

CURRICULUM OF SCIENTIFIC AND TEACHING ACTIVITY
TROPEA MARIA ROSARIA

PERSONAL INFORMATION

Name: Maria Rosaria Tropea

Address: Department di Scienze Biomediche e Biotecnologiche, Via S. Sofia 89 – Torre Biologica, 95123 Catania

Tel. +39(095)4781335 (laboratorio)

E-mail: mariarosaria.tropea@unict.it; tropea.mariarosaria@gmail.com

ACADEMIC QUALIFICATIONS

2025

National Scientific Qualification (ASN) for Associate Professorship in Physiology (BIOS-06/A)

Italian Ministry of University and Research (MUR), Italy

2019

Qualification to practice as Medical Doctor (Italy)

EDUCATION AND TRAINING

11/04/2022

PhD in Neuroscience

University of Catania

Experimental thesis entitled “Role of Amyloid- β peptide at the synapse in physiological conditions and in Alzheimer’s disease: crosstalk with 7-nAChRs and cyclic nucleotides”

18/10/2018

MD Degree in Medicine and Surgery (110/110 cum laude)

University of Catania, MD Degree Programme in Medicine and Surgery

Experimental thesis entitled “Amyloid-beta peptide and cGMP crosstalk in synaptic plasticity and memory: relevance in physiological conditions and neurodegenerative disorders”

01/08/2017-31/08/2017

IFMSA Professional Exchange

Department of Anesthesiology and Intensive Care, “Elias” University Emergency Hospital, Bucharest (Romania)

03/07/2012

High School Diploma

Liceo Scientifico Archimede, Acireale (CT), Italy

PROFESSIONAL EXPERIENCE

Research Activity

18/06/2025-present

Researcher under Framework Agreement (UniCT-OASI)

IRCCS Oasi Maria S.S. di Troina, Unit of Neuropharmacology and Translational Neuroscience

01/02/2024-present

Fixed-term Assistant Professor (RTD-A)

University of Catania, Department of Biomedical and Biotechnological Sciences

Research activity in: Neurophysiology and Neurobiology

Techniques: Behavioral studies, electrophysiology, molecular biology

13/03/2023-24/05/2023

Visiting Research Fellow

Marche Polytechnic University, Department of Clinical and Experimental Medicine, Ancona

CV Maria Rosaria Tropea

Research activity in: Neurophysiology and Neurobiology, Synaptic plasticity, Learning and memory, Alzheimer's disease
Techniques: Western blot

06/02/2023-31/01/2024

Research Fellow

University of Catania, Department of Biomedical and Biotechnological Sciences

Research activity in: Neurophysiology and Neurobiology, Synaptic plasticity, Learning and memory, Alzheimer's disease

Techniques: Behavioral studies, electrophysiology, molecular biology, stereotaxic surgery, microscopy

15/06/2022-05/07/2022

Visiting Research Fellow

Marche Polytechnic University, Department of Clinical and Experimental Medicine, Ancona

Research activity in: Neurophysiology and Neurobiology, Synaptic plasticity, Learning and memory, Alzheimer's disease

Techniques: Western blot

02/05/2022-02/11/2022

Research Grant Fellow

University of Catania, Department of Biomedical and Biotechnological Sciences

Research activity in: Neurophysiology and Neurobiology, Synaptic plasticity, Learning and memory, Alzheimer's disease

Techniques: Behavioral studies, electrophysiology, molecular biology, stereotaxic surgery

20/09/2021-22/12/2021

Visiting PhD Student

MHeNS School for mental Health and Neuroscience, Maastricht University, Maastricht, The Netherlands

Research activity in: Neurophysiology and Neurobiology, Alzheimer's disease

Techniques: calcium imaging, cell cultures

2018-2020 (4 mesi)

Visiting PhD Student

Marche Polytechnic University, Department of Clinical and Experimental Medicine, Ancona

Research activity in: Neurophysiology and Neurobiology, Synaptic plasticity, Learning and memory, Alzheimer's disease

Techniques: Immunohistochemistry, histology, microscopy ottica, microscopy confocale

01/11/2018-11/04/2022

PhD Student in Neuroscience

University of Catania, Department of Biomedical and Biotechnological Sciences

Research activity in: Neurophysiology and Neurobiology, Synaptic plasticity, Learning and memory, Alzheimer's disease

Techniques: Behavioral studies, electrophysiology, molecular biology, stereotaxic surgery

28/08/2014-15/10/2018

Medical Student - Research Internship for the preparation of the experimental thesis

University of Catania, Department of Biomedical and Biotechnological Sciences

Research activity in: Neurophysiology and Neurobiology, Synaptic plasticity, Learning and memory, Alzheimer's disease

Techniques: Behavioral studies, electrophysiology, molecular biology

Participation in Research Activities in Collaboration with National and International Research Groups

- 2024-present
Project title: "Preclinical and clinical breakthrough theranostic and treatments for cancer"
Role: Collaborator (western blot, behavioral studies)
PI: Prof. Giovanni Li Volti, University of Catania

- **2021**
Project title: “7 nicotinic acetylcholine receptor antagonism prevents amyloid beta-induced toxicity”
Role: Collaborator (calcium imaging in cell cultures)
PI: Prof. Jos Prickaerts, Maastricht University, Maastricht (NL)
- **2020-2023**
Project title: “3DLab-Sicilia - Creation of a regional network to provide innovative services based on advanced visualization technologies”
Role: Collaborator (neuropsychological test design)
PI: Prof. Daniela Puzzo, University of Catania
- **2019-2020**
Project title: “Intranasal and oral administration of alprazolam as anxiety treatment: gender and age-related differences”
Role: Collaborator (behavioral studies)
PI: Prof. Daniela Puzzo, University of Catania
- **2019-2022**
Project title: “Application of computer aided design and artificial intelligence in cognitive neuroscience: from the construction of an open-source behavioral apparatus to high throughput analysis of data”
Role: Collaborator (rationale, behavioral studies, design and construction of the apparatus)
PI: Dr. Walter Gulisano, University of Catania
- **2018-present**
Project title: “Role of dopamine in synaptic plasticity and cognition: implications for aging and Alzheimer’s disease”
Role: Collaborator (rationale, project drafting, behavioral and electrophysiological studies, western blot)
PI: Prof. Daniela Puzzo, University of Catania
In collaboration with: Prof. Fiorenzo Conti, Marche Polytechnic University, Ancona; Prof. Gian Marco Leggio, University of Catania
- **2016-present**
Project title: “Role of alpha7 acetylcholine receptors in Alzheimer’s disease pathogenesis”
Role: Collaborator (rationale, project drafting, behavioral and electrophysiological studies, microscopy)
PI: Prof. Daniela Puzzo, University of Catania
In collaboration with: Prof. Fiorenzo Conti, Marche Polytechnic University, Ancona; Prof. Claudio Grassi, Catholic University of the Sacred Heart, Roma; Prof. Ottavio Arancio, Columbia University, New York, NY (USA)
- **2016-2023**
Project title: “Application of 3D printing technology for production of customized guide cannulas for intrahippocampal injections”
Role: Collaborator (Nissl staining and behavioral studies)
PI: Dr. Walter Gulisano, University of Catania
- **2016-2021**
Project title: “Evaluation of antidepressant efficacy of vortioxetine in an animal model of cognitive dysfunction: focus on memory deficits”
Role: Collaborator (behavioral studies)
PI: Prof. Filippo Caraci, University of Catania
- **2016-2018**
Project title: “Activation of serotonin type 7 (5-HT7) receptors as a novel therapeutic strategy in Fragile X Syndrome”
Role: Collaborator (behavioral studies)
PI: Prof. Lucia Ciranna, University of Catania
- **2015-2019**
Project title: “Pre- and post-synaptic mechanisms underlying beta-amyloid physiological function and its crosstalk with nAChRs and second messenger systems”
Role: Collaborator (behavioral and electrophysiological studies)
PI: Prof. Daniela Puzzo, University of Catania
- **2015-2018**
Project title: “Effects of low doses of PDE inhibitors on cognition”

- Role: Collaborator (behavioral and electrophysiological studies)
 PI: Prof. Daniela Puzzo, University of Catania
 In collaboration with: Prof. Jos Prickaerts, Maastricht University, Maastricht (NL)
- 2014-present
 Project title: “Physiological role of beta-amyloid peptide in hippocampal synaptic plasticity and memory”
 Role: Collaborator (behavioral and electrophysiological studies, western blot)
 PI: Prof. Daniela Puzzo, University of Catania
 In collaboration with: Prof. Fiorenzo Conti, Marche Polytechnic University, Ancona; Prof. Claudio Grassi, Catholic University of the Sacred Heart, Roma; Prof. Ottavio Arancio, Columbia University, New York, NY (USA).
 - 2014-present
 Project title: “Cyclic nucleotides and beta-amyloid peptide in hippocampal synaptic plasticity and memory”
 Role: Collaborator (behavioral and electrophysiological studies, western blot)
 PI: Prof. Daniela Puzzo, University of Catania
 - **2014-2016**
 Project title: “Effects of Rhodiola Rosea in cognitive impairment: a bench-to-bedside translational study”
 Role: Collaborator (behavioral studies)
 PI: Prof. Agostino Palmeri, University of Catania
 - **2014-2017**
 Project title: “Effects of APP in oligomers-induced impairment of synaptic plasticity and memory”
 Role: Collaborator (behavioral studies)
 PI: Prof. Ottavio Arancio, Columbia University, New York, NY (USA)

Interpersonal and Organizational Skills Related to Research Activity

30/03/2021-present

Responsible for carrying out experiments for the animal research project “Role of nicotinic and dopaminergic receptors during aging and in Alzheimer’s disease”
 University of Catania, Department of Biomedical and Biotechnological Sciences

2018-present

Responsible for laboratory management “Neurophysiology of Learning and Memory, Aging and Alzheimer’s Disease” and organization of experimental activity (PI: Prof. Daniela Puzzo)
 University of Catania, Department of Biomedical and Biotechnological Sciences

AWARDS AND HONORS

- **2024:** Anna Kuliscioff Award 2024
- **09-13/07/2022:** FENS-IBRO/PERC Travel Grant for FENS Forum 2022
- 12/05/2019: Special mention YRP, Italian Physiological Society
- **10/12/2017:** Best Oral Presentation in Fundamental Sciences; Medical Students’ Society of Bucharest, Romania
- 23/09/2016: Best Poster Award, 67th National Congress of the Italian Physiological Society

REVIEWER ACTIVITY

International peer-reviewed scientific journals (Frontiers in Pharmacology; Frontiers in Molecular Neuroscience; Journal of Alzheimer’s Disease)
 06/2022-present: Review Editor in Brain Disease Mechanisms (specialty section of Frontiers in Molecular Neuroscience)

Scientific Societies

Italian Physiological Society, Society for Neuroscience

TEACHING ACTIVITY

A.Y. 2025-2026

Course SSD BIO/09 - Physiology

MD Degree Programme in Medicine and Surgery

University of Catania

A.Y. 2025-2026

Course SSD BIO/09 - Physiology

CdLM in Medicine and Surgery

University of Catania

A.Y. 2025-2026

Course SSD BIO/09 - Physiology

BSc Degree Programme in Nursing

University of Catania

A.Y. 2025-2026

Course SSD BIO/09 - Physiology

BSc Degree Programme in Occupational Therapy

University of Catania

A.Y. 2024-2025

Course SSD BIO/09 - Physiology

MD Degree Programme in Medicine and Surgery

University of Catania

A.Y. 2024-2025

Course SSD BIO/09 - Physiology

CdLM in Medicine and Surgery

University of Catania

A.Y. 2024-2025

Course SSD BIO/09 - Physiology

BSc Degree Programme in Nursing

University of Catania

A.Y. 2024-2025

Course SSD BIO/09 - Physiology

BSc Degree Programme in Occupational Therapy

University of Catania

A.Y. 2023-2024

Course SSD BIO/09 - Physiology

MD Degree Programme in Medicine and Surgery

University of Catania

A.Y. 2023-2024

Course SSD BIO/09 - Physiology

BSc Degree Programme in Nursing

University of Catania

A.Y. 2023-2024

Adjunct Lecturer

Course SSD BIO/09 - Physiology

BSc Degree Programme in Occupational Therapy

University of Catania

A.Y. 2022-2023
Adjunct Lecturer
Course SSD BIO/09 - Physiology
BSc Degree Programme in Nursing
University of Palermo (campuses of Agrigento, Caltanissetta and Trapani)

A.Y. 2022-2023
Adjunct Lecturer
Course SSD BIO/09 - Physiology
BSc Degree Programme in Nursing
University of Catania

14/02/2022-present
Teaching Assistant in Physiology (SSD BIO/09)
MD Degree Programme in Medicine and Surgery
University of Catania

11/01/2021-30/06/2021
Tutoring Activity - Young Researchers Fund
Degree Programme in Sports Science
Department of Biomedical and Biotechnological Sciences
University of Catania

2019-present
Supervisor of Experimental MD Theses in Medicine and Surgery
SSD BIO/09 - Physiology
University of Catania

2018-present
Supplementary Teaching Activities and Open-Lab Sessions
SSD BIO/09 - Physiology
MD Degree Programme in Medicine and Surgery
University of Catania

SCIENTIFIC PUBLICATIONS

Bibliometric Indicators

- Articles in peer-reviewed international journals (PubMed): 18
- Total h-index (Scopus): 11
- Citations (Scopus): 742
- Leadership (1st author): 10

PUBLICATIONS IN PEER-REVIEWED INTERNATIONAL JOURNALS

1. **Tropea MR***, Aceto G, Trovato RC, Nicitra E, Santuccio N, Intili G, D'Ascenzo M, Puzzo D. Dopamine D3 receptor blockade restores hippocampal synaptic plasticity and rescues memory deficits in Alzheimer's disease mouse models. *Front Aging Neurosci.* 2026 Jul 13;18:1840697. doi: 10.3389/fnagi.2026.1840697. ***Corresponding author.**
2. **Tropea MR**, Melone M, Piacentini R, Spiezio AD, Tore M, Trovato RC, Vacanti V, Bragina L, Puliatti G, Albin M, Cannata B, Abid SB, Tonesi N, Chiavegato A, Zonta M, Ripoli C, Losi G, Grassi C, Conti F, Puzzo D. Astrocytic $\alpha 7$ nicotinic acetylcholine receptors play an essential role in regulating glutamate dynamics and memory flexibility in the hippocampus. *Prog Neurobiol.* 2026 Jul 21;264:102943. doi: 10.1016/j.pneurobio.2026.102943.
3. Torrisi SA*, **Tropea MR***, Rizzo S, Giovenzana M, Magri C, Barbon A, Mingardi J, Chinello C, Pagani L, Pigad I, Leggio L, Iraci N, Gulisano W, Drago F, Puzzo D, Musazzi L, Leggio GM. Functional, synaptoproteomic and structural adaptations underlying sex-dependent traumatic stress

susceptibility/resilience in the hippocampus. *Pharmacol. Res.* 2026. doi: 10.1016/j.phrs.2025.108072.

***Co-first author.**

4. Cannata B, Sposito L, Albini M, Aceto G, Puliatti G, Lazzarino G, Ripoli C, **Tropea MR**, Puzzo D, Piacentini R, Grassi C. Functional deletion of $\alpha 7$ nicotinic acetylcholine receptor impairs Ca^{2+} -dependent glutamatergic synaptic transmission by affecting both presynaptic and postsynaptic protein expression and function. *Front Physiol.* 2025 Aug 8;16:1662171. doi: 10.3389/fphys.2025.1662171.
5. **Tropea MR**, Melone M, Li Puma DD, Vacanti V, Aceto G, Bandiera B, Trovato RC, Torrisi SA, Leggio GM, Palmeri A, D'Ascenzo M, Conti F, Grassi C, Puzzo D. Blockade of dopamine D3 receptors improves hippocampal synaptic function and rescues age-related cognitive phenotype. *Aging Cell.* 2024 Sep 5:e14291. doi: 10.1111/ace1.14291.
6. **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.
7. **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.
8. **Tropea MR**, Sanfilippo G, Giannino F, Davi 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.
9. Caruso G, Grasso M, Fidilio A, Torrisi SA, Musso N, Geraci F, **Tropea MR**, Privitera A, Tascetta 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.
10. **Tropea MR**, Li Puma DD, Melone M, Gulisano W, Arancio O, Grassi C, Conti F, Puzzo D. Genetic deletion of $\alpha 7$ 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.
11. Torrisi SA*, Geraci F*, **Tropea MR***, Grasso M, Caruso G, Fidilio A, Musso N, Sanfilippo G, Tascetta 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 A β 1-42 oligomers in mice: a key role of Transforming Growth Factor- β 1. *Front Pharmacol.* ***Co-first author.**
12. Gulisano W, Melone M, Ripoli C, **Tropea MR**, Li Puma DD, Giunta S, Cocco S, Marcotulli D, Origlia N, Palmeri A, Arancio O, Conti F, Grassi G, Puzzo D. Neuromodulatory action of picomolar extracellular A β 42 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.
13. 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-HT $_7$ 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.
14. 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.
15. 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.**
16. 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 A β and Tau oligomers is APP-dependent. *Elife.* 2017 Jul 11;6. pii: e26991. doi: 10.7554/eLife.26991.
17. 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.
18. 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.

CONFERENCES

Oral Communications

1. **Tropea MR**, Santuccio N, Trovato RC, Puzzo D. $\alpha 7$ nicotinic acetylcholine receptors are required for NO–cGMP-dependent synaptic plasticity and memory. In FEPS-SIF Brescia 2026 European Congress of Physiology. Brescia, 8-11 Sept 2026.
2. **Tropea MR**, Melone M, Piacentini R, Di Spiezio A, Tore M, Trovato RC, Vacanti V, Ben Abid S, Zonta M, Ripoli C, Losi G, Conti F, Grassi C, Puzzo D. Astrocytic $\alpha 7$ nicotinic receptor dysfunction alters glutamate dynamics and memory flexibility in prodromal Alzheimer's-like pathology. In 74th SIF National Congress. Turin, 17-19 Sept 2025.
3. **Tropea MR**, Melone M, Piacentini R, Trovato RC, Zonta M, Losi G, Conti F, Grassi C, Puzzo D. Astrocytic $\alpha 7$ nicotinic acetylcholine receptors dysfunction alters glutamate dynamics driving early synaptic and memory alterations in an Alzheimer's Disease model. In IUPS 2025, Frankfurt, Germany, 11-14 Sept 2025.
4. **Tropea MR**. Targeting dopamine D3 receptors in Alzheimer's and age-related memory loss. In SINS 2025, Pisa, 10-13 Sept 2025 (Symposium).
5. **Tropea MR**, Vacanti V, Trovato RC, Puzzo D. The lack of Amyloid- β production and function prevents the beneficial effects of phosphodiesterase inhibitors on hippocampal synaptic plasticity and memory. In Neuroscience 2024, Chicago (IL), USA, 5-9 Oct 2024 (Nanosymposium).
6. **Tropea MR**, Vacanti V, Trovato RC, Puzzo D. The cross-talk between Amyloid- β , $\alpha 7$ nicotinic acetylcholine receptors and cyclic nucleotides at the synapse: from physiology to Alzheimer's Disease In: 74th SIF National Congress. Rome, 11-13 Sept 2024 (Symposium).
7. **Tropea MR**, Vacanti V, Gulisano W, Puzzo D. Amyloid-beta peptide is needed for cyclic nucleotide-mediated enhancement of synaptic plasticity and memory. In: 73rd SIF National Congress. Pisa, 6-8 Sept 2023.
8. **Tropea MR**, Vacanti V, Gulisano W, Puzzo D. Amyloid-beta peptide production and function is needed for cyclic nucleotides-mediated enhancement of memory. In 16th Annual Meeting of Young Researchers in Physiology. Bertinoro (FO), Jun 21-23, 2023.
9. **Tropea MR**, Melone M, Vacanti V, Centaro A, Gulisano W, Leggio GM, Conti F, Puzzo D. Inhibition of D3 receptors rescues synaptic dysfunction and memory impairment in aged and Alzheimer's disease mouse models. In: Neuroscience 2022, San Diego (CA), USA, 12-16 Nov 2022 (Nanosymposium).
10. **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).
11. **Tropea MR**, Gulisano W, Romano A, Giannino F, Vacanti V, Leggio GM, Puzzo D. Dopamine D3 receptors modulate hippocampal synaptic plasticity and memory in the healthy and aged brain. In 15th Annual Meeting of Young Researchers in Physiology. Bertinoro (FO), Jun 13-15, 2022.
12. **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.
13. **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 $\alpha 7$ nicotinic acetylcholine receptors triggers an Alzheimer's disease-like pathology. In: 71st SIF National Congress. Milan (online), 7-9 Sept 2021.
14. **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.
15. **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.
16. **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).

17. 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: 69th Congress of the Italian Physiological Society. Florence, Sept 19-21, 2018.
18. **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.
19. **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: 67th Congress of the Italian Physiological Society. Catania, Sept 21-23, 2016 (poster pitch context).

Abstracts and Poster Presentations

1. Santuccio N, **Tropea MR**, Trovato RC, Puzzo D. $\alpha 7$ nicotinic receptors regulate the NO–cGMP pathway underlying synaptic plasticity and memory. In: 19th Annual Meeting of Young Researchers in Physiology 2026 (YRP26), Catania, Italy, 27-29 May 2026
2. Trovato RC, **Tropea MR**, Vacanti V, Melone M, Conti F, Puzzo D. Restoring GLT-1 expression rescues synaptic plasticity and memory flexibility in $\alpha 7$ nicotinic acetylcholine receptors knock out mice. In: Annual Meeting of Young Researchers in Physiology, Catania, Italy, 21-23 May 2025.
3. Trovato RC, **Tropea MR**, Vacanti V, Melone M, Conti F, Puzzo D. The upregulation of GLT-1 expression rescues synaptic plasticity and memory impairment in $\alpha 7$ nicotinic acetylcholine receptors knock out mice. In: 74th SIF National Congress, Rome, Italy, 11-13 September 2024.
4. Vacanti V, **Tropea MR**, Melone M, Li Puma D, Aceto G, Bandiera B, Trovato R, D'Ascenzo M, Conti F, Grassi C, Puzzo D. Blocking dopamine D3 receptors enhances hippocampal synaptic plasticity and memory via post-synaptic mechanisms. In: 74th SIF National Congress, Rome, Italy, 11-13 September 2024.
5. **Tropea MR**, Melone M, Li Puma DD, Vacanti V, Aceto G, Bandiera B, Trovato RC, Torrisi SA, Leggio GM, Palmeri A, D'Ascenzo M, Conti F, Grassi C, Puzzo D. Dopamine D3 Receptor Blockade enhances hippocampal plasticity through post-synaptic mechanisms. In: Federation of European Neuroscience Societies (FENS 2024) – Vienna, Austria 25-29 June 2024. (poster presenter)
6. Vacanti V, **Tropea MR**, Trovato RC, Puzzo D. Amyloid- β production and function are needed for cyclic nucleotides-mediated enhancement of synaptic plasticity and memory. In: Federation of European Neuroscience Societies (FENS 2024) – Vienna, Austria 25-29 June 2024.
7. Vacanti V, **Tropea MR**, Melone M, Li Puma DD, Aceto G, Bandiera B, Trovato RC, Torrisi SA, Leggio GM, Palmeri A, D'Ascenzo M, Conti F, Grassi C, Puzzo D. Dopamine D3 receptor blockade enhances hippocampal synaptic function via post-synaptic mechanisms and rescues age-related cognitive deficits. In 17th Annual Meeting of Young Researchers in Physiology. Catania (CT), May 22-24, 2024.
8. Trovato RC, **Tropea MR**, Vacanti V, Melone Conti F, Puzzo D. The lack of $\alpha 7$ nicotinic acetylcholine receptors cause a dysregulation of glutamate reuptake underlying memory loss. In 17th Annual Meeting of Young Researchers in Physiology. Catania (CT), May 22-24, 2024.
9. **Tropea MR**, Gulisano W, Romano A, Giannino F, Vacanti V, Leggio GM, Puzzo D. Dopamine D3 receptors modulate hippocampal synaptic plasticity and memory in the healthy and aged brain. In 15th Annual Meeting of Young Researchers in Physiology. Bertinoro (FO), Jun 13-15, 2022.
10. Vacanti V, **Tropea MR**, Melone M, Arancio O, Grassi C, Conti F, Puzzo D. The failure of A β physiology causes glutamate reuptake dysregulation underlying memory loss in $\alpha 7$ KO mice. In: 73rd SIF National Congress. Pisa, 6-8 Sept 2023.
11. **Tropea MR**, Melone M, Vacanti V, Gulisano W, Leggio GM, Conti F, Puzzo D. Inhibition of D3 receptors restores synaptic plasticity and memory impairment in aged and Alzheimer's disease mouse models. In: AAIC 2023. Amsterdam, The Netherlands (online), Jul 16-20 2022 (poster presenter).
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LANGUAGE SKILLS

Native language: Italian

Other languages: English

- Reading skills: excellent
- Writing skills: excellent
- Speaking skills: excellent

(Track Test Certification Level C2)

TECHNICAL SKILLS AND COMPETENCIES

Computer Skills

- Operating systems - Mac OS, Microsoft Windows (98, NT, 2000, XP, Vista, 7, 8.1, 10)
- Productivity - Microsoft Office (Excel, Word, PowerPoint), Adobe Acrobat, Mendeley
- Communication - MS Teams, Zoom, Skype, Telegram.
- Graphic rendering - Adobe (Photoshop, In Design, Illustrator), Rinhoceros
- Scientific software - Axon (pClamp, Clampfit), ImageJ, GraphPad Prism
- Web App - Google (Drive, Docs, Sheets, Forms, Slides), ClassMarker

Scientific Skills

- Electrophysiology - In vitro extracellular recordings from hippocampal slices
- Stereotaxic surgery - Implantation of guide cannulas for intracerebral administration
- Behavioral studies - Morris Water Maze, Radial Arm Water Maze, Object Recognition and Location, Open field, Fear Conditioning, Elevated Plus Maze, Tail Suspension Test, Marble burying, Grip strength test
- Microscopy – Immunohistochemistry, Histology, Microscopy ottica, Microscopy confocale, Calcium imaging in cell cultures
- Molecular biology - Western Blot
- Cell cultures - SH-SY5Y cells

I, Maria Rosaria Tropea, aware that false declarations are subject to the criminal penalties provided for under Article 76 of Presidential Decree No. 445/2000, hereby declare that the information provided above is true and accurate.

I, Maria Rosaria Tropea, authorize the processing of my personal data in accordance with Regulation (EU) 2016/679 (General Data Protection Regulation – GDPR) and Italian Legislative Decree No. 196/2003, as amended.

Maria Rosaria Tropea

(Signature omitted pursuant to Article 3 of Italian Legislative Decree No. 39/1993)

Catania, 14/09/2026