

CV of Emilia Maria Pedone

Date of Birth [REDACTED]

Place of Birth [REDACTED]

E-Mail empedone@unina.it

Work Address: Biostructures and Bioimaging of C.N.R, V. P. Castellino 111, 80131, Naples, Italy

- **Academic degree - Year and Institution**

PhD in Biochemistry and Molecular Biology at the University of Naples "Federico II" on the 8th of April 1999

- **Previous fellowships**

February 1999-January 2000. Fellowship between the Department of Organic and Biological Chemistry and the MURST entitled: "Characterization of redox proteins from thermophilic organisms"

January 2000 -December 2000. PostDoct Fellow at the Department of Organic and Biological Chemistry, University of Naples Federico II entitled "Proteins from thermophilic microorganisms: characterization of the structure relationship function in native proteins, obtained by cloning and expression in heterologous organisms and through protein engineering

- **Previous positions**

30th October 2020- until now CNR researcher II level

December 2000- until now CNR researcher III level

Previous research activity of the applicant and foreign languages known

Emilia Pedone is Senior Researcher at Institute of Biostructures and Bioimaging of C.N.R in Naples, Italy.

Her prevailing interest is the study of the structure-function relationship regarding different protein targets and protein-protein interactions involved in the insurgence of several pathologies. She has gained expertise in the main techniques of microbiology, biochemistry and molecular biology. In addition, she has acquired technical skills for the expression of heterologous proteins in organisms such as Escherichia coli or insect cells or labeled proteins for the resolution of the structure by NMR or X-ray crystallography. Moreover, she gained the know-how of biophysical methodologies such as CD, light scattering, SPR, ITC, spectrofluorimetry and thermophoresis for the study of protein-protein, protein-peptide, protein-DNA interactions.

Bibliometric indicators

Google Scholar: Total Cit. 2599; H-index 29; i10-index:81

Scopus: Total Cit. 2166 H-index 25

Publications

116 papers on peer-review international journals

Co-relator of 14 theses (Master degree) and 4 PhD-thesis

The scientific activity of Dr. Pedone (<http://orcid.org/0000-0003-0203-8611>) involved essentially four research lines:

- 1) Study of structure-function relationships in proteins involved in the peroxides detoxification or in oxidative folding and redox homeostasis isolated from thermophilic microorganisms (object of 34 papers; 4 reviews; 4 as corresponding author; 15 as first author).
- 2) Study of the structure-function relationships and analysis of different protein interactions correlated to the onset of pathologies in order to design new molecular entities, especially of peptidic nature, of therapeutic interest (54 papers, 16 as corresponding author)
- 3) Study of the protein–DNA/metal interaction for the structure-function correlation (object of 12 papers/ 5 as corresponding author)
- 4) Study of biologically active molecules of peptidic nature with anti-inflammatory, antimicrobial or antitumoral roles (object of 5 papers; 3 as corresponding authors).

Dr Pedone is actually involved in three novel and appealing research projects, all included in research line 2:

- 1) The first one is focused on the role of metal ions and/or disordered regions in the structure-function of proteins. In particular, Dr. Pedone is involved in monitoring the formation of amyloid-like structures involved in the insurgence of pathologies (object of 2 papers; 1 as corresponding author)
- 2) Another research project is aimed at clarifying the anti-tumor potential of small sulfurated saccharide molecules. The mechanism of action and the binding properties of the selected molecules are investigated with recombinantly expressed sugar receptors belonging to the family of galectins. Human galectins act as regulatory factors in many types of cancers by either inhibiting or promoting tumor growth (object of 2 papers).
- 3) In the last period, due to the spread of a new coronavirus (SARS-CoV-2) representing a real pandemic threat so that to find potential therapeutic agents is a dire need, another research line was aimed at promoting a multi targeting approach to fight COVID-19. In particular the research line is focused not only on some already characterized targets for SARS-CoV-2 i.e. the main protease (MPro), but also on further emerging targets in the Spike protein sequence besides ACE2 interaction site such as a new type of ganglioside-binding domain (GBD). This domain is particularly relevant because it is conserved among coronavirus and moreover it seems to reside exactly in the galectin-like domain, already object of Dr Pedone research lines. (2 papers, 1 as last name and another as corresponding author).

Other qualifications

Dr. Pedone is member of the Interuniversity Research Center on bioactive peptides (CIRPEB) from 29-03-2006 until now.

She is a Member participating in the COST Action BM1405: Non-globular proteins – from sequence to structure, function and application in molecular physiopathology (NGP-NET) from 25-09-2015 until now.

She is part of the Italian Society of Peptides from 11-04-2016 until now

She is part of the Italian Biochemical Society (SIB) from 25-07-2016 until now.

Enabled for associate professor in Biochemistry 05/E1 from 16/06/2014 to 16/06/2023.

Enabled for full professor in Biochemistry 05/E1 from 31/03/2017 to 31/03/2026.

Enabled for associate professor in Applied Biology 05/F1 from 04/04/2017 to 04/04/2023

Foreign languages known: English, advanced level.

Editorial board member of:

Journal of Peptides from December 2018

Biochemistry and Molecular Biology (BMB) from March 2019

International Journal of Molecular Sciences from April 2020

Guest Editor:

Guest editor for a special issue entitled “Molecular Studies of Covid-19 Chemistry” on Frontiers of Chemistry on May 2020. Deadline 30 December 2020

Guest editor for a special issue entitled” Structure-Function relationship in proteins correlated with the insurgence of diseases on Section: Macromolecules” (<https://www.mdpi.com/journal/ijms/sections/macromolecules>) on International Journal of Molecular Sciences on July 2020. Deadline February 2021.

Guest editor for a special issue entitled “A lesson from Archaea: how to counteract oxidative stress” on Antioxidants. Deadline December 2021.

Referee for the following international journals:

Extremophiles; Journal of Bacteriology; Plos one; Biochemie; Scientific Reports; Applied Microbiology and Biotechnology; Biomaterials; Journal of Enzyme inhibition and medicinal chemistry; Biorganic Chemistry; International Journal of Molecular Sciences.

List of publications of the applicant of the last five years

1. Di Gaetano S, Pirone L, Galdadas I, Traboni S, Iadonisi A, Pedone E, Saviano M, Gervasio FL, Capasso D. Design, Synthesis, and Anticancer Activity of a Selenium-Containing

- Galectin-3 and Galectin-9N Inhibitor. *Int J Mol Sci.* 2022 Feb 25;23(5):2581. doi: 10.3390/ijms23052581.
2. Ibarra LE, Camorani S, Agnello L, Pedone E, Pirone L, Chesta CA, Palacios RE, Fedele M, Cerchia L. Selective Photo-Assisted Eradication of Triple-Negative Breast Cancer Cells through Aptamer Decoration of Doped Conjugated Polymer Nanoparticles. *Pharmaceutics.* 2022 Mar 12;14(3):626. doi: 10.3390/pharmaceutics14030626
 3. Capasso D, Di Gaetano S, Selvaraj C, Pedone E. Editorial: Molecular Studies of Covid-19 Chemistry. *Front Chem.* 2021 Aug 31;9:729142. doi: 10.3389/fchem.2021.729142. PMID: 34532311
 4. Senatore E, Chiuso F, Rinaldi L, Intartaglia D, Delle Donne R, Pedone E, Catalanotti B, Pirone L, Fiorillo B, Moraca F, Giamundo G, Scala G, Raffener A, Torres-Quesada O, Stefan E, Kwiatkowski M, van Pijkeren A, Morleo M, Franco B, Garbi C, Conte I, Feliciello A. The TBC1D31/praja2 complex controls primary ciliogenesis through PKA-directed OFD1 ubiquitylation. *EMBO J.* 2021 May 17;40(10):e106503. doi: 10.15252/embj.2020106503.
 5. Farina B, Pirone L, D'Abrosca G, Della Valle M, Russo L, Isernia C, Sassano M, Del Gatto A, Di Gaetano S, Zaccaro L, Malgieri G, Pedone EM, Fattorusso R. Screening a Molecular Fragment Library to Modulate the PED/PEA15-Phospholipase D1 Interaction in Cellular Lysate Environments. *ACS Chem Biol.* 2021 Dec 17;16(12):2798-2807. doi: 10.1021/acscchembio.1c00688
 6. Gaglione R, Smaldone G, Cesaro A, Rumolo M, De Luca M, Di Girolamo R, Petraccone L, Del Vecchio P, Oliva R, Notomista E, Pedone E, Arciello A. Impact of a Single Point Mutation on the Antimicrobial and Fibrillogenic Properties of Cryptides from Human Apolipoprotein B. *Pharmaceutics (Basel).* 2021 Jun 29;14(7):631. doi: 10.3390/ph14070631.
 7. Di Gaetano S, Capasso D, Delre P, Pirone L, Saviano M, Pedone E*, Mangiatordi GF. More Is Always Better Than One: The N-Terminal Domain of the Spike Protein as Another Emerging Target for Hampering the SARS-CoV-2 Attachment to Host Cells. *Int J Mol Sci.* 2021 Jun 16;22(12):6462. doi: 10.3390/ijms22126462
 8. Senatore E, Chiuso F, Rinaldi L, Intartaglia D, Delle Donne R, Pedone E, Catalanotti B, Pirone L, Fiorillo B, Moraca F, Giamundo G, Scala G, Raffener A, Torres-Quesada O, Stefan E, Kwiatkowski M, van Pijkeren A, Morleo M, Franco B, Garbi C, Conte I, Feliciello A. The TBC1D31/praja2 complex controls primary ciliogenesis through PKA-directed OFD1 ubiquitylation. *EMBO J.* 2021 May 17;40(10):e106503. doi: 10.15252/embj.2020106503.
 9. Tito A, Colantuono A, Pirone L, Pedone E, Intartaglia D, Giamundo G, Conte I, Vitaglione P and Apone A. Pomegranate Peel Extract as an Inhibitor of SARS-CoV-2 Spike Binding to Human ACE2 Receptor (in vitro): A Promising Source of Novel Antiviral Drugs. *Front Chem.* 2021 Apr 28;9:638187. doi: 10.3389/fchem.2021.638187. eCollection 2021
 10. Pirone L, Del Gatto A, Di Gaetano S, Saviano M, Capasso D, Zaccaro L, Pedone E*. A Multi-Targeting Approach to Fight SARS-CoV-2 Attachment. *Front Mol Biosci.* 2020 Aug 3;7:186. doi: 10.3389/fmolb.2020.00186. eCollection 2020.
 11. Pedone E, Fiorentino G, Bartolucci S, Limauro D. Enzymatic Antioxidant Signatures in Hyperthermophilic Archaea. *Antioxidants (Basel).* 2020 Aug 3;9(8):703. doi: 10.3390/antiox9080703.
 12. D'Abrosca G, Paladino A, Baglivo I, Russo L, Sassano M, Grazioso R, Iacovino R, Pirone L, Pedone EM, Pedone PV, Isernia C, Fattorusso R, Malgieri G. Structural Insight of the Full-Length Ros Protein: A Prototype of the Prokaryotic Zinc-Finger Family. *Sci Rep.* 2020 Jun 9;10(1):9283. doi: 10.1038/s41598-020-66204-5.
 13. Bocedi A, Gambardella G, Cattani G, Bartolucci S, Limauro D, Pedone E, Iavarone F, Castagnola M, Ricci G. Ultra-rapid glutathionylation of chymotrypsinogen in its molten

- globule-like conformation: A comparison to archaeal proteins. *Sci Rep.* 2020 Jun 2;10(1):8943. doi: 10.1038/s41598-020-65696-5.
14. Montanari R, Capelli D, Yamamoto K, Awaishima H, Nishikata K, Barendregt A, Heck AJR, Loiodice F, Altieri F, Paiardini A, Grottesi A, Pirone L, Pedone E, Peiretti F, Brunel JM, Itoh T, Pochetti G. Insights into PPAR γ Phosphorylation and Its Inhibition Mechanism. *J Med Chem.* 2020 May 14;63(9):4811-4823. doi:10.1021/acs.jmedchem.0c00048.
 15. Mercurio FA, Di Natale C, Pirone L, Vincenzi M, Marasco D, De Luca S, Pedone EM, Leone M. Exploring the Ability of Cyclic Peptides to Target SAM Domains: A Computational and Experimental Study. *Chembiochem.* 2020 Mar 2;21(5):702-711. doi: 10.1002/cbic.201900444.
 16. Penna E, Cerciello A, Chambery A, Russo R, Cernilogar FM, Pedone EM, Perrone-Capano C, Cappello S, Di Giaimo R, Crispino M. Cystatin B Involvement in Synapse Physiology of Rodent Brains and Human Cerebral Organoids. *Front Mol Neurosci.* 2019 Aug 16;12:195. doi: 10.3389/fnmol.2019.00195.
 17. Pirone L, Smaldone G, Spinelli R, Barberisi M, Beguinot F, Vitagliano L, Miele C, Di Gaetano S, Raciti GA, Pedone E*. KCTD1: A novel modulator of adipogenesis through the interaction with the transcription factor AP2 α . *Biochim Biophys Acta Mol Cell Biol Lipids.* 2019 Aug 26;1864(12):158514. doi: 10.1016/j.bbalip.2019.08.010.
 18. Gallo G, Antonucci I, Pirone L, Amoresano A, Contursi P, Limauro D, Pedone E, Bartolucci S, Fiorentino G. A physicochemical investigation on the metal binding properties of TtSmtB, a thermophilic member of the ArsR/SmtB transcription factor family. *Int J Biol Macromol.* 2019 Oct 1;138:1056-1063. doi: 10.1016/j.ijbiomac.2019.07.174.
 19. Smaldone G, Balasco N, Pirone L, Caruso D, Di Gaetano S, Pedone EM, Vitagliano L. Molecular basis of the scalp-ear-nipple syndrome unraveled by the characterization of disease-causing KCTD1 mutants. *Sci Rep.* 2019 Jul 19;9(1):10519. doi: 10.1038/s41598-019-46911-4.
 20. Di Gaetano S, Bedini E, Landolfi A, Pedone E, Pirone L, Saviano M, Traboni S, Capasso D, Iadonisi A. Synthesis of diglycosylated (di)sulfides and comparative evaluation of their antiproliferative effect against tumor cell lines: A focus on the nature of sugar-recognizing mediators involved. *Carbohydr Res.* 2019 Aug 1;482:107740. doi: 10.1016/j.carres.2019.107740.
 21. Amato T, Virgilio A, Pirone L, Vellecco V, Bucci M, Pedone E, Esposito V, Galeone A. Investigating the properties of TBA variants with twin thrombin binding domains. *Sci Rep.* 2019 Jun 24;9(1):9184. doi: 10.1038/s41598-019-45526-z.
 22. Bellia F, Lanza V, García-Viñuales S, Ahmed IMM, Pietropaolo A, Iacobucci C, Malgieri G, D'Abrosca G, Fattorusso R, Nicoletti VG, Sbardella D, Tundo GR, Coletta M, Pirone L, Pedone E, Calcagno D, Grasso G, Milardi D. Ubiquitin binds the amyloid β peptide and interferes with its clearance pathways. *Chem Sci.* 2019 Jan 10;10(9):2732-2742. doi: 10.1039/c8sc03394c.
 23. Pirone L, Caldinelli L, Di Lascio S, Di Girolamo R, Di Gaetano S, Fornasari D, Pollegioni L, Benfante R, Pedone E. Molecular insights into the role of the polyalanine region in mediating PHOX2B aggregation. *FEBS J.* 2019 Apr 7. doi: 10.1111/febs.14841.
 24. Pirone L, Di Gaetano S, Rizzarelli E, Bellia F, Pedone E. Focusing on the functional characterization of the anserinase from *Oreochromis niloticus*. *Int J Biol Macromol.* 2019 Jun 1;130:158-165. doi: 10.1016/j.ijbiomac.2019.02.118. 30797810.
 25. Mercurio FA, Di Natale C, Pirone L, Marasco D, Calce E, Vincenzi M, Pedone EM, De Luca S, Leone M. Design and analysis of EphA2-SAM peptide ligands: A multi-disciplinary screening approach. *Bioorg Chem.* 2019 Vol. 84:434-443. doi: 10.1016/j.bioorg.2018.12.009.
 26. Di Gaetano S, Del Gatto A, Pirone L, Comegna D, Zaccaro L, Saviano M, Arcà B, Capasso D, Pedone E. A selective avb5 integrin antagonist hidden into the anophelin family protein

- cE5 from the malaria vector *Anopheles gambiae*. *Peptide Science*. 2018;e24054.DOI: 10.1002/pep2.24054.
27. Pirone L, Pitzer JE, D'Abrosca G, Fattorusso R, Malgieri G, Pedone EM, Pedone PV, Roop RM 2nd, Baglivo I. Identifying the region responsible for *Brucella abortus* MucR higher-order oligomer formation and examining its role in gene regulation. *Sci Rep*. 2018 Nov 22;8(1):17238. doi: 10.1038/s41598-018-35432-1.
 28. Mercurio FA, Pirone L, Di Natale C, Marasco D, Pedone EM, Leone M. Sam domain-based stapled peptides: Structural analysis and interaction studies with the Sam domains from the EphA2 receptor and the lipid phosphatase Ship2. *Bioorg Chem*. 2018 Oct;80:602-610. doi: 10.1016/j.bioorg.2018.07.013
 29. Malgieri G, D'Abrosca G, Pirone L, Toto A, Palmieri M, Russo L, Sciacca MFM, Tatè R, Sivo V, Baglivo I, Majewska R, Coletta M, Pedone PV, Isernia C, De Stefano M, Gianni S, Pedone EM, Milardi D, Fattorusso R. Folding mechanisms steer the amyloid fibril formation propensity of highly homologous proteins. *Chem Sci*. 2018 Mar 1;9(13):3290-3298. doi: 10.1039/c8sc00166a. eCollection 2018 Apr 7.
 30. Smaldone G, Pirone L, Capolupo A, Vitagliano L, Monti MC, Di Gaetano S, Pedone E. The essential player in adipogenesis GRP78 is a novel KCTD15 interactor. *Int J Biol Macromol*. 2018 Apr 14;115:469-475. doi: 10.1016/j.ijbiomac.2018.04.078.
 31. Baglivo I, Pirone L, Malgieri G, Fattorusso R, Roop Ii RM, Pedone EM, Pedone PV. MucR binds multiple target sites in the promoter of its own gene and is a heat-stable protein: Is MucR a H-NS-like protein? *FEBS Open Bio*. 2018 Mar 31;8(4):711-718. doi: 10.1002/2211-5463.12411. eCollection 2018
 32. Fusco FA, Fiorentino G, Pedone E, Contursi P, Bartolucci S, Limauro D. Biochemical characterization of a novel thermostable β -glucosidase from *Dictyoglomus turgidum*. *Int J Biol Macromol*. 2018 Jul 1;113:783-791. doi: 10.1016/j.ijbiomac.2018.03.018.
 33. Ferrucci V, de Antonellis P, Pennino FP, Asadzadeh F, Virgilio A, Montanaro D, Galeone A, Boffa I, Pisano I, Scognamiglio I, Navas L, Diana D, Pedone E, Gargiulo S, Gramanzini M, Brunetti A, Danielson L, Carotenuto M, Liguori L, Verrico A, Quaglietta L, Errico ME, Del Monaco V, D'Argenio V, Tirone F, Mastronuzzi A, Donofrio V, Giangaspero F, Picard D, Remke M, Garzia L, Daniels C, Delattre O, Swartling FJ, Weiss WA, Salvatore F, Fattorusso R, Chesler L, Taylor MD, Cinalli G, Zollo M. Metastatic group 3 medulloblastoma is driven by PRUNE1 targeting NME1-TGF- β -OTX2-SNAIL via PTEN inhibition. *Brain*. 2018 May 1;141(5):1300-1319. doi: 10.1093/brain/awy039.
 34. Mercurio FA, Di Natale C, Pirone L, Iannitti R, Marasco D, Pedone EM, Palumbo R, Leone M. The Sam-Sam interaction between Ship2 and the EphA2 receptor: design and analysis of peptide inhibitors. *Sci Rep*. 2017 Dec 12;7(1):17474. doi: 10.1038/s41598-017-17684-5.
 35. Fusco FA, Ronca R, Fiorentino G, Pedone E, Contursi P, Bartolucci S, Limauro D. Biochemical characterization of a thermostable endomannanase/endoglucanase from *Dictyoglomus turgidum*. *Extremophiles*. 2018 Jan;22(1):131-140. doi: 10.1007/s00792-017-0983-6.
 36. Gaglione R, Smaldone G, Di Girolamo R, Piccoli R, Pedone E, Arciello A. Cell milieu significantly affects the fate of AApoAI amyloidogenic variants: predestination or serendipity? *Biochim Biophys Acta*. 2018 Mar;1862(3):377-384. doi: 10.1016/j.bbagen.2017.11.018
 37. Baglivo I, Pirone L, Pedone EM, Pitzer JE, Muscariello L, Marino MM, Malgieri G, Freschi A, Chambery A, Roop Ii RM, Pedone PV. Ml proteins from *Mesorhizobium loti* and MucR from *Brucella abortus*: an AT-rich core DNA-target site and oligomerization ability. *Sci Rep*. 2017 Nov 17;7(1):15805. doi: 10.1038/s41598-017-16127-5.
 38. Gaglione R, Pirone L, Farina B, Fusco S, Smaldone G, Aulitto M, Dell'Olmo E, Roscetto E, Del Gatto A, Fattorusso R, Notomista E, Zaccaro L, Arciello A, Pedone E, Contursi P.

- Insights into the anticancer properties of the first antimicrobial peptide from Archaea. *Biochim Biophys Acta*. 2017 Sep;1861(9):2155-2164. doi: 10.1016/j.bbagen.2017.06.009.
39. Mercurio FA, Costantini S, Di Natale C, Pirone L, Guariniello S, Scognamiglio PL, Marasco D, Pedone EM, Leone M. Structural investigation of a C-terminal EphA2 receptor mutant: Does mutation affect the structure and interaction properties of the Sam domain? *Biochim Biophys Acta*. 2017 Sep;1865(9):1095-1104. doi: 10.1016/j.bbapap.2017.06.003.
 40. Pirone L, Ripoll-Rozada J, Leone M, Ronca R, Lombardo F, Fiorentino G, Andersen JF, Pereira PJB, Arcà B, Pedone E. Functional analyses yield detailed insight into the mechanism of thrombin inhibition by the antihemostatic salivary protein cE5 from *Anopheles gambiae*. *J Biol Chem*. 2017 Jul 28;292(30):12632-12642. doi: 10.1074/jbc.M117.788042. Epub 2017 Jun 7.
 41. Deplano A, Morgillo CM, Demurtas M, Björklund E, Cipriano M, Svensson M, Hashemian S, Smaldone G, Pedone E, Luque FJ, Cabiddu MG, Novellino E, Fowler CJ, Catalanotti B, Onnis V. Novel propanamides as fatty acid amide hydrolase inhibitors. *Eur J Med Chem*. 2017 Aug 18;136:523-542. doi: 10.1016/j.ejmech.2017.05.033.
 42. Bosso A, Pirone L, Gaglione R, Pane K, Del Gatto A, Zaccaro L, Di Gaetano S, Diana D, Fattorusso R, Pedone E, Cafaro V, Haagsman HP, van Dijk A, Scheenstra MR, Zanfardino A, Crescenzi O, Arciello A, Varcamonti M, Veldhuizen EJA, Di Donato A, Notomista E, Pizzo E. A new cryptic host defense peptide identified in human 11-hydroxysteroid dehydrogenase-1 β -like: from in silico identification to experimental evidence. *Biochim Biophys Acta*. 2017 Sep;1861(9):2342-2353. doi: 10.1016/j.bbagen.2017.04.009.
 43. Aulitto M, Fusco S, Fiorentino G, Limauro D, Pedone E, Bartolucci S, Contursi P. *Thermus thermophilus* as source of thermozymes for biotechnological applications: homologous expression and biochemical characterization of an α -galactosidase. *Microb Cell Fact*. 2017 Feb 13;16(1):28. doi: 10.1186/s12934-017-0638-4.
 44. Sacchi S, Cappelletti P, Pirone L, Smaldone G, Pedone E, Pollegioni L. Elucidating the role of the pLG72 R30K substitution in schizophrenia susceptibility. *FEBS Lett*. 2017 Feb;591(4):646-655. doi: 10.1002/1873-3468.12585.