 Jun 24;53 Suppl 1:S1-S74. doi: 10.3233/JAD-169002.

Publications (National journals and book chapters)

- 1) Verderio C., Rossetto O., Coco S., Pravettoni E., Bacci A. and Matteoli M. (1998) *How clostridial toxins penetrates into neuronal cells.* **BiolT**, 7: 29-33.
- 2) Verderio C., Coco S. and Matteoli M. (1998) *Morphological studies of the secretory machinery using neurotoxin probes.* In: **Cellular and Molecular Mechanisms of toxin Action**, Ph. Lazarovici, Ed., Harwood Acad. Publ., Switzerland 419-438.

- 3) Coco S., Verderio C., Forbicini P., Bacci A. and Matteoli M. (1997) Maturation of pre- and post-synaptic compartments in hippocampal neurons developing in cultures. In: **NATO ASI Series**, Springer-Verlag Ed., series H: Cell Biology, vol. 100: 133-143.