

Dr. Giuseppe Caruso

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Research experience

Since Jul 2020 (current position)	Senior Research Associate Departments of Drug Sciences, University of Catania, Catania, Italy
Since Jun 2017 (current position)	Visiting Researcher Departments of Biomedical and Biotechnological Sciences & Drug Sciences, University of Catania, Catania, Italy
Aug 2017 – Jun 2020	Senior Researcher Neurodegenerative Diseases and Pharmacology, Oasi Research Institute (I.R.C.C.S), 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 <ul style="list-style-type: none">- PhD thesis: <i>Molecular basis of PCD (protein conformational disorders) of nervous system: microenvironmental conditions and cellular correlations</i>
Dec 2008	MSc in Biomolecular Chemistry with Prof. Vincenzo G. Nicoletti , University of Catania, Italy <ul style="list-style-type: none">- MSc thesis: <i>Study of effects of copper and ribose on oligomerization of amyloidogenic peptides and toxicity</i>- 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

- Apr 2017 – Present Review Editor for *Frontiers in Neuroscience* (specialty section Neuroenergetics, Nutrition and Brain Health).
- Feb 2021 – Present Associate Editor for *Frontiers in Neuroscience* (Neurodegeneration)
- Oct 2020 – Present Review Editor for *Frontiers in Psychiatry* (Molecular Psychiatry)
- Sep 2020 – Present Editorial Board member of *Current Research in Pharmacology and Drug Discovery Journal*
- Jan 2021 – Present Editorial Board member of *Neuroglia*
- Jun 2017 – Present Reviewed articles for the following international journals: *Biochimica et Biophysica Acta (BBA) - Molecular Basis of Disease*, *BioMed Research, Cells*, *Cellular Physiology and Biochemistry*, *European Journal of Pharmaceutics and Biopharmaceutics*, *Frontiers in Cell and Developmental Biology*, *Frontiers in Cellular Neuroscience*, *Frontiers in Neuroscience*, *Immunology Letters*, *International Immunopharmacology*, *International Journal of Environmental Research and Public Health*, *International Journal of Food Sciences and Nutrition*, *International Journal of Molecular Science*, *Mathematics*, *Metabolic Brain Disease*, *Molecules*, *Nanotoxicology*, *Neurotoxicity Research*, *Nutrition Reviews*, *Plants*, *Toxicology Research*, *Zoological Research*, *BioMetals*, *Frontiers in Pharmacology*, *Toxicology Letters*, *Dose-Response*. Publons profile: publons.com/a/1337409/
- Jun 2020 Reviewer for French National Research Agency's (ANR) - Generic Call for Proposals 2020 (AAPG 2020)
- Nov 2019 – 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*" (Journal: *Molecules*)
- Oct 2020 – Present Topic Editor of the Research Topic "*Nanomedicine for the Delivery of Chemotherapeutics and Immune Checkpoint Inhibitors to Enhance Chemoimmunotherapy Effects Against Solid Cancers*" (Journal: *Frontiers in Bioengineering and Biotechnology*)
- Nov 2012 – Dec 2012 Biology adviser at BIOIMIS of Bassano del Grappa, Italy.

Teaching experience

- 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". University of Geneva (CMU), Geneva, Switzerland.

Academic year 2019/2020	Teaching activity in the module “Nutraceuticals in cognitive decline” 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 Science, University of Catania, Italy.
Apr 2020 – Jul 2020	Taught toxicology (BIO/14) as a qualified tutor at Department of Drug Sciences, University of Catania, Catania, Italy.
Mar 2019	Teacher at the course of “Translational research in Alzheimer’s disease” organized by Oasi Research Institute – IRCCS, Troina (ECM class)
Feb 2018 – Sep 2019	Taught human anatomy (BIO/16) as a qualified tutor of at Department of Biomedical and Biotechnological Sciences (BIOMETEC), University of Catania, Catania, Italy.
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

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 — US Patent App. 15/754,193
- Title of Invention: Amphotericin B as an adjuvant. Inventors: David SA, Malladi SS, Khetani KK, **Caruso G**, Fox LM, Salyer AC — Provisional patent.

Published Journal Articles

1. 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.* doi: 10.1080/07420528.2021.1932998.
2. Alhakamy NA*, **Caruso G***, Al-Rabia MW, Badr-Eldin SM, Aldawsari HM, Asfour HZ, Alshehri S, Alzaharani 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**]
3. **Caruso G***, Benatti C*, Musso N, Fresta CG, Fidilio A, Spampinato G, Brunello N, Bucolo C, Drago F, Lunte SM, Peterson BR, Tascetta 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**]
4. **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**]
5. **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.
6. Bongiorno D*, Musso N*, **Caruso G***, Lazzaro LM, Caraci F, Stefania S, Campanile F. Staphylococcus aureus ST228 and ST239 as models for expression studies of diverse markers during osteoblast infection and persistence (2021) *Microbiologyopen* **10**:e1178. doi: 10.1002/mbo3.1178. [***equally contributing authors**]
7. Alhakamy NA, Ahmed OAA, Ibrahim TS, Aldawsari HM, Eljaaly K, Fahmy UA, Alaofi AL, Caraci F***, Caruso G***. Evaluation of the antiviral activity of sitagliptin-glatiramer acetate nano-conjugates against SARS-CoV-2 virus (2021) *Pharmaceutics* **14**:178. doi: 10.3390/ph14030178 [***equally contributing authors; **corresponding authors**]
8. Badr-Eldin SM, Alhakamy NA, Fahmy U, Ahmed OAA, Asfour HZ, Althagafi AA, Aldawsari HM, Rizg WY, Mahdi WA, Alghaith A, Alshehri S, Caraci F, **Caruso G***. Cytotoxic and pro-apoptotic effects of a sub-toxic concentration of fluvastatin on OVCAR3 ovarian cancer cells after

its optimized formulation to melittin nano-conjugates (2021) *Front. Pharmacol.* **11**:642171. doi: 10.3389/fphar.2020.642171 [***corresponding author**]

9. Currenti W, Godos J, Castellano S, **Caruso G**, Ferri R, Caraci F, Grosso G, Galvano F. Association between time restricted feeding and cognitive status in older Italian adults (2021) *Nutrients* **13**:E191. doi: 10.3390/nu13010191.
10. Musso N*, **Caruso G***, Bongiorno D*, Grasso M, Bivona DA, Campanile F, Caraci F, Stefani S. Different Modulatory Effects of Four Methicillin-Resistant Staphylococcus aureus Clones on MG-63 Osteoblast-Like Cells (2021) *Biomolecules* **11**:E72. doi: 10.3390/biom11010072. [***equally contributing authors**]
11. Caruso G*,**, Grasso M*, Fidilio A*, Tascetta F, Drago F, Caraci F. Antioxidant properties of second-generation antipsychotics: focus on microglia (2020) *Pharmaceuticals (Basel)* **13**:457. doi: 10.3390/ph13120457. [***equally contributing authors; **corresponding author**]
12. Fresta CG*, **Caruso G***, Fidilio A*, Platania CBM, Musso N, Caraci F, Drago F, Bucolo C. Dihydrotanshinone, a natural diterpenoid, preserves blood-retinal barrier integrity via P2X7 receptor (2020) *Int. J. Mol. Sci.* **21**, 9305. doi: 10.3390/ijms21239305. [***equally contributing authors**]
13. Barbagallo C, Di Martino MT, Grasso M, Salluzzo MG, Scionti F, Cosentino FII, **Caruso G**, Barbagallo D, Di Pietro C, Ferri R, Caraci F, Purrello M, Ragusa M. Uncharacterized RNAs in Plasma of Alzheimer's Patients Are Associated with Cognitive Impairment and Show a Potential Diagnostic Power (2020) *Int. J. Mol. Sci.* **21**:E7644. doi: 10.3390/ijms21207644.
14. Fahmy UA, Aldawsari HM, Badr-Eldin SM, Ahmed OAA, Alhakamy NA, Alsulimani HH, Caraci F, **Caruso G***. The Encapsulation of Febuxostat into Emulsomes Strongly Enhances the Cytotoxic Potential of the Drug on HCT 116 Colon Cancer Cells (2020) *Pharmaceutics* **12**:E956. doi: 10.3390/pharmaceutics12100956. [***corresponding author**]
15. Alhakamy NA, Badr-Eldin SM, A Fahmy U, Alruwaili NK, Awan ZA, **Caruso G**, Alfaleh MA, Alaofi AL, Arif FO, Ahmed OAA, Alghaith AF. Thymoquinone-Loaded Soy-Phospholipid-Based Phytosomes Exhibit Anticancer Potential against Human Lung Cancer Cells (2020) *Pharmaceutics* **12**:E761. doi: 10.3390/pharmaceutics12080761.
16. Alhakamy NA, Ahmed OAA, Kurakula M, **Caruso G**, Caraci F, Asfour HZ, Alfarsi A, Eid BG, Mohamed AI, Alruwaili NK, Abdulaal WH, Fahmy UA, Alhadrami HA, Eldakhakhny BM, Abdel-Naim AB. Chitosan-Based Microparticles Enhance Ellagic Acid's Colon Targeting and Proapoptotic Activity (2020) *Pharmaceutics* **12**:652. doi: 10.3390/pharmaceutics12070652.
17. Ahmed OAA, Fahmy UA, Badr-Eldin SM, Aldawsari HM, Awan ZA, Asfour HZ, Kammoun AK, **Caruso G**, Caraci F, Alfarsi A, Al-Ghamdi RA, Al-Ghamdi RA, Alhakamy NA. Application of Nanopharmaceutics for Flibanserin Brain Delivery Augmentation Via the Nasal Route (2020) *Nanomaterials (Basel)* **10**:E1270. doi: 10.3390/nano10071270.
18. Awan ZA, Fahmy UA, Badr-Eldin SM, Ibrahim TS, Asfour HZ, Al-Rabia MW, Alfarsi A, Alhakamy NA, Abdulaal WH, Al Sadoun H, Helmi N, Noor AO, Caraci F, Almasri DM, **Caruso G***. The Enhanced Cytotoxic and Pro-Apoptotic Effects of Optimized Simvastatin-Loaded Emulsomes on MCF-7 Breast Cancer Cells (2020) *Pharmaceutics* **12**:E597. doi: 10.3390/pharmaceutics12070597. [***corresponding author**]
19. **Caruso G***, Musso N, Grasso M, Costantino A, Lazzarino G, Tascetta F, Gulisano M, Lunte SM, Caraci F. Microfluidics as a Novel Tool for Biological and Toxicological Assays in Drug Discovery Processes: Focus on Microchip Electrophoresis (2020) *Micromachines (Basel)* **11**:E593. doi: 10.3390/mi11060593. [***corresponding author**]

20. Caraci F, Santagati M, **Caruso G**, Cannavò D., Leggio GM, Salomone S, Drago F. New antipsychotic drugs for the treatment of agitation and psychosis in Alzheimer's disease: focus on brexpiprazole and pimavanserin (2020) *F1000Res.* **9**:F1000 Faculty Rev-686. doi: 10.12688/f1000research.22662.1.
21. Alhakamy NA, Fahmy UA, Ahmed OAA, **Caruso G**, Caraci F, Asfour HZ, Bakhrebah MA, Alomary MN, Abdulaal WH, Okbazghi SZ, Abdel-Naim AB, Eid BG, Aldawsari HM, Kurakula M, Mohamed AI. Chitosan coated microparticles enhance simvastatin colon targeting and proapoptotic activity (2020) *Mar. Drugs* **18**:226. doi: 10.3390/md18040226.
22. Guerrera CV, Furneri G, Grasso M, **Caruso G**, Castellano S, Drago F, Di Nuovo S, Caraci F. Antidepressant drugs and physical activity: a possible synergism in the treatment of major depression? (2020) *Front. Psychol.* **11**:857. doi: 10.3389/fpsyg.2020.00857.
23. Di Pietro V, Yakoub KM, **Caruso G**, Lazzarino G, Signoretti S, Barbey AK, Tavazzi B, Lazzarino G, Belli A, Amorini AM. Antioxidant Therapies in Traumatic Brain Injury (2020) *Antioxidants (Basel)* **9**: pii: E260. doi: 10.3390/antiox9030260.
24. Hampel HJ, Caraci F, Cuello AC, **Caruso G**, Nisticò R, Corbo M, Baldacci F, Toschi N, Garaci F, Chiesa PA, Verdooner SR, Akman-Anderson L, Hernandez L, Ávila J, Emanuele E, Valenzuela PL, Lucia A, Watling M, Imbimbo BP, Vergallo A, Lista S. A path towards precision medicine for neuroinflammatory mechanisms in Alzheimer's disease (2020) *Front. Immunol.* **11**:456. doi: 10.3389/fimmu.2020.00456.
25. Fresta CG, Fidilio A, **Caruso G**, Caraci F, Giblin FJ, Leggio GM, Salomone S, Drago F, Bucolo C. A New Human Blood-Retinal Barrier Model Based on Endothelial Cells, Pericytes, and Astrocytes (2020) *Int. J. Mol. Sci.* **21**: pii: E1636. doi: 10.3390/ijms21051636.
26. Fresta CG, Fidilio A, Lazzarino G, Musso N, Grasso M, Merlo S, Amorini AM, Bucolo C, Tavazzi B, Lazzarino G*, Lunte SM, Caraci F, **Caruso G***. Modulation of Pro-Oxidant and Pro-Inflammatory Activities of M1 Macrophages by the Natural Dipeptide Carnosine (2020) *Int. J. Mol. Sci.* **21**: pii: E776. doi: 10.3390/ijms21030776. [***corresponding authors**]
27. Calabrese G, Dolcimascolo A, **Caruso G**, Forte S. MiR-19a is involved in progression and malignancy of anaplastic thyroid cancer cells (2019) *Onco. Targets Ther.* **12**:9571-9583. doi: 10.2147/OTT.S221733.
28. **Caruso G**, Spampinato SF, Cardaci V, Caraci F, Sortino MA, Merlo S. β -amyloid and oxidative stress: perspectives in drug development (2019) *Curr. Pharm. Des.* **25**:4771-4781. doi: 10.2174/1381612825666191209115431.
29. Lazzarino G, Amorini AM, Signoretti S, Musumeci G, Lazzarino G, **Caruso G**, Pastore FS, Di Pietro V, Tavazzi B, Belli A. Pyruvate Dehydrogenase and Tricarboxylic Acid Cycle Enzymes Are Sensitive Targets of Traumatic Brain Injury Induced Metabolic Derangement (2019) *Int. J. Mol. Sci.* **20**: pii: E5774. doi: 10.3390/ijms20225774.
30. Caraci F, Merlo S, Drago F, **Caruso G**, Parenti C, Sortino AM. Rescue of noradrenergic system as a novel pharmacological strategy in the treatment of chronic pain: focus on microglia activation (2019) *Front. Pharmacol.* **10**:1024. doi: 10.3389/fphar.2019.01024.
31. **Caruso G**, Benatti C, Blom JMC, Caraci F, Joan MC Blom, Tascetta. The many faces of mitochondrial dysfunction in depression: From pathology to treatment (2019) *Front. Pharmacol.* **10**:995. doi: 10.3389/fphar.2019.00995.
32. **Caruso G***, Fresta CG, Fidilio A, O'Donnell F, Musso N, Lazzarino G, Grasso M, Amorini AM, Tascetta F, Bucolo C, Drago F, Lazzarino G*, Lunte SM, Caraci F. Carnosine decreases PMA-induced oxidative stress and inflammation in murine macrophages (2019) *Antioxidants (Basel)*. **8**: pii: E281. doi: 10.3390/antiox8080281. [***corresponding authors**]

33. **Caruso G***, Fresta CG, Grasso M, Santangelo R, Lazzarino G, Lunte SM, Caraci F. Inflammation as the common biological link between depression and cardiovascular diseases: can carnosine exerts a protective role? (2019) *Curr. Med. Chem.* **27**:1782-1800. doi: 10.2174/0929867326666190712091515. [***corresponding author**]
34. Torrisi SA, Geraci F, Tropea MR, Grasso M, **Caruso G**, Fidilio A, Musso N, Sanfilippo G, Tascetta F, Palmeri A, Salomone S, Drago F, 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 (2019) *Front. Pharmacol.* **10**:693. doi: 10.3389/fphar.2019.00693.
35. Yakoub KM, Lazzarino G, Amorini AM, **Caruso G**, Scazzone C, Ciaccio M, Tavazzi B, Lazzarino G, Belli A, Di Pietro V. Fructose-1,6-Bisphosphate Protects Hippocampal Rat Slices from NMDA Excitotoxicity (2019) *Int. J. Mol. Sci.* **20**: pii: E2239. doi: 10.3390/ijms20092239.
36. Lazzarino G, Listorti I, Bilotta G, Capozzolo T, Amorini AM, Longo S, **Caruso G**, Lazzarino G, Tavazzi B, Bilotta P. Water- and Fat-Soluble Antioxidants in Human Seminal Plasma and Serum of Fertile Males (2019) *Antioxidants (Basel)* **8**: pii: E96; doi: 10.3390/antiox8040096.
37. **Caruso G***, Fresta CG, Musso N, Giambirtone M, Grasso M, Spampinato SF, Merlo S, Drago F, Lazzarino G, Sortino MA, Lunte SM, Caraci F*. Carnosine prevents A β -induced oxidative stress and inflammation in microglial cells: a key role of TGF- β 1 (2019) *Cells* **8**: pii: E64. doi: 10.3390/cells8010064. [***corresponding authors**]
38. **Caruso G***, Caraci F*, Jolivet RB*. Pivotal role of carnosine in the modulation of brain cells activity: Multimodal mechanism of action and therapeutic potential in neurodegenerative disorders (2018) *Prog. Neurobiol.* **175**:35-53. doi: 10.1016/j.pneurobio.2018.12.004. [***corresponding authors**]
39. Siegel JM, Schilly KM, Wijesinghe MB, **Caruso G**, Fresta CG, Lunte SM. Optimization of a microchip electrophoresis method with electrochemical detection for the determination of nitrite in macrophage cells as an indicator of nitric oxide production (2018) *Anal. Methods* **11**:148-156. doi: 10.1039/C8AY02014K.
40. **Caruso G***, Fresta CG, Lazzarino G, Distefano DA, Parlascino P, Lunte SM, Lazzarino G*, Caraci F. Sub-toxic human amylin fragment concentrations promote the survival and proliferation of SH-SY5Y cells via the release of VEGF and HspB5 from endothelial RBE4 cells (2018) *Int. J. Mol. Sci.* **19**: pii: E3659; doi: 10.3390/ijms19113659 [***corresponding authors**]
41. Lazzarino G, Listorti I, Muzii L, Amorini AM, Longo S, Di Stasio E, **Caruso G**, D'Urso S, Puglia I, Pisani G, Lazzarino G, Tavazzi B, Bilotta P. Low-molecular weight compounds in human seminal plasma as potential biomarkers of male infertility (2018) *Hum. Reprod.* **33**:1817-1828. doi: 10.1093/humrep/dey279.
42. Caraci F, Spampinato SF, Morgese MG, Tascetta F, Salluzzo MG, Giambirtone MC, **Caruso G**, Munafò A, Torrisi SA, Leggio GM, Trabace L, Nicoletti F, Drago F, Sortino MA, Copani A. Neurobiological links between depression and AD: The role of TGF- β 1 signaling as a new pharmacological target (2018) *Pharmacol. Res.* **130**:374-384. doi: 10.1016/j.phrs.2018.02.007.
43. Fresta CG, Chakraborty A, Wijesinghe MB, Amorini AM, Tavazzi B, Lazzarino G*, Lunte SM, Caraci F, Dhar P*, **Caruso G***. Non-toxic engineered carbon nanodiamond concentrations induce oxidative/nitrosative stress, imbalance of energy metabolism and mitochondrial dysfunction in microglial and alveolar basal epithelial cells (2018) *Cell. Death. Dis.*, **9**:245. doi: 10.1038/s41419-018-0280-z. [***corresponding authors**]
44. **Caruso G**, Fresta CG, Siegel JM, Wijesinghe MB, Lunte SM. Microchip electrophoresis with laser-induced fluorescence detection for determining the ratio of nitric oxide to superoxide

production during inflammation in macrophages (2017) *Anal. Bioanal. Chem.*, **409**:4529-4538. doi: 10.1007/s00216-017-0401-z. [**Article selected for publication as a Paper in Forefront**]

45. **Caruso G**, Fresta CG, Martinez-Becerra FA, Lopalco A, Johnson RT, de Campos RP, Siegel JM, Wijesinghe MB, Lazzarino G, Lunte SM. Carnosine modulates nitric oxide in stimulated murine RAW 264.7 macrophages (2017) *Mol. Cell. Biochem.*, **431**:197-210. doi: 10.1007/s11010-017-2991-3.
46. Fresta CG, Hogard ML*, **Caruso G***, Costa EE, Lazzarino G, Lunte SM. Monitoring carnosine uptake by RAW 264.7 macrophage cells using microchip electrophoresis with fluorescence detection (2017) *Anal. Methods*, **9**:402-408. doi: 10.1039/C6AY03009B. [***equally contributing authors**]
47. **Caruso G**, Distefano DA, Parlascino P, Fresta CG, Lazzarino G, Lunte SM, Nicoletti VG. Receptor-mediated toxicity of human amylin fragment aggregated by short and long term incubations with copper ions (2017) *Mol. Cell. Biochem.*, **425**:85-93. doi: 10.1007/s11010-016-2864-1.
48. Beesu M*, **Caruso G***, Salyer AC*, Shukla NM, Khetani KK, Smith LJ, Fox LM, Tanji H, Ohto U, Shimizu T and David SA. Identification of a Human Toll-Like Receptor (TLR) 8-Specific Agonist and a Functional Pan-TLR Inhibitor in 2-Aminoimidazoles (2016) *J. Med. Chem.*, **59**:3311-30. doi: 10.1021/acs.jmedchem.6b00023. [***co-first authors**]
49. Salyer AC, **Caruso G**, Khetani KK, Fox LM, Malladi SS and David SA. Identification of Adjuvant Activity of Amphotericin B in a Novel, Multiplexed, Poly-TLR/NLR High-throughput Screen (2016) *PLoS One*, **11**:e0149848. doi: 10.1371/journal.pone.0149848.
50. Beesu M, **Caruso G**, Salyer AC, Khetani KK, Sil D, Weerasinghe M, Tanji H, Ohto U, Shimizu T and David SA. Structure-Based Design of Human TLR8-Specific Agonists with Augmented Potency and Adjuvanticity (2015) *J. Med. Chem.* **58**:7833-49. doi: 10.1021/acs.jmedchem.5b01087.
51. de Campos RP, Siegel JM, Fresta CG, **Caruso G**, Fracassi da Silva JA and Lunte SM. Indirect detection of superoxide in RAW 264.7 macrophage cells using microchip electrophoresis coupled to laser induced fluorescence detection (2015) *Anal. Bioanal. Chem.* **407**:7003-12. doi: 10.1007/s00216-015-8865-1. doi: 10.1039/c4mt00130c.
52. Sinopoli A, Magrì A, Milardi D, Pappalardo M, Pucci P, Flagiello A, Titman JJ, Nicoletti VG, **Caruso G**, Pappalardo G and Grasso G. The role of copper(II) in the aggregation of human amylin (2014) *Metallomics* **6**:1841-52. doi: 10.1039/c4mt00130c.
53. Gunasekara DB, Siegel JM, **Caruso G**, Hulvey MK and Lunte SM. Microchip electrophoresis with amperometric detection method for profiling cellular nitrosative stress markers (2014) *Analyst* **139**:3265-73. doi: 10.1039/c4an00185k.
54. Metto EC, Evans K, Barney P, Culbertson AH, Gunasekara DB, **Caruso G**, Hulvey MK, Fracassi da Silva JA, Lunte SM and Culbertson CT. An Integrated Microfluidic Device for Monitoring Changes in Nitric Oxide Production in Single T-Lymphocyte (Jurkat) Cells (2013) *Anal. Chem.* **85**:10188-95. doi: 10.1021/ac401665u.
55. Mainz ER, Gunasekara DB, **Caruso G**, Jensen DT, Hulvey MK, Fracassi da Silva JA, Metto EC, Culbertson AH, Culbertson CT and Lunte SM. Monitoring Intracellular Nitric Oxide Production Using Microchip Electrophoresis and Laser-Induced Fluorescence Detection (2012) *Anal. Methods* **4**:414-420. doi: 10.1039/C2AY05542B
56. Lunte SM, Gunasekara DB, Metto EC, Hulvey MK, Mainz ER, **Caruso G**, Fracassi da Silva JA, Jensen DT, Culbertson AH, Grigsby RJ and Culbertson CT. Microchip electrophoresis devices for the detection of nitric oxide: Comparison of bulk cell and single cell analysis (2011) *Microtas* **3**:1728-1730.

Talks and posters at international conferences

- **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-29th, 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

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- 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

- 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.

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)

References

- Prof. Filippo Caraci, University of Catania - E-mail: fcaraci@unict.it
- Prof. Susan M. Lunte, University of Kansas - E-mail: slunte@ku.edu
- Prof. Giuseppe Lazzarino, University of Catania - E-mail: lazzarig@unict.it
- Prof. Renaud Jolivet, University of Geneva – E-mail: renaud.jolivet@unige.ch

- Prof. Prajna Paramita Dhar, University of Kansas - E-mail: prajnadhar@ku.edu
- Prof. Sunil A. David, University of Minnesota - E-mail: sdavid@umn.edu