

Curriculum Vitae: Anna Signorile

Dr. Anna Signorile PhD
Associate Professor of Biochemistry,
Department of Basic Medical Sciences,
Neurosciences and Sense Organs
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Personal information

Born in Bari September 1968

Education

1993 Degree in Biology at the University of Bari (106/110)

1996-1998 Winner, 1^o position of postgraduate scholarship in Centro Ricerche Bonomo Castel del Monte (Bari)

1998-2001 Doctorate in Clinical Biochemistry at the Department of Biochemistry and Medical Biology, University of Bari for studies on phosphorylation and dephosphorylation of mitochondrial proteins; characterization of cAMP-dependent protein kinase and individuation of protein phosphatase in mammalian mitochondria.

2002-2004 Research grant at the Department of Biochemistry and Medical Biology, University of Bari, for studies on the identification, characterization and physiological role of mitochondrial phosphatases.

2004 Specialization degree Summa cum Laude in Clinical Biochemistry - Medicine and Surgery Faculty - University of Bari, Italy.

Current position

2015 up till now Associate Professor at Department of Basic Medical Sciences, Neurosciences and Sense Organs, Medicine and Surgery Faculty - University of Bari, Italy.
SSD BIO/10

Scientific interest

Studies on physiological and physiopathological conditions correlated with reactive oxygen species (ROS) production in various biological samples (blood, cells, organs). Evaluation of oxidative stress products, analysis of the effects of antioxidant agents (Vit. C, Vit E, Glutathione).

Investigations on cAMP-dependent protein kinase, protein phosphatase and mitochondrial phosphoproteins.

Studies on the role of cytosolic and mitochondrial cyclic AMP in the modulation of the respiratory chain complexes, ROS balance, apoptosis, mitochondrial dynamics. Analysis of mitochondrial DNA mutations associated with the Metabolic Syndrome.

Teaching activities

From 1996-1998 she has taught “Chemistry and preliminary biochemistry” to nursing course, University of Bari.

From 2004-2005 she has taught “Techniques of Molecular Biology” to School of Hygiene and Preventive Medicine, University of Bari.

From 2004-2009 she has taught “Laboratory of Biochemistry and Biotechnology I” to the Biotechnological Sciences Faculty, University of Bari.

From 2005 – today component of the Academic Board of the PhD in "Biology and Medical Biochemistry", University of Bari.

From 2005-2008 she has taught “Biochemistry” for the course in Physiotherapy, Faculty of Medicine and Surgery, University of Bari.

From 2009-2010 she has taught “Functional analysis of the proteome and proteomics applied” to the Biotechnological Sciences Faculty, University of Bari.

From 2010-2011 she has taught “Laboratory of Applied Biochemistry integrated with the Laboratory of Molecular Biology” to the Biotechnological Sciences Faculty, University of Bari.

From 2011-2012 she has taught “Laboratory of biochemistry and biochemical technologies to the Biotechnological Sciences Faculty, University of Bari.

From 2012-2013 she has taught “Laboratory of Biochemistry and Applied Biochemistry” to the Biotechnological Sciences Faculty, University of Bari.

From 2013-2014 she has taught “Laboratory of Applied Biochemistry integrated with the Laboratory of Molecular Biology” to the Biotechnological Sciences Faculty, University of Bari.

From 2014 up till now she teaches “Biochemistry” to the Medicine and Surgery faculty, University of Bari.

Tutor of the following PhD theses

2007-2010, dr Arcangela Santeramo (PhD in Biology and Medical Biochemistry). “cAMP cascade in modulation of ROS balance and complex I activity”

2008-2011 dr Nicola Sardaro (PhD in Biology and Medical Biochemistry). “Neurotoxic action all-trans retinoic acid and alteration of the enzymes of the mitochondrial respiratory chain during neonatal development”.

2009-2012 dr Marina Larizza (PhD in Biology and Medical Biochemistry). “Oxidative stress and cAMP: modulation of complex I of mitochondrial respiratory chain”.

Funding and research projects

- Component of the research project “Gli enzimi della fosforilazione ossidativa: meccanismi molecolari ed aspetti fisiopatologici” University of Bari- University Research (ex 60%) 2004 - Prof. S. Papa.
- Component of the research project “Gli enzimi della fosforilazione ossidativa: meccanismi molecolari ed aspetti fisiopatologici” University of Bari- University Research (ex 60%) 2005 - Prof. S. Papa
- Principal Investigator of research unit of PRIN project “Studio del genoma e della funzionalità mitocondriale in soggetti con differenti fenotipi della Sindrome metabolica”. 2005.

- Component of the research project “ Gli enzimi della fosforilazione ossidativi: analisi genetica, meccanismi molecolari e aspetti fisiopatologici” University of Bari-University Research (ex 60%) 2006 - Prof. S. Papa
- Component of the research project “Gli Enzimi della Fosforilazione Ossidativa: Analisi Genetica, Meccanismi Molecolari e Aspetti Fisiopatologici" ” University of Bari-University Research (ex 60%) 2007 - Prof. S. Papa
- Component of the research project “Biogenesi, Meccanismi Funzionali e Aspetti Fisiopatologici dei Complessi della Fosforilazione Ossidativa”, University of Bari-University Research (ex 60%) 2008 - Prof. S. Papa
- Component of the research project “I complessi della fosforilazione ossidativa: biogenesi, meccanismi funzionali e aspetti fisiopatologici” University of Bari-University Research (ex 60%) 2009 - Prof. S. Papa
- Component of the research project “ Biogenesi e regolazione del complesso I della catena respiratoria mitocondriale in modelli cellulari malattie di carattere neurologico” University of Bari-University Research (ex 60%) 2010 - Prof. V. Petruzzella
- Component of the research project “Rete Nazionale per lo studio della Proteomica Umana (Italian Human ProteomeNet) PROGETTO DI RICERCA FIRB - RBRN07BMCT_014 from 2008-2012. Prof. S. Papa
- Component of the research project “Genomica funzionale e disfunzioni patologiche dei sistemi redox e bioenergetici cellulari”. From 2010-2013. PROGRAMMA "FUTURO IN RICERCA"- PROGETTO DI RICERCA FIRB-RBFR0813Z5. Dott. De Rasmio Domenico
- Component del gruppo di ricerca del progetto Rete Nazionale per lo studio della Proteomica Umana (Italian Human ProteomeNet) PROGETTO DI RICERCA FIRB - RBRN07BMCT_014 Periodo 24.09.2008-24.09-2012. Resp. Scientifico Prof. Sergio Papa
- Component of the research project “Omeostasi mitocondriale nei processi neurodegenerativi” - Università degli studi di Bari- Contributo su fondi di Ateneo ES.FIN.2012 Scientifico Prof. Tiziana Cocco
- Principal Investigator of research project“Regolazione dei sistemi redox e bioenergetici cellulari in condizioni fisio-patologiche” with project funds FIRB - FUTURE RESEARCH PROGRAM 2008 - Protocol: RBFR0813Z5
- Component of the research project entitled, “Role of mitochondria in nephropathic cystinosis: the control of cyclic AMP”, The Cystinosis Research Foundation. Principal investigator Dr. Francesco Bellomo. February 1, 2018- July 31, 2019.

Meeting organization

2008 Annual Meeting of Italian Group of Biomembrane and Bioenergetics (GIBB), 20-21 June, 2008, Bari, Italy. Member of Organizing Committee. <http://www.gibb-be.org/>

Editorial activity

From 2016 REVIEWER BBA Bioenergetics

From 2016 REVIEWER Canadian Journal of Physiology and Pharmacology

From 2017 REVIEWER Toxicology in Vitro

From 2017 Member of editorial board of Journal of Oncology Research Forecast

From 2018 Member of editorial board of Research and Review Archives

Publications

Pubblicazioni

1. Impact of atypical mitochondrial cyclic-AMP level in nephropathic cystinosis. Bellomo F, Signorile A, Tamma G, Ranieri M, Emma F, De Rasmò D. *Cell Mol Life Sci.* 2018 Mar 16. doi: 10.1007/s00018-018-2800-5. [Epub ahead of print]
2. Uncoupling FoxO3A mitochondrial and nuclear functions in cancer cells undergoing metabolic stress and chemotherapy. V. Celestini, T. Tezil, L. Russo, C. Fasano, P. Sanese, G. Forte, A. Peserico, M. Lepore Signorile, G. Longo, D. De Rasmò, **A. Signorile**, R. M. Gadaleta, N. Scialpi, M. Terao, E. Garattini, T. Cocco, G. Villani, A. Moschetta, V. Grossi, C. Simone. *Cell Death and Disease* (2018) 9:231 DOI 10.1038/s41419-018-0336-0
3. Inhibition of Drp1-mediated mitochondrial fission improves mitochondrial dynamics and bioenergetics stimulating neurogenesis in hippocampal progenitor cells from a Down syndrome mouse model Valenti D, Rossi L, Marzulli D, Bellomo F, De Rasmò D, **Signorile A**, Vacca RA. *Biochim Biophys Acta.* **2017** Sep 19. pii: S0925-4439(17)30329-0. doi: 10.1016/j.bbadis.2017.09.014.
4. Resveratrol Modulation of Protein Expression in parkin-Mutant Human Skin Fibroblasts: A Proteomic Approach Daniele Vergara, Antonio Gaballo, **Anna Signorile**, Anna Ferretta, Paola Tanzarella, Consiglia Pacelli, Marco Di Paola, Tiziana Cocco, and Michele Maffia *Oxidative Medicine and Cellular Longevity* Volume 2017 (2017), Article ID 2198243
5. Mitochondria as pharmacological targets in Down syndrome. Valenti D, Braidì N, De Rasmò D, **Signorile A**, Rossi L, Atanasov AG, Volpicella M, Henrion-Caude A, Nabavi SM, Vacca RA. *Free Radic Biol Med.* **2017** Aug 31. pii: S0891-5849(17)30730-X. doi: 10.1016/j.freeradbiomed.2017.08.014.
6. Mitochondrial cAMP prevents apoptosis modulating Sirt3 protein level and OPA1 processing in cardiac myoblast cells” **Signorile A.**, Santeramo A., Tamma G., Pellegrino T., D’Oria S., Lattanzio P. De Rasmò D. *BBA Molecular Cell Research*, **2017** Feb;1864(2):355-366.
7. Pharmacological activation of Protein Phosphatase 2 A (PP2A) activity: a novel strategy to fight against human malignancies? MR Rosaria Carratù A Signorile D. De Rasmò, A Reale, A Vacca. *Curr Med Chem.* **2016**;23(38):4286-4296.

8. Major pathogenic mechanisms in vascular dementia: Roles of cellular stress response and hormesis in neuroprotection. Calabrese V, Giordano J, **Signorile A**, Laura Ontario M, Castorina S, De Pasquale C, Eckert G, Calabrese EJ. *J Neurosci Res.* **2016** Dec;94(12):1588-1603. doi: 10.1002/jnr.23925. Review.
9. How could retinoids fit into Alzheimer's therapy? Steardo, L., Signorile, A., Scuderi, C., Carratù, M.R. *Drugs of the Future* 41 (1) **2016**
10. The polyphenols resveratrol and epigallocatechin-3-gallate restore the severe impairment of mitochondria in hippocampal progenitor cells from a Down syndrome mouse model. Valenti D, de Bari L, de Rasmio D, **Signorile A**, Henrion-Caude A, Contestabile A, Vacca RA. *Biochim Biophys Acta.* 2016 Jun;1862(6):1093-104. doi: 10.1016/j.bbadis.2016.03.003. Epub **2016** Mar 7.
11. cAMP regulates the functional activity, coupling efficiency and structural organization of mammalian FOF1 ATP synthase. De Rasmio D, Micelli L, Santeramo A, **Signorile A**, Lattanzio P, Papa S. *Biochim Biophys Acta.* **2016** Apr;1857(4):350-8. doi: 10.1016/j.bbabi.2016.01.006.
12. Methylmercury injury to CNS: mitochondria at the core of the matter? Carratù, M.R. **Signorile A**. In *OPEN ACCESS JOURNAL OF TOXICOLOGY - ISSN:2474-7599* vol. 1 (1) **2015**.
13. Impaired enzymatic defensive activity, mitochondrial dysfunction and proteasome activation are involved in RTT cell oxidative damage. Cervellati C, Sticozzi C, Romani A, Belmonte G, De Rasmio D, **Signorile A**, Cervellati F, Milanese C, Mastroberardino PG, Pecorelli A, Savelli V, Forman HJ, Hayek J, Valacchi G. *Biochim Biophys Acta.* **2015** Jul 17;1852(10 Pt A):2066-2074. doi: 10.1016/j.bbadis.2015.07.014.
14. Intramitochondrial adenylyl cyclase controls the turnover of nuclear-encoded subunits and activity of mammalian complex I of the respiratory chain. De Rasmio* D, **Signorile*** A, Santeramo A, Larizza M, Lattanzio P, Capitanio G, Papa S. *Biochim Biophys Acta.* **2015** Jan;1853(1):183-91. 84 * Authors have equally contributed to the work.
15. Regulation of the biogenesis of OXPHOS complexes in cell transition from replicating to quiescent state: involvement of PKA and effect of hydroxytyrosol. **Signorile A**, Micelli L, De Rasmio D, Santeramo A, Papa F, Ficarella R, Gattoni G, Scacco S, Papa S. *Biochim Biophys Acta.* **2014** Apr;1843(4):675-84.
16. Epigallocatechin-3-gallate prevents oxidative phosphorylation deficit and promotes mitochondrial biogenesis in human cells from subjects with Down's syndrome. Valenti D, De Rasmio D, **Signorile A**, Rossi L, de Bari L, Scala I, Granese B, Papa S, Vacca RA. *Biochim Biophys Acta.* **2013** Apr;1832(4):542-52.
17. Oncogenic K-ras expression is associated with derangement of the cAMP/PKA pathway and forskolin-reversible alterations of mitochondrial dynamics and respiration. Palorini R, De Rasmio D, Gaviraghi M, Sala Danna L, **Signorile A**, Cirulli C, Chiaradonna F, Alberghina L, Papa S. *Oncogene.* **2013** Jan 17;32(3):352-62.

18. The oxidative phosphorylation system in mammalian mitochondria. Papa S, Martino PL, Capitanio G, Gaballo A, De Rasmio D, **Signorile A**, Petruzzella V. *Adv Exp Med Biol.* **2012**;942:3-37.
19. Activation of the cAMP cascade in human fibroblast cultures rescues the activity of oxidatively damaged complex I. De Rasmio D, **Signorile A**, Larizza M, Pacelli C, Cocco T, Papa S. *Free Radic Biol Med.* **2012** Feb 15;52(4):757-64.
20. Respiratory chain complex I, a main regulatory target of the cAMP/PKA pathway is defective in different human diseases. Papa S, Rasmio DD, Technikova-Dobrova Z, Panelli D, **Signorile A**, Scacco S, Petruzzella V, Papa F, Palmisano G, Gnoni A, Micelli L, Sardanelli AM. *FEBS Lett.* **2012** Mar 9;586(5):568-77.
21. Are Retinoids a Promise for Alzheimer's Disease Management **2012**?. Carratù MR; Marasco C; Signorile A; Scuderi C; Steardo L. pp.6119-6125. In *CURRENT MEDICINAL CHEMISTRY* - ISSN:0929-8673 vol. 19 (36)
22. Rat embryo exposure to all-trans retinoic acid results in postnatal oxidative damage of respiratory complex I in the cerebellum. **Signorile A**, Sardaro N, De Rasmio D, Scacco S, Papa F, Borracci P, Carratù MR, Papa S. *Mol Pharmacol.* **2011** Oct;80(4):704-13.
23. Mitochondrial defect and PGC-1 α dysfunction in parkin-associated familial Parkinson's disease. Pacelli C, De Rasmio D, **Signorile A**, Grattagliano I, di Tullio G, D'Orazio A, Nico B, Comi GP, Ronchi D, Ferranini E, Pirolo D, Seibel P, Schubert S, Gaballo A, Villani G, Cocco T. *Biochim Biophys Acta.* **2011** Aug;1812(8):1041-53.
24. T16189C mitochondrial DNA variant is associated with metabolic syndrome in Caucasian subjects. Palmieri VO, De Rasmio D, **Signorile A**, Sardanelli AM, Grattagliano I, Minerva F, Cardinale G, Portincasa P, Papa S, Palasciano G. *Nutrition.* **2011** Jul-Aug;27(7-8):773-7.
25. The β -adrenoceptor agonist isoproterenol promotes the activity of respiratory chain complex I and lowers cellular reactive oxygen species in fibroblasts and heart myoblasts. De Rasmio D, Gattoni G, Papa F, Santeramo A, Pacelli C, Cocco T, Micelli L, Sardaro N, Larizza M, Scivetti M, Milano S, **Signorile A**. *Eur J Pharmacol.* **2011** Feb 10;652(1-3):15-22.
26. cAMP/Ca²⁺ response element-binding protein plays a central role in the biogenesis of respiratory chain proteins in mammalian cells. De Rasmio D, Signorile A, Papa F, Roca E, Papa S. *IUBMB Life.* **2010** Jun;62(6):447-52.
27. cAMP-dependent protein kinase regulates post-translational processing and expression of complex I subunits in mammalian cells. Papa S, Scacco S, De Rasmio D, **Signorile A**, Papa F, Panelli D, Nicastro A, Scaringi R, Santeramo A, Roca E, Trentadue R, Larizza M. *Biochim Biophys Acta.* **2010** Jun-Jul;1797(6-7):649-58.

28. cAMP response element-binding protein (CREB) is imported into mitochondria and promotes protein synthesis. De Rasmio D, **Signorile A**, Roca E, Papa S. FEBS J. **2009** Aug;276(16):4325-33.
29. Practical approaches to investigate redox regulation of heat shock protein expression and intracellular glutathione redox state. Calabrese V, **Signorile A**, Cornelius C, Mancuso C, Scapagnini G, Ventimiglia B, Ragusa N, Dinkova-Kostova A. Methods Enzymol. **2008**;441:83-110.
30. Mammalian complex I: a regulable and vulnerable pacemaker in mitochondrial respiratory function. Papa S, De Rasmio D, Scacco S, **Signorile A**, Technikova-Dobrova Z, Palmisano G, Sardanelli AM, Papa F, Panelli D, Scaringi R, Santeramo A. Biochim Biophys Acta. **2008** Jul-Aug;1777(7-8):719-28.
31. The phosphorylation pattern of bovine heart complex I subunits. Palmisano G, Sardanelli AM, **Signorile A**, Papa S, Larsen MR. Proteomics. **2007** May;7(10):1575-83.
32. Mutations in structural genes of complex I associated with neurological diseases. Scacco S, Petruzzella V, Bertini E, Luso A, Papa F, Bellomo F, **Signorile A**, Torracio A, Papa S. Ital J Biochem. **2006** Sep-Dec;55(3-4):254-62.
33. Occurrence of A-kinase anchor protein and associated cAMP-dependent protein kinase in the inner compartment of mammalian mitochondria. Sardanelli AM, **Signorile A**, Nuzzi R, Rasmio DD, Technikova-Dobrova Z, Drahota Z, Occhiello A, Pica A, Papa S. FEBS Lett. **2006** Oct 16;580(24):5690-6.
34. cAMP controls oxygen metabolism in mammalian cells. Piccoli C, Scacco S, Bellomo F, **Signorile A**, Iuso A, Boffoli D, Scrima R, Capitanio N, Papa S. FEBS Lett. **2006** Aug 7;580(18):4539-43.
35. Regulation by the cAMP cascade of oxygen free radical balance in mammalian cells. Bellomo F, Piccoli C, Cocco T, Scacco S, Papa F, Gaballo A, Boffoli D, **Signorile A**, D'Aprile A, Scrima R, Sardanelli AM, Capitanio N, Papa S. Antioxid Redox Signal. **2006** Mar-Apr;8(3-4):495-502.
36. Complex I and the cAMP cascade in human physiopathology. Papa S, Scacco S, Sardanelli AM, Petruzzella V, Vergari R, **Signorile A**, Technikova-Dobrova Z. Biosci Rep. **2002** Feb;22(1):3-16.
37. Antioxidants, reactive oxygen and nitrogen species, gene induction and mitochondrial function. Jackson MJ, Papa S, Bolaños J, Bruckdorfer R, Carlsen H, Elliott RM, Flier J, Griffiths HR, Heales S, Holst B, Lorusso M, Lund E, Øivind Moskaug J, Moser U, Di Paola M, Polidori MC, **Signorile A**, Stahl W, Viña-Ribes J, Astley SB. Mol Aspects Med. **2002** Feb-Jun;23(1-3):209-85
38. The NADH: ubiquinone oxidoreductase (complex I) of the mammalian respiratory chain and the cAMP cascade. Papa S, Sardanelli AM, Scacco S, Petruzzella V, Technikova-Dobrova Z, Vergari R, **Signorile A**. J Bioenerg Biomembr. **2002** Feb;34(1):1-10.

39. Serine (threonine) phosphatase(s) acting on cAMP-dependent phosphoproteins in mammalian mitochondria. **Signorile A**, Sardanelli AM, Nuzzi R, Papa S. FEBS Lett. **2002** Feb 13;512(1-3):91-4.
40. Cyclic adenosine monophosphate-dependent phosphorylation of mammalian mitochondrial proteins: enzyme and substrate characterization and functional role. Technikova-Dobrova Z, Sardanelli AM, Speranza F, Scacco S, **Signorile A**, Lorusso V, Papa S. Biochemistry. **2001** Nov 20;40(46):13941-7.
41. Chronic low dose ethanol intake: biochemical characterization of liver mitochondria in rats. Puzziferri I, **Signorile A**, Guerrieri F, Papa S, Cuomo V, Steardo L. Life Sci. **1999**;66(6):477-84.
42. Ethanol-induced changes of intracellular thiol compartmentation and protein redox status in the rat liver: effect of tauroursodeoxycholate. Vendemiale G, Grattagliano I, **Signorile A**, Altomare E. J Hepatol. **1998** Jan;28(1):46-53.
43. Oxidative protein damage in human diabetic eye: evidence of a retinal participation. Altomare E, Grattagliano I, Vendemiale G, Micelli-Ferrari T, **Signorile A**, Cardia L. Eur J Clin Invest. **1997** Feb;27(2):141-7.
44. Oxidative modification of proteins in chronic alcoholics. Grattagliano I, Vendemiale G, Didonna D, Errico F, Bolognino A, Pistone A, Cofano M, **Signorile A**, Ciannamea F, Altomare E. Boll Soc Ital Biol Sper. **1995** Jul-Aug;71(7-8):189-95.