

**BIOGRAPHICAL SKETCH**

(max 4 pages)

NAME: Viviana Trezza

POSITION TITLE: Associate Professor, Head of the Pharmacology Lab of the Dept. of Science, Roma Tre University

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Sapienza University of Rome, Italy	Master	03/2003	Pharmaceutical Chemistry
Sapienza University of Rome, Italy	PhD	01/2007	Pharmacology
Brain Center Rudolf Magnus, Utrecht (The Netherlands)	postdoc	01/2010	Neuropharmacology

**A. Personal Statement**

The primary aim of my research is to investigate the brain mechanisms underlying functional and dysfunctional socio-emotional behavior, with the long term goal of identifying novel pharmacological targets for neuropsychiatric and neurodevelopmental disorders characterized by aberrant socio-emotional processing. A special emphasis in my current research, that dates back to my doctoral studies, is also placed on the role of the endocannabinoid system in the regulation of emotions and cognition through development. Over the past years, I have worked on the development of an integrative overview of how different neurotransmitter systems in a distributed network of brain areas interact to modulate socio-emotional processing in health and disease states, and I characterized key mediating mechanisms involving the endocannabinoid, opioid, dopaminergic and noradrenergic systems. Within this line of research, I am also interested in shedding light on the brain mechanisms mediating the impact of drugs of abuse on social behavior. Experimental approaches in my lab include a combination of sophisticated behavioral, neurochemical and pharmacological methods in mouse and rat models of psychiatric diseases induced by genetic, pharmacological or environmental manipulations. I have established successful collaborations with neuropsychiatrists, psychologists, molecular neurobiologists, neuroimaging experts, organic chemists, and electrophysiologists to develop and implement experimental translational tools to study socio-emotional traits under normal and pathological conditions.

**B. Positions and Honors****Positions and Employment**

2003-2007	Ph.D. student, Dept. Physiology and Pharmacology, Sapienza University of Rome (Italy).
2007-2010	Post-doc, Dept. Neuroscience and Pharmacology, Brain Center Rudolf Magnus, University Medical Center Utrecht, Utrecht, The Netherlands
2010-2018	Assistant Professor and Head of the Pharmacology Lab, Dept. Science, Roma Tre University, Rome (Italy).
2018-to date	Associate Professor and Head of the Pharmacology Lab, Dept. Science, Roma Tre University, Rome (Italy).

**Other Experience and Professional Memberships**

2013-present	Head of the Animal Welfare Committee, Dept. Science, Roma Tre University, Rome, Italy
2014-2018	Member of the Quality Assurance Committee for research and teaching, Roma Tre University, Rome, Italy
2010-present	Member of the Advisory Board of the PhD School in Biomedical Sciences, Roma Tre University, Rome, Italy

- 2013, 2016 Member of the final dissertation Committee of the PhD School in Pharmacology, Sapienza University of Rome, Italy
- 2012 Member of the final dissertation Committee of the PhD School in Toxicology, Sapienza University of Rome, Italy
- 2011 Member of the final dissertation Committee of the PhD School in Neurobiology, Sapienza University of Rome, Italy

Member of the Italian Society for Neuroscience (SINS), Society for Neuroscience (SfN), European Brain and Behaviour Society (EBBS), Italian Society of Pharmacology (SIF), European Behavioral Pharmacology Society (EBPS), Mediterranean Neuroscience Society (MNS).

#### **Editorial Activity**

- 2019 Guest Editor, Neuropharmacology
- 2013 – present Review Editor, Behavioural Pharmacology
- 2010 – present Editorial Board Member, Frontiers in Behavioural Neuroscience
- 2012 – present Editorial Board Member, Plos One

#### **Awards**

- 2008 Prize for “The best young Pharmacology Researcher” sponsored by the Italian Society of Pharmacology (SIF) for the five most promising Italian Researchers younger than 35.
- 2010 Direct appointment at Roma Tre University (Italy). According to current Italian legislation, this recruitment process is reserved to researchers who, while appointed at foreign Universities for at least 3 years, performed excellent research in their own field leading to publications in leading international journals, demonstrated superior academic teaching, actively advised doctoral students and contributed to the intellectual life of their Institution (Decreto Ministeriale 23 settembre 2009 prot. n. 45/2009).
- 2013 European Behavioral Pharmacology Society (EBPS) Young Investigator Award
- 2016 “De Dianense Virtute” prize

#### **Supervision of PhD students (as promotor) and postdoctoral fellows**

##### **PhD students**

- Sara Schiavi (Promotor; Department of Science, University Roma Tre, Rome, Italy; 2015-2019)
- Annunziata D’Elia (Promotor; Department of Science, University Roma Tre, Rome, Italy; 2018-2022)
- Francesca Melancia (Promotor; Department of Science, University Roma Tre, Rome, Italy; 2015-2019)
- Michela Servadio (Promotor; Department of Science, University Roma Tre, Rome, Italy; 2013-2017)
- Antonia Manduca (Promotor; Department of Science, University Roma Tre, Rome, Italy; 2010-2014)
- Marijke Achterberg (co-promotor, Utrecht University, The Netherlands; 2010-2014)

##### **Postdoctoral fellows**

- Maria Morena (2014)
- Alexandre Giusti-Paiva (2015)

#### **Invited speaker (last 5 years only)**

- February 2019: The gut microbiota and autism. XLVI Seminario sulla evoluzione biologica e i grandi problemi della biologia. Accademia dei Lincei, Roma, Italia.
- October 2017: Novel pharmacological tools to treat social dysfunctions in autism spectrum disorders: insights from rodent studies. 17th Meeting of the Italian Society of Neuroscience (SINS), Ischia, Italia.
- October 2017: Targeting anandamide metabolism rescues core and associated autistic-like features in rats prenatally exposed to valproic acid. 38th Meeting of the Italian Society of Pharmacology (SIF), Rimini, Italia.
- June 2017: The endocannabinoid system as a novel therapeutic target for developmental disorders. 2nd International Conference of the Trisomy 21 Research Society, Chicago, USA.
- September 2017: New insights into opioid-cannabinoid-dopamine interactions in social play reward. 17th Biennial Meeting of the European Behavioural Pharmacology Society (EBPS), Heraklion, Greece.

- October 2015: Cannabinoid modulation of socio-emotional behaviour. 37° Meeting of the Italian Society of Pharmacology, Naples, Italy.
- July 2015: Neurobiology of social behavior: from physiology to pathophysiology. Institut de Pharmacologie – CNRS, Valbonne, France.
- June 2015: Rewarding value and neurobiological mechanisms of social play behavior in rats. Mediterranean Neuroscience Society Meeting, Pula, Italy.
- April 2015: Social reward processing during adolescence. British Neuroscience Association Festival of Neuroscience, Edinburgh, United Kingdom.
- March 2015: Social play in adolescence: how its observation may help us understand developmental disorders. ECNP workshop for junior scientist, Nice, France

## C Publications

Total number of publications in peer-reviewed international journals: 91; Total citations: 3793; Hirsch (H) index: 31 (Scopus, updated on 09/05/2019). Year of first publication: 2005; two maternity leaves

### 15 best peer-reviewed publications

1. Schiavi S., Manduca A., Segatto M., Campolongo P., Pallottini V., Vanderschuren L.J.M.J., **Trezza V.** (2019) Unidirectional opioid-cannabinoid cross-tolerance in the modulation of social play behavior in rats. *Psychopharmacology*, in press;
2. Tartaglione A.M., Schiavi S., Calamandrei G., **Trezza V.** (2019) Prenatal valproate in rodents as a tool to understand the neural underpinnings of social dysfunctions in Autism Spectrum Disorder. *Neuropharmacology*, in press;
3. Bara A., Manduca A., Bernabeu A., Borsoi M., Serviado M., Lassalle O., Murphy M., Wager-Miller J., Mackie K., Pelissier-Alicot A.L., **Trezza V.**, Manzoni O. (2018) Sex-dependent effects of in utero cannabinoid exposure on cortical function. *eLife*, Sep 11;7. pii: e36234;
4. Maurin T., Melancia F., Jarjat M., Castro L., Costa L., Khayachi A., Delhaye S., Castagnola S., Mota E., Di Giorgio A., Servadio M., Drozd M., Poupon G., Schiavi S., Sardone L., Azoulay S., Ciranna L., Martin S., Vincent P., **Trezza V.**, Bardoni B. (2018) Involvement of Phosphodiesterase 2A activity in the pathophysiology of Fragile X Syndrome. *Cerebral Cortex*, in press;
5. Melancia F., Schiavi S., Servadio M., Cartocci V., Campolongo P., Palmery M., Pallottini V., **Trezza V.** (2018) Sex specific autistic endophenotypes induced by prenatal exposure to valproic acid involve anandamide signaling. *British Journal of Pharmacology*, 175(18):3699-3712;
6. Servadio M., Manduca A., Melancia F., Leboffe L., Schiavi S., Campolongo P., Palmery M., Ascenzi P., di Masi A., **Trezza V.** (2018) Impaired repair of DNA damage is associated with autistic-like traits in rats prenatally exposed to valproic acid. *European Neuropsychopharmacology*, 28(1):85-96;
7. Servadio M., Melancia F., Manduca A., di Masi A., Schiavi S., Cartocci V., Pallottini V., Campolongo P., Ascenzi P., **Trezza V.** (2016) Targeting anandamide metabolism rescues core and associated autistic-like symptoms in rats prenatally exposed to valproic acid. *Translational Psychiatry*, 6(9):e902;
8. Vanderschuren L.J.M.J., Achterberg E.J., **Trezza V.** (2016) The neurobiology of social play and its rewarding value in rats. *Neuroscience & Biobehavioral Reviews*, 70:86-105;
9. Manduca A., Servadio M., Damsteegt R., Campolongo P., Vanderschuren L.J.M.J., **Trezza V.** (2016) Dopaminergic neurotransmission in the nucleus accumbens modulates social play behavior in rats. *Neuropsychopharmacology*, 41(9):2215-23, doi: 10.1038/npp.2016.22;
10. Manduca A., Morena M., Campolongo P., Servadio M., Palmery M., Trabace L., Hill M.N., Vanderschuren L.J.M.J., Cuomo V., **Trezza V.** (2015) Distinct roles of the endocannabinoids anandamide and 2-arachidonoylglycerol in social behavior and emotionality at different developmental ages in rats. *European Neuropsychopharmacology*, 25(8):1362-74;
11. Manduca A., Servadio M., Campolongo P., Palmery M., Trabace L., Vanderschuren L.J.M.J., Cuomo V., **Trezza V.** (2014) Strain- and context-dependent effects of the anandamide hydrolysis inhibitor URB597 on social behavior in rats. *European Neuropsychopharmacology*; 24(8):1337-48;

12. Manduca A., Campolongo P., Palmery M., Vanderschuren L.J.M.J., Cuomo V., **Trezza V.** (2014) Social play behavior, ultrasonic vocalizations and their modulation by morphine and amphetamine in Wistar and Sprague-Dawley rats. *Psychopharmacology*; 231(8):1661-73;
13. **Trezza V.**, Damsteegt R., Manduca A., Petrosino S., Van Kerkhof L.W.M., Pasterkamp R.J., Zhou Y., Campolongo P., Cuomo V., Di Marzo V., Vanderschuren L.J.M.J. (2012) Endocannabinoids in amygdala and nucleus accumbens mediate social play reward in adolescent rats. *The Journal of Neuroscience*, 32(43):14899-14908;
14. **Trezza V.**, Damsteegt R., Acherberg E.J.M., Vanderschuren L.J.M.J. (2011) Nucleus accumbens  $\mu$ -opioid receptors mediate social reward. *The Journal of Neuroscience*, 31(17):6362-70;
15. **Trezza V.**, Baarendse P.J.J., Vanderschuren L.J.M.J. (2010) The pleasures of play: pharmacological insights into Social Reward Mechanisms. *Trends in Pharmacological Sciences*, 31(10):463-9;

#### D. Research Support as Principal Investigator

##### Ongoing research support

Jerome Lejeune Foundation Research grant Trezza (PI) Ongoing  
"Role of the endocannabinoid system in Fragile X syndrome" (40000 €), released by Jerome Lejeune Foundation.  
The goal of this project is to behaviorally characterize and compare FMR1 KO rats and mice and to study whether changes in endocannabinoid activity are observed in these KO animals compared to WT controls.

PRIN 2017 Trezza (PI) Ongoing  
"Early life social experiences and dysregulation of the brain reward system: The role of endocannabinoid transmission" (125000 €), released by the Italian Ministry of Scientific Research.  
The goal of this project is to study the impact of early life social experiences on the brain reward system, focusing on endocannabinoid neurotransmission.

Linea 7, Dipartimenti

##### Completed research support

Firb Futuro in Ricerca grant RBFR10XKHS Trezza (PI) Completed in 2017  
"Post-traumatic stress disorder at developmental ages: from neurobiology and vulnerability factors to novel nanoparticle-based therapeutics" (716000 €), released by the Italian Ministry of Scientific Research.  
The goal of this project was to study neurobiological mechanisms and vulnerability factors for post-traumatic stress disorder at young age, using animal models, in order to provide novel pharmacological tools to treat both the cognitive and emotional symptoms of the disease.

Veni grant n. 91611052 Trezza (PI) Completed in 2015  
"Neurobiology of social behavior in adolescent rats" (250000 €), released by NWO, "Nederlandse Organisatie voor Wetenschappelijk Onderzoek".  
The goal of this project was to study the neural underpinnings of social behavior in adolescent rats.

Marie Curie Career Reintegration Grant n. 293589 Trezza (PI) Completed in 2015  
"The young social brain at work: from neurobiology to innovative pharmacotherapies for autism spectrum disorders" (100000 €), 7<sup>th</sup> Framework Programme People.  
The goal of this project was to investigate the neurobiology of social behavior, in both normal and impaired conditions, using rodent models.