

## Serena Leone



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**Current Position:** Researcher (Ricercatore III livello)

**Current Affiliation:**

Biology and Evolution of Marine Organisms (BEOM), Stazione Zoologica Anton Dohrn, Napoli

### Education/Training/Experience

Institute and Location	Degree / Function	Year	Field of Study
Università degli Studi di Napoli "Federico II", Napoli, Italy	Laurea	2003	Chemistry
Università degli Studi di Napoli "Federico II", Napoli, Italy	Ph.D.	2003-2006	Bio-Organic Chemistry
Brigham and Women's Hospital, Harvard Medical School, Boston, United States	Postdoc	2007-2010	Structural Biology and Biochemistry of Glycosaminoglycans
Instut de Biologie structurale "J.P. Ebel", Grenoble, France	Postdoc	2010	Structural Biology of Viral Proteins
Boston College, Boston, United States	Senior Research Scientist	2011-2013	Structural Biology and Biochemistry of Glycoconjugates
Università degli Studi di Napoli "Federico II", Napoli, Italy	Researcher	2014-2019	Structural Biology and Protein Biochemistry
Stazione Zoologica Anton Dohrn, Napoli, Italy	Researcher	2020 -present	Protein Biochemistry

## **Appointments and awards**

2004 – 2005: Visiting Scientist (6 months) Leibniz Centre for Medicine and Biosciences, Borstel (Germany)

2009: Visiting Scientist (2 months) Faculté de Pharmacie, Université de Picardie – Jules Verne, Amiens (France)

## **Other**

2015 – Co-founder of the academic Spin-Off "iSweetch s.r.l.s.", for the design and production of functionally enhanced sweet proteins and their application to food and beverage preparations.

2020 – Guest editor for “Life” special Issue "Structure, Function and New Developments of Sweet Proteins".

17-09-2019 – Abilitazione Scientifica Nazionale II Fascia SC 03/D1 (SSD CHIM/11)

## **Students' Supervision**

Co-supervisor of three undergraduate students. Supervisor of two PhD students

## **Publications**

Author of 48 publications on ISI-journals (h index: 20)

### ***List of publications of the last 10 years:***

#### **Peer-reviewed publications:**

Vingiani, G. M.; **Leone, S.**; De Luca, D.; Borra, M.; Dobson, A. D. W.; Ianora, A.; De Luca, P.; Lauritano, C. First Identification and Characterization of Detoxifying Plastic-Degrading DBP Hydrolases in the Marine Diatom *Cylindrotheca closterium*. *Science of The Total Environment* **2022**, *812*, 152535. <https://doi.org/10.1016/j.scitotenv.2021.152535>.

Murano, C.; Zuccarotto, A.; **Leone, S.**; Sollitto, M.; Gerdol, M.; Castellano, I.; Palumbo, A. A Survey on the Distribution of Ovoidiol and OvoA Gene Expression in Different Tissues and Cells: A Comparative Analysis in Sea Urchins and Mussels. *Marine Drugs* **2022**, *20* (4), 268. <https://doi.org/10.3390/md20040268>.

He, Y.; He, Z.; **Leone, S.**; Liu, S. Milk Exosomes Transfer Oligosaccharides into Macrophages to Modulate Immunity and Attenuate Adherent-Invasive E. Coli (AIEC) Infection. *Nutrients* **2021**, *13* (9), 3198. <https://doi.org/10.3390/nu13093198>.

Delfi, M.; Emendato, A.; **Leone, S.**; Lampitella, E. A.; Porcaro, P.; Cardinale, G.; Petraccone, L.; Picone, D. A Super Stable Mutant of the Plant Protein Monellin Endowed with Enhanced Sweetness. *Life* **2021**, *11* (3), 236. <https://doi.org/10.3390/life11030236>.

**Leone, S.**; Emendato, A.; Spadaccini, R.; Picone, D. Solution Structure of Insect CSP and OBPs by NMR. *Methods Enzymol* **2020**, *642*, 169–192. <https://doi.org/10.1016/bs.mie.2020.04.063>.

Delfi, M.; **Leone, S.**; Emendato, A.; Ami, D.; Borriello, M.; Natalello, A.; Iannuzzi, C.; Picone, D. Understanding the Self-Assembly Pathways of a Single Chain Variant of Monellin: A First Step towards the Design of Sweet Nanomaterials. *International Journal of Biological Macromolecules* **2020**, *152*, 21–29. <https://doi.org/10.1016/j.ijbiomac.2020.02.229>.

Boumaiza, M.; Trabelsi, K.; Choucha, Z.; Akrouti, I.; **Leone, S.**; Picone, D.; Kallel, H.; Kallel, H. Production and Characterization of a Fusion Form of Hepatitis E Virus TORF2 Capsid Protein in Escherichia Coli. *Preparative Biochemistry & Biotechnology* **2020**. <https://doi.org/10.1080/10826068.2020.1836656>.

Moccia, F.; Riccardi, C.; Musumeci, D.; **Leone, S.**; Oliva, R.; Petraccone, L.; Montesarchio, D. Insights into the G-Rich VEGF-Binding Aptamer V7t1: When Two G-Quadruplexes Are Better than One! *NUCLEIC ACIDS RESEARCH* **2019**, *47* (15), 8318–8331. <https://doi.org/10.1093/nar/gkz589>.

Miele, N. A.; **Leone, S.**; Cabisidan, E. K.; Picone, D.; Monaco, R. D.; Cavella, S. Temporal Sweetness Profile of the Emerging Sweetener MNEI in Stirred Yogurt. *Journal of Sensory Studies* **2019**, *34* (4), e12505. <https://doi.org/10.1111/joss.12505>.

**Leone, S.**; Fonderico, J.; Melchiorre, C.; Carpentieri, A.; Picone, D. Structural Effects of Methylglyoxal Glycation, a Study on the Model Protein MNEI. *Mol Cell Biochem* **2019**, *451* (1), 165–171. <https://doi.org/10.1007/s11010-018-3403-z>.

Esposito, L.; Donnarumma, F.; Ruggiero, A.; **Leone, S.**; Vitagliano, L.; Picone, D. Structure, Stability and Aggregation Propensity of a Ribonuclease A-Onconase Chimera. *International Journal of Biological Macromolecules* **2019**, *133*, 1125–1133. <https://doi.org/10.1016/j.ijbiomac.2019.04.164>.

Donnarumma, F.; **Leone, S.**; Delfi, M.; Emendato, A.; Ami, D.; Laurents, D. V.; Natalello, A.; Spadaccini, R.; Picone, D. Probing Structural Changes during Amyloid Aggregation of the Sweet Protein MNEI. *FEBS J* **2019**, febs.15168. <https://doi.org/10.1111/febs.15168>.

Cancelliere, R.; **Leone, S.**; Gatto, C.; Mazzoli, A.; Ercole, C.; Iossa, S.; Liverini, G.; Picone, D.; Crescenzo, R. Metabolic Effects of the Sweet Protein MNEI as a Sweetener in Drinking Water. A Pilot Study of a High Fat Dietary Regimen in a Rodent Model. *Nutrients* **2019**, *11* (11), 2643. <https://doi.org/10.3390/nu11112643>.

Pica, A.; **Leone, S.**; Di Girolamo, R.; Donnarumma, F.; Emendato, A.; Rega, M. F.; Merlino, A.; Picone, D. PH Driven Fibrillar Aggregation of the Super-Sweet Protein Y65R-MNEI: A Step-by-Step Structural Analysis. *Biochimica et Biophysica Acta (BBA) - General Subjects* **2018**, *1862* (4), 808–815. <https://doi.org/10.1016/j.bbagen.2017.12.012>.

Luchini, A.; D'Errico, G.; **Leone, S.**; Vaezi, Z.; Bortolotti, A.; Stella, L.; Vitiello, G.; Paduano, L. Structural Organization of Lipid-Functionalized-Au Nanoparticles. *Colloids and Surfaces B: Biointerfaces* **2018**, *168*, 2–9. <https://doi.org/10.1016/j.colsurfb.2018.04.044>.

Emendato, A.; Guerrini, R.; Marzola, E.; Wienk, H.; Boelens, R.; **Leone, S.**; Picone, D. Disordered Peptides Looking for Their Native Environment: Structural Basis of CB1 Endocannabinoid Receptor Binding to Peptides. *Front. Mol. Biosci.* **2018**, *5*. <https://doi.org/10.3389/fmolb.2018.00100>.

Donnarumma, F.; Emendato, A.; **Leone, S.**; Ercole, C.; D'Errico, G.; Picone, D. Salt Modulated Fibrillar Aggregation of the Sweet Protein MNEI in Aqueous Solution. *J Solution Chem* **2018**, *47* (5), 939–949. <https://doi.org/10.1007/s10953-018-0764-6>.

Castiglia, D.; **Leone, S.**; Tamburino, R.; Sannino, L.; Fonderico, J.; Melchiorre, C.; Carpentieri, A.; Grillo, S.; Picone, D.; Scotti, N. High-Level Production of Single Chain Monellin Mutants with Enhanced Sweetness and Stability in Tobacco Chloroplasts. *Planta* **2018**, *248* (2), 465–476. <https://doi.org/10.1007/s00425-018-2920-z>.

Boumaiza, M.; Colarusso, A.; Parrilli, E.; Garcia-Fruitós, E.; Casillo, A.; Arís, A.; Corsaro, M. M.; Picone, D.; **Leone, S.**; Tutino, M. L. Getting Value from the Waste: Recombinant Production of a Sweet Protein by *Lactococcus Lactis* Grown on Cheese Whey. *Microbial Cell Factories* **2018**, *17* (1), 126. <https://doi.org/10.1186/s12934-018-0974-z>.

Miele, N. A.; Cabisidan, E. K.; Blaiotta, G.; **Leone, S.**; Masi, P.; Monaco, R. D.; Cavella, S. Rheological and Sensory Performance of a Protein-Based Sweetener (MNEI), Sucrose, and Aspartame in Yogurt. *Journal of Dairy Science* **2017**, *100* (12), 9539–9550. <https://doi.org/10.3168/jds.2017-12894>.

Stanek, J.; Andreas, L. B.; Jaudzems, K.; Cala, D.; Lalli, D.; Bertarello, A.; Schubeis, T.; Akopjana, I.; Kotelovica, S.; Tars, K.; Pica, A.; **Leone, S.**; Picone, D.; Xu, Z.-Q.; Dixon, N. E.; Martinez, D.; Berbon, M.; El Mammeri, N.; Noubhani, A.; Saupe, S.; Habenstein, B.; Loquet, A.; Pintacuda, G. NMR Spectroscopic Assignment of Backbone and Side-Chain Protons in Fully Protonated Proteins: Microcrystals, Sedimented Assemblies, and Amyloid Fibrils. *Angewandte Chemie International Edition* **2016**, *55* (50), 15504–15509. <https://doi.org/10.1002/anie.201607084>.

Spadaccini, R.; **Leone, S.**; Rega, M. F.; Richter, C.; Picone, D. Influence of PH on the Structure and Stability of the Sweet Protein MNEI. *FEBS Lett* **2016**, *590* (20), 3681–3689. <https://doi.org/10.1002/1873-3468.12437>.

Newburg, D. S.; Ko, J. S.; **Leone, S.**; Nanthakumar, N. N. Human Milk Oligosaccharides and Synthetic Galactosyloligosaccharides Contain 3'-, 4-, and 6'-Galactosyllactose and Attenuate Inflammation in Human T84, NCM-460, and H4 Cells and Intestinal Tissue Ex Vivo. *J Nutr* **2016**, *146* (2), 358–367. <https://doi.org/10.3945/jn.115.220749>.

**Leone, S.**; Picone, D. Molecular Dynamics Driven Design of PH-Stabilized Mutants of MNEI, a Sweet Protein. *PLOS ONE* **2016**, *11* (6), e0158372. <https://doi.org/10.1371/journal.pone.0158372>.

**Leone, S.**; Pica, A.; Merlino, A.; Sannino, F.; Temussi, P. A.; Picone, D. Sweeter and Stronger: Enhancing Sweetness and Stability of the Single Chain Monellin MNEI through Molecular Design. *Scientific Reports* **2016**, *6*, 34045. <https://doi.org/10.1038/srep34045>.

He, Y.; Liu, S.; Kling, D. E.; **Leone, S.**; Lawlor, N. T.; Huang, Y.; Feinberg, S. B.; Hill, D. R.; Newburg, D. S. The Human Milk Oligosaccharide 2'-Fucosyllactose Modulates CD14 Expression in Human Enterocytes, Thereby Attenuating LPS-Induced Inflammation. *Gut* **2016**, *65* (1), 33–46. <https://doi.org/10.1136/gutjnl-2014-307544>.

Rega, M. F.; Di Monaco, R.; **Leone, S.**; Donnarumma, F.; Spadaccini, R.; Cavella, S.; Picone, D. Design of Sweet Protein Based Sweeteners: Hints from Structure–Function Relationships. *Food Chemistry* **2015**, *173*, 1179–1186. <https://doi.org/10.1016/j.foodchem.2014.10.151>.

**Leone, S.**; Sannino, F.; Tutino, M. L.; Parrilli, E.; Picone, D. Acetate: Friend or Foe? Efficient Production of a Sweet Protein in Escherichia Coli BL21 Using Acetate as a Carbon Source. *Microbial Cell Factories* **2015**, *14* (1), 106. <https://doi.org/10.1186/s12934-015-0299-0>.

He, Y.; Liu, S.; **Leone, S.**; Newburg, D. S. Human Colostrum Oligosaccharides Modulate Major Immunologic Pathways of Immature Human Intestine. *Mucosal Immunol* **2014**, 7 (6), 1326–1339. <https://doi.org/10.1038/mi.2014.20>.

De Castro, C.; Lanzetta, R.; **Leone, S.**; Parrilli, M.; Molinaro, A. The Structural Elucidation of the Salmonella Enterica Subsp. Enterica, Reveals That It Contains Both O-Factors 4 and 5 on the LPS Antigen. *Carbohydrate Research* **2013**, 370, 9–12. <https://doi.org/10.1016/j.carres.2013.01.015>.