Curriculum vitae et studiorum- Clara Iannuzzi

CLARA IANNUZZI
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ACADEMIC CAREER

- 2014-2017: Research fellow (RTD/B) at Department of Precision Medicine, Università della Campania "L. Vanvitelli", Naples (Italy). Field of interest: Biochemistry, biophysics and cell biology. The position was fully founded by Italian Ministry of University and Research through the international Programme "Rientro dei cervelli Rita Levi Montalcini".
- 2007-2013: Career Development Fellowship at "National Institute for Medical Research, Molecular Structure Division", Prof. Annalisa Pastore Group, London (UK). Field of interest: Structural biochemistry and biophysics.
- 2002-2006: PhD in Cellular Biochemistry at Università della Campania "L. Vanvitelli", Naples (Italy).
- 2002: Master's degree in Chemical Sciences, University "Federico II", Naples (Italy)

GRANTS AWARDED

- 2022: National Grant based on peer-review process founded by University of Campania, participant for 15 months project. Project title: "Investigating the Role of adipokinEs in nSClc immunotherapy rEsponse (iRESCUE)" founded by University of Campania "L. Vanvitelli" (Italy).
- 2019: National grant VALERE MOLTO, scientific coordinator of research unit for a 3-year project. Project title: "Moving from current guidelines to personalized colorectal cancer treatment: Opportunities and challenges" founded by University of Campania "L. Vanvitelli" (Italy).
- 2014-2017: International grant "Rientro dei Cervelli-Rita Levi Montalcini", scientific coordinator of the project "The role of glycation on the structural and dynamical properties and in the amyloid aggregation process of proteins involved in neurodegenerative diseases".

The founding was for 4-year project and it has been fully founded by Italian Ministry of University and Research (MIUR).

RESEARCH OVERVIEW

The research activity of Prof. Clara Iannuzzi is documented by many scientific publications in international peer-reviewed journals, 2 book chapters in international books and many communications at international meetings regarding the molecular mechanisms underlying protein misfolding and the structure/function relationship in proteins with a high biomedical impact. These research activities are performed through a combination of biochemistry, biophysics and cellular biology techniques and some of them are developed in collaboration with national and international research groups.

Main research activities:

- Protein misfolding, aggregation and amyloid formation. Characterization of the molecular mechanisms underlying the amyloid aggregation process and the physiopathology of amyloidogenic aggregates in neurodegenerative diseases. Identification of molecular mechanisms underlying the amyloid aggregation process in proteins involved in many neurodegenerative diseases.

- Clarify the role of the post-translational modifications in the cytotoxicity associated to neurodegenerative disorders. In particular, the role of protein glycation, a non-enzymatic protein modification, in the in vivo amyloid formation and in the physiopathology of neurodegenerative and ageing diseases.

- Structure/function relationship in proteins involved in biological processes associated to metabolic disfunctions. This study is performed through the investigation of protein-protein interactions and high-resolution techniques.

SCIENTIFIC PUBLICATIONS (last ten years)

1. Iannuzzi, C., Liccardo, M., Sirangelo, I. Overview of the Role of Vanillin in Neurodegenerative Diseases and Neuropathophysiological Conditions. Int J Mol Sci. 2023 Jan 17;24(3):1817. doi: 10.3390/ijms24031817.
2. Sirangelo, I., Liccardo, M., Iannuzzi, C. Hydroxytyrosol prevents doxorubicin-induced oxidative stress and apoptosis in cardiomyocytes. Antioxidants (Basel) 2022, 11:1087. doi:10.3390/antiox11061087.
3. Palinski, W., Monti, M., Camerlingo, R., Iacobucci, I., Bocella, S., Pinto, F., Iannuzzi, C., Mansueto, G., Pignatiello, S., Fazioli, F., Gallo, M., Marra, L:, Cozzolino, F., De Chiara, A., Pucci, P., Bilancio, A., de Nigris, F. Lysosome purinergic receptor P2X4 regulates neoangiogenesis induced by microvesicles from sarcoma patients. Cell Death Dis 2021, 12, 797. doi:10.1038/s41419-021-04069-w.
4. Sirangelo, I., Borriello, M., Liccardo, M., Scafuro, M., Russo, P., Iannuzzi, C. Hydroxytyrosol Selectively Affects Non-Enzymatic Glycation in Human Insulin and Protects by AGEs Cytotoxicity. Antioxidants (Basel) 2021, 10(7):1127. doi:10.3390/antiox10071127.
5. Sirangelo, I.; Iannuzzi, C. Understanding the Role of Protein Glycation in the Amyloid Aggregation Process. Int. J. Mol. Sci. 2021, 22, 6609. doi:10.3390/ijms22126609

6. Sirangelo, I., Sapio, L., Ragone, A., Naviglio, S., Iannuzzi, C., Barone, D., Giordano, A., Borriello, M. Vanillin prevents doxorubicin-induced apoptosis and oxidative stress in rat H9c2 cardiomyocytes. Nutrients 2020, 12 (8), 2317. doi: 10.3390/nu12082317.
7. Sirangelo I., Borriello M., Vilasi S., Iannuzzi C. Hydroxytyrosol Inhibits Protein Oligomerization and Amyloid Aggregation in Human Insulin. International Journal of Molecular Sciences 2020, 21, 4636. doi:10.3390/ijms21134636.
8. 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. Int J Biol Macromol. 2020, 152: 21-29. doi: 10.1016/j.ijbiomac.2020.02.229.
9. 5. Esposito R, Delfino I, Portaccio M, Iannuzzi C, Lepore M. An insight into pH-induced changes in FAD conformational structure by means of time-resolved fluorescence and circular dichroism. European Biophysics Journal 2019, 48(4): 395-403. doi: 10.1007/s00249-019-01369-0.
10. Borriello M, Iannuzzi C, Sirangelo I. Pinocembrin Protects from AGE-Induced Cytotoxicity and Inhibits Non-Enzymatic Glycation in Human Insulin. Cells 2019 Apr 26;8(5). pii: E385. doi: 10.3390/cells8050385.
11. Varone A, Mariggiò S, Patheja M, Maione V, Varriale A, Vessichelli M, Spano D, Formiggini F, Lo Monte M, Brancati N, Frucci M, Del Vecchio P, D'Auria S, Flagiello A, Iannuzzi C, Luini A, Pucci P, Banci L, Valente C, Corda D. A signalling cascade involving receptor-activated phospholipase A(2), glycerophosphoinositol 4-phosphate, Shp1 and Src in the activation of cell motility. Cell Communication and Signaling 2019 Mar 1;17(1):20. doi:10.1186/s12964-019-0329-3.
12. Iannuzzi C, Borriello M, D'Agostino A, Cimini D, Schiraldi C, Sirangelo I. Protective effect of extractive and biotechnological chondroitin in insulin amyloid and advanced glycation end product-induced toxicity. Journal of Cellular Physiology 2019, 234(4): 3814-3828. doi:10.1002/jcp.27153.
13. Sirangelo I, Borriello M, Irace G, Iannuzzi C. Intrinsic blue-green fluorescence in amyloid fibrils. AIMS Biophysics 2018, 5(2): 155-165. doi: 10.3934/biophy.2018.2.155.
14. Adinolfi S, Puglisi R, Crack JC, Iannuzzi C, Dal Piaz F, Konarev PV, Svergun DI, Martin S, Le Brun NE, Pastore A. The Molecular Bases of the Dual Regulation of Bacterial Iron Sulfur Cluster Biogenesis by CyaY and IscX. Frontiers in Molecular Biosciences 2018, 4:97. doi: 10.3389/fmolb.2017.00097.
15. Iannuzzi C, Borriello M, Portaccio M, Irace G, Sirangelo I. Insights into insulin fibril assembly at physiological and acidic pH and related amyloid intrinsic fluorescence. International Journal of Molecular Sciences 2017, 18(12): 2551. doi:10.3390/ijms18122551.
16. Iannuzzi C, Borriello M, Irace G, Cammarota M, Di Maro A, Sirangelo I. Vanillin affects amyloid aggregation and non-enzymatic glycation in human insulin. Scientific Reports 2017, 7(1):15086. doi: 10.1038/s41598-017-15503-5.
17. Sirangelo I, Iannuzzi C. The Role of Metal Binding in the Amyotrophic Lateral Sclerosis-Related Aggregation of Copper-Zinc Superoxide Dismutase. Molecules 2017, 22(9). pii: E1429. doi: 10.3390/molecules22091429.
18. Iannuzzi A, Pereira J, Iannuzzi C, Fu B, Ferguson-Smith M. Pooling strategy and chromosome painting characterize a living zebroid for the first time. PLoS One 2017 Jul 12;12(7):e0180158. doi: 10.1371/journal.pone.0180158.
19. Sirangelo I, Vella FM, Irace G, Manco G, Iannuzzi C. Glycation in Demetalated Superoxide Dismutase 1 Prevents Amyloid Aggregation and Produces Cytotoxic Ages Adducts. Frontiers in Molecular Biosciences 2016, doi: 10.3389/fmolb.2016.00055.

20. Iannuzzi C, Borriello M, Carafa V, Altucci L, Vitiello M, Balestrieri ML, Ricci G, Irace G, Sirangelo I. D-ribose-glycation of insulin prevents amyloid aggregation and produces cytotoxic adducts. Biochimica et Biophysica Acta-Molecular Basis of Disease 2016, 1862(1):93-104. doi: 10.1016/j.bbadis. 2015.10.021.
21. Iannuzzi C, Carafa V, Altucci L, Irace G, Borriello M, Vinciguerra R, Sirangelo I. Glycation of Wild-Type Apomyoglobin Induces Formation of Highly Cytotoxic Oligomeric Species. Journal of Cell Physiology 2015, 230(11):2807-20. doi: 10.1002/jcp.25011.
22. Adrover M, Howes BD, Iannuzzi C, Smulevich G, Pastore A. Anatomy of an iron-sulfur cluster scaffold protein: Understanding the determinants of [2Fe-2S] cluster stability on IscU. Biochimica et Biophysica Acta - Molecular Cell Research 2015, 1853(6): 1448-1456. doi:10.1016/j.bbamcr.2014.10.023.
23. Iannuzzi C, Irace G, Sirangelo I. The Effect of Glycosaminoglycans (GAGs) on Amyloid Aggregation and Toxicity. Molecules 2015, 20: 2510-2528, ISSN: 1420-3049, doi: 10.3390/molecules20022510.
24. Ferriero R, Iannuzzi C, Manco G, Brunetti-Pierri N. Differential inhibition of PDKs by phenylbutyrate and enhancement of pyruvate dehydrogenase complex activity by combination with dichloroacetate. Journal of Inherited Metabolic Disease 2015, doi: 10.1007/s10545-014-9808-2.
25. Iannuzzi C, Irace G, Sirangelo I. Differential effects of glycation on protein aggregation and amyloid formation. Frontiers in Molecular Biosciences 2014, doi: 10.3389/fmolb.2014.00009.
26. Cigliano L, Strazzullo M, Rossetti C, Grazioli G, Auriemma G, Sarubbi F, Iannuzzi C., Iannuzzi L, Spagnuolo MS. Characterization of blood redox status of early and mid-late lactating dairy cows. Czech Journal Of Animal Science 2014, 59:170-181.
27. Iannuzzi A, Perucatti A, Genualdo V, Pauciullo A, Incarnato D, Musilova P, Rubes J, Iannuzzi C. The utility of chromosome microdissection in clinical cytogenetics: a new reciprocal translocation in sheep. Cytogenetic And Genome Research 2014, doi: 10.1159/000361000.
28. Iannuzzi C, Adrover M, Puglisi R, Yan R, Temussi PA, Pastore A. The role of zinc in the stability of the marginally stable IscU scaffold protein. Protein Science 2014, doi: 10.1002/pro.2501
29. Iannuzzi C, Maritato R, Irace G, Sirangelo I. Glycation Accelerates Fibrillization of the Amyloidogenic W7FW14F Apomyoglobin. Plos One 2013, doi: 10.1371/journal.pone.0080768.
30. Sirangelo I, Giovane A, Maritato R, D'Onofrio N, Iannuzzi C, Giordano A, Irace G, Balestrieri ML. Platelet-Activating Factor Mediates the Cytotoxicity Induced by W7FW14F Apomyoglobin Amyloid Aggregates in Neuroblastoma Cells. Journal of Cellular Biochemistry 2014, 115(12):2116-22, doi: 10.1002/jcb.24888.
31. Yan R, Adinolfi S, Iannuzzi C, Kelly G, Oregioni A, Martin S, Pastore A. Cluster and fold stability of E. coli ISC-type ferredoxin. Plos One 2013, 8(11):e78948. ISSN: 1932-6203, doi: 10.1371/journal.pone.0078948.
32. Yan R, Konarev PV, Iannuzzi C, Adinolfi S, Roche B, Kelly G, Simon L, Martin SR, Py B, Barras F, Svergun DI, Pastore A. Ferredoxin competes with bacterial frataxin in binding to the desulfurase IscS. Journal of Biological Chemistry 2013, 288:24777-24787. ISSN: 1083-351X, doi: 10.1074/jbc.M113.480327.
33. Iannuzzi C, Maritato R, Irace G, Sirangelo I. Misfolding and amyloid aggregation of apomyoglobin. International Journal of Molecular Sciences 2013, 14:14287-14300. ISSN: 1422-0067, doi: 10.3390/ijms140714287.

34. Infusini G, Iannuzzi C, Vilasi S, Maritato R, Birolo L, Pagnozzi D, Pucci P, Irace G, Sirangelo I. W-F substitutions in apomyoglobin increase the local flexibility of the N-terminal region causing amyloid aggregation: A H/D exchange study. Protein and Peptide Letters 2013, 20(8):898-904. ISSN: 0929-8665, doi: 10.2174/0929866511320080006.

SCIENTIFIC COMMUNICATIONS

- Liccardo M., Misso G., Caraglia M., Sirangelo I., Iannuzzi C., FalcoM. "AGEs Affect Cancer-Related Process in Different Cellular Models" Bioprosys joint meeting 18-19 May 2023, Naples (Italy).
- Liccardo M., Borriello M., Sirangelo I. Iannuzzi C. "Hydroxytyrosol affects non-enzymatic glycation and protects by ages cytotoxicity" 61° SIB Congress, virtual conference 23th -24th Sep 2021.
- Oral communication "Differential inhibition of PDKs by phenylbutyrate and identification of putative binding sites". 5th World Congress on Biotechnology 25th-27th June 2014, Valencia (Spain).
- Oral communication "Insights into the molecular mechanism of glycation-stimulated protein aggregation". International conference "Biophysics of amyloids and prions" 25th -26th 2014, Naples (Italy).
- Iannuzzi C., Maritato R., Irace G., Sirangelo I. "Effect of glycation on amyloid aggregation and cytotoxicity" 5th World Congress on Biotechnology 25th-27th June 2014, Valencia (Spain).
- Oral communication "The role of CyaY in Fe-S cluster assembly on the E. coli IscU scaffold protein". 6th International Conference on Fe-S cluster protein Biogenesis and regulation, 22nd -25th August 2011, Cambridge (UK).
- Oral communication "A Mössbauer and resonance Raman study of the role of CyaY in iron sulfur cluster assembly on the E. coli IscU scaffold protein". Friedereich's Ataxia Scientific Conference, 5th-7th May 2011, Strasbourg (FR).
- Prischi F., Iannuzzi C., Pastore C., Adinolfi S., Martin.S., Pastore A. "A low resolution structure of an IscS/IscU/CyaY complex unveils the mechanism of iron-sulfur cluster assembly and the role of frataxin" Fe-S cluster discussion and frataxin twin meetings, 6th-8th May 2010, London (UK).
- Iannuzzi C., Prischi F., Adinolfi S., Martin S.R., Pastore A. "Bacterial frataxin CyaY is the gatekeeper of iron-sulfur cluster formation" FEBS Workshop on Understanding transient molecular interactions in biology, May 18th-21st 2010 Seville (Spain).
- Adrover M., Iannuzzi C., Martorell G., Pastore A., Martin S.R., Temussi P. "Protein stability and cold denaturation: the case study of Yfh1" Workshop Thermodynamically unstable proteins: chance or necessity? December 14th -16th 2009, Trieste (Italy).
- Iannuzzi C., Adinolfi S., Martin S.R., Prischi F., Pastore A. "Bacterial frataxin CyaY is the gatekeeper of iron-sulfur cluster formation catalyzed by IscS" Aug 30th- Sep 2nd 2009, Fifth International conference on Iron-sulfur cluster biogenesis and regulation University of Georgia, Athens, U.S.
- C. Iannuzzi, G. Irace, S. Vilasi, C. Malmo, I. Sirangelo "Heme binding inhibits amyloid fibrillation of W7FW14F apomyoglobin and determines lack of aggregate cytotoxicity" The 20th Symposium of the Protein Society, August 5th -9th 2006, San Diego-California.
- S. Vilasi, R. Dosi, C. Iannuzzi, C. Malmo, A. Parente, G. Irace and I. Sirangelo "kinetics of amyloid aggregation of mammal apomyoglobins and correlation with their amino acid sequences" EMBO-FEBS Workshop on Amyloid Formation, March 25th-28th 2006, Firenze (Italy).

- C. Iannuzzi, C. Malmo, S. Vilasi, G. Irace and I. Sirangelo "Effect of anti-aggregating agents on the fibrillation process of the amyloid-forming apomyoglobin mutant W7FW14F" 30th FEBS-Congress-9th IUBMB Congress, July 2nd-7th 2005, Budapest (Hungary).
- Sirangelo I., Iannuzzi C., Malmo C., Mezzogiorno A., Bianco M.R., Papa M., Irace G. (2004). "Amyloid-forming apomyoglobin mutant W7FW14F: fibrillogenesis and cytotoxic activity". FEBS Congress, June 26th -July 1st 2004, Varsaw (Poland).
- C. Iannuzzi, C. Malmo, S. Vilasi, A. Mezzogiorno, M. Papa, G. Irace & I. Sirangelo (2004). "W7FW14F mutations induce apomyoglobin misfolding and amyloid-like fibril formation". Summer school "Understanding Protein Stability", May 8th-13th 2004, Stockholm (Sverige).

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