

CV July 2025

Academic position:

Researcher

Dr. Francesca Biggio began her academic career at the Department of Life and Environmental Sciences, University of Cagliari, in 1999. She earned her degree in Biological Sciences in 2000. In January 2004, she was awarded a PhD in Neuroscience. Currently, she holds the position of full Researcher at the University of Cagliari.

From 2007 to 2009, Dr. Biggio completed a postdoctoral fellowship at the Department of Neuroscience, Georgetown University Medical Center, Washington D.C., USA.

During her career she has been actively involved in the field of neuropharmacology of central GABAergic transmission and interested in studying the role of neurosteroids both as modulators of GABA_A receptor expression and function and as endogenous factors capable of regulating the emotional states, and the effects of pregnancy and delivery on molecular regulation and function of GABA_A receptor, neurogenesis and trophic factors (BDNF, NGF). She has a skill in cellular and molecular biology techniques such as ELISA, Western Blot, Culture cells, Extraction and purification of steroids from cerebral tissue and plasma, RIA, HPLC, DNA and RNA extraction, Reverse Transcriptase Polymerase Chain Reaction (PCR), and several behavioral test, in particular, Elevated plus maze, Vogel test, Maternal care, Sucrose test, Foot-Shock test.

She has been involved in several projects regarding the stress-related effects on voluntary ethanol consumption and parallel changes in hormonal pattern and behavioral aspects. In the last decades she has been involved in studies on the effects of chronic stress such as maternal separation, social isolation and resocialization in rats, on the hormonal pattern, behaviour and the responsiveness to stress in adulthood, detecting the GABA_A subunits receptor, neuronal growth factors, steroids levels in order to define a correlation among behavioral and emotional state after the exposure of different protocols of stress.

Recently, Dr. Biggio has published studies on the combined effects of ethanol and energy drinks on synaptic plasticity impairments in GABAergic and glutamatergic transmission across various brain regions in adolescent and adult rats.

She is author and co-author of 40 scientific papers published in peer-reviewed international journals.

Principal publications:

1. Talani G, **BIGGIO F**, Gorule AA, Licheri V, Saolini E, Colombo D, Sarigu G, Petrella M, Vedele F, Biggio G, Sanna. **Sex-dependent changes of hippocampal synaptic plasticity and cognitive performance in C57BL/6J mice exposed to neonatal repeated maternal separation.** *E.Neuropharmacology*. 2023. 222:109301. doi: 10.1016/j.neuropharm.2022.109301.
2. **BIGGIO F**, Fattuoni C, Mostallino MC, Follesa P. **Effects of Chronic Bifidobacteria Administration in Adult Male Rats on Plasma Metabolites: A Preliminary Metabolomic Study.** *Metabolites*. 2022. 12(8):762. doi: 10.3390/metabo12080762.
3. Floris G, Asuni GP, Talani G, **BIGGIO F**, Pisu MG, Zanda MT, Contu L, Maciocco E, Serra M, Follesa P. **Increased Voluntary Alcohol Consumption in Mice Lacking GABA B(1) Is Associated With Functional Changes in Hippocampal GABA A Receptors.** *Front Behav Neurosci*. 2022. 16:893835. doi: 10.3389/fnbeh.2022.893835. eCollection 2022.
4. Biggio G, **BIGGIO F**, Talani G, Mostallino MC, Aguglia A, Aguglia E, Palagini L. **Melatonin: From Neurobiology to Treatment.** *Brain Sci*. 2021. 11(9):1121. doi: 10.3390/brainsci11091121.
5. Marti M, Talani G, Miliano C, Bilel S, **BIGGIO F**, Bratzu J, Diana M, De Luca MA, Fattore L. **New insights into methoxetamine mechanisms of action: Focus on serotonergic 5-HT2 receptors in pharmacological and behavioral effects in the rat.** *Exp Neurol*. 2021. 345:113836.
6. Talani G, **BIGGIO F**, Mostallino MC, Locci V, Porcedda C, Boi L, Saolini E, Piras R, Sanna E, Biggio G.. **Treatment with gut bifidobacteria improves hippocampal plasticity and cognitive behavior in adult healthy rats.** *Neuropharmacology*. 2020. 15;165:107909.
7. Pisu MG, Boero G, Garau A, Casula C, Cisci S, **BIGGIO F**, Concas A, Follesa P, Maciocco E, Porcu P, Serra M. Are preconceptional stressful experiences crucial elements for the aetiology of autism spectrum disorder? Insights from an animal model. *Neuropharmacology*. 2019. 157:107686.
8. **BIGGIO F**, Mostallino MC, Talani G, Locci V, Mostallino R, Calandra G, Sanna E, Biggio G. **Social enrichment reverses the isolation-induced deficits of neuronal plasticity in the hippocampus of male rats.** *Neuropharmacology*. 2019. 151:45-54.
9. Boero G, Pisu MG, **BIGGIO F**, Muredda L, Carta G, Banni S, Paci E, Follesa P, Concas A, Porcu P, Serra M. **Impaired glucocorticoid-mediated HPA axis negative feedback induced by juvenile social isolation in male rats.** *Neuropharmacology*. 2018. 31;133:242-253.
10. **BIGGIO F**, Talani G, Locci V, Pisu MG, Boero G, Ciarlo B, Grayson DR, Serra M. **Low doses of prenatal ethanol exposure and maternal separation alter HPA axis function and ethanol consumption in adult male rats.** *Neuropharmacology*. 2018. 131:271-281.
11. Boero G, **BIGGIO F**, Pisu MG, Locci V, Porcu P, Serra M. **Combined effect of gestational stress and postpartum stress on maternal care in rats.** *Physiol Behav*. 2018. 184:172-178.
12. Pisu MG, Boero G, **BIGGIO F**, Garau A, Corda D, Congiu M, Concas A, Porcu P, Serra M. **Juvenile social isolation affects maternal care in rats: involvement of allopregnanolone.** 2017. *Psychopharmacology*. 234(17):2587-2596.
13. Talani G, **BIGGIO F**, Licheri V, Locci V, Biggio G, Sanna E. **Isolation Rearing Reduces Neuronal Excitability in Dentate Gyrus Granule Cells of Adolescent C57BL/6J Mice: Role of GABAergic Tonic Currents and Neurosteroids.** 2016. *Front Cell Neurosci*.13;10:158.

14. Pisu MG, Garau A, Boero G, **BIGGIO F**, Pibiri V, Dore R, Locci V, Paci E, Porcu P, Serra M. **Sex differences in the outcome of juvenile social isolation on HPA axis function in rats.** Neuroscience. 2016. 21;320:172-82.
15. Talani G, Licheri V, **BIGGIO F**, Locci V, Mostallino MC, Secci PP, Melis V, Dazzi L, Carta G, Banni S, Biggio G, Sanna E. **Enhanced Glutamatergic Synaptic Plasticity in the Hippocampal CA1 Field of Food-Restricted Rats: Involvement of CB1 Receptors.** Neuropsychopharmacology. 2016. 41(5):1308-18.
16. **BIGGIO F.**, Pisu M.G., Garau A., Boero G., Locci V., Mostallino M.C., Olla P., Utzeri C., Serra M. **Maternal separation attenuates the effect of adolescent social isolation on HPA axis responsiveness in adult rats.** Eur Neuropsychopharmacol. 2014. 24(7):1152-61.
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18. Dazzi L., Talani G., **BIGGIO F.**, Utzeri C., Lallai V., Licheri V., Lutz S., Mostallino M.C., Secci P.P. Biggio G., Sanna E. **Involvement of the cannabinoid CB1 receptor in modulation of dopamine output in the prefrontal cortex associated with food restriction in rats.** PLoS One. 2014. 9(3):e92224.
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21. Avdoshina V., **BIGGIO F.**, Palchik G., Campbell LA., Mocchetti I. **Morphine induces the release of CCL5 from astrocytes: potential neuroprotective mechanism against the HIV protein gp120.** Glia. 2010. 58(13):1630-9.
22. **BIGGIO F.**, Gorini G., Utzeri C., Olla P., Marrosu F., Mocchetti I., Follesa P. **Chronic vagus nerve stimulation induces neuronal plasticity in the rat hippocampus.** Int J Neuropsychopharmacol. 2009. 12(9):1209-21.
23. Bachis A., **BIGGIO F.**, Major E.O., Mocchetti I. **M- and T-tropic HIVs Promote Apoptosis in Rat Neurons.** J Neuroimmune Pharmacol. 2009. 4(1):150-60.
24. Follesa P., **BIGGIO F.**, Gorini G., Caria S., Talani G., Dazzi L., Puligheddu M., Marrosu F., Biggio G. **Vagus Nerve Stimulation Increases the Gene Expression of BDNF and bFGF in the Rat Brain.** Brain Res. 2007. 1179:28-34.
25. **BIGGIO F.**, Gorini G., Caria S., Murru L., Sanna E., Follesa P. **Flumazenil selectively prevents the increase in α_4 subunit gene expression and an associated change in GABA_A receptor function induced by ethanol withdrawal.** Journal of Neurochemistry. 2007. 102(3):657-66.
26. **BIGGIO F.**, Gorini G., Caria S., Murru L., Mostallino M.C., Sanna E., Follesa P. **Plastic neuronal changes in GABA(A) receptor gene expression induced by progesterone metabolites: In vitro molecular and functional studies.** Pharmacol Biochem Behav. 2006. 84(4):545-54.
27. Follesa P., **BIGGIO F.**, Talani G., Murru L., Serra M., Sanna E., Biggio G. **Neurosteroids, GABA_A receptors, and ethanol dependence.** Psychopharmacology. 2006. 186(3):267-80.
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31. Biggio G., Dazzi L., **BIGGIO F.**, Mancuso L., Talani G., Busonero F., Mostallino M.C., Sanna E., Follesa P. ***Molecular mechanisms of tolerance to and withdrawal of GABA_A receptor modulators.*** Eur Neuropsychopharmacol. 2003. 13(6):411-23.
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36. Follesa P., Cagetti E., Mancuso L., **BIGGIO F.**, Manca A., Maciocco E., Massa F., Desole M.S., Carta M., Busonero F., Sanna E., Biggio G. ***Increase in expression of the GABA(A) receptor alpha(4) subunit gene induced by withdrawal of, but not by long-term treatment with, benzodiazepine full or partial agonists.*** Brain Res Mol Brain Res. 2001. 92(1-2):138-48.