

Curriculum Vitae Prof. Giuseppe Caruso

Research experience

Since Oct 2024 (current position)	Assistant Professor of Pharmacology Departmental Faculty of Medicine UniCamillus – Saint Camillus International University of Health and Medical Sciences, Rome, Italy
Since Mar 2023 (current position)	Adjunct Assistant Professor Departments of Pharmaceutical Chemistry University of Kansas, Lawrence, KS, USA
Jan 2022 – Sep 2024	Assistant Professor of Pharmacology Departments of Drug and Health Sciences University of Catania, Catania, Italy
Jan 2022 – Sep 2024	Associate Researcher Research Unit of Neuropharmacology and Translational Neurosciences Oasi Research Institute - IRCCS, Troina, Italy
Jun 2022	Adjunct Research Associate Affiliate, University of Kansas, USA
Jun 2020 – Dec 2021	Senior Research Associate Departments of Drug and Health Sciences University of Catania, Catania, Italy
Jan 2018 – May 2020	Visiting Researcher Departments of Biomedical and Biotechnological Sciences University of Catania, Catania, Italy
Aug 2017 – Jun 2020	Senior Researcher Neurodegenerative Diseases and Pharmacology, Oasi Research Institute - IRCCS, Troina, Italy
Apr 2019 – May 2019	Adjunct Industry Research Associate Affiliate, University of Kansas, USA
Jul 2016 – Jul 2017	American Heart Association Fellow Cardiovascular Diseases and Pharmacology, University of Kansas, USA
Jul 2015 – Jun 2016	Postdoctoral researcher with Prof. Susan M. Lunte Pharmaceutical Chemistry, University of Kansas, USA
Nov 2014 – Jun 2015	Postdoctoral researcher with Prof. Sunil A. David Medicinal Chemistry, University of Kansas, USA
Nov 2009 – Feb 2014	PhD student with Prof. Vincenzo G. Nicoletti Neurobiology, University of Catania, Italy
Sep 2013 – Dec 2013	Visiting Scholar with Prof. Susan M. Lunte Pharmaceutical Chemistry, University of Kansas, USA
Apr 2010 – Apr 2011	International Internship Programme Scholarship Pharmaceutical Chemistry, University of Kansas, USA

Education

- Feb 2014 **PhD in Neurobiology with Prof. Vincenzo G. Nicoletti**, University of Catania, Italy
- PhD thesis: *Molecular basis of PCD (protein conformational disorders) of nervous system: microenvironmental conditions and cellular correlations*
- Dec 2008 **MSc in Biomolecular Chemistry with Prof. Vincenzo G. Nicoletti**, University of Catania, Italy
- MSc thesis: *Study of effects of copper and ribose on oligomerization of amyloidogenic peptides and toxicity*
 - Earned on December 22nd, 2008 with grade of **110/110 with Honors**
- Apr 2006 **BSc in Biological sciences with Prof. Vito De Pinto**, University of Catania, Italy
- BSc thesis: *Two-dimensional analysis of protein content of the metabolic fraction of extracts of wheat*
 - Earned on April 20th, 2006 with grade of **110/110 with Honors**

Professional service

Editorial Board Member

- Apr 2021 – Present Review Editor for Experimental Pharmacology and Drug Discovery (Frontiers in Pharmacology)
- Apr 2021 – Present Associate Editor for Neurodegeneration (Frontiers in Neuroscience)
- Oct 2020 – Present Review Editor for Molecular Psychiatry (Frontiers in Psychiatry)
- Sep 2020 – Present Editorial Board member of Current Research in Pharmacology and Drug Discovery Journal
- Gen 2019 – Present Topical Advisory Panel Member for Molecules
- Apr 2017 – Present Review Editor for Neuroenergetics, Nutrition and Brain Health (Frontiers in Neuroscience).
- Feb 2022 – Feb 2023 Topical Advisory Panel Member for International Journal of Molecular Sciences
- Jan 2021 – Dec 2023 Editorial Board member of Neuroglia

Reviewer for International Journals/Agencies

- Jun 2020 Reviewer for French National Research Agency's (ANR) - Generic Call for Proposals 2020 (AAPG 2020)
- Jun 2017 – Present Reviewed manuscripts for: Frontiers in Pharmacology, Current Research in Pharmacology and Drug Discovery, Dose-Response, European Journal of Pharmaceutics and Biopharmaceutics, Nanotoxicology, Neurotoxicity Research, Frontiers in Bioscience-Landmark, PLOS ONE, Immunology Letters, Toxicology Research, Toxicology Letters, International Journal of Peptide Research and Therapeutics, International Immunopharmacology, Biochimica et Biophysica Acta (BBA) - Molecular Basis of Disease, BioMed Research International, BioMetals, Cells, Cellular Physiology and Biochemistry, Frontiers in Cell and Developmental Biology, Frontiers in

Cellular Neuroscience, Frontiers in Neuroscience, Frontiers in Oncology, Frontiers in Psychiatry, Foods, Journal of Functional Foods, International Journal of Environmental Research and Public Health, International Journal of Food Sciences and Nutrition, Nutrition, Metabolism and Cardiovascular Diseases, Food Science & Nutrition, International Journal of Molecular Science, Mathematics, Metabolic Brain Disease, Molecules, Nutrition Reviews, Plants, Stem Cell International, The Journal of Xiangya Medicine, Zoological Research. Verified peer reviews: www.webofscience.com/wos/author/record/1524545

Nov 2012 – Dec 2012 Biology adviser at BIOIMIS of Bassano del Grappa, Italy

Guest Editor for Special Issues/Research Topics

- Mar 2023 – Oct 2023 Guest Editor of the Special Issue “*Update on Macrophages/Microglia in Non-infectious Diseases*” (Journal: Frontiers in Bioscience-Landmark)
- Nov 2022 – Present Guest Editor of the Special Issue “*Special Issue in Honor of Prof. Susan Lunte's 65th Birthday: When Microfluidics Meets Pharmacology: From Cell Biology and Toxicology to Drug Discovery and Development*” (Journal: International Journal of Molecular Sciences)
- Nov 2022 – Present Guest Editor of the Special Issue “*The Therapeutic Potential of Naturally Occurring Compounds in Counteracting Oxidative Stress and Inflammation: From Basic Science to Therapy 2.0*” (Journal: Molecules)
- Jun 2022 – Present Guest Editor of the Research Topic “*Microfluidics and Mass Spectrometry in Drug Discovery and Development: From Synthesis to Evaluation*” (Journal: Frontiers in Pharmacology)
- Apr 2021 – Jan 2022 Guest Editor of the Special Issue “*Antioxidant Therapies in Acute and Chronic Neurodegenerations*” (Journal: International Journal of Molecular Sciences)
- Nov 2019 – Feb 2022 Guest Editor of the Special Issue “*The Therapeutic Potential of Naturally Occurring Compounds in Counteracting Oxidative Stress and Inflammation: From Basic Science to Therapy*” (Journal: Molecules)

Teaching experience

- Academic year 2023/2024 Taught the course of “Pharmacogenetics and pharmacogenomics” (BIO/14; 2 ECTs/16 hours) part of the Hospital Pharmacy Specialisation, at the University of Catania, Catania, Italy
- Academic year 2023/2024 Taught the course of “Phytotherapy” (BIO/14; 6 ECTs/42 hours) part of the Degree in Applied Pharmaceutical Sciences, at the University of Catania, Catania, Italy
- Academic year 2022/2023 Taught the course of “Pharmacogenetics and pharmacogenomics” (BIO/14; 2 ECTs/16 hours) part of the Hospital Pharmacy Specialisation, at the University of Catania, Catania, Italy
- Academic year 2022/2023 Taught the course of “Phytotherapy” (BIO/14; 6 ECTs/42 hours) part of the Degree in Applied Pharmaceutical Sciences, at the University of Catania, Catania, Italy

Academic year 2022/2023	Teaching activity in the module “Clinical pharmacology” (BIO/14; 3 ECTS/12 hours) within the Master in “Biology and Biotechnology of Reproduction”, University of Catania, Catania, Italy
June 2022	Visiting Professor at the University of Kansas. Course: “Neurodegenerative Disorders: An Introduction to Neurobiology and Pharmacological Strategies” (8 hours). University of Kansas, Lawrence, Kansas, USA
Academic year 2021/2022	Taught the course of “Pharmacogenetics and pharmacogenomics” (BIO/14; 2 ECTS/16 hours) part of the Hospital Pharmacy Specialisation, at the University of Catania, Catania, Italy
Academic year 2021/2022	Taught the course of “Phytotherapy” (BIO/14; 6 ECTS/42 hours) part of the Degree in Applied Pharmaceutical Sciences, at the University of Catania, Catania, Italy
Academic year 2021/2021	Teaching activity in the module “Clinical pharmacology” (BIO/14; 3 ECTS/12 hours) within the Master in “Clinical embryology and seminological andrology”, University of Catania, Catania, Italy
Sep 2020 – Oct 2020	Visiting Professor at University of Geneva, the Lemanic Neuroscience Doctoral School (LNDS). Course: “Pharmacological Strategies for the Treatment of Neurodegenerative Disorders: From Current Therapies to Novel Targets” (12.5 hours). University of Geneva (CMU), Geneva, Switzerland.
Apr 2020 – Jul 2020	Taught Toxicology (BIO/14) as a qualified tutor at Department of Drug and Health Sciences, University of Catania, Catania, Italy
Since Jan 2020	Tutor or co-tutor of theses at the University of Catania: Applied Pharmaceutical Sciences (3), Pharmaceutical Chemistry and Technology (7), Medicine and Surgery (1), Biological Sciences (5), Biotechnology (1), and Scuola Superiore di Catania (1)
Academic year 2019/2020	Teaching activity in the module “Nutraceuticals in cognitive decline” (4 hours) within the Master in “Nutraceuticals, nutrition and health”, University of Messina, Messina, Italy
Since Apr 2019	Expert of Toxicology (“Cultore della materia”), Department of Drug and Health Science, University of Catania, Italy
Mar 2019	Teacher at the course of “Translational research in Alzheimer’s disease” organized by Oasi Research Institute – IRCCS, Troina (ECM class)
Nov 2014 – July 2017	Tutor of pharmacy students (Miranda Diec, Andoh Khadiiam) and co-supervisor of PhD students (Dhanushka Weerasekara, Kelci Schilly), University of Kansas, USA
May 2016 – July 2016	Supervisor of Fergall O’Donnell, an international student coming from the School of Biotechnology (Ireland), within the Research Experiences for Undergraduates (REU) program, University of Kansas, USA
Jan 2013 – Oct 2014	Private teacher preparing students for entry-level exams for University (Biology and Chemistry), Unistudi Snc, Catania, Italy
Nov 2009 – Oct 2014	Private teacher preparing students for entry-level exams for university (Biology and Chemistry), UniD S.r.l. - Formazione, Catania, Italy

Jan 2009 – Oct 2014

Private teacher preparing students for certification exams on pharmacology, dermatology, chemistry, computer science, physiology and hygiene, Centro di formazione U.A.A.M.I., Catania, Italy

Funding track record

American Heart Postdoctoral Fellowship

- Role: Principal Investigator
- Title: Role of carnosine in regulation of production of RNOS by macrophages
- Project summary: The ultimate goal of this project was to investigate the possible protective role of carnosine on RNOS and pro-inflammatory markers production by macrophages as a function of activation/differentiation states.
- Budget: 98950\$ (July 2016 – June 2018)

Honors and awards

January 2023	The publication “ <i>Phenolic Acids and Prevention of Cognitive Decline: Polyphenols with a Neuroprotective Role in Cognitive Disorders and Alzheimer’s Disease</i> ” has been selected as one of the Editor’s Choice Articles (Journal: Nutrients)
November 2022	The publication “ <i>Carnosine Protects Macrophages against the Toxicity of Aβ1-42 Oligomers by Decreasing Oxidative Stress</i> ” has been selected as one of the Editor’s Choice Articles (Journal: Biomedicines)
October 2022	The publication “ <i>Modulation of Pro-Oxidant and Pro-Inflammatory Activities of M1 Macrophages by the Natural Dipeptide Carnosine</i> ” has been selected as one of the Highly Cited Papers in 2020 (Journal: IJMS)
October 2022	The publication “ <i>The Therapeutic Potential of Carnosine/Anserine Supplementation against Cognitive Decline: A Systematic Review with Meta-Analysis</i> ” has been selected as one of the Editor’s Choice Articles (Journal: Biomedicines)
May 2020	The publication “ <i>Carnosine Prevents Aβ-Induced Oxidative Stress and Inflammation in Microglial Cells: A Key Role of TGF-β1</i> ” has been selected as a hot paper (Journal: Cells)
April 2017	The publication “ <i>Microchip electrophoresis with laser-induced fluorescence detection for determining the ratio of nitric oxide to superoxide production during inflammation in macrophages</i> ” has been selected as Paper in Forefront (Journal: Analytical and Bioanalytical Chemistry)
Jul 2016	American Heart Postdoctoral Fellowship (2 years) (USA)
Mar 2009	International Internship Program Scholarship (1 year) (Italy)
Dec 2008	Cum laude honors for MSc degree
Apr 2006	Cum laude honors for BSc degree

Licensed and provisional patents

- Title of Invention: Rationally designed human TLR8-selective agonists. Inventors: David SA, Beesu M, **Caruso G**, Salyer AC — United States publication number: US 2018/0258045 A1; International publication number: WO 2017/034986 A1.

- Title of Invention: Amphotericin B as an adjuvant. Inventors: David SA, Malladi SS, Khetani KK, **Caruso G**, Fox LM, Salyer AC — Provisional patent.
- Title of Invention: Formulation of nanogel for the intranasal administration with cerebral target of the neuroprotective peptide carnosine. Inventors: Bonaccorso A, **Caruso G**, Caraci F, Carbone C, Musumeci T, Pellitteri RMC, Pignatello R — Provisional patent.

Published Journal Articles

1. Bivona D, Bonomo C, Colombini L, Bonacci PG, Privitera GF, **Caruso G**, Caraci F, Santoro F, Musso N, Bongiorno D, Iannelli F, Stefani S. Generation and Characterization of Stable Small Colony Variants of USA300 Staphylococcus aureus in RAW 264.7 Murine Macrophages (2024) *Antibiotics (Basel)* **13**:264; doi: 10.3390/antibiotics13030264.
2. Grasso M, Fidilio A, L'Episcopo F, Recupero M, Barone C, Bacalini MG, Benatti C, Giambirtone MC, **Caruso G**, Greco D, Di Nuovo S, Romano C, Ferri R, Buono S, Cuello AC, Blom JMC, Tascetta F, Piazza PV, De La Torre R, Caraci F. Low TGF- β 1 plasma levels are associated with cognitive decline in Down syndrome (2024) *Front. Pharmacol.* **15**:1379965; doi: 10.3389/fphar.2024.1379965.
3. Sibbitts J, Di Pietro L, Privitera A, Cardaci V, Maugeri S, Camarda**, **Caruso G****. 3D bioprinting and microfluidic-based devices for cancer detection and drug treatment: focus on prostate cancer (2024) *Curr. Med. Chem.*; doi: 10.2174/0109298673298382240307040239. [**corresponding authors]
4. **Caruso G**, Maugeri S, Privitera A, Lazzarino G, Lazzarino G, Amorini AM. Carnosine and inflammation (2023). *Encyclopedia of Life Sciences*; doi: 10.1002/9780470015902.a0029609.
5. López-Ortiz S, **Caruso G**, Emanuele E, Menéndez H, Peñín-Grandes S, Guerrero CS, Caraci F, Nisticò R, Lucia A, Santos-Lozano A, Lista S. Digging into the intrinsic capacity concept: Can it be applied to Alzheimer's disease? (2024) *Prog. Neurobiol.* **234**:102574; doi: 10.1016/j.pneurobio.2024.102574.
6. Maugeri S, Sibbitts J, Privitera A, Cardaci V, Di Pietro L, Leggio L, Iraci N, Lunte SM, **Caruso G****. The Anti-Cancer Activity of the Naturally Occurring Dipeptide Carnosine: Potential for Breast Cancer (2023). *Cells* **12**:2592. [**corresponding author]
7. Bonaccorso A, Privitera A, Grasso M, Salomone S, Carbone C, Pignatello R, Musumeci T, Caraci F*, **Caruso G*****. The therapeutic potential of novel carnosine formulations: perspectives for drug development (2023) *Pharmaceuticals* **16**:778; doi: 10.3390/ph16060778. [*equally contributing authors; **corresponding author]
8. **Caruso G****. Editorial: Microfluidics and Mass Spectrometry in Drug Discovery and Development: From Synthesis to Evaluation (2023) *Front. Pharmacol.* **14**:1201926; doi: 10.3389/fphar.2023.1201926. [**corresponding author]
9. **Caruso G*****, Fresta CG*, Fidilio A*, Lazzara F*, Musso N, Cardaci V, Drago F, Caraci F, Bucolo C. Carnosine counteracts the molecular alterations $\alpha\beta$ oligomers-induced in human retinal pigment epithelial cells (2023) *Molecules* **28**:3324; doi: 10.3390/molecules28083324. [*equally contributing authors; **corresponding author]
10. **Caruso G****, Scalisi EM, Pecoraro R, Cardaci V, Privitera A, Truglio E, Capparucci F, Jarosova R, Salvaggio A, Caraci F, Brundo MV. Effects of carnosine on the embryonic development and TiO₂

nanoparticles-induced oxidative stress on Zebrafish (2023) *Front. Vet. Sci.* doi: 10.3389/fvets.2023.1148766. [**corresponding author]

11. **Caruso G*****, Di Pietro L*, Caraci F. Gap junctions and connexins in microglia-related oxidative stress and neuroinflammation: perspectives for drug discovery (2023) *Biomolecules* **13**:505; doi: 10.3390/biom13030505. [*equally contributing authors; **corresponding author]
12. Privitera A, Cardaci V, Weerasekara D, Saab MW, Diolosa L., Fidilio A, Jolivet RB, Lazzarino G, Amorini AM, Camarda M, Lunte SM, Caraci F*, **Caruso G*****. Microfluidic/HPLC combination to study carnosine protective activity on challenged human microglia: focus on oxidative stress and energy metabolism (2023) *Front. Pharmacol.* doi: 10.3389/fphar.2023.1161794 [*equally contributing authors; **corresponding author]
13. **Caruso G*****, Lucia Di Pietro*, Cardaci V, Maugeri S, Caraci F. The therapeutic potential of carnosine: Focus on cellular and molecular mechanisms (2023) *Curr. Res. Pharmacol. Drug Discov.* **4**:100153. doi: 10.1016/j.crphar.2023.100153. [*equally contributing authors; **corresponding author]
14. Godos J, Grosso G, Ferri R, Caraci F, Lanza G, Al-Qahtani WH, **Caruso G**, Castellano S. Mediterranean diet, mental health, cognitive status, quality of life, and successful aging in southern Italian older adults (2023) *Exp. Gerontol.* **10**:112143. doi: 10.1016/j.exger.2023.112143.
15. **Caruso G****, Privitera A, Saab MW, Musso N, Maugeri S, Fidilio A, Privitera AP, Pittalà A, Jolivet RB, Lanzanò L, Lazzarino G, Caraci F, Amorini AM. Characterization of carnosine effect on human microglial cells under basal conditions (2023) *Biomedicines* **11**:474. doi: 10.3390/biomedicines11020474. [**corresponding author]
16. Pallisco R, Lazzarino G, Bilotta G, Marroni F, Mangione R, Saab MW, Brundo MV, Pittalà A, **Caruso G**, Capoccia E, Lazzarino G, Tavazzi B, Bilotta P, Amorini AM. Metabolic signature of energy metabolism alterations and excess nitric oxide production in culture media correlate with low human embryo quality and unsuccessful pregnancy (2023) *Int. J. Mol. Sci.* **24**:890. doi: 10.3390/ijms24010890.
17. Bonacci PG*, **Caruso G*****, Scandura G, Pandino C, Romano A, Russo GI, Pethig R, Camarda M, Musso N. Impact of buffer composition on biochemical, morphological and mechanical parameters: A tare before dielectrophoretic cell separation and isolation (2023) *Transl. Oncol.* **28**:101599. doi: 10.1016/j.tranon.2022.101599. [*equally contributing authors; **corresponding author]
18. Fidilio A, Grasso M, **Caruso G**, Musso N, Begni V, Privitera A, Torrisi SA, Campolongo P, Schiavone S, Tascetta F, Leggio GM, Drago F, Riva MA, Caraci F. Prenatal stress induces a depressive-like phenotype in adolescent rats: The key role of TGF- β 1 pathway (2022) *Front. Pharmacol.* **13**:1075746. doi: 10.3389/fphar.2022.1075746.
19. López-Ortiz S, Santos-Lozano A, Lucia A, Valenzuela PL, Lista S, Pinto-Fraga J, Carmona R, Caraci F, **Caruso G**, Toschi N, Emanuele E, Gabelle A, Nisticò R, Garaci F. Effects of physical activity and exercise interventions on Alzheimer's disease: an umbrella review of existing meta-analyses (2022) *J. Neurol.* doi: 10.1007/s00415-022-11454-8.
20. Caraci F, Fidilio A, Santangelo R, **Caruso G**, Giuffrida ML, Tomasello M, Nicoletti F, Copani A. Molecular connections between DNA replication and cell death in β -amyloid-treated neurons (2022) *Curr. Neuropharmacol.* Accepted.

21. Ahmed OAA, Badr-Eldin SM, **Caruso G****, Fahmy UA, Alharbi WS, Almehmady AM, Alghamdi SA, Alhakamy NA, Mohamed AI, Aldawsari HM, Mady FM*. Colon targeted eudragit coated beads loaded with optimized fluvastatin-scorpion venom conjugate as a potential approach for colon cancer therapy: *in vitro* anticancer activity and *in vivo* colon imaging (2022) *J. Pharm. Sci.* S0022-3549(22)00354-9. doi: 10.1016/j.xphs.2022.08.020. [****corresponding author**]
22. Aldawsari HM, Badr-Eldin SM, Assiri NY, Alhakamy NA, Privitera A, Caraci F*, **Caruso G*****. Surface-tailoring of emulsomes for boosting brain delivery of vinpocetine via intranasal route: *in vitro* optimization and *in vivo* pharmacokinetic assessment (2022) *Drug Delivery* **29**:2671-2684. doi: 10.1080/10717544.2022.2110996. [***equally contributing authors; **corresponding author**]
23. **Caruso G****, Privitera A, Antunes BM, Lazzarino G, Lunte SM, Aldini G, Caraci F. The therapeutic potential of carnosine as an antidote against drug-induced cardiotoxicity and neurotoxicity: focus on Nrf2 pathway (2022) *Molecules* **24**:4452. doi: 10.3390/molecules27144452. [****corresponding author**]
24. Giampieri F, Godos J, **Caruso G****, Owczarek M, Jurek J, Castellano S, Ferri R, Caraci F**, Grosso G. Dietary phytoestrogen intake and cognitive status in Southern Italian older adults (2022) *Biomolecules* **12**:760. doi: 10.3390/biom12060760. [****corresponding authors**]
25. **Caruso G****. Unveiling the hidden therapeutic potential of carnosine, a molecule with a multimodal mechanism of action: a position paper (2022) *Molecules* **27**:3303. doi: 10.3390/molecules27103303. [****corresponding author**]
26. Fahmy O, Ahmed OAA, Khairul-Asri MG, Alhakamy NA, Alharbi WS, Fahmy UA, El-Moselhy MA, Fresta CG, **Caruso G*****, Caraci F*. Adverse events and tolerability of combined durvalumab and tremelimumab versus durvalumab alone in solid cancers: A systematic review and meta-analysis (2022) *Biomedicines* **10**:1101. doi: 10.3390/biomedicines10051101. [***equally contributing authors; **corresponding author**]
27. Distefano A*, **Caruso G***, Oliveri V, Bellia F, Sbardella D, Zingale GA, Caraci F, Grasso G. Neuroprotective effect of carnosine is mediated by insulin-degrading enzyme (2022) *ACS Chem. Neurosci.* **13**: 1588-1593. doi: 10.1021/acschemneuro.2c00201. [***equally contributing authors**]
28. **Caruso G**, Godos J, Privitera A, Lanza G, Castellano S, Chillemi A, Bruni O, Ferri R, Caraci F, Grosso G. Phenolic acids and prevention of cognitive decline: polyphenols with a neuroprotective role in cognitive disorders and Alzheimer's disease (2022) *Nutrients* **14**:819. doi: 10.3390/nu14040819.
29. Russo GI, Musso N, Romano A, **Caruso G**, Petralia S, Lanzanò L, Broggi G, Camarda M. The role of dielectrophoresis for cancer diagnosis and prognosis (2021) *Cancers (Basel)* **14**:198. doi: 10.3390/cancers14010198.
30. **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 (2021) *Front. Pharmacol.* **12**:809541. doi: 10.3389/fphar.2021.809541. [****corresponding author**]
31. Fahmy O, Alhakamy NA, Khairul-Asri MG, Ahmed OAA, Fahmy UA, Fresta CG, **Caruso G****. Oncological response and predictive biomarkers for the checkpoint inhibitors in castration-resistant metastatic prostate cancer: a systematic review and meta-analysis (2021) *J. Pers. Med.* **12**:8. doi: 10.3390/jpm12010008. [****corresponding author**]
32. Alhakamy NA, Badr-Eldin SM, Alharbi WS, Alfaleh MA, Al-Hejaili OD, Aldawsari HM, Eid BG, Bakhaidar R, Drago F, Caraci F**, **Caruso G****. Development of an icariin-loaded bilosome-melittin

- formulation with improved anticancer activity against cancerous pancreatic cells (2021) *Pharmaceuticals (Basel)* **14**:1309. doi: 10.3390/ph14121309. [**corresponding authors]
33. Hampel H, **Caruso G**, Nisticò R, Piccioni G, Mercuri NB, Giorgi FS, Ferrarelli F, Lemercier P, Caraci F, Lista S, Vergallo A. Biological mechanism-based neurology and psychiatry: a BACE1/2 and downstream pathway model (2021) *Curr. Neuropharmacol.* doi: 10.2174/1570159X19666211201095701.
34. Eid BG, Alhakamy NA, Fahmy UA, Ahmed OAA, Md S, Abdel-Naim AB, **Caruso G******, Caraci F****. Melittin and diclofenac synergistically promote wound healing in a pathway involving TGF- β 1 (2022) *Pharmacol. Res.* **175**:105993. doi: 10.1016/j.phrs.2021.105993. [*equally contributing authors; **corresponding author]
35. Fahmy O, Alhakamy NA, Rizg WY, Bagalagel A, Alamoudi AJ, Aldawsari HM, Khateb AM, Eldakhakhny BM, Fahmy UA, Abdulaal WH, Fresta CG, **Caruso G****. Updates on molecular and biochemical development and progression of prostate cancer (2021) *J. Clin. Med.* **10**:5127. doi: 10.3390/jcm10215127. [**corresponding author]
36. Alhakamy NA*, **Caruso G******, Eid BG, Fahmy UA, Ahmed OAA, Abdel-Naim AB, Alamoudi AJ, Alghamdi SA, Al Sadoun H, Eldakhakhny BM, Caraci F**, Abdulaal WH. Ceftriaxone and melittin synergistically promote wound healing in diabetic rats (2021) *Pharmaceutics* **13**:1622. doi: 10.3390/pharmaceutics13101622. [*equally contributing authors; **corresponding author]
37. **Caruso G**, Torrisi SA, Mogavero P, Currenti W, Castellano S, Godos J, Ferri R, Galvano F, Leggio GM, Grosso G, Caraci F. Polyphenols and neuroprotection: therapeutic implications for cognitive decline (2021) *Pharmacol. Ther.* 108013. doi: 10.1016/j.pharmthera.2021.108013.
38. Fidilio A, Grasso M, Turnaturi R, **Caruso G**, Spitale FM, Vicario N, Parenti R, Spoto S, Musso N, Marrazzo A, Chiechio S, Caraci F, Pasquinucci L, Parenti C. The multimodal MOPr/DOPr agonist LP2 reduces allodynia in chronic constriction injured rats by rescue of TGF- β 1 signalling (2021) *Front. Pharmacol.* **12**:749365. doi: 10.3389/fphar.2021.749365.
39. Lazzarino G, Pallisco R, Bilotta G, Listorti I, Mangione R, Saab MW, **Caruso G**, Amorini AM, Brundo MV, Lazzarino G, Tavazzi B, Bilotta P. Altered follicular fluid metabolic pattern correlates with female infertility and outcome measures of in vitro fertilization (2021) *Int. J. Mol. Sci.* **22**:8735. doi: 10.3390/ijms22168735.
40. Grasso M*, **Caruso G***, Godos J, Bonaccorso A, Carbone C, Castellano S, Currenti W, Grosso G, Musumeci T, Caraci F. Improving cognition with nutraceuticals targeting TGF- β 1 signaling (2021) *Antioxidants* **10**:1075. doi: 10.3390/antiox10071075. [*equally contributing authors]
41. Currenti W, Godos J, Castellano S, **Caruso G**, Ferri R, Caraci F, Grosso G, Galvano F. Time-restricted feeding is associated with mental health in elderly Italian adults (2021) *Chronobiol. Int.* **38**:1507-1516. doi: 10.1080/07420528.2021.1932998.
42. Alhakamy NA*, **Caruso G***, Al-Rabia MW, Badr-Eldin SM, Aldawsari HM, Asfour HZ, Alshehri S, Alzharani SH, Alhamdan MM, Rizg WY, Allam AN. Piceatannol-loaded bilosome-stabilized zein protein exhibits enhanced cytostatic and apoptotic activities in lung cancer cells (2021) *Pharmaceutics* **13**:638. doi: 10.3390/pharmaceutics13050638. [*equally contributing authors]
43. **Caruso G***, Benatti C*, Musso N, Fresta CG, Fidilio A, Spampinato G, Brunello N, Bucolo C, Drago F, Lunte SM, Peterson BR, Tascadda F, Caraci F. Carnosine protects macrophages against the toxicity of A β 1-42 oligomers by decreasing oxidative stress (2021) *Biomedicines* **9**:477. doi: 10.3390/biomedicines9050477. [*equally contributing authors]

44. **Caruso G****, Fresta CG, Costantino A, Lazzarino G, Amorini AM, Lazzarino G, Tavazzi B, Lunte SM, Dhar P, Gulisano M, Caraci F. Lung surfactant decreases biochemical alterations and oxidative stress induced by a sub-toxic concentration of carbon nanoparticles in alveolar epithelial and microglial cells (2021) *Int. J. Mol. Sci.* **22**:2694. doi: 10.3390/ijms22052694 [**corresponding author]
45. **Caruso G**, Godos J, Castellano S, Micek A, Murabito P, Galvano F, Ferri R, Grosso G, Caraci F. The therapeutic potential of carnosine/anserine supplementation against cognitive decline: a systematic review with meta-analysis (2021) *Biomedicines* **9**:253. doi: 10.3390/biomedicines9030253.
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Talks and posters at international conferences

- **Caruso G, et al.** The neuroprotective effect of carnosine is mediated by insulin-degrading enzyme. 41° Congresso Nazionale della Società Italiana di Farmacologia, Roma (Italy), Nov 16th-19th, 2022. (Abstract selected for oral presentation) (Talk)
- **Caruso G, et al.** Antioxidant and anti-inflammatory activity of carnosine in experimental models of Alzheimer's disease. 1st Joint meeting on Natural Products Pharmacology SIF - SIPHAR - IMGNPP. Naples, February 24th-26th, 2022. (Abstract selected for oral presentation) (Talk)
- **Caruso G, et al.** Antioxidant activity of fluoxetine and vortioxetine in a non-transgenic animal model of Alzheimer's disease. 2nd International Conference on Neuroprotection by Drugs, Nutraceuticals, and Physical Activity, DIGITAL EDITION, December 9th-10th, 2021. (Talk)
- **Caruso G.** Antioxidant and anti-inflammatory activity of carnosine in experimental models of Alzheimer's disease. 40° Congresso Nazionale della Società Italiana di Farmacologia (SIF) – DIGITAL EDITION, March 9th-13th, 2021. (Talk)
- **Caruso G, et al.** Carnosine negatively modulates pro-oxidant and pro-inflammatory activities of M1 macrophages. 40° Congresso Nazionale della Società Italiana di Farmacologia (SIF) – DIGITAL EDITION, March 9th-13th, 2021. (Abstract selected for oral presentation) (Talk)
- **Caruso G, et al.** Carnosine prevents A β -induced oxidative stress and inflammation in microglial cells. First VIRTUAL annual meeting della Rete IRCCS delle neuroscienze e della neuroriabilitazione, Jul 8th-9th, 2020. (Poster)
- **Caruso G, et al.** Carnosine prevents A β -induced oxidative stress and inflammation in microglial cells: a key role of TGF- β 1. 39° Congresso Nazionale della Società Italiana di Farmacologia, Firenze (Italy), Nov 20th-23rd, 2019. (Abstract selected for oral presentation) (Talk)
- **Caruso G, et al.** Non-toxic engineered carbon nanodiamond concentrations induce oxidative/nitrosative stress, imbalance of energy metabolism and mitochondrial dysfunction in microglial and alveolar basal epithelial cells. ABCD Congress, Bologna (Italy), Sep 19th-21st, 2019. (Abstract selected for oral presentation) (Talk)
- **Caruso G, et al.** Sub-toxic human amylin fragment concentrations promote the survival and proliferation of neuron-like cells via the release of VEGF and HspB5 from endothelial cells. Biomedical Sciences Symposium, Lawrence (KS), Apr 18th, 2019. (Poster)
- **Caruso G, et al.** Carnosine prevents amyloid-beta-induced oxidative stress and inflammation in microglial cells. AD/PD Conference, Lisbon (Portugal), March 26th-31st, 2019. (Poster)
- **Caruso G, et al.** Carnosine prevents amyloid- β -induced inflammation in microglial cells. CSRM Congress, Pavia (Italy), Sep 28th-29^h, 2018. (Abstract selected for oral presentation) (Talk)
- **Caruso G, et al.** Carnosine prevents amyloid-beta-induced inflammation in microglial cells. BraYn Conference, Genova (Italy), June 29th-30th, 2018. (Poster)
- **Caruso G, et al.** Carnosine prevents amyloid- β -induced inflammation in microglial cells. CoFaS Congress, Roccalumera (Italy), May 11th-12th, 2018. (Talk)

- **Caruso G, et al.** Carnosine decreases nitric oxide production and modulates activation, M1/M2 polarization, and cytokines secretion of stimulated macrophages. ABCD Congress, Bologna (Italy), Sep 21st-23rd, 2017. (Abstract selected for oral presentation) (Talk)
- **Caruso G, et al.** Carnosine decreases nitric oxide concentrations and modulates activation and differentiation in stimulated macrophages through a complex biochemical mechanism. GPEN Conference, Lawrence (KS), Nov 9th-12th, 2016. (Poster)
- **Caruso G, et al.** Role of carnosine in the modulation of nitric oxide production by RAW 264.7 macrophages. Gordon Research Conference (Oxygen Radicals), Ventura (CA), Feb 7th-12th, 2016. (Poster)
- **Caruso G, et al.** Novel microfluidic and fluorescence detection approaches for the determination of reactive oxygen and nitrogen species: application to the investigation of the anticancer activity of the natural antioxidant carnosine. KUCC Research Symposium, Edwards County (KS), Nov 13th-14th, 2015. (Poster)
- **Caruso G, et al.** Role of carnosine in the modulation of nitric oxide production by RAW 264.7 macrophages. Midwest Regional Meeting of the American Chemical Society, St. Joseph (MO), Oct 21st-24th, 2015. (Talk)
- **Caruso G, et al.** High-throughput screens for the identification of novel innate immune stimulatory compounds. The 53rd Annual MIKI Meeting-in-Miniature, Lawrence (KS), Apr 10th-12th, 2015. (Poster)
- **Caruso G, et al.** Modulation of amyloidogenic peptides by transition metal ions. XVI Congress of the Italian Society for Neuroscience, Catania (Italy), Apr 19th-22nd, 2012. (Poster)
- **Caruso G, et al.** Investigating the metabolism of dynorphin A 1-17, an opioid neuropeptide, in peripheral tissues and the central nervous system. Pittcon Conference, Atlanta (GA), Mar 13th-18th 2011. (Poster)
- **Caruso G, et al.** analytical techniques for investigating the metabolism and blood brain barrier transport of the neuropeptide dynorphin A 1-17. 45th ACS Midwest Regional Meeting (MWRM 2010), Wichita (KS), Oct 27th-30th, 2010. (Talk)
- **Caruso G, et al.** analytical techniques for investigating the metabolism and blood brain barrier transport of the neuropeptide dynorphin A 1-17. 17th International Symposium on Electro- and Liquid Phase-separation Techniques, Baltimore (MD), Aug 29th-Sep 1st, 2010. (Poster)

Invited talks

- The link between depression and Alzheimer`s disease: novel targets for the treatments. 6th BIGS Neuroscience Virtual Student Symposium, Bonn, Germany, October 15th-16th, 2020.
- Carnosine negatively modulates pro-oxidant activities of M1 peripheral macrophages and prevents neuroinflammation induced by amyloid- β in microglial cells. University of Geneva (UNIGE), Geneva, Switzerland, October 1st, 2020.
- Fluoxetine and vortioxetine reverse depressive-like phenotype and memory deficits induced by amyloid- β (1-42) oligomers in mice: implication of transforming growth factor- β 1 and oxidative stress. University of Lausanne (UNIL), Lausanne, Switzerland, September 28th, 2020.
- Carnosine prevents A β -induced cell death, oxidative stress, and inflammation in microglial cells through a multimodal mechanism of action: a key role of TGF- β 1. University of Kansas, Kansas Intellectual and Developmental Disabilities Research Center, Lawrence, Kansas, Apr 30th, 2019.
- Carnosine and oxidative stress-driven disorders. Karolinska Institutet, Solna, Sweden, July 6th, 2017.

- Carnosine modulates nitric oxide/nitrite ratio and influence activation and differentiation of stimulated murine macrophages through a complex biochemical mechanism. Campus Biotech, Geneva, Switzerland, Mar 30th, 2017.
- Carnosine modulates nitric oxide in stimulated murine RAW 264.7 macrophages. University of Kansas Medical Center, Kansas City, Kansas, Mar 2nd, 2017.
- Novel microfluidic and fluorescence detection approaches for the determination of reactive oxygen and nitrogen species and antioxidants uptake. University of Catania, Catania, Italy, Jan 12th, 2016.
- Use of microchip electrophoresis and fluorescence along with bulk and single cell analysis for detection and quantification of intracellular nitric oxide in different cell types. University of Catania, Catania, Italy, Jan 15th, 2014.
- Analytical techniques to study the metabolism of nitric oxide in macrophages and lymphocytes and neuropeptide dynorphin A 1-17 in central nervous system and blood-brain barrier. University of Catania, Catania, Italy, Jan 11th, 2011.

Campus or departmental talks

- Pivotal role of carnosine in the modulation of microglia and macrophages activity: multimodal mechanism of action and therapeutic potential in neurodegenerative disorders. Pharmaday, Department of Drug and Health Sciences, University of Catania, Catania, Italy, June 30th, 2022.
- Role of carnosine in regulation of RNOS production in oxidative driven diseases. Simons Labs Auditorium, University of Kansas, Lawrence, Kansas, Mar 22nd, 2016.
- Role of carnosine in the modulation of nitric oxide production by RAW 264.7 macrophages. Malott Hall, University of Kansas, Lawrence, Kansas, Nov 9th, 2015.
- Study of effects of metals and glycation conditions on oligomerization of amyloidogenic peptides. Higuchi Biosciences Center, University of Kansas, Lawrence, Kansas, Nov 30th, 2010.

Institutional Responsibilities

Academic year 2022/2023 Member of the Scientific Council of Master (2nd level) in “Clinical embryology and seminological andrology” (Università di Catania).

Sept 2023 Member of the Admission Committee for Hospital Pharmacy Specialisation (University of Catania);

Academic year 2022/2023 Member of the Scientific Council of Master (2nd level) in “Clinical embryology and seminological andrology” (Università di Catania).

- Co-organizer of the seminar of Prof. Susan M. Lunte, Distinguished Professor from University of Kansas (Lawrence, Kansas). Title of the oral presentation: “Microfluidics as a novel tool for biological and toxicological assays in drug discovery processes: focus on microchip electrophoresis”. Department of Drug and Health Sciences, University of Catania, Catania, Italy, February 8th, 2022.
- Co-organizer of the “KU – Catania Interdisciplinary research seminar series: exploring synergies between physics and pharmacology”. Ritchie Hall, University of Kansas, Lawrence, Kansas, June 6th-10th, 2022. Link: <https://indico.ku.edu/event/231/>

- Co-organizer of the seminar of Prof. Giancarlo Aldini, Full Professor from University of Milan (Italy). Title of the oral presentation: “Chemical and molecular mechanisms of cellular and extra-cellular antioxidant drugs”. Department of Drug and Health Sciences, University of Catania, Catania, Italy, May 30th, 2022.
- Co-organizer of the seminar of Dr. Matthew Zupan, Postdoc della University of Kansas (Lawrence, Kansas). Title of the oral presentation: “Elucidating the Protective Phagocytic Role of Microglia in Neurodegenerative Diseases”. Department of Biomedical and Biotechnological Sciences, University of Catania, Catania, Italy, September 6th, 2024.
- Proponent for the international agreement between the University of Catania (Catania, Italy) and the University of Kansas (Lawrence, Kansas, USA) (accomplished on June 24th, 2022)

Experimental techniques

Microfluidic devices; Laser-induced fluorescence; Electrochemistry; UV-Vis spectroscopy; MTT, XTT and LDH assay; Griess assay; Th-T assay; ELISA; Immunofluorescence; Flow cytometry; High throughput assays; Reporter gene assays; Multiplexed cytokine and chemokine assays; Atomic force microscopy; Side-by-SideTM diffusion chambers coupled to the use of radioactive-labeled molecules for drug metabolism and protein permeability studies of the blood-brain barrier; High-throughput Real-time PCR; Western Blot; Dot Blot; High-performance liquid chromatography; Horizontal and vertical electrophoresis; SDS-PAGE; Extraction of DNA, RNA and proteins; Liquid chromatography-tandem mass spectrometry.

Computing skills

MS Office, Windows OS, EndNote, Origin, ImageJ, SigmaStat, SoftMax PRO, ChemiDoc, GraphPad.

Languages

- **Italian:** mother tongue
- **English:** excellent writing, reading, and speaking

Membership of professional societies

Jan 2015 – Present	American Heart Association/American Stroke Association (AHA)
Jun 2017 – Present	Association of Cell Biology and Differentiation (ABCD)
Feb 2019 – Present	Società Italiana di Farmacologia (SIF)
Nov 2019 – Present	Società Italiana di Farmacognosia (SIPHAR)