

Dipartimento di Scienze Biochimiche "A. Rossi Fanelli" Attività di Ricerca e Pubblicazioni Scientifiche 2013

L'attività di ricerca del Dipartimento di Scienze Biochimiche "A. Rossi Fanelli" nell'anno 2013 si è sviluppata secondo le linee programmatiche definite nel piano triennale delle ricerche 2011-2013, 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 2013 sono testimoniate da circa 100 pubblicazioni scientifiche:

1: 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. PubMed PMID: 23999645.

2: Amendola R, Cervelli M, Fratini E, Sallustio DE, Tempera G, Ueshima T, Mariottini P, Agostinelli E. Reactive oxygen species spermine metabolites generated from amine oxidases and radiation represent a therapeutic gain in cancer treatments. *Int J Oncol*. 2013 Sep;43(3):813-20. doi: 10.3892/ijo.2013.2013. Epub 2013 Jul 12. PubMed PMID: 23857253.

3: Angelaccio S. Extremophilic SHMTs: from structure to biotechnology. *Biomed Res Int*. 2013;2013:851428. doi: 10.1155/2013/851428. Epub 2013 Jun 13. Review. PubMed PMID: 23841096; PubMed Central PMCID: PMC3697235.

4: Angelucci F, Saccoccia F, Ardini M, Boumis G, Brunori M, Di Leandro L, Ippoliti R, Miele AE, Natoli G, Scotti S, Bellelli A. Switching between the alternative structures and functions of a 2-Cys peroxiredoxin, by site-directed mutagenesis. *J Mol Biol*. 2013 Nov 15;425(22):4556-68. doi: 10.1016/j.jmb.2013.09.002. Epub 2013 Sep 8. PubMed PMID: 24021815.

5: Antoniani D, Rossi E, Rinaldo S, Bocci P, Lolicato M, Paiardini A, Raffaelli N, Cutruzzolà F, Landini P. The immunosuppressive drug azathioprine inhibits biosynthesis of the bacterial signal molecule cyclic-di-GMP by interfering with intracellular nucleotide pool availability. *Appl Microbiol Biotechnol*. 2013 Aug;97(16):7325-36. doi: 10.1007/s00253-013-4875-0. Epub 2013 Apr 14. PubMed PMID: 23584245.

6: Ardini M, Fiorillo A, Fittipaldi M, Stefanini S, Gatteschi D, Ilari A, Chiancone E. Kineococcus radiotolerans Dps forms a heteronuclear Mn-Fe ferroxidase center that may explain the Mn-dependent protection against oxidative stress. *Biochim Biophys Acta*. 2013 Jun;1830(6):3745-55. doi: 10.1016/j.bbagen.2013.02.003. Epub 2013 Feb 8. PubMed PMID: 23396000.

- 7: Ascenzi P, Gianni S. Functional role of transient conformations: Rediscovering "chronosteric effects" thirty years later. *IUBMB Life*. 2013 Oct;65(10):836-44. doi: 10.1002/iub.1208. Epub 2013 Sep 17. Review. PubMed PMID: 24078391.
- 8: Aureli C, Cassano T, Masci A, Francioso A, Martire S, Cocciolo A, Chichiarelli S, Romano A, Gaetani S, Mancini P, Fontana M, d'Erme M, Mosca L. 5-S-cysteinyl-dopamine neurotoxicity: Influence on the expression of α -synuclein and ERp57 in cellular and animal models of Parkinson's disease. *J Neurosci Res*. 2014 Mar;92(3):347-58. doi: 10.1002/jnr.23318. Epub 2013 Nov 22. PubMed PMID: 24273027.
- 9: Aureli C, Gaucci E, Arcangeli V, Grillo C, Eufemi M, Chichiarelli S. ERp57/PDIA3 binds specific DNA fragments in a melanoma cell line. *Gene*. 2013 Jul 25;524(2):390-5. doi: 10.1016/j.gene.2013.04.004. Epub 2013 Apr 13. PubMed PMID: 23587917.
- 10: 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 Jan;58(1):543-9. doi: 10.1128/AAC.00990-13. Epub 2013 Nov 11. PubMed PMID: 24217695; PubMed Central PMCID: PMC3910768.
- 11: Baiocco P, Poce G, Alfonso S, Coccozza M, Porretta GC, Colotti G, Biava M, Moraca F, Botta M, Yardley V, Fiorillo A, Lantella A, Malatesta F, Ilari A. Inhibition of *Leishmania infantum* trypanothione reductase by azole-based compounds: a comparative analysis with its physiological substrate by X-ray crystallography. *ChemMedChem*. 2013 Jul;8(7):1175-83. doi: 10.1002/cmdc.201300176. Epub 2013 Jun 3. PubMed PMID: 23733388.
- 12: 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. PubMed PMID: 24095978; PubMed Central PMCID: PMC3877707.
- 13: 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.
- 14: Bonaiuto E, Milelli A, Cozza G, Tumiatti V, Marchetti C, Agostinelli E, Fimognari C, Hrelia P, Minarini A, Di Paolo ML. Novel polyamine analogues: from substrates towards potential inhibitors of monoamine oxidases. *Eur J Med Chem*. 2013 Dec;70:88-101. doi: 10.1016/j.ejmech.2013.07.005. Epub 2013 Oct 1. PubMed PMID: 24140951.
- 15: Borisov VB, Forte E, Davletshin A, Mastronicola D, Sarti P, Giuffrè A. Cytochrome bd oxidase from *Escherichia coli* displays high catalase activity: an additional defense against oxidative stress. *FEBS Lett*. 2013 Jul 11;587(14):2214-8. doi: 10.1016/j.febslet.2013.05.047. Epub 2013 May 30. PubMed PMID: 23727202.

- 16: Bossa F, Annese V, Valvano MR, Latiano A, Martino G, Rossi L, Magnani M, Palmieri O, Serafini S, Damonte G, De Santo E, Andriulli A. Erythrocytes-mediated delivery of dexamethasone 21-phosphate in steroid-dependent ulcerative colitis: a randomized, double-blind Sham-controlled study. *Inflamm Bowel Dis*. 2013 Aug;19(9):1872-9. doi: 10.1097/MIB.0b013e3182874065. PubMed PMID: 23714676.
- 17: 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.
- 18: Campanini B, Bettati S, di Salvo ML, Mozzarelli A, Contestabile R. Asymmetry of the active site loop conformation between subunits of glutamate-1-semialdehyde aminomutase in solution. *Biomed Res Int*. 2013;2013:353270. doi: 10.1155/2013/353270. Epub 2013 Jul 31. PubMed PMID: 23984351; PubMed Central PMCID: PMC3747428.
- 19: Capone C, Cervelli M, Angelucci E, Colasanti M, Maccone A, Mariottini P, Persichini T. A role for spermine oxidase as a mediator of reactive oxygen species production in HIV-Tat-induced neuronal toxicity. *Free Radic Biol Med*. 2013 Oct;63:99-107. doi: 10.1016/j.freeradbiomed.2013.05.007. Epub 2013 May 9. PubMed PMID: 23665428.
- 20: Capuozzo E, Pecci L, Baseggio Conrado A, Fontana M. Thiotaaurine prevents apoptosis of human neutrophils: a putative role in inflammation. *Adv Exp Med Biol*. 2013;775:227-36. doi: 10.1007/978-1-4614-6130-2_19. PubMed PMID: 23392938.
- 21: Carcoforo P, Ura B, Mischiati C, Squerzanti M, Lanzara V, Cervellati C, Calza R, De Laureto PP, Frare E, Portinari M, Feriotta G, Lanzara S, Agostinelli E, Bergamini CM. Comparative proteomic analysis of ductal breast carcinoma demonstrates an altered expression of chaperonins and cytoskeletal proteins. *Mol Med Rep*. 2013 May;7(5):1700-4. doi: 10.3892/mmr.2013.1375. Epub 2013 Mar 15. PubMed PMID: 23525150.
- 22: Chamundeeswari M, Sastry TP, Lakshmi BS, Senthil V, Agostinelli E. Iron nanoparticles from animal blood for cellular imaging and targeted delivery for cancer treatment. *Biochim Biophys Acta*. 2013 Apr;1830(4):3005-10. doi: 10.1016/j.bbagen.2012.12.031. Epub 2013 Jan 10. PubMed PMID: 23313166.
- 23: Chiarella S, Federici L, Di Matteo A, Brunori M, Gianni S. The folding pathway of a functionally competent C-terminal domain of nucleophosmin: protein stability and denatured state residual structure. *Biochem Biophys Res Commun*. 2013 May 24;435(1):64-8. doi: 10.1016/j.bbrc.2013.04.038. Epub 2013 Apr 22. PubMed PMID: 23618861.
- 24: Colotti G, Baiocco P, Fiorillo A, Boffi A, Poser E, Chiaro FD, Ilari A. Structural insights into the enzymes of the trypanothione pathway: targets for antileishmaniasis drugs. *Future Med Chem*. 2013 Oct;5(15):1861-75. doi: 10.4155/fmc.13.146. Review. PubMed PMID: 24144416.
- 25: Colotti G, Ilari A, Boffi A, Morea V. Metals and metal derivatives in medicine. *Mini Rev Med Chem*. 2013 Feb;13(2):211-21. Review. PubMed PMID: 23438056.
- 26: Colotti G, Ilari A, Fiorillo A, Baiocco P, Cinellu MA, Maiore L, Scaletti F,

Gabbiani C, Messori L. Metal-Based Compounds as Prospective Antileishmanial Agents: Inhibition of Trypanothione Reductase by Selected Gold Complexes. *ChemMedChem*. 2013 Aug 23. doi: 10.1002/cmdc.201300276. [Epub ahead of print] PubMed PMID: 24039168.

27: Cutruzzolà F, Avigliano L, Candi E. p73 keeps metabolic control in balance. *Cell Cycle*. 2014 Jan 15;13(2):179-80. doi: 10.4161/cc.27301. Epub 2013 Nov 22. PubMed PMID: 24309544; PubMed Central PMCID: PMC3906232.

28: Di Domenico F, De Marco F, Perluigi M. Proteomics strategies to analyze HPV-transformed cells: relevance to cervical cancer. *Expert Rev Proteomics*. 2013 Oct;10(5):461-72. doi: 10.1586/14789450.2013.842469. Review. PubMed PMID: 24117203.

29: Di Domenico F, Coccia R, Cocciolo A, Murphy MP, Cenini G, Head E, Butterfield DA, Giorgi A, Schinina ME, Mancuso C, Cini C, Perluigi M. Impairment of proteostasis network in Down syndrome prior to the development of Alzheimer's disease neuropathology: redox proteomics analysis of human brain. *Biochim Biophys Acta*. 2013 Aug;1832(8):1249-59. doi: 10.1016/j.bbadis.2013.04.013. Epub 2013 Apr 18. PubMed PMID: 23603808; PubMed Central PMCID: PMC3940071.

30: 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.

31: di Salvo ML, Contestabile R, Paiardini A, Maras B. Glycine consumption and mitochondrial serine hydroxymethyltransferase in cancer cells: the heme connection. *Med Hypotheses*. 2013 May;80(5):633-6. doi: 10.1016/j.mehy.2013.02.008. Epub 2013 Mar 6. PubMed PMID: 23474074.

32: di Salvo ML, Florio R, Paiardini A, Vivoli M, D'Aguanno S, Contestabile R. Alanine racemase from *Tolypocladium inflatum*: a key PLP-dependent enzyme in cyclosporin biosynthesis and a model of catalytic promiscuity. *Arch Biochem Biophys*. 2013 Jan 15;529(2):55-65. doi: 10.1016/j.abb.2012.11.011. Epub 2012 Dec 3. PubMed PMID: 23219598.

33: Di Salvo ML, Scarsdale JN, Kazanina G, Contestabile R, Schirch V, Wright HT. Structure-based mechanism for early PLP-mediated steps of rabbit cytosolic serine hydroxymethyltransferase reaction. *Biomed Res Int*. 2013;2013:458571. doi: 10.1155/2013/458571. Epub 2013 Jul 15. PubMed PMID: 23956983; PubMed Central PMCID: PMC3728543.

34: Di Silvio E, Di Matteo A, Malatesta F, Travaglini-Allocatelli C. Recognition and binding of apocytochrome c to *P. aeruginosa* CcmI, a component of cytochrome c maturation machinery. *Biochim Biophys Acta*. 2013 Aug;1834(8):1554-61. doi: 10.1016/j.bbapap.2013.04.027. Epub 2013 May 3. PubMed PMID: 23648553.

35: 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.

36: Draper MP, Weir S, Maccone A, Donatelli J, Trieber CA, Tanaka SK, Levy SB. Mechanism of action of the novel aminomethylcycline antibiotic omadacycline.

Antimicrob Agents Chemother. 2014 Mar;58(3):1279-83. doi: 10.1128/AAC.01066-13. Epub 2013 Sep 16. PubMed PMID: 24041885; PubMed Central PMCID: PMC3957880.

37: Eildal JN, Hultqvist G, Balle T, Stuhr-Hansen N, Padrah S, Gianni S, Strømgaard K, Jemth P. Probing the role of backbone hydrogen bonds in protein-peptide interactions by amide-to-ester mutations. *J Am Chem Soc.* 2013 Sep 4;135(35):12998-3007. doi: 10.1021/ja402875h. Epub 2013 Jun 7. PubMed PMID: 23705582.

38: Falvo E, Tremante E, Fraioli R, Leonetti C, Zamparelli C, Boffi A, Morea V, Ceci P, Giacomini P. Antibody-drug conjugates: targeting melanoma with cisplatin encapsulated in protein-cage nanoparticles based on human ferritin. *Nanoscale.* 2013 Dec 21;5(24):12278-85. doi: 10.1039/c3nr04268e. PubMed PMID: 24150593.

39: Fiorini A, Sultana R, Förster S, Perluigi M, Cenini G, Cini C, Cai J, Klein JB, Farr SA, Niehoff ML, Morley JE, Kumar VB, Allan Butterfield D. Antisense directed against PS-1 gene decreases brain oxidative markers in aged senescence accelerated mice (SAMP8) and reverses learning and memory impairment: a proteomics study. *Free Radic Biol Med.* 2013 Dec;65:1-14. doi: 10.1016/j.freeradbiomed.2013.06.017. Epub 2013 Jun 15. PubMed PMID: 23777706; PubMed Central PMCID: PMC3855183.

40: Fiorini A, Koudriavtseva T, Bucaj E, Coccia R, Foppoli C, Giorgi A, Schininà ME, Di Domenico F, De Marco F, Perluigi M. Involvement of oxidative stress in occurrence of relapses in multiple sclerosis: the spectrum of oxidatively modified serum proteins detected by proteomics and redox proteomics analysis. *PLoS One.* 2013 Jun 7;8(6):e65184. doi: 10.1371/journal.pone.0065184. Print 2013. PubMed PMID: 23762311; PubMed Central PMCID: PMC3676399.

41: Forte E, Borisov VB, Davletshin A, Mastronicola D, Sarti P, Giuffrè A. Cytochrome bd oxidase and hydrogen peroxide resistance in *Mycobacterium tuberculosis*. *MBio.* 2013 Dec 17;4(6):e01006-13. doi: 10.1128/mBio.01006-13. PubMed PMID: 24345747; PubMed Central PMCID: PMC3870254.

42: Galli L, Rubinacci A, Coccorullo D, Salpietro S, Spagnuolo V, Gianotti N, Bigoloni A, Vinci C, Mignogna G, Sirtori M, Lazzarin A, Castagna A. Optimal dietary calcium intake in HIV treated patients: no femoral osteoporosis but higher cardiovascular risk. *Clin Nutr.* 2014 Apr;33(2):363-6. doi: 10.1016/j.clnu.2013.07.004. Epub 2013 Jul 12. PubMed PMID: 23891159.

43: Gaucci E, Altieri F, Turano C, Chichiarelli S. The protein ERp57 contributes to EGF receptor signaling and internalization in MDA-MB-468 breast cancer cells. *J Cell Biochem.* 2013 Nov;114(11):2461-70. doi: 10.1002/jcb.24590. PubMed PMID: 23696074.

44: Georgescauld F, Moynié L, Habersetzer J, Cervoni L, Mocan I, Borza T, Harris P, Dautant A, Lascau I. Intersubunit ionic interactions stabilize the nucleoside diphosphate kinase of *Mycobacterium tuberculosis*. *PLoS One.* 2013;8(3):e57867. doi: 10.1371/journal.pone.0057867. Epub 2013 Mar 5. PubMed PMID: 23526954; PubMed Central PMCID: PMC3589492.

45: Giardina G, Paiardini A, Fericola S, Franceschini S, Rinaldo S, Stelitano V, Cutruzzolà F. Investigating the allosteric regulation of YfiN from *Pseudomonas aeruginosa*: clues from the structure of the catalytic domain. *PLoS One.* 2013 Nov

22;8(11):e81324. doi: 10.1371/journal.pone.0081324. eCollection 2013. PubMed PMID: 24278422; PubMed Central PMCID: PMC3838380.

46: Giri R, Morrone A, Toto A, Brunori M, Gianni S. Structure of the transition state for the binding of c-Myb and KIX highlights an unexpected order for a disordered system. *Proc Natl Acad Sci U S A*. 2013 Sep 10;110(37):14942-7. doi: 10.1073/pnas.1307337110. Epub 2013 Aug 26. PubMed PMID: 23980173; PubMed Central PMCID: PMC3773806.

47: 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. PubMed PMID: 24043461.

48: Grieco P, Carotenuto A, Auriemma L, Saviello MR, Campiglia P, Gomez-Monterrey IM, Marcellini L, Luca V, Barra D, Novellino E, Mangoni ML. The effect of d-amino acid substitution on the selectivity of temporin L towards target cells: identification of a potent anti-Candida peptide. *Biochim Biophys Acta*. 2013 Feb;1828(2):652-60. doi: 10.1016/j.bbame.2012.08.027. Epub 2012 Sep 10. PubMed PMID: 22974815.

49: Grieco P, Carotenuto A, Auriemma L, Limatola A, Di Maro S, Merlino F, Mangoni ML, Luca V, Di Grazia A, Gatti S, Campiglia P, Gomez-Monterrey I, Novellino E, Catania A. Novel α -MSH peptide analogues with broad spectrum antimicrobial activity. *PLoS One*. 2013 Apr 23;8(4):e61614. doi: 10.1371/journal.pone.0061614. Print 2013. PubMed PMID: 23626703; PubMed Central PMCID: PMC3634028.

50: Guca E, Roumestand C, Vallone B, Royer CA, Dellarole M. Low-cost equilibrium unfolding of heme proteins using 2 μ l samples. *Anal Biochem*. 2013 Dec 1;443(1):13-5. doi: 10.1016/j.ab.2013.08.006. Epub 2013 Aug 16. PubMed PMID: 23958270.

51: 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*. 2013 Dec 3. doi: 10.1111/brv.12072. [Epub ahead of print] PubMed PMID: 24299058.

52: Hultqvist G, Haq SR, Punekar AS, Chi CN, Engström Å, Bach A, Strømgaard K, Selmer M, Gianni S, Jemth P. Energetic pathway sampling in a protein interaction domain. *Structure*. 2013 Jul 2;21(7):1193-1202. PubMed PMID: 23810696.

53: 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.

54: Kannan Sivaraman K, Paiardini A, Sieńczyk M, Ruggeri C, Oellig CA, Dalton JP, Scammells PJ, Drag M, McGowan S. Synthesis and structure-activity relationships of phosphonic arginine mimetics as inhibitors of the M1 and M17 aminopeptidases from Plasmodium falciparum. *J Med Chem*. 2013 Jun 27;56(12):5213-7. doi: 10.1021/jm4005972. Epub 2013 Jun 13. PubMed PMID: 23713488.

55: Krako N, Magnifico MC, Arese M, Meli G, Forte E, Lecci A, Manca A, Giuffrè A, Mastronicola D, Sarti P, Cattaneo A. Characterization of mitochondrial dysfunction in the 7PA2 cell model of Alzheimer's disease. *J Alzheimers Dis.* 2013;37(4):747-58. doi: 10.3233/JAD-130728. PubMed PMID: 23948918.

56: Lori C, Lantella A, Pasquo A, Alexander LT, Knapp S, Chiaraluce R, Consalvi V. Effect of single amino acid substitution observed in cancer on Pim-1 kinase thermodynamic stability and structure. *PLoS One.* 2013 Jun 5;8(6):e64824. doi: 10.1371/journal.pone.0064824. Print 2013. PubMed PMID: 23755147; PubMed Central PMCID: PMC3673989.

57: 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.

58: Luca V, Stringaro A, Colone M, Pini A, Mangoni ML. Esculentin(1-21), an amphibian skin membrane-active peptide with potent activity on both planktonic and biofilm cells of the bacterial pathogen *Pseudomonas aeruginosa*. *Cell Mol Life Sci.* 2013 Aug;70(15):2773-86. doi: 10.1007/s00018-013-1291-7. Epub 2013 Mar 16. PubMed PMID: 23503622.

59: Mangoni ML. A lesson from Bombinins H, mildly cationic diastereomeric antimicrobial peptides from *Bombina* skin. *Curr Protein Pept Sci.* 2013 Dec;14(8):734-43. PubMed PMID: 24384035.

60: Marcon F, Carotti D, Andreoli C, Siniscalchi E, Leopardi P, Caiola S, Biffoni M, Zijno A, Medda E, Nisticò L, Rossi S, Crebelli R. DNA damage response in monozygotic twins discordant for smoking habits. *Mutagenesis.* 2013 Mar;28(2):135-44. doi: 10.1093/mutage/ges062. Epub 2012 Nov 6. PubMed PMID: 23132286.

61: Martire S, Fuso A, Rotili D, Tempera I, Giordano C, De Zottis I, Muzi A, Vernole P, Graziani G, Lococo E, Faraldi M, Maras B, Scarpa S, Mosca L, d'Erme M. PARP-1 modulates amyloid beta peptide-induced neuronal damage. *PLoS One.* 2013 Sep 24;8(9):e72169. doi: 10.1371/journal.pone.0072169. eCollection 2013. PubMed PMID: 24086258; PubMed Central PMCID: PMC3782458.

62: Mattei B, Sabatini S, Schininà ME. Proteomics in deciphering the auxin commitment in the *Arabidopsis thaliana* root growth. *J Proteome Res.* 2013 Nov 1;12(11):4685-701. doi: 10.1021/pr400697s. Epub 2013 Oct 1. Review. PubMed PMID: 24032454.

63: Miele AE, Bellelli A, Brunori M. Hemoglobin allostery: new views on old players. *J Mol Biol.* 2013 May 13;425(9):1515-26. doi: 10.1016/j.jmb.2012.12.018. Epub 2012 Dec 28. PubMed PMID: 23274140.

64: Milano T, Paiardini A, Grgurina I, Pascarella S. Type I pyridoxal 5'-phosphate dependent enzymatic domains embedded within multimodular nonribosomal peptide synthetase and polyketide synthase assembly lines. *BMC Struct Biol.* 2013 Oct 23;13:26. doi: 10.1186/1472-6807-13-26. PubMed PMID: 24148833; PubMed Central PMCID: PMC3870968.

65: Mondovi B, Fogel WA, Federico R, Calinescu C, Mateescu MA, Rosa AC, Masini E. Effects of amine oxidases in allergic and histamine-mediated conditions. *Recent Pat Inflamm Allergy Drug Discov.* 2013 Jan 1;7(1):20-34. Review. PubMed PMID: 22946464.

66: Montanari E, Capece S, Di Meo C, Meringolo M, Coviello T, Agostinelli E, Matricardi P. Hyaluronic acid nanohydrogels as a useful tool for BSAO immobilization in the treatment of melanoma cancer cells. *Macromol Biosci.* 2013 Sep;13(9):1185-94. doi: 10.1002/mabi.201300114. Epub 2013 Jul 8. PubMed PMID: 23836462.

67: Montemiglio LC, Macone A, Ardiccioni C, Avella G, Vallone B, Savino C. Redirecting P450 EryK specificity by rational site-directed mutagenesis. *Biochemistry.* 2013 May 28;52(21):3678-87. doi: 10.1021/bi400223j. Epub 2013 May 16. PubMed PMID: 23597312.

68: Nicoletti FP, Droghetti E, Howes BD, Bustamante JP, Bonamore A, Sciamanna N, Estrin DA, Feis A, Boffi A, Smulevich G. H-bonding networks of the distal residues and water molecules in the active site of *Thermobifida fusca* hemoglobin. *Biochim Biophys Acta.* 2013 Sep;1834(9):1901-9. doi: 10.1016/j.bbapap.2013.02.033. Epub 2013 Mar 5. PubMed PMID: 23467007.

69: 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.

70: Oppici E, Fodor K, Paiardini A, Williams C, Voltattorni CB, Wilmanns M, Cellini B. Crystal structure of the S187F variant of human liver alanine: glyoxylate [corrected] aminotransferase associated with primary hyperoxaluria type I and its functional implications. *Proteins.* 2013 Aug;81(8):1457-65. doi: 10.1002/prot.24300. Epub 2013 Jun 1. Erratum in: *Proteins.* 2014 Jan;82(1):171. PubMed PMID: 23589421; PubMed Central PMCID: PMC3810726.

71: Paiardini A, Pascarella S. Structural mimicry between SLA/LP and Rickettsia surface antigens as a driver of autoimmune hepatitis: insights from an in silico study. *Theor Biol Med Model.* 2013 Apr 10;10:25. doi: 10.1186/1742-4682-10-25. PubMed PMID: 23575112; PubMed Central PMCID: PMC3636016.

72: 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. PubMed PMID: 24374232.

73: Pietrocola G, Geoghegan JA, Rindi S, Di Poto A, Missineo A, Consalvi V, Foster TJ, Speziale P. Molecular Characterization of the Multiple Interactions of SpsD, a Surface Protein from *Staphylococcus pseudintermedius*, with Host Extracellular Matrix Proteins. *PLoS One.* 2013 Jun 21;8(6):e66901. Print 2013. PubMed PMID: 23805283; PubMed Central PMCID: PMC3689669.

74: Robin S, Arese M, Forte E, Sarti P, Kolaj-Robin O, Giuffrè A, Soulimane T. Functional dissection of the multi-domain di-heme cytochrome c(550) from *Thermus thermophilus*. *PLoS One.* 2013;8(1):e55129. doi: 10.1371/journal.pone.0055129. Epub 2013 Jan 31. PubMed PMID: 23383080; PubMed Central PMCID: PMC3561395.

75: Ronchetti D, Tuana G, Rinaldi A, Agnelli L, Cutrona G, Mosca L, Fabris S, Matis S, Colombo M, Gentile M, Recchia AG, Kwee I, Bertoni F, Morabito F, Ferrarini M, Neri A. Distinct patterns of global promoter methylation in early stage chronic lymphocytic leukemia. *Genes Chromosomes Cancer*. 2014 Mar;53(3):264-73. doi: 10.1002/gcc.22139. Epub 2013 Dec 18. PubMed PMID: 24347044.

76: Salerno C, Capuozzo E. Effects of the semisynthetic bis-indole derivative KAR-2 on store-operated calcium entry in human neutrophils. *Arch Biochem Biophys*. 2013 Sep 1;537(1):133-7. doi: 10.1016/j.abb.2013.07.011. Epub 2013 Jul 19. PubMed PMID: 23876240.

77: 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.

78: Saravanan R, Joshi M, Mohanram H, Bhunia A, Mangoni ML, Bhattacharjya S. NMR structure of temporin-1 ta in lipopolysaccharide micelles: mechanistic insight into inactivation by outer membrane. *PLoS One*. 2013 Sep 9;8(9):e72718. doi: 10.1371/journal.pone.0072718. eCollection 2013. PubMed PMID: 24039798; PubMed Central PMCID: PMC3767682.

79: Sarti P, Magnifico MC, Altieri F, Mastronicola D, Arese M. New Evidence for Cross Talk between Melatonin and Mitochondria Mediated by a Circadian-Compatible Interaction with Nitric Oxide. *Int J Mol Sci*. 2013 May 28;14(6):11259-76. doi: 10.3390/ijms140611259. PubMed PMID: 23759982; PubMed Central PMCID: PMC3709731.

80: Singh R, Spyrakis F, Cozzini P, Paiardini A, Pascarella S, Mozzarelli A. Chemogenomics of pyridoxal 5'-phosphate dependent enzymes. *J Enzyme Inhib Med Chem*. 2013 Feb;28(1):183-94. doi: 10.3109/14756366.2011.643305. Epub 2011 Dec 19. PubMed PMID: 22181815.

81: Sosna M, Bonamore A, Gorton L, Boffi A, Ferapontova EE. Direct electrochemistry and Os-polymer-mediated bioelectrocatalysis of NADH oxidation by *Escherichia coli* flavohemoglobin at graphite electrodes. *Biosens Bioelectron*. 2013 Apr 15;42:219-24. doi: 10.1016/j.bios.2012.10.094. Epub 2012 Nov 7. PubMed PMID: 23208089.

82: 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.

83: Spadaccio C, Patti G, De Marco F, Coccia R, Di Domenico F, Pollari F, Zanzonico R, Pettinari M, Lusini M, Di Sciascio G, Covino E, Chello M. Usefulness of preprocedural levels of advanced glycation end products to predict restenosis in patients with controlled diabetes mellitus undergoing drug-eluting stent implantation for stable angina pectoris (from the Prospective ARMYDA-AGEs Study). *Am J Cardiol*. 2013 Jul 1;112(1):21-6. doi: 10.1016/j.amjcard.2013.02.046. Epub 2013 Apr 2. PubMed PMID: 23561587.

- 84: Spagnuolo V, Cocorullo D, Galli L, Bigoloni A, Galli A, Rubinacci A, Mignogna G, Carbone A, Lazzarin A, Castagna A. Plasma fibroblast growth factor 23 and osteocalcin serum levels are associated with cardiovascular risk in HIV-1-infected patients receiving antiretroviral treatment. *J Antimicrob Chemother.* 2013 Dec;68(12):2960-3. doi: 10.1093/jac/dkt264. Epub 2013 Jun 27. PubMed PMID: 23812682.
- 85: Stelitano V, Brandt A, Fernicola S, Franceschini S, Giardina G, Pica A, Rinaldo S, Sica F, Cutruzzolà F. Probing the activity of diguanylate cyclases and c-di-GMP phosphodiesterases in real-time by CD spectroscopy. *Nucleic Acids Res.* 2013 Apr;41(7):e79. doi: 10.1093/nar/gkt028. Epub 2013 Jan 28. PubMed PMID: 23358823; PubMed Central PMCID: PMC3627566.
- 86: Stelitano V, Giardina G, Paiardini A, Castiglione N, Cutruzzolà F, Rinaldo S. C-di-GMP hydrolysis by *Pseudomonas aeruginosa* HD-GYP phosphodiesterases: analysis of the reaction mechanism and novel roles for pGpG. *PLoS One.* 2013 Sep 16;8(9):e74920. doi: 10.1371/journal.pone.0074920. eCollection 2013. PubMed PMID: 24066157; PubMed Central PMCID: PMC3774798.
- 87: Stoppoloni D, Politi L, Dalla Vedova P, Messano M, Koverech A, Scandurra R, Scotto d'Abusco A. L-carnitine enhances extracellular matrix synthesis in human primary chondrocytes. *Rheumatol Int.* 2013 Sep;33(9):2399-403. doi: 10.1007/s00296-012-2373-9. Epub 2012 Mar 27. PubMed PMID: 22451022.
- 88: Sultana R, Perluigi M, Allan Butterfield D. Lipid peroxidation triggers neurodegeneration: a redox proteomics view into the Alzheimer disease brain. *Free Radic Biol Med.* 2013 Sep;62:157-69. doi: 10.1016/j.freeradbiomed.2012.09.027. Epub 2012 Oct 5. Review. PubMed PMID: 23044265; PubMed Central PMCID: PMC3573239.
- 89: Temporini C, Pochetti G, Fracchiolla G, Piemontese L, Montanari R, Moaddel R, Laghezza A, Altieri F, Cervoni L, Ubiali D, Prada E, Loiodice F, Massolini G, Calleri E. Open tubular columns containing the immobilized ligand binding domain of peroxisome proliferator-activated receptors α and γ for dual agonists characterization by frontal affinity chromatography with mass spectrometry detection. *J Chromatogr A.* 2013 Apr 5;1284:36-43. doi: 10.1016/j.chroma.2013.01.077. Epub 2013 Feb 16. PubMed PMID: 23466198; PubMed Central PMCID: PMC3618287.
- 90: Travaglini-Allocatelli C. Protein Machineries Involved in the Attachment of Heme to Cytochrome c: Protein Structures and Molecular Mechanisms. *Scientifica (Cairo).* 2013;2013:505714. Epub 2013 Dec 23. Review. PubMed PMID: 24455431; PubMed Central PMCID: PMC3884852.
- 91: Trnková L, Ricci D, Grillo C, Colotti G, Altieri F. Green tea catechins can bind and modify ERp57/PDIA3 activity. *Biochim Biophys Acta.* 2013 Mar;1830(3):2671-82. PubMed PMID: 23671928.
- 92: Trnková L, Ricci D, Grillo C, Colotti G, Altieri F. Green tea catechins can bind and modify ERp57/PDIA3 activity. *Biochim Biophys Acta.* 2013 Mar;1830(3):2671-2682. doi: 10.1016/j.bbagen.2012.11.011. Epub 2012 Nov 28. PubMed PMID: 23201203.
- 93: Urbani A, De Canio M, Palmieri F, Sechi S, Bini L, Castagnola M, Fasano M, Modesti A, Roncada P, Timperio AM, Bonizzi L, Brunori M, Cutruzzolà F, De Pinto

V, Di Ilio C, Federici G, Folli F, Foti S, Gelfi C, Lauro D, Lucacchini A, Magni F, Messana I, Pandolfi PP, Papa S, Pucci P, Sacchetta P; Italian Mt-Hpp Study Group-Italian Proteomics Association (www.itpa.it). The mitochondrial Italian Human Proteome Project initiative (mt-HPP). *Mol Biosyst.* 2013 Aug;9(8):1984-92. doi: 10.1039/c3mb70065h. Epub 2013 May 28. PubMed PMID: 23712443.

94: Vavala E, Mignogna G, Spano F, Stringaro A, Colone M, Sanguinetti M, Maras B, Angiolella L. The cell wall protein Rhd3/Pga29 is over-expressed in *Candida albicans* upon micafungin treatment. *J Chemother.* 2013 Dec;25(6):332-40. doi: 10.1179/1973947813Y.0000000091. Epub 2013 Dec 6. PubMed PMID: 24090751.

95: 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. PubMed PMID: 23860846.

96: Wong CM, Bansal G, Pavlickova L, Marcocci L, Suzuki YJ. Reactive oxygen species and antioxidants in pulmonary hypertension. *Antioxid Redox Signal.* 2013 May 10;18(14):1789-96. doi: 10.1089/ars.2012.4568. Epub 2012 Jul 11. Review. PubMed PMID: 22657091; PubMed Central PMCID: PMC3619148.

97: Wong CM, Marcocci L, Das D, Wang X, Luo H, Zungu-Edmondson M, Suzuki YJ. Mechanism of protein decarbonylation. *Free Radic Biol Med.* 2013 Dec;65:1126-33. doi: 10.1016/j.freeradbiomed.2013.09.005. Epub 2013 Sep 14. PubMed PMID: 24044890; PubMed Central PMCID: PMC3859829.