

CURRICULUM VITAE

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January 2011 Associate member of the CNR-Institute of Neuroscience
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EDUCATION AND TRAINING:

2018 Obtained Abilitazione Scientifica Nazionale (ASN) to Full Professor BIO/13
2015 Associate Professor of Applied Biology
2004-2014 Assistant Professor in the Dept. of Molecular Biotechnology and Translational Medicine
2002-2003 Research Scientist, The Research Foundation SUNY in Stony Brook, Dept. of Neurobiology and Behavior, SUNY in Stony Brook, NY
1998-2002 Post doc, Howard Hughes Medical Institute, Department of Neurobiology and Behavior, SUNY in Stony Brook, NY.
1997 PhD in Cellular and Molecular Biology, Dept. of Pharmacology and Medical Toxicology, University of Milan.
1993 Graduate School, University of Milan, Dept. of Genetics and Microbiology. 110/110 cum laude.
1987 BS, Maturità Scientifica

RESEARCH INTEREST

The main focus of my research is to unravel the molecular machinery regulating the epigenome of neuronal cells and understand how the environment and experiences shape our behavior. In line, most of my contributions to science filled some gaps in general mechanisms involving epigenetics in transcription regulation, tissue specification and differentiation especially related to the nervous system. During my career, I contributed to discover and characterize Lysine Specific Demethylase 1 (LSD1), the first annotated histone demethylase. Today LSD1 is highly studied in cancer biology but its role in the neuronal context is likewise essential. We indeed began understanding its prominent implication in neurodevelopmental pathologies and neuropsychiatric disorders. With my group, we identified a mammalian-restricted neuronal isoform of this enzyme, neuroLSD1 which, together with LSD1, enables a further layer of regulation proper of the most complex brain-related behaviors. Through transcriptional modulation of synaptic- and plasticity-related genes, the dual system LSD1-neuroLSD1 represents a unique tool able to modify the mammalian brain epigenome in response to neuronal activity. Thus, LSD1 and neuroLSD1 participate in the epigenetic mechanisms that translate the effect of several environmental factors among which stress and aging into an altered transcriptional physiology in the mammalian brain. In particular, we are now interested in understanding the epigenetic mechanisms of stress response in the hippocampus and how they foster the onset of Major Depression in those individuals that are vulnerable to stress.

As LSD1 expert, I also had the chance to be involved in the study of a recently discovered neurodevelopmental disorder, namely Cleft Palate, Psychomotor Retardation, and Distinctive Facial Features (CPRF) (OMIM: 616728), caused by LSD1 mutations, unraveling that the three patients so far identified display loss of function mutations. Extreme rarity of CPRF has to do with another peculiar feature of *LSD1* gene, listed in the top 1% of evolutionarily constrained genes, i.e. those genes that are intolerant to functional variation, an aspect that further emphasizes its fundamental role in the brain.

PUBLICATIONS

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2. Rusconi F, **Battaglioli E**. Acute Stress-Induced Epigenetic Modulations and Their Potential Protective Role Toward Depression. *Front Mol Neurosci*. 2018 May 31;11:184. PMID: PMC5990609.
3. Prini P, Rusconi F, Zamberletti E, Gabaglio M, Penna F, Fasano M, **Battaglioli E**, Parolaro D, Rubino T. Adolescent THC exposure in female rats leads to cognitive deficits through a mechanism involving chromatin modifications in the prefrontal cortex. *J Psychiatry Neurosci*. 2017 Oct 12;42(6):170082. PMID: 29022873.
4. Iwase S, Bérubé NG, Zhou Z, Kasri NN, **Battaglioli E**, Scandaglia M, Barco A. Epigenetic Etiology of Intellectual Disability. *J Neurosci*. 2017 Nov 8;37(45):10773-10782. doi: 10.1523/JNEUROSCI.1840-17.2017. Review.: PMC5678009.
5. Ferrari L, Scuvera G, Tucci A, Bianchessi D, Rusconi F, Menni F, **Battaglioli E**, Milani D, Riva P. Identification of an atypical microdeletion generating the RNF135-SUZ12 chimeric gene and causing a position effect in an NF1 patient with overgrowth. *Hum Genet*. 2017 Aug 3. doi: 10.1007/s00439-017-1832-5. [Epub ahead of print] PubMed PMID: 28776093.
6. Rusconi F, Grillo B, Toffolo E, Mattevi A, **Battaglioli E**. NeuroLSD1: Splicing-Generated Epigenetic Enhancer of Neuroplasticity. *Trends Neurosci*. 2017 Jan;40(1):28-38. doi: 10.1016/j.tins.2016.11.002. Epub 2016 Dec 13. Review. PubMed PMID: 27986293.
7. Pilotto S, Speranzini V, Marabelli C, Rusconi F, Toffolo E, Grillo B, **Battaglioli E**, Mattevi A. LSD1/KDM1A mutations associated to a newly described form of intellectual disability impair demethylase activity and binding to transcription factors. *Hum Mol Genet*. 2016 Jun 15;25(12):2578-2587. Epub 2016 Apr 19. PubMed PMID: 27094131.
8. Rusconi F, Grillo B, Ponzoni L, Bassani S, Toffolo E, Paganini L, Mallei A, Braida D, Passafaro M, Popoli M, Sala M, **Battaglioli E**. LSD1 modulates stress-evoked transcription of immediate early genes and emotional behavior. *Proc Natl Acad Sci U S A*. 2016 Mar 29;113(13):3651-6. doi: 10.1073/pnas.1511974113. Epub 2016 Mar 14. PubMed PMID: 26976584; PubMed Central PMCID: PMC4822633.
9. Barrios AP, Gomez AV, Sez JE, Ciossani G, Toffolo E, **Battaglioli E**, Mattevi A, Andres ME. Differential properties of transcriptional complexes formed by the CoREST family. *Mol Cell Biol*. 2014 May 12. [Epub ahead of print] PubMed PMID:24820421.
10. Rusconi F, Paganini L, Braida D, Ponzoni L, Toffolo E, Maroli A, Landsberger N, Bedogni F, Turco E, Pattini L, Altruda F, De Biasi S, Sala M, **Battaglioli E**. LSD1 Neurospecific Alternative Splicing Controls Neuronal Excitability in Mouse Models of Epilepsy. *Cereb Cortex*. 2014 Apr 15. [Epub ahead of print] PubMed PMID: 24735673.
11. Toffolo E, Rusconi F, Paganini L, Tortorici M, Pilotto S, Heise C, VerPELLI C, Tedeschi G, Maffioli E, Sala C, Mattevi A, **Battaglioli E**. Phosphorylation of neuronal Lysine-Specific Demethylase 1LSD1/KDM1A impairs transcriptional repression by regulating interaction with CoREST and histone deacetylases HDAC1/2. *J Neurochem*. 2014 Mar;128(5):603-16. doi: 10.1111/jnc.12457. Epub 2013 Oct 23. P
12. VerPELLI C, Piccoli G, Zibetti C, Zanchi A, Gardoni F, Huang K, Brambilla D, Di Luca M, **Battaglioli E**, Sala C. Synaptic activity controls dendritic spine morphology by modulating eEF2-dependent BDNF synthesis. *J Neurosci*. 2010; 30(17):5830-42. PubMed PMID: 20427644.
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15. Bodega B, Ramirez GD, Grasser F, Cheli S, Brunelli S, Mora M, Meneveri R, Marozzi A, Mueller S, **Battaglioli E**, Ginelli E. Remodeling of the chromatin structure of the facioscapulohumeral muscular dystrophy (FSHD) locus and upregulation of FSHD-related gene 1 (FRG1) expression during human myogenic differentiation. *BMC Biol.* 2009; 7:41.
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