

Dipartimento di Scienze Biochimiche "A. Rossi Fanelli"  
Attività di Ricerca e Pubblicazioni Scientifiche 2014

L'attività di ricerca del Dipartimento di Scienze Biochimiche "A. Rossi Fanelli" nell'anno 2014 si è sviluppata secondo le linee programmatiche definite nel piano triennale delle ricerche 2014-2016, a sua volta elaborato sulla scorta dei progetti finanziati e delle attività di ricerca tradizionalmente perseguite negli anni scorsi ed articolato sui seguenti punti:

- a) Biochimica e Fisiologia dei Sistemi Cellulari
- b) Biologia Molecolare e Biofisica
- c) Biologia Strutturale
- d) Biotecnologie
- e) Basi Biochimiche dei Processi Patologici

Le ricerche scientifiche svolte dal personale del Dipartimento nel corso del 2014 sono testimoniate da oltre 100 pubblicazioni scientifiche:

1) Abraini JH, Marassio G, David HN, Vallone B, Prangé T, Colloc'h N. Crystallographic studies with xenon and nitrous oxide provide evidence for protein-dependent processes in the mechanisms of general anesthesia. *Anesthesiology*. 2014 Nov;121(5):1018-27. doi: 10.1097/ALN.0000000000000435. PubMed PMID: 25211169.

2) Agostinelli E, Condello M, Tempera G, Macone A, Bozzuto G, Ohkubo S, Calcabrini A, Arancia G, Molinari A. The combined treatment with chloroquine and the enzymatic oxidation products of spermine overcomes multidrug resistance of melanoma M14 ADR2 cells: a new therapeutic approach. *Int J Oncol*. 2014 Sep;45(3):1109-22. doi: 10.3892/ijo.2014.2502. Epub 2014 Jun 18. PubMed PMID: 24969157.

3) Agostinelli E, Vianello F, Magliulo G, Thomas T, Thomas TJ. Nanoparticle strategies for cancer therapeutics: Nucleic acids, polyamines, bovine serum amine oxidase and iron oxide nanoparticles (Review). *Int J Oncol*. 2015 Jan;46(1):5-16. doi: 10.3892/ijo.2014.2706. Epub 2014 Oct 14. PubMed PMID: 25333509.

4) Agostinelli E. Polyamines and transglutaminases: biological, clinical, and biotechnological perspectives. *Amino Acids*. 2014 Mar;46(3):475-85. doi: 10.1007/s00726-014-1688-0. Epub 2014 Feb 20. PubMed PMID: 24553826.

5) Ahou A, Martignago D, Alabdallah O, Tavazza R, Stano P, Macone A, Pivato M, Masi A, Rambla JL, Vera-Sirera F, Angelini R, Federico R, Tavladoraki P. A plant spermine oxidase/dehydrogenase regulated by the proteasome and polyamines. *J Exp Bot*. 2014 Apr;65(6):1585-603. doi: 10.1093/jxb/eru016. Epub 2014 Feb 18. PubMed PMID: 24550437.

- 6) Amelio I, Cutruzzolá F, Antonov A, Agostini M, Melino G. Serine and glycine metabolism in cancer. *Trends Biochem Sci.* 2014 Apr;39(4):191-8. doi: 10.1016/j.tibs.2014.02.004. Epub 2014 Mar 20. Review. PubMed PMID: 24657017; PubMed Central PMCID: PMC3989988.
- 7) Amendola R, Cervelli M, Tempera G, Fratini E, Varesio L, Mariottini P, Agostinelli E. Spermine metabolism and radiation-derived reactive oxygen species for future therapeutic implications in cancer: an additive or adaptive response. *Amino Acids.* 2014 Mar;46(3):487-98. doi: 10.1007/s00726-013-1579-9. Epub 2013 Sep 3. Review. PubMed PMID: 23999645.
- 8) Angelaccio S, Dworkowski F, Di Bello A, Milano T, Capitani G, Pascarella S. Conformational transitions driven by pyridoxal-5'-phosphate uptake in the psychrophilic serine hydroxymethyltransferase from *Psychromonas ingrahamii*. *Proteins.* 2014 Oct;82(10):2831-41. doi: 10.1002/prot.24646. Epub 2014 Aug 5. PubMed PMID: 25044250.
- 9) Angelucci F, Morea V, Angelaccio S, Saccoccia F, Contestabile R, Ilari A. The crystal structure of archaeal serine hydroxymethyltransferase reveals idiosyncratic features likely required to withstand high temperatures. *Proteins.* 2014 Dec;82(12):3437-49. doi: 10.1002/prot.24697. Epub 2014 Oct 10. PubMed PMID: 25257552.
- 10) Arcovito A, Chiarella S, Della Longa S, Di Matteo A, Lo Sterzo C, Scaglione GL, Federici L. Synergic role of nucleophosmin three-helix bundle and a flanking unstructured tail in the interaction with G-quadruplex DNA. *J Biol Chem.* 2014 Aug 1;289(31):21230-41. doi: 10.1074/jbc.M114.565010. Epub 2014 Jun 21. PubMed PMID: 24952945; PubMed Central PMCID: PMC4118085.
- 11) Arisan ED, Obakan P, Coker-Gurkan A, Calcabrini A, Agostinelli E, Unsal NP. CDK inhibitors induce mitochondria-mediated apoptosis through the activation of polyamine catabolic pathway in LNCaP, DU145 and PC3 prostate cancer cells. *Curr Pharm Des.* 2014;20(2):180-8. PubMed PMID: 23701543.
- 12) Avella G, Ardiccioni C, Scaglione A, Moschetti T, Rondinelli C, Montemiglio LC, Savino C, Giuffrè A, Brunori M, Vallone B. Engineering the internal cavity of neuroglobin demonstrates the role of the haem-sliding mechanism. *Acta Crystallogr D Biol Crystallogr.* 2014 Jun;70(Pt 6):1640-8. doi: 10.1107/S1399004714007032. Epub 2014 May 29. PubMed PMID: 24914975.
- 13) Bahadur V, Mastronicola D, Tiwari HK, Kumar Y, Falabella M, Pucillo LP, Sarti P, Giuffrè A, Singh BK. O(2)-dependent efficacy of novel piperidine- and piperazine-based chalcones against the human parasite *Giardia intestinalis*. *Antimicrob Agents Chemother.* 2014;58(1):543-9. doi: 10.1128/AAC.00990-13. Epub 2013 Nov 11. PubMed PMID: 24217695; PubMed Central PMCID: PMC3910768.

14) Barone E, Di Domenico F, Butterfield DA. Statins more than cholesterol lowering agents in Alzheimer disease: their pleiotropic functions as potential therapeutic targets. *Biochem Pharmacol.* 2014 Apr 15;88(4):605-16. doi: 10.1016/j.bcp.2013.10.030. Epub 2013 Nov 11. Review. PubMed PMID: 24231510; PubMed Central PMCID: PMC3972306.

15) Barone E, Di Domenico F, Mancuso C, Butterfield DA. The Janus face of the heme oxygenase/biliverdin reductase system in Alzheimer disease: it's time for reconciliation. *Neurobiol Dis.* 2014 Feb;62:144-59. doi: 10.1016/j.nbd.2013.09.018. Epub 2013 Oct 2. Review. PubMed PMID: 24095978; PubMed Central PMCID: PMC3877707.

16) Baseggio Conrado A, D'Angelantonio M, Torreggiani A, Pecci L, Fontana M. Reactivity of hypotaurine and cysteine sulfinic acid toward carbonate radical anion and nitrogen dioxide as explored by the peroxidase activity of Cu,Zn superoxide dismutase and by pulse radiolysis. *Free Radic Res.* 2014 Nov;48(11):1300-10. doi: 10.3109/10715762.2014.951839. Epub 2014 Sep 4. PubMed PMID: 25156684.

17) Bedse G, Colangeli R, Lavecchia AM, Romano A, Altieri F, Cifani C, Cassano T, Gaetani S. Role of the basolateral amygdala in mediating the effects of the fatty acid amide hydrolase inhibitor URB597 on HPA axis response to stress. *Eur Neuropsychopharmacol.* 2014 Sep;24(9):1511-23. doi: 10.1016/j.euroneuro.2014.07.005. Epub 2014 Jul 19. PubMed PMID: 25106694.

18) Bedse G, Romano A, Cianci S, Lavecchia AM, Lorenzo P, Elphick MR, Laferla FM, Vendemiale G, Grillo C, Altieri F, Cassano T, Gaetani S. Altered expression of the CB1 cannabinoid receptor in the triple transgenic mouse model of Alzheimer's disease. *J Alzheimers Dis.* 2014;40(3):701-12. doi: 10.3233/JAD-131910. PubMed PMID: 24496074.

19) Boffi A, Favero G, Federico R, Macone A, Antiochia R, Tortolini C, Sanz  G, Mazzei F. Amine oxidase-based biosensors for spermine and spermidine determination. *Anal Bioanal Chem.* 2015 Feb;407(4):1131-7. doi:10.1007/s00216-014-8324-4. Epub 2014 Nov 19. PubMed PMID: 25407429.

20) Bonaccorsi di Patti MC, Polticelli F, Cece G, Cutone A, Felici F, Persichini T, Musci G. A structural model of human ferroportin and of its iron binding site. *FEBS J.* 2014 Jun;281(12):2851-60. doi: 10.1111/febs.12825. Epub 2014 May 14. PubMed PMID: 24767627.

21) Bonetti D, Toto A, Giri R, Morrone A, Sanfelice D, Pastore A, Temussi P, Gianni S, Brunori

M. The kinetics of folding of frataxin. *Phys Chem Chem Phys*. 2014 Apr 14;16(14):6391-7. doi: 10.1039/c3cp54055c. Epub 2014 Jan 15. PubMed PMID: 24429875.

22) Borisov VB, Forte E, Siletsky SA, Sarti P, Giuffrè A. Cytochrome bd from *Escherichia coli* catalyzes peroxynitrite decomposition. *Biochim Biophys Acta*. 2015 Feb;1847(2):182-8. doi: 10.1016/j.bbabi.2014.10.006. Epub 2014 Oct 29. PubMed PMID: 25449967.

23) Brufani M, Figliola R. (R)- $\alpha$ -lipoic acid oral liquid formulation: pharmacokinetic parameters and therapeutic efficacy. *Acta Biomed*. 2014 Aug 20;85(2):108-15. PubMed PMID: 25245645.

24) Brunori M. Variations on the theme: allosteric control in hemoglobin. *FEBS J*. 2014 Jan;281(2):633-43. doi: 10.1111/febs.12586. Epub 2013 Nov 28. Review. PubMed PMID: 24164725.

25) Bustamante JP, Abbruzzetti S, Marcelli A, Gauto D, Boechi L, Bonamore A, Boffi A, Bruno S, Feis A, Foggi P, Estrin DA, Viappiani C. Ligand uptake modulation by internal water molecules and hydrophobic cavities in hemoglobins. *J Phys Chem B*. 2014 Feb 6;118(5):1234-45. doi: 10.1021/jp410724z. Epub 2014 Jan 23. PubMed PMID: 24410478.

26) Bustamante JP, Bonamore A, Nadra AD, Sciamanna N, Boffi A, Estrin DA, Boechi L. Molecular basis of thermal stability in truncated (2/2) hemoglobins. *Biochim Biophys Acta*. 2014 Jul;1840(7):2281-8. doi: 10.1016/j.bbagen.2014.03.018. Epub 2014 Apr 2. PubMed PMID: 24704259.

27) Butterfield DA, Di Domenico F, Barone E. Elevated risk of type 2 diabetes for development of Alzheimer disease: a key role for oxidative stress in brain. *Biochim Biophys Acta*. 2014 Sep;1842(9):1693-706. doi: 10.1016/j.bbadis.2014.06.010. Epub 2014 Jun 17. Review. PubMed PMID: 24949886; PubMed Central PMCID: PMC4125611.

28) Butterfield DA, Di Domenico F, Swomley AM, Head E, Perluigi M. Redox proteomics analysis to decipher the neurobiology of Alzheimer-like neurodegeneration: overlaps in Down's syndrome and Alzheimer's disease brain. *Biochem J*. 2014 Oct 15;463(2):177-89. doi: 10.1042/BJ20140772. Review. PubMed PMID: 25242166.

29) Butterfield DA, Gu L, Di Domenico F, Robinson RA. Mass spectrometry and redox proteomics: applications in disease. *Mass Spectrom Rev*. 2014 Jul-Aug;33(4):277-301. doi: 10.1002/mas.21374. Epub 2013 Sep 30. PubMed PMID: 24930952.

30) Campilongo R, Di Martino ML, Marcocci L, Pietrangeli P, Leuzzi A, Grossi M, Casalino M,

Nicoletti M, Micheli G, Colonna B, Prosseda G. Molecular and functional profiling of the polyamine content in enteroinvasive *E. coli*: looking into the gap between commensal *E. coli* and harmful *Shigella*. *PLoS One*. 2014 Sep 5;9(9):e106589. doi: 10.1371/journal.pone.0106589. eCollection 2014. PubMed PMID: 25192335; PubMed Central PMCID: PMC4156367.

31) Cardone F, Principe S, Schininà ME, Maras B, Capellari S, Parchi P, Notari S, Di Francesco L, Poggi A, Galeno R, Vinci R, Mellina V, Almonti S, Ladogana A, Pocchiari M. Mutant PrPC<sup>JD</sup> prevails over wild-type PrPC<sup>JD</sup> in the brain of V210I and R208H genetic Creutzfeldt-Jakob disease patients. *Biochem Biophys Res Commun*. 2014 Nov 14;454(2):289-94. doi: 10.1016/j.bbrc.2014.10.051. Epub 2014 Oct 19. PubMed PMID: 25450391.

32) Cenini G, Fiorini A, Sultana R, Perluigi M, Cai J, Klein JB, Head E, Butterfield DA. An investigation of the molecular mechanisms engaged before and after the development of Alzheimer disease neuropathology in Down syndrome: a proteomics approach. *Free Radic Biol Med*. 2014 Nov;76:89-95. doi: 10.1016/j.freeradbiomed.2014.08.006. Epub 2014 Aug 20. PubMed PMID: 25151119; PubMed Central PMCID: PMC4252833.

33) Cocchiola R, Grillo C, Altieri F, Chichiarelli S, Turano C, Eufemi M. Upregulation of TPX2 by STAT3: identification of a novel STAT3 binding site. *PLoS One*. 2014 Nov 17;9(11):e113096. doi: 10.1371/journal.pone.0113096. eCollection 2014. PubMed PMID: 25401333; PubMed Central PMCID: PMC4234655.

34) Coccia A, Bastianelli D, Mosca L, Monticolo R, Panuccio I, Carbone A, Calogero A, Lendaro E. Extra virgin olive oil phenols suppress migration and invasion of T24 human bladder cancer cells through modulation of matrix metalloproteinase-2. *Nutr Cancer*. 2014;66(6):946-54. doi: 10.1080/01635581.2014.922204. Epub 2014 Jun 11. PubMed PMID: 24918476.

35) Colotti G, Poser E, Fiorillo A, Genovese I, Chiarini V, Ilari A. Sorcin, a calcium binding protein involved in the multidrug resistance mechanisms in cancer cells. *Molecules*. 2014 Sep 5;19(9):13976-89. doi: 10.3390/molecules190913976. Review. PubMed PMID: 25197934.

36) Conti S, Li X, Gianni S, Ghadami SA, Buxbaum J, Cecchi C, Chiti F, Bemporad F. A complex equilibrium among partially unfolded conformations in monomeric transthyretin. *Biochemistry*. 2014 Jul 15;53(27):4381-92. doi: 10.1021/bi500430w. Epub 2014 Jul 1. PubMed PMID: 24945718.

37) Cutone A, Frioni A, Berlutti F, Valenti P, Musci G, Bonaccorsi di Patti MC. Lactoferrin prevents LPS-induced decrease of the iron exporter ferroportin in human

monocytes/macrophages. *Biometals*. 2014 Oct;27(5):807-13. doi: 10.1007/s10534-014-9742-7. Epub 2014 May 3. PubMed PMID: 24793588.

38) Cutruzzolà F, Arcovito A, Giardina G, della Longa S, D'Angelo P, Rinaldo S. Distal-proximal crosstalk in the heme binding pocket of the NO sensor DNR. *Biometals*. 2014 Aug;27(4):763-73. doi: 10.1007/s10534-014-9770-3. Epub 2014 Jul 10. PubMed PMID: 25007853.

39) Cutruzzolà F, Avigliano L, Candi E. p73 keeps metabolic control in balance. *Cell Cycle*. 2014;13(2):179-80. doi: 10.4161/cc.27301. Epub 2013 Nov 22. PubMed PMID: 24309544; PubMed Central PMCID: PMC3906232.

40) Dalla Via L, García-Argáez AN, Braga A, Martínez-Vázquez M, Grancara S, Martinis P, Agostinelli E, Toninello A. An eudesman derivative from *Verbesina persicifolia* D.C. as a natural mild uncoupler in liver mitochondria. A new potential anti-obesity agent? *Curr Pharm Des*. 2014;20(2):253-61. PubMed PMID: 23701541.

41) Di Domenico F, Barone E, Perluigi M, Butterfield DA. Strategy to reduce free radical species in Alzheimer's disease: an update of selected antioxidants. *Expert Rev Neurother*. 2015 Jan;15(1):19-40. doi: 10.1586/14737175.2015.955853. Epub 2014 Sep 22. PubMed PMID: 25243342.

42) Di Domenico F, Pupo G, Tramutola A, Giorgi A, Schininà ME, Coccia R, Head E, Butterfield DA, Perluigi M. Redox proteomics analysis of HNE-modified proteins in Down syndrome brain: clues for understanding the development of Alzheimer disease. *Free Radic Biol Med*. 2014 Jun;71:270-80. doi: 10.1016/j.freeradbiomed.2014.03.027. Epub 2014 Mar 25. PubMed PMID: 24675226.

43) Di Grazia A, Luca V, Segev-Zarko LA, Shai Y, Mangoni ML. Temporins A and B stimulate migration of HaCaT keratinocytes and kill intracellular *Staphylococcus aureus*. *Antimicrob Agents Chemother*. 2014 May;58(5):2520-7. doi: 10.1128/AAC.02801-13. Epub 2014 Feb 10. PubMed PMID: 24514087; PubMed Central PMCID: PMC3993219.

44) Di Magno L, Manzi D, D'Amico D, Coni S, Macone A, Infante P, Di Marcotullio L, De Smaele E, Ferretti E, Screpanti I, Agostinelli E, Gulino A, Canettieri G. Druggable glycolytic requirement for Hedgehog-dependent neuronal and medulloblastoma growth. *Cell Cycle*. 2014;13(21):3404-13. doi:10.4161/15384101.2014.952973. PubMed PMID: 25485584.

45) Di Micco P, Fazzi D'Orsi M, Morea V, Frontali L, Francisci S, Montanari A. The yeast model suggests the use of short peptides derived from mt LeuRS for the therapy of diseases

due to mutations in several mt tRNAs. *Biochim Biophys Acta*. 2014 Dec;1843(12):3065-74. doi: 10.1016/j.bbamcr.2014.09.011. Epub 2014 Sep 28. PubMed PMID: 25261707.

46) di Salvo ML, Remesh SG, Vivoli M, Ghatge MS, Paiardini A, D'Aguanno S, Safo MK, Contestabile R. On the catalytic mechanism and stereospecificity of *Escherichia coli* L-threonine aldolase. *FEBS J*. 2014 Jan;281(1):129-45. doi: 10.1111/febs.12581. Epub 2013 Nov 13. PubMed PMID: 24165453.

47) Di Silvio E, Bonetti D, Toto A, Morrone A, Gianni S. The mechanism of binding of the second PDZ domain from the Protein Tyrosine Phosphatase-BL to the Adenomatous Polyposis Coli tumor suppressor. *Protein Eng Des Sel*. 2014 Aug;27(8):249-53. doi: 10.1093/protein/gzu022. Epub 2014 Jun 13. PubMed PMID: 24928580.

48) Dogan J, Gianni S, Jemth P. The binding mechanisms of intrinsically disordered proteins. *Phys Chem Chem Phys*. 2014 Apr 14;16(14):6323-31. doi: 10.1039/c3cp54226b. Epub 2013 Dec 6. PubMed PMID: 24317797.

49) Dosnon M, Bonetti D, Morrone A, Erales J, di Silvio E, Longhi S, Gianni S. Demonstration of a Folding after Binding Mechanism in the Recognition between the Measles Virus N(TAIL) and X Domains. *ACS Chem Biol*. 2014 Dec 22. [Epub ahead of print] PubMed PMID: 25511246.

50) Elsinghorst PW, di Salvo ML, Parroni A, Contestabile R. Inhibition of human pyridoxal kinase by 2-acetyl-4-((1R,2S,3R)-1,2,3,4-tetrahydroxybutyl)imidazole (THI). *J Enzyme Inhib Med Chem*. 2014 Jun 5:1-5. [Epub ahead of print] PubMed PMID: 24899377.

51) Fantechi E, Innocenti C, Zanardelli M, Fittipaldi M, Falvo E, Carbo M, Shullani V, Di Cesare Mannelli L, Ghelardini C, Ferretti AM, Ponti A, Sangregorio C, Ceci P. A smart platform for hyperthermia application in cancer treatment: cobalt-doped ferrite nanoparticles mineralized in human ferritin cages. *ACS Nano*. 2014 May 27;8(5):4705-19. doi: 10.1021/nn500454n. Epub 2014 Apr 8. PubMed PMID: 24689973.

52) Fiorillo A, di Marino D, Bertuccini L, Via A, Pozio E, Camerini S, Ilari A, Lalle M. The crystal structure of *Giardia duodenalis* 14-3-3 in the apo form: when protein post-translational modifications make the difference. *PLoS One*. 2014 Mar 21;9(3):e92902. doi: 10.1371/journal.pone.0092902. eCollection 2014. PubMed PMID: 24658679; PubMed Central PMCID: PMC3962474.

53) Foppoli C, De Marco F, Cini C, Perluigi M. Redox control of viral carcinogenesis: The human papillomavirus paradigm. *Biochim Biophys Acta*. 2014 Dec 19. pii: S0304-

4165(14)00424-3. doi: 10.1016/j.bbagen.2014.12.016. [Epub ahead of print] Review. PubMed PMID: 25534611.

54) Francioso A, Boffi A, Villani C, Manzi L, D'Erme M, Macone A, Mosca L. Isolation and identification of 2,4,6-trihydroxyphenanthrene as a byproduct of trans-resveratrol photochemical isomerization and electrocyclization. *J Org Chem*. 2014 Oct 3;79(19):9381-4. doi: 10.1021/jo501405m. Epub 2014 Sep 18. PubMed PMID: 25198795.

55) Francioso A, Mastromarino P, Masci A, d'Erme M, Mosca L. Chemistry, stability and bioavailability of resveratrol. *Med Chem*. 2014 May;10(3):237-45. Review. PubMed PMID: 24329932.

56) Francioso A, Mastromarino P, Restignoli R, Boffi A, d'Erme M, Mosca L. Improved stability of trans-resveratrol in aqueous solutions by carboxymethylated (1,3/1,6)- $\beta$ -D-glucan. *J Agric Food Chem*. 2014 Feb 19;62(7):1520-5. doi: 10.1021/jf404155e. Epub 2014 Feb 6. PubMed PMID: 24467639.

57) Gianni S, Camilloni C, Giri R, Toto A, Bonetti D, Morrone A, Sormanni P, Brunori M, Vendruscolo M. Understanding the frustration arising from the competition between function, misfolding, and aggregation in a globular protein. *Proc Natl Acad Sci U S A*. 2014 Sep 30;111(39):14141-6. doi: 10.1073/pnas.1405233111. Epub 2014 Sep 16. PubMed PMID: 25228761; PubMed Central PMCID: PMC4191818.

58) Gianni S, Dogan J, Jemth P. Distinguishing induced fit from conformational selection. *Biophys Chem*. 2014 May;189:33-9. doi: 10.1016/j.bpc.2014.03.003. Epub 2014 Apr 1. Review. PubMed PMID: 24747333.

59) Gianni S, Jemth P. Conserved nucleation sites reinforce the significance of Phi value analysis in protein-folding studies. *IUBMB Life*. 2014 Jul;66(7):449-52. doi: 10.1002/iub.1287. Epub 2014 Jul 18. PubMed PMID: 25044918.

60) Giuffrè A, Borisov VB, Arese M, Sarti P, Forte E. Cytochrome bd oxidase and bacterial tolerance to oxidative and nitrosative stress. *Biochim Biophys Acta*. 2014 Jul;1837(7):1178-87. doi: 10.1016/j.bbabi.2014.01.016. Epub 2014 Jan 31. Review. PubMed PMID: 24486503.

61) Gonçalves VL, Vicente JB, Pinto L, Romão CV, Frazão C, Sarti P, Giuffrè A, Teixeira M. Flavodiiron oxygen reductase from *Entamoeba histolytica*: modulation of substrate preference by tyrosine 271 and lysine 53. *J Biol Chem*. 2014 Oct 10;289(41):28260-70. doi:



10.1074/jbc.M114.579086. Epub 2014 Aug 23. PubMed PMID: 25151360; PubMed Central PMCID: PMC4192481.

62) Grancara S, Martinis P, Manente S, García-Argáez AN, Tempera G, Bragadin M, Dalla Via L, Agostinelli E, Toninello A. Bidirectional fluxes of spermine across the mitochondrial membrane. *Amino Acids*. 2014 Mar;46(3):671-9. doi: 10.1007/s00726-013-1591-0. Epub 2013 Sep 17. Review. PubMed PMID: 24043461.

63) Grillo C, Chichiarelli S, Gaucci E, Altieri F, Turano C, Cervoni L. The binding of silibinin to ERp57. *Chem Biol Interact*. 2014 Apr 25;213:37-43. doi: 10.1016/j.cbi.2014.02.005. Epub 2014 Feb 14. PubMed PMID: 24530445.

64) Haslam IS, Roubos EW, Mangoni ML, Yoshizato K, Vaudry H, Kloepper JE, Pattwell DM, Maderson PF, Paus R. From frog integument to human skin: dermatological perspectives from frog skin biology. *Biol Rev Camb Philos Soc*. 2014 Aug;89(3):618-55. doi: 10.1111/brv.12072. Epub 2013 Dec 3. PubMed PMID: 24299058.

65) Hehle VK, Lombardi R, van Dolleweerd CJ, Paul MJ, Di Micco P, Morea V, Benvenuto E, Donini M, Ma JK. Site-specific proteolytic degradation of IgG monoclonal antibodies expressed in tobacco plants. *Plant Biotechnol J*. 2015 Feb;13(2):235-45. doi: 10.1111/pbi.12266. Epub 2014 Oct 4. PubMed PMID: 25283551.

66) Ilari A, Alaleona F, Tria G, Petrarca P, Battistoni A, Zamparelli C, Verzili D, Falconi M, Chiancone E. The Salmonella enterica ZinT structure, zinc affinity and interaction with the high-affinity uptake protein ZnuA provide insight into the management of periplasmic zinc. *Biochim Biophys Acta*. 2014 Jan;1840(1):535-44. doi: 10.1016/j.bbagen.2013.10.010. Epub 2013 Oct 12. PubMed PMID: 24128931.

67) Kass I, Hoke DE, Costa MG, Reboul CF, Porebski BT, Cowieson NP, Leh H, Pennacchietti E, McCoey J, Kleifeld O, Borri Voltattorni C, Langley D, Roome B, Mackay IR, Christ D, Perahia D, Buckle M, Paiardini A, De Biase D, Buckle AM. Cofactor-dependent conformational heterogeneity of GAD65 and its role in autoimmunity and neurotransmitter homeostasis. *Proc Natl Acad Sci U S A*. 2014 Jun 24;111(25):E2524-9. doi: 10.1073/pnas.1403182111. Epub 2014 Jun 9. PubMed PMID: 24927554; PubMed Central PMCID: PMC4078817.

68) Kolar SS, Luca V, Baidouri H, Mannino G, McDermott AM, Mangoni ML. Esculentin-1a(1-21)NH<sub>2</sub>: a frog skin-derived peptide for microbial keratitis. *Cell Mol Life Sci*. 2015 Feb;72(3):617-27. doi: 10.1007/s00018-014-1694-0. Epub 2014 Aug 3. PubMed PMID: 25086859.

69) Lalioti VS, Ilari A, O'Connell DJ, Poser E, Sandoval IV, Colotti G. Sorcin links calcium signaling to vesicle trafficking, regulates Polo-like kinase 1 and is necessary for mitosis. *PLoS One*. 2014 Jan 10;9(1):e85438. doi: 10.1371/journal.pone.0085438. eCollection 2014. PubMed PMID: 24427308; PubMed Central PMCID: PMC3888430.

70) Lo Vasco VR, Leopizzi M, Stoppoloni D, Della Rocca C. Silencing of phosphoinositide-specific phospholipase C  $\epsilon$  remodulates the expression of the phosphoinositide signal transduction pathway in human osteosarcoma cell lines. *Anticancer Res*. 2014 Aug;34(8):4069-75. PubMed PMID: 25075031.

71) Lori C, Pasquo A, Montanari R, Capelli D, Consalvi V, Chiaraluce R, Cervoni L, Loiodice F, Laghezza A, Aschi M, Giorgi A, Pochetti G. Structural basis of the transactivation deficiency of the human PPAR $\gamma$  F360L mutant associated with familial partial lipodystrophy. *Acta Crystallogr D Biol Crystallogr*. 2014 Jul;70(Pt 7):1965-76. doi: 10.1107/S1399004714009638. Epub 2014 Jun 29. PubMed PMID: 25004973.

72) Luca V, Olivi M, Di Grazia A, Palleschi C, Uccelletti D, Mangoni ML. Anti-Candida activity of 1-18 fragment of the frog skin peptide esculentin-1b: in vitro and in vivo studies in a *Caenorhabditis elegans* infection model. *Cell Mol Life Sci*. 2014 Jul;71(13):2535-46. doi: 10.1007/s00018-013-1500-4. Epub 2013 Nov 10. PubMed PMID: 24221134.

73) Lund P, Tramonti A, De Biase D. Coping with low pH: molecular strategies in neutralophilic bacteria. *FEMS Microbiol Rev*. 2014 Nov;38(6):1091-125. doi: 10.1111/1574-6976.12076. Epub 2014 Jul 2. Review. PubMed PMID: 24898062.

74) Ma Y, Biava H, Contestabile R, Budisa N, di Salvo ML. Coupling bioorthogonal chemistries with artificial metabolism: intracellular biosynthesis of azidohomoalanine and its incorporation into recombinant proteins. *Molecules*. 2014 Jan 15;19(1):1004-22. doi: 10.3390/molecules19011004. PubMed PMID: 24434673.

75) Maras B, Angiolella L, Mignogna G, Vavala E, Maccone A, Colone M, Pitari G, Stringaro A, Dupré S, Palamara AT. Glutathione metabolism in *Candida albicans* resistant strains to fluconazole and micafungin. *PLoS One*. 2014 Jun 4;9(6):e98387. doi: 10.1371/journal.pone.0098387. eCollection 2014. PubMed PMID: 24896636; PubMed Central PMCID: PMC4045664.

76) Masciarelli S, Quaranta R, Iosue I, Colotti G, Padula F, Varchi G, Fazi F, Del Rio A. A small-molecule targeting the microRNA binding domain of argonaute 2 improves the retinoic acid differentiation response of the acute promyelocytic leukemia cell line NB4. *ACS Chem*

Biol. 2014 Aug 15;9(8):1674-9. doi: 10.1021/cb500286b. Epub 2014 Jun 11. PubMed PMID: 24914804.

77) Mastronicola D, Falabella M, Testa F, Pucillo LP, Teixeira M, Sarti P, Saraiva LM, Giuffrè A. Functional characterization of peroxiredoxins from the human protozoan parasite *Giardia intestinalis*. PLoS Negl Trop Dis. 2014 Jan 9;8(1):e2631. doi: 10.1371/journal.pntd.0002631. eCollection 2014. PubMed PMID: 24416465; PubMed Central PMCID: PMC3886907.

78) Minicozzi V, Chiaraluce R, Consalvi V, Giordano C, Narcisi C, Punzi P, Rossi GC, Morante S. Computational and experimental studies on  $\beta$ -sheet breakers targeting A $\beta$ 1-40 fibrils. J Biol Chem. 2014 Apr 18;289(16):11242-52. doi: 10.1074/jbc.M113.537472. Epub 2014 Feb 28. PubMed PMID: 24584938; PubMed Central PMCID: PMC4036262.

79) Mistry SN, Drinkwater N, Ruggeri C, Sivaraman KK, Loganathan S, Fletcher S, Drag M, Paiardini A, Avery VM, Scammells PJ, McGowan S. Two-pronged attack: dual inhibition of *Plasmodium falciparum* M1 and M17 metalloaminopeptidases by a novel series of hydroxamic acid-based inhibitors. J Med Chem. 2014 Nov 13;57(21):9168-83. doi: 10.1021/jm501323a. Epub 2014 Oct 24. PubMed PMID: 25299353.

80) Musci G, Polticelli F, Bonaccorsi di Patti MC. Ceruloplasmin-ferroportin system of iron traffic in vertebrates. World J Biol Chem. 2014 May 26;5(2):204-15. doi: 10.4331/wjbc.v5.i2.204. Review. PubMed PMID: 24921009; PubMed Central PMCID: PMC4050113.

81) Naquet P, Pitari G, Duprè S, Galland F. Role of the Vnn1 pantetheinase in tissue tolerance to stress. Biochem Soc Trans. 2014 Aug;42(4):1094-100. doi: 10.1042/BST20140092. PubMed PMID: 25110008.

82) Nicoletti FP, Bustamante JP, Droghetti E, Howes BD, Fittipaldi M, Bonamore A, Baiocco P, Feis A, Boffi A, Estrin DA, Smulevich G. Interplay of the H-bond donor-acceptor role of the distal residues in hydroxyl ligand stabilization of *Thermobifida fusca* truncated hemoglobin. Biochemistry. 2014 Dec 30;53(51):8021-30. doi: 10.1021/bi501132a. Epub 2014 Dec 17. PubMed PMID: 25437272.

83) Obakan P, Arisan ED, Calcabrini A, Agostinelli E, Bolkent S, Palavan-Unsal N. Activation of polyamine catabolic enzymes involved in diverse responses against epibrassinolide-induced apoptosis in LNCaP and DU145 prostate cancer cell lines. Amino Acids. 2014 Mar;46(3):553-64. doi: 10.1007/s00726-013-1574-1. Epub 2013 Aug 21. PubMed PMID: 23963538.

- 84) Paiardini A, Aducci P, Cervoni L, Cutruzzolà F, Di Lucente C, Janson G, Pascarella S, Rinaldo S, Visconti S, Camoni L. The phytotoxin fusicochin differently regulates 14-3-3 proteins association to mode III targets. *IUBMB Life*. 2014 Jan;66(1):52-62. doi: 10.1002/iub.1239. Epub 2014 Jan 10. PubMed PMID: 24408864.
- 85) Paiardini A, Contestabile R, Buckle AM, Cellini B. PLP-dependent enzymes. *Biomed Res Int*. 2014;2014:856076. doi: 10.1155/2014/856076. Epub 2014 Jan 15. PubMed PMID: 24527459; PubMed Central PMCID: PMC3914556.
- 86) Paone A, Marani M, Fiascarelli A, Rinaldo S, Giardina G, Contestabile R, Paiardini A, Cutruzzolà F. SHMT1 knockdown induces apoptosis in lung cancer cells by causing uracil misincorporation. *Cell Death Dis*. 2014 Nov 20;5:e1525. doi:10.1038/cddis.2014.482. PubMed PMID: 25412303; PubMed Central PMCID: PMC4260740.
- 87) Patrizi B, Lapini A, Di Donato M, Marcelli A, Lima M, Righini R, Foggi P, Baiocco P, Bonamore A, Boffi A. Role of local structure and dynamics of small ligand migration in proteins: a study of a mutated truncated hemoprotein from *Thermobifida fusca* by time resolved MIR spectroscopy. *J Phys Chem B*. 2014 Aug 7;118(31):9209-17. doi: 10.1021/jp504499b. Epub 2014 Jul 23. PubMed PMID: 25019316.
- 88) Peluso I, Manafikhi H, Altieri F, Zanza C, Palmery M. The effect of sample storage on the Peroxidation of Leukocytes Index Ratio (PLIR) measure. *Sci Rep*. 2014 Oct 7;4:6539. doi: 10.1038/srep06539. PubMed PMID: 25290094.
- 89) Perli E, Giordano C, Pisano A, Montanari A, Campese AF, Reyes A, Ghezzi D, Nasca A, Tuppen HA, Orlandi M, Di Micco P, Poser E, Taylor RW, Colotti G, Francisci S, Morea V, Frontali L, Zeviani M, d'Amati G. The isolated carboxy-terminal domain of human mitochondrial leucyl-tRNA synthetase rescues the pathological phenotype of mitochondrial tRNA mutations in human cells. *EMBO Mol Med*. 2014 Feb;6(2):169-82. doi: 10.1002/emmm.201303198. Epub 2014 Jan 10. PubMed PMID: 24413190; PubMed Central PMCID: PMC3927953.
- 90) Perluigi M, Di Domenico F, Butterfield DA. Unraveling the complexity of neurodegeneration in brains of subjects with Down syndrome: insights from proteomics. *Proteomics Clin Appl*. 2014 Feb;8(1-2):73-85. Review. PubMed PMID: 24259517; PubMed Central PMCID: PMC3965623.
- 91) Perluigi M, Pupo G, Tramutola A, Cini C, Coccia R, Barone E, Head E, Butterfield DA, Di Domenico F. Neuropathological role of PI3K/Akt/mTOR axis in Down syndrome brain. *Biochim Biophys Acta*. 2014 Jul;1842(7):1144-53. doi: 10.1016/j.bbadis.2014.04.007. Epub 2014 Apr 13. PubMed PMID: 24735980; PubMed Central PMCID: PMC4062876.

- 92) Perluigi M, Swomley AM, Butterfield DA. Redox proteomics and the dynamic molecular landscape of the aging brain. *Ageing Res Rev.* 2014 Jan;13:75-89. doi: 10.1016/j.arr.2013.12.005. Epub 2013 Dec 25. Review. PubMed PMID: 24374232.
- 93) Rinaldo S, Giardina G, Cutruzzolà F. Nitrosylation of c heme in cd(1)-nitrite reductase is enhanced during catalysis. *Biochem Biophys Res Commun.* 2014 Aug 29;451(3):449-54. doi: 10.1016/j.bbrc.2014.08.020. Epub 2014 Aug 10. PubMed PMID: 25117445.
- 94) Roversi D, Luca V, Aureli S, Park Y, Mangoni ML, Stella L. How many antimicrobial peptide molecules kill a bacterium? The case of PMAP-23. *ACS Chem Biol.* 2014 Sep 19;9(9):2003-7. doi: 10.1021/cb500426r. Epub 2014 Jul 30. PubMed PMID: 25058470.
- 95) Saccoccia F, Angelucci F, Boumis G, Carotti D, Desiato G, Miele AE, Bellelli A. Thioredoxin reductase and its inhibitors. *Curr Protein Pept Sci.* 2014;15(6):621-46. PubMed PMID: 24875642; PubMed Central PMCID: PMC4275836.
- 96) Saccoccia F, Angelucci F, Boumis G, Desiato G, Miele AE, Bellelli A. Selenocysteine robustness versus cysteine versatility: a hypothesis on the evolution of the moonlighting behaviour of peroxiredoxins. *Biochem Soc Trans.* 2014 Dec;42(6):1768-72. doi: 10.1042/BST20140212. PubMed PMID: 25399604.
- 97) Salerno C, Zicari A, Mari E, D'Eufemia P. Scavenging properties of neutrophil 4-hydroxyphenylpyruvate dioxygenase are based on a hypothesis that does not stand up to scrutiny. *Biomed Pharmacother.* 2014 Oct;68(8):1045-8. doi:10.1016/j.biopha.2014.09.002. Epub 2014 Sep 18. PubMed PMID: 25443415.
- 98) Santini P, Politi L, Vedova PD, Scandurra R, Scotto d'Abusco A. The inflammatory circuitry of miR-149 as a pathological mechanism in osteoarthritis. *Rheumatol Int.* 2014 May;34(5):711-6. doi: 10.1007/s00296-013-2754-8. Epub 2013 Apr 18. PubMed PMID: 23595570.
- 99) Sechi S, Colotti G, Belloni G, Mattei V, Frappaolo A, Raffa GD, Fuller MT, Giansanti MG. GOLPH3 is essential for contractile ring formation and Rab11 localization to the cleavage site during cytokinesis in *Drosophila melanogaster*. *PLoS Genet.* 2014 May 1;10(5):e1004305. doi: 10.1371/journal.pgen.1004305. eCollection 2014 May. PubMed PMID: 24786584; PubMed Central PMCID: PMC4006750.
- 100) Spadaccio C, De Marco F, Di Domenico F, Coccia R, Lusini M, Barbato R, Covino E,

Chello M. Simvastatin attenuates the endothelial pro-thrombotic shift in saphenous vein grafts induced by Advanced glycation endproducts. *Thromb Res.* 2014 Mar;133(3):418-25. doi: 10.1016/j.thromres.2013.12.023. Epub 2013 Dec 21. PubMed PMID: 24388572.

101) Sposini S, Caltabiano G, Hanyaloglu AC, Miele R. Identification of transmembrane domains that regulate spatial arrangements and activity of prokineticin receptor 2 dimers. *Mol Cell Endocrinol.* 2015 Jan 5;399:362-72. doi: 10.1016/j.mce.2014.10.024. Epub 2014 Nov 6. PubMed PMID: 25449422.

102) Stoppoloni D, Politi L, Leopizzi M, Gaetani S, Guazzo R, Basciani S, Moreschini O, De Santi M, Scandurra R, Scotto d'Abusco A. Effect of glucosamine and its peptidyl-derivative on the production of extracellular matrix components by human primary chondrocytes. *Osteoarthritis Cartilage.* 2015 Jan;23(1):103-13. doi: 10.1016/j.joca.2014.09.005. Epub 2014 Sep 16. PubMed PMID: 25219669.

103) Stringaro A, Vavala E, Colone M, Pepi F, Mignogna G, Garzoli S, Cecchetti S, Ragno R, Angiolella L. Effects of *Mentha suaveolens* Essential Oil Alone or in Combination with Other Drugs in *Candida albicans*. *Evid Based Complement Alternat Med.* 2014;2014:125904. doi: 10.1155/2014/125904. Epub 2014 Feb 27. PubMed PMID: 24719638; PubMed Central PMCID: PMC3955632.

104) Toto A, Giri R, Brunori M, Gianni S. The mechanism of binding of the KIX domain to the mixed lineage leukemia protein and its allosteric role in the recognition of c-Myb. *Protein Sci.* 2014 Jul;23(7):962-9. doi: 10.1002/pro.2480. Epub 2014 May 9. PubMed PMID: 24753318; PubMed Central PMCID: PMC4088980.

105) Vicente JB, Colaço HG, Mendes MI, Sarti P, Leandro P, Giuffrè A. NO\* binds human cystathionine  $\beta$ -synthase quickly and tightly. *J Biol Chem.* 2014 Mar 21;289(12):8579-87. doi: 10.1074/jbc.M113.507533. Epub 2014 Feb 10. PubMed PMID: 24515102; PubMed Central PMCID: PMC3961681.

106) Vijayanathan V, Agostinelli E, Thomas T, Thomas TJ. Innovative approaches to the use of polyamines for DNA nanoparticle preparation for gene therapy. *Amino Acids.* 2014 Mar;46(3):499-509. doi: 10.1007/s00726-013-1549-2. Epub 2013 Jul 17. Review. PubMed PMID: 23860846.

107) Yang Y, Allemand F, Guca E, Vallone B, Delbecq S, Roumestand C. (1)H, (15)N and (13)C Backbone resonance assignments of murine met-neuroglobin, free and in complex with cyanide. *Biomol NMR Assign.* 2014 May 16. [Epub ahead of print] PubMed PMID: 24830543.

108) Zanoni R, Ioannidu CA, Mazzola L, Politi L, Misiano C, Longo G, Falconieri M, Scandurra R. Graphitic carbon in a nanostructured titanium oxycarbide thin film to improve implant osseointegration. *Mater Sci Eng C Mater Biol Appl*. 2015Jan;46:409-16. doi: 10.1016/j.msec.2014.10.073. Epub 2014 Oct 28. PubMed PMID:25492005.