BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
Maria Rosaria Tropea	Post-doctoral researcher

EDUCATION

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of Catania, Catania (Italy)	MD	2018	Medicine and Surgery
University of Catania, Catania (Italy)	Ph.D.	2022	Neuroscience

Positions and Honors

POSITIONS

- 2014-2018: MD student, Dept. Biomedical and Biotechnological Sciences, Univ. Catania, Catania (Italy)
- 2018-2022: PhD student, Dept. Biomedical and Biotechnological Sciences, Univ. Catania, Catania (Italy)
- 2018-2020: Visiting PhD student, Dept. Exptl. and Clinic. Medicine, Univ. Politecnica delle Marche, Ancona (Italy)
- Sept-Dec 2021: Visiting PhD student, MHeNS School for mental Health and Neuroscience, Maastricht University, Maastricht (The Netherlands)
- Jun-Jul 2022: Visiting Research Fellow, Dept. Exptl. and Clinic. Medicine, Univ. Politecnica delle Marche, Ancona (Italy)
- 2022-now: Post-doctoral researcher, Dept. Biomedical and Biotechnological Sciences, Univ. Catania, Catania (Italy)

AWARDS AND HONORS

- 2022: FENS-IBRO/PERC Travel Grant for FENS Forum 2022, Paris (France)
- 2019: Special mention Young Researchers in Physiology, Italian Society of Physiology
- 2019: Chair Oral Presentation Session. In: National Meeting of PhD Students in Neuroscience, SINS 2019, Napoli, Italy
- 2017: Best Oral Presentation in Fundamental Sciences; Medical Students' Society of Bucharest, Romania
- 2016: Best Poster Award, 67° National Meeting Italian Society of Physiology, Catania, Italy

OTHER EXPERIENCE

2021-now: Experimental procedure executive, Project "Role of nicotinic and dopaminergic receptors in aging and Alzheimer's disease", Univ. Catania, Catania (Italy)

Teaching: Tutoring and Integrative Teaching Activity for PhD and MD students, Univ. Catania
Journal reviewer: Journal of Alzheimer's Disease; Frontiers in Pharmacology; Frontiers in Molecular Neuroscience
Review editor: Brain Disease Mechanisms, Frontiers in Molecular Neuroscience

PROFESSIONAL SOCIETIES

Society for Neuroscience (SfN); Italian Society for Physiology (SIF); European Society for Neuroscience (FENS)

Peer-reviewed publications (in reverse chronological order).

1. **Tropea MR**, Gulisano W, Vacanti V, Arancio O, Puzzo D, Palmeri A. Nitric oxide/cGMP/CREB pathway and amyloid-beta crosstalk: From physiology to Alzheimer's disease. Free Radic Biol Med. 2022 Nov 20;193(Pt 2):657-668. doi: 10.1016/j.freeradbiomed.2022.11.022.
2. **Tropea MR**, Torrisi A, Vacanti V, Pizzone D, Puzzo D, Gulisano W. Application of 3D Printing Technology to Produce Hippocampal Customized Guide Cannulas. eNeuro. 2022 Sep 13:ENEURO.0099-22.2022. doi: 10.1523/ENEURO.0099-22.2022.
3. **Tropea MR**, Sanfilippo G, Giannino F, Davì V, Gulisano W, Puzzo D. Innate preferences affect results of object recognition task in wild type and Alzheimer's disease mouse models. J Alzheimers Dis. 2022;85(3):1343-1356. doi: 10.3233/JAD-215209.
4. Caruso G, Grasso M, Fidilio A, Torrisi SA, Musso N, Geraci F, **Tropea MR**, Privitera A, Tascedda F, Puzzo D, Salomone S, Drago F, Leggio GM, Caraci F. Antioxidant activity of fluoxetine and vortioxetine in a non-transgenic animal model of Alzheimer's disease. Front Pharmacol. 2021 Dec 24;12:809541. doi: 10.3389/fphar.2021.809541.
5. **Tropea MR**, Li Puma DD, Melone M, Gulisano W, Arancio O, Grassi C, Conti F, Puzzo D. Genetic deletion of α7 nicotinic acetylcholine receptors induces an age-dependent Alzheimer's disease-like pathology. Prog Neurobiol. 2021 Nov; 206:102154. doi: 10.1016/j.pneurobio.2021.102154.
6. Torrisi SA*, Geraci F*, **Tropea MR***, Grasso M, Caruso G, Fidilio A, Musso N, Sanfilippo G, Tascedda F, Palmeri A, Drago F, Salomone S, Puzzo D, Leggio GM, Caraci F. Fluoxetine and Vortioxetine reverse depressive-like phenotype and memory deficits induced by Aβ1-42 oligomers in mice: a key role of Transforming Growth Factor-β1. Front Pharmacol. *Co-first author.
7. Gulisano W, Melone M, Ripoli C, **Tropea MR**, Li Puma DD, Giunta S, Cocco S, Marcotullli D, Origlia N, Palmeri A, Arancio O, Conti F, Grassi G, Puzzo D. Neuromodulatory action of picomolar extracellular Aβ42 oligomers on pre- and postsynaptic mechanisms underlying synaptic function and memory. J Neurosci. 2019 May 24; 0163:19. doi: 10.1523/JNeurosci.0163-19.2019.
8. Costa L, Sardone LM, Bonaccorso CM, D'Antoni S, Spatuzza M, Gulisano W, **Tropea MR**, Puzzo D, Leopoldo M, Lacivita E, Catania MV, Ciranna L. Activation of Serotonin 5-HT7 Receptors Modulates Hippocampal Synaptic Plasticity by Stimulation of Adenylate Cyclases and Rescues Learning and Behavior in a Mouse Model of Fragile X Syndrome. Front Mol Neurosci. 2018 Oct 2;11:353. doi: 10.3389/fnmol.2018.00353.
9. Gulisano W, Melone M, Li Puma DD, **Tropea MR**, Palmeri A, Arancio O, Grassi C, Conti F, Puzzo D. The effect of amyloid-beta peptide on synaptic plasticity and memory is influenced by different isoforms, concentrations and aggregation status. Neurobiol Aging. Neurobiol Aging. 2018 Jul 18;71:51-60. doi: 10.1016/j.neurobiolaging.2018.06.025.
10. Gulisano W*, **Tropea MR***, Arancio O, Palmeri A, Puzzo D. Sub-efficacious doses of phosphodiesterase 4 and 5 inhibitors improve memory in a mouse model of Alzheimer's disease. Neuropharmacology. 2018 Jun 6;138:151-159. doi: 10.1016/j.neuropharm.2018.06.002. *Co-first author.
11. Puzzo D, Piacentini R, Fá M, Gulisano W, Li Puma DD, Staniszewski A, Zhang H, **Tropea MR**, Cocco S, Palmeri A, Fraser P, D'Adamio L, Grassi C, Arancio O. LTP and memory impairment caused by extracellular Aβ and Tau oligomers is APP-dependent. Elife. 2017 Jul 11;6. pii: e26991. doi: 10.7554/eLife.26991.

12. Palmeri A, Ricciarelli R, Gulisano W, Rivera D, Rebosio C, Calcagno E, **Tropea MR**, Conti S, Das U, Roy S, Pronzato MA, Arancio O, Fedele E, Puzzo D. Amyloid-β Peptide Is Needed for cGMP-Induced Long-Term Potentiation and Memory. J Neurosci. 2017 Jul 19;37(29):6926-6937. doi: 10.1523/JNEUROSCI.3607-16.2017.
13. Palmeri A, Mammana L, **Tropea MR**, Gulisano W, Puzzo D. Salidroside, a Bioactive Compound of Rhodiola Rosea, Ameliorates Memory and Emotional Behavior in Adult Mice. J Alzheimers Dis. 2016 Feb 26;52(1):65-75. doi: 10.3233/JAD-151159.

Oral communications

1. **Tropea MR**, Melone M, Vacanti V, Centaro A, Gulisano W, Leggio GM, Conti F, Puzzo D. Inhibition of D3 receptors rescues synaptic disfunction and memory impairment in aged and Alzheimer's disease mouse models. In: Neuroscience 2022, San Diego (CA), USA, 12-16 Nov 2022 (Nanosymposium).
2. **Tropea MR**, Melone M, Vacanti V, Centaro A, Gulisano W, Leggio GM, Conti F, Puzzo D. Physiological role of dopamine D3 receptors in hippocampal synaptic plasticity and memory in physiological conditions and age-related disorders. In: 72nd SIF National Congress, Bari, Italy, 14-16 Sept 2022 (Symposium).
3. **Tropea MR**, Gulisano W, Romano A, Giannino F, Vacanti V, Leggio GM, Puzzo D. Physiological role of dopamine D3 receptors in hippocampal synaptic plasticity and memory. In: The 39th Congress of International Union of Physiological Sciences, Beijing, China (Online) 7-11 May 2022.
4. **Tropea MR**, Gulisano W, Li Puma DD, Melone M, Arancio O, Grassi C, Conti F, Puzzo D. A failure of Amyloid-β physiological function due to the deletion of α7 nicotinic acetylcholine receptors triggers an Alzheimer's disease-like pathology. In: 71st SIF National Congress. Milan (online), 7-9 Sept 2021.
5. **Tropea MR**, Gulisano W, Teich A, Arancio O, Palmeri A, Puzzo D. Oligomeric Amyloid-beta at physiological concentrations rescues the impairment of hippocampal synaptic plasticity and memory in aged Amyloid Precursor Protein knockout mice. In: FEPS 2019. Bologna, Sept 10-13, 2019.
6. **Tropea MR**. Oligomeric amyloid-beta peptide at picomolar concentrations converts early-LTP into late-LTP, and short-term into long-term memory through the NO/cGMP/PKG/CREB pathway. In: 13th Annual Meeting of Young Researchers in Physiology. Anacapri (NA), May 10-12, 2019.
7. **Tropea MR**. Synaptic plasticity and Memory in physiological conditions and Neurodegenerative disorders. Workshop in: The International Medical Students' Congress of Bucharest. Bucharest (Romania), Dec 5-9, 2018 (invited speaker).
8. **Tropea MR**, Gulisano W, Arancio O, Prickaerts J, Palmeri A, Puzzo D. cAMP and cGMP specific phosphodiesterase inhibitors enhance memory in physiological conditions and Alzheimer's disease. In: 69° Congress of the Italian Physiological Society. Florence, Sept 19-21, 2018.
9. **Tropea MR**, Puzzo D. Amyloid-beta peptide is required for the cGMP-induced long-term potentiation and memory. In: The International Medical Students' Congress of Bucharest. Bucharest (Romania), Dec 6-10, 2017.
10. **Tropea MR**, Mammana L, Gulisano W, Puzzo D, Palmeri A. Effects of Salidroside, a bioactive compound of Rhodiola Rosea, on memory and emotional behavior in adult mice. In: 67° Congress of the Italian Physiological Society. Catania, Sept 21-23, 2016 (poster pitch context).

Poster presentations

1. **Tropea MR**, Melone M, Vacanti V, Gulisano W, Leggio GM, Conti F, Puzzo D. Inhibition of dopamine d3 receptors improves hippocampal synaptic plasticity and memory. In: FENS Forum 2022, Paris, France, 9-13 July 2022 (poster presenter).
2. **Tropea MR**, Gulisano W, Romano A, Giannino F, Leggio GM, Puzzo D. Physiological role of dopamine D3 receptors in hippocampal synaptic plasticity and memory. In SfN Virtual Neuroscience 2021. Nov 8-11, 2021 (poster presenter).
3. Gulisano W, **Tropea MR**, Puzzo D. The Lightmouse project: a complete open-source behavioral system from hardware to AI-based analysis software to study cognition in rodents. In: 71st SIF National Congress. Milan (online), Sept 7-9, 2021.
4. **Tropea MR**, Gulisano W, Li Puma DD, Melone M, Arancio O, Grassi C, Conti F, Puzzo D. A failure of Amyloid-β physiological function due to deletions of α7 nicotinic acetylcholine receptors triggers an Alzheimer's disease-like pathology. In SfN Global Connectome: a virtual event. Jan 11-13, 2021 (poster presenter).
5. **Tropea MR**, Gulisano W, Puzzo D. A novel modular behavioral apparatus to standardize experimental context in recognition memory assessment. In: Neuroscience 2019, Chicago (IL) USA, Oct 19-23, 2019 (poster presenter).
6. Gulisano W, Melone M, Ripoli C, **Tropea MR**, Li Puma DD, Giunta S, Cocco S, Marcotulli D, Origlia N, Palmeri A, Conti F, Grassi C, Puzzo D. Dissecting amyloid β physiological function at the synapse. In: Neuroscience 2019, Chicago (IL) USA, Oct 19-23, 2019.
7. Gulisano W, **Tropea MR**, Palmeri A, Puzzo D. Phosphodiesterase inhibitors as a possible therapeutic target in aging and Alzheimer's disease. In: 2019 SINS Meeting, Perugia, Sept 26-29, 2019.
8. Gulisano W, **Tropea MR**, Puzzo D. The relevance of a standardized experimental context to assess recognition memory: realization of a novel modular behavioral apparatus. In: FEPS 2019. Bologna, Sept 10-13, 2019.
9. **Tropea MR**, Gulisano W, Melone M, Li Puma DD, Palmeri A, Arancio O, Grassi C, Conti F, Puzzo D. Unraveling the role of different isoforms, concentrations, and aggregation status of amyloid-β peptide in hippocampal synaptic plasticity and memory. In: National Meeting of PhD Students in Neuroscience SINS 2019. Naples, Mar 1, 2019 (poster presenter).
10. Puzzo D, Gulisano W, **Tropea MR**, Arancio O, Palmeri A. A combination of sub-efficacious doses of phosphodiesterase 4 and 5 inhibitors rescued spatial, recognition and fear memory in a mouse model of Alzheimer's disease. In: Society for Neuroscience Meeting. San Diego, USA, Nov 3-7, 2018.
11. Gulisano W, Melone M, Li Puma DD, **Tropea MR**, Palmeri A, Arancio O, Grassi C, Conti F, Puzzo D. Unraveling the role of monomeric and oligomeric amyloid-β 1-40 and 1-42 at high and low concentrations in hippocampal synaptic plasticity and memory. In: Society for Neuroscience Meeting. San Diego, USA, Nov 3-7, 2018.
12. Ciranna L, Costa L, Spatuzza M, Bonaccorso CM, D'Antoni S, Gulisano W, **Tropea MR**, Leopoldo M, Lacivita E, Puzzo D, Catania MV. In vivo treatment with a 5-HT7 receptor agonist rescues synaptic plasticity, dendritic spine morphology, learning and behavior in a mouse model of Fragile X Syndrome. In: 11th FENS Forum. Berlin (Germany), July 7-11, 2018.
13. Puzzo D, Piacentini R, Fá M, Gulisano W, Li Puma DD, Staniszewski A, Zhang H, **Tropea MR**, Cocco S, Palmeri A, Fraser PE, D'Adamio L, Grassi C, Arancio O. Oligomers of amyloid-beta and tau impair synaptic plasticity and memory in an APP-dependent fashion. In: In: Society for Neuroscience Meeting. Washington D.C. (CA), USA. Nov 11-15, 2017.
14. Sanfilippo G, Melone M, Gulisano W, **Tropea MR**, Palmeri A, Conti F, Puzzo D. Both monomers and oligomers of Amyloid-β peptide are involved in synaptic plasticity in

physiological and pathological conditions. In: 68° Congress of the Italian Physiological Society. Pavia, Sept 6-8, 2017.

15. **Tropea MR**, Gulisano W, Puzzo D, Palmeri A. The effect of 200 pM Amyloid-beta on short- and long-term plasticity depends upon endogenous α7-nicotinic ACh receptors. In: 68° Congress of the Italian Physiological Society. Pavia, Sept 6-8, 2017 (poster presenter).
16. Puzzo D, Ricciarelli R, Gulisano W, **Tropea MR**, Rebosio C, Arancio O, Fedele E, Palmeri A. Amyloid-beta peptide is required for the cGMP-induced long-term potentiation and memory. In: In: Society for Neuroscience Meeting. San Diego (CA), USA. Nov 3-7, 2016.
17. Puzzo D, Ricciarelli R, Gulisano W, **Tropea MR**, Rebosio C, Arancio O, Fedele E, Palmeri A. Amyloid-beta peptide is needed for cGMP-induced long-term potentiation and memory. In: 10th FENS Forum. Copenhagen (Denmark), July 2-6, 2016.
18. **Tropea MR**, Mammana L, Gulisano W, Puzzo D, Palmeri A. Enhancing effects of Salidroside, a bioactive compound of Rhodiola Rosea, on cognition and emotional behavior in adult mice. In: Controversies in Neurodegeneration, Joint Meeting of the SIF Workgroups “neurodegenerative diseases” and “Inflammation”. Catania, Jun 9, 2016 (poster presenter).