

## Dipartimento di Scienze Biochimiche "A. Rossi Fanelli" Attività di Ricerca e Pubblicazioni Scientifiche 2011

L'attività di ricerca del Dipartimento di Scienze Biochimiche "A. Rossi Fanelli" nell'anno 2011 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 2011 sono testimoniate da circa 100 pubblicazioni scientifiche:

1: Agostinelli E. Role of polyamines, their analogs and transglutaminases in biological and clinical perspectives. *Amino Acids*. 2012 Feb;42(2-3):397-409. doi: 10.1007/s00726-011-1129-2. Epub 2011 Nov 12. PubMed PMID: 22080207.

2: Agostinelli E, Toninello A, Vianello F, Stevanato R. Do mammalian amine oxidases and the mitochondrial polyamine transporter have similar protein structures? *Amino Acids*. 2012 Feb;42(2-3):725-31. doi: 10.1007/s00726-011-0988-x. Epub 2011 Aug 2. PubMed PMID: 21809073.

3: Angelucci F, Miele AE, Boumis G, Brunori M, Dimastrogiovanni D, Bellelli A. Macromolecular bases of antischistosomal therapy. *Curr Top Med Chem*. 2011;11(16):2012-28. Review. PubMed PMID: 21619508.

4: Anselmi M, Eliseo T, Zanetti-Polzi L, Fullone MR, Fogliano V, Di Nola A, Paci M, Grgurina I. Structure of the lipodepsipeptide syringomycin E in phospholipids and sodium dodecylsulphate micelle studied by circular dichroism, NMR spectroscopy and molecular dynamics. *Biochim Biophys Acta*. 2011 Sep;1808(9):2102-10. doi: 10.1016/j.bbame.2011.04.018. Epub 2011 May 25. PubMed PMID: 21658366.

5: Baiocco P, Ilari A, Ceci P, Orsini S, Gramiccia M, Di Muccio T, Colotti G. Inhibitory Effect of Silver Nanoparticles on Trypanothione Reductase Activity and *Leishmania infantum* Proliferation. *ACS Med Chem Lett*. 2010 Dec 29;2(3):230-3. doi: 10.1021/ml1002629. eCollection 2011 Mar 10. PubMed PMID: 24900299; PubMed Central PMCID: PMC4017975.

6: Bandino A, Battaglia V, Bravoco V, Busletta C, Compagnone A, Cravanzola C, Meli F, Agostinelli E, Parola M, Colombatto S. Chronic exposure to agmatine results in the selection of agmatine-resistant hepatoma cells. *Amino Acids*. 2012 Feb;42(2-3):769-74. doi: 10.1007/s00726-011-0993-0. Epub 2011 Sep 7. Erratum in: *Amino Acids*. 2012 Jun;42(6):2533. Andrea, Bandino [corrected to Bandino, Andrea]; Valentina, Battaglia [corrected to Battaglia, Valentina]; Vittoria, Bravoco [corrected to Bravoco, Vittoria]; Chiara, Busletta [corrected to Busletta, Chiara]; Alessandra, Compagnone [corrected to Compagnone, Alessandra]; Carlo,

Cravanzola [corrected to Cravanzola, Carlo]; Floriana, Meli [corrected to Meli, Floriana]; Enzo, Agostinelli [corrected to Agostinelli, Enzo]; Maurizio, Parola [corrected to Parola, Maurizio]; Sebastiano, Colombatto [corrected to Colombatto, Sebastiano]. PubMed PMID: 21901471.

7: Barbagallo M, Di Martino ML, Marcocci L, Pietrangeli P, De Carolis E, Casalino M, Colonna B, Prosseda G. A new piece of the Shigella Pathogenicity puzzle: spermidine accumulation by silencing of the speG gene [corrected]. PLoS One. 2011;6(11):e27226. doi: 10.1371/journal.pone.0027226. Epub 2011 Nov 10. Erratum in: PLoS One. 2012;7(5): doi/10.1371/annotation/272940da-34b6-4cd7-8794-ecb5df8d7cc2. PubMed PMID: 22102881; PubMed Central PMCID: PMC3213128.

8: Barone E, Mancuso C, Di Domenico F, Sultana R, Murphy MP, Head E, Butterfield DA. Biliverdin reductase-A: a novel drug target for atorvastatin in a dog pre-clinical model of Alzheimer disease. J Neurochem. 2012 Jan;120(1):135-46. doi: 10.1111/j.1471-4159.2011.07538.x. Epub 2011 Nov 9. PubMed PMID: 22004509.

9: Barone E, Cenini G, Di Domenico F, Martin S, Sultana R, Mancuso C, Murphy MP, Head E, Butterfield DA. Long-term high-dose atorvastatin decreases brain oxidative and nitrosative stress in a preclinical model of Alzheimer disease: a novel mechanism of action. Pharmacol Res. 2011 Mar;63(3):172-80. doi: 10.1016/j.phrs.2010.12.007. Epub 2010 Dec 27. PubMed PMID: 21193043; PubMed Central PMCID: PMC3034810.

10: Barone E, Di Domenico F, Cenini G, Sultana R, Cini C, Preziosi P, Perluigi M, Mancuso C, Butterfield DA. Biliverdin reductase--a protein levels and activity in the brains of subjects with Alzheimer disease and mild cognitive impairment. Biochim Biophys Acta. 2011 Apr;1812(4):480-7. doi: 10.1016/j.bbadis.2011.01.005. Epub 2011 Jan 15. PubMed PMID: 21241799; PubMed Central PMCID: PMC3042515.

11: Barone E, Di Domenico F, Cenini G, Sultana R, Coccia R, Preziosi P, Perluigi M, Mancuso C, Butterfield DA. Oxidative and nitrosative modifications of biliverdin reductase-A in the brain of subjects with Alzheimer's disease and amnesic mild cognitive impairment. J Alzheimers Dis. 2011;25(4):623-33. doi: 10.3233/JAD-2011-110092. PubMed PMID: 21483094.

12: Battaglia V, Tibaldi E, Grancara S, Zonta F, Brunati AM, Martinis P, Bragadin M, Grillo MA, Tempera G, Agostinelli E, Toninello A. Effect of peroxides on spermine transport in rat brain and liver mitochondria. Amino Acids. 2012 Feb;42(2-3):741-9. doi: 10.1007/s00726-011-0990-3. Epub 2011 Aug 2. PubMed PMID: 21809072.

13: Bellelli A, Brunori M. Hemoglobin allostery: variations on the theme. Biochim Biophys Acta. 2011 Oct;1807(10):1262-72. doi: 10.1016/j.bbabi.2011.04.004. Epub 2011 May 3. Review. PubMed PMID: 21565157.

14: Bhunia A, Saravanan R, Mohanram H, Mangoni ML, Bhattacharjya S. NMR structures and interactions of temporin-1Ti and temporin-1Tb with lipopolysaccharide micelles: mechanistic insights into outer membrane permeabilization and synergistic activity. J Biol Chem. 2011 Jul 8;286(27):24394-406. doi: 10.1074/jbc.M110.189662. Epub 2011 May 17. PubMed PMID: 21586570; PubMed Central PMCID: PMC3129218.

- 15: Borisov VB, Forte E, Sarti P, Giuffrè A. Catalytic intermediates of cytochrome bd terminal oxidase at steady-state: ferryl and oxy-ferrous species dominate. *Biochim Biophys Acta*. 2011 May;1807(5):503-9. doi: 10.1016/j.bbabi.2011.02.007. Epub 2011 Feb 23. PubMed PMID: 21352800.
- 16: Boumis G, Angelucci F, Bellelli A, Brunori M, Dimastrogiovanni D, Miele AE. Structural and functional characterization of *Schistosoma mansoni* Thioredoxin. *Protein Sci*. 2011 Jun;20(6):1069-76. doi: 10.1002/pro.634. Epub 2011 May 5. PubMed PMID: 21465612; PubMed Central PMCID: PMC3104236.
- 17: Brama M, Politi L, Santini P, Migliaccio S, Scandurra R. Cadmium-induced apoptosis and necrosis in human osteoblasts: role of caspases and mitogen-activated protein kinases pathways. *J Endocrinol Invest*. 2012 Feb;35(2):198-208. doi: 10.3275/7801. Epub 2011 Jun 21. PubMed PMID: 21697648.
- 18: Bramucci E, Milano T, Pascarella S. Genomic distribution and heterogeneity of MocR-like transcriptional factors containing a domain belonging to the superfamily of the pyridoxal-5'-phosphate dependent enzymes of fold type I. *Biochem Biophys Res Commun*. 2011 Nov 11;415(1):88-93. doi: 10.1016/j.bbrc.2011.10.017. Epub 2011 Oct 12. PubMed PMID: 22020104.
- 19: Brunori M. Allostery turns 50: is the vintage yet attractive? *Protein Sci*. 2011 Jul;20(7):1097-9. doi: 10.1002/pro.660. PubMed PMID: 21594946; PubMed Central PMCID: PMC3149181.
- 20: Butterfield DA, Barone E, Di Domenico F, Cenini G, Sultana R, Murphy MP, Mancuso C, Head E. Atorvastatin treatment in a dog preclinical model of Alzheimer's disease leads to up-regulation of haem oxygenase-1 and is associated with reduced oxidative stress in brain. *Int J Neuropsychopharmacol*. 2012 Aug;15(7):981-7. doi: 10.1017/S1461145711001118. Epub 2011 Jul 18. PubMed PMID: 21767440.
- 21: Capuozzo E, Pecci L, Giovannitti F, Baseggio Conrado A, Fontana M. Oxidative and nitrative modifications of enkephalins by human neutrophils: effect of nitroenkephalin on leukocyte functional responses. *Amino Acids*. 2012 Aug;43(2):875-84. doi: 10.1007/s00726-011-1147-0. Epub 2011 Nov 24. PubMed PMID: 22113643.
- 22: Castellani M, Havens J, Kleinschroth T, Millett F, Durham B, Malatesta F, Ludwig B. The acidic domain of cytochrome  $c_1$  in *paracoccus denitrificans*, analogous to the acidic subunits in eukaryotic  $bc_1$  complexes, is not involved in the electron transfer reaction to its native substrate cytochrome  $c(552)$ . *Biochim Biophys Acta*. 2011 Nov;1807(11):1383-9. doi: 10.1016/j.bbabi.2011.08.001. Epub 2011 Aug 11. PubMed PMID: 21856278; PubMed Central PMCID: PMC3171513.
- 23: Ceci P, Forte E, Di Cecca G, Fornara M, Chiancone E. The characterization of *Thermotoga maritima* ferritin reveals an unusual subunit dissociation behavior and efficient DNA protection from iron-mediated oxidative stress. *Extremophiles*. 2011 May;15(3):431-9. doi: 10.1007/s00792-011-0374-3. Epub 2011 Apr 13. PubMed PMID: 21487935.
- 24: Ceci P, Di Cecca G, Falconi M, Oteri F, Zamparelli C, Chiancone E. Effect of the charge distribution along the "ferritin-like" pores of the proteins from the Dps family on the iron incorporation process. *J Biol Inorg Chem*. 2011

Aug;16(6):869-80. doi: 10.1007/s00775-011-0784-9. Epub 2011 May 6. PubMed PMID: 21547575.

25: Coccia C, Rinaldi AC, Luca V, Barra D, Bozzi A, Di Giulio A, Veerman EC, Mangoni ML. Membrane interaction and antibacterial properties of two mildly cationic peptide diastereomers, bombinins H2 and H4, isolated from *Bombina* skin. *Eur Biophys J*. 2011 Apr;40(4):577-88. doi: 10.1007/s00249-011-0681-8. Epub 2011 Feb 17. PubMed PMID: 21327963.

26: Colotti G, Ilari A. Polyamine metabolism in *Leishmania*: from arginine to trypanothione. *Amino Acids*. 2011 Feb;40(2):269-85. doi: 10.1007/s00726-010-0630-3. Epub 2010 May 29. Review. PubMed PMID: 20512387.

27: D'Acquarica I, Cerreto A, Delle Monache G, Subrizi F, Boffi A, Tafi A, Forli S, Botta B. N-linked peptidoresorc[4]arene-based receptors as noncompetitive inhibitors for  $\alpha$ -chymotrypsin. *J Org Chem*. 2011 Jun 3;76(11):4396-407. doi: 10.1021/jo102592f. Epub 2011 May 10. PubMed PMID: 21534559.

28: Daidone F, Florio R, Rinaldo S, Contestabile R, di Salvo ML, Cutruzzolà F, Bossa F, Paiardini A. In silico and in vitro validation of serine hydroxymethyltransferase as a chemotherapeutic target of the antifolate drug pemetrexed. *Eur J Med Chem*. 2011 May;46(5):1616-21. doi: 10.1016/j.ejmech.2011.02.009. Epub 2011 Mar 2. PubMed PMID: 21371789.

29: Daidone I, Magliano A, Di Nola A, Mignogna G, Clarkson MM, Lizzi AR, Oratore A, Mazza F. Conformational study of bovine lactoferricin in membrane-micking conditions by molecular dynamics simulation and circular dichroism. *Biometals*. 2011 Apr;24(2):259-68. doi: 10.1007/s10534-010-9390-5. Epub 2010 Nov 19. PubMed PMID: 21088870.

30: Dalla Via L, Santi S, Di Noto V, Venzo A, Agostinelli E, Calcabrini A, Condello M, Toninello A. Platinum(II) chloride indenyl complexes: electrochemical and biological evaluation. *J Biol Inorg Chem*. 2011 Jun;16(5):695-713. doi: 10.1007/s00775-011-0771-1. Epub 2011 Mar 29. PubMed PMID: 21594772.

31: Di Domenico F, Foppoli C, Coccia R, Perluigi M. Antioxidants in cervical cancer: chemopreventive and chemotherapeutic effects of polyphenols. *Biochim Biophys Acta*. 2012 May;1822(5):737-47. doi: 10.1016/j.bbadis.2011.10.005. Epub 2011 Oct 12. Review. PubMed PMID: 22019724.

32: Di Domenico F, Sultana R, Barone E, Perluigi M, Cini C, Mancuso C, Cai J, Pierce WM, Butterfield DA. Quantitative proteomics analysis of phosphorylated proteins in the hippocampus of Alzheimer's disease subjects. *J Proteomics*. 2011 Jun 10;74(7):1091-103. doi: 10.1016/j.jprot.2011.03.033. Epub 2011 Apr 13. PubMed PMID: 21515431; PubMed Central PMCID: PMC3119855.

33: Di Domenico F, Coccia R, Butterfield DA, Perluigi M. Circulating biomarkers of protein oxidation for Alzheimer disease: expectations within limits. *Biochim Biophys Acta*. 2011 Dec;1814(12):1785-95. doi: 10.1016/j.bbapap.2011.10.001. Epub 2011 Oct 12. Review. PubMed PMID: 22019699.

34: Di Francesco L, Correani V, Fabrizi C, Fumagalli L, Mazzanti M, Maras B, Schininà ME. 14-3-3 $\epsilon$  marks the amyloid-stimulated microglia long-term activation. *Proteomics*. 2012 Jan;12(1):124-34. doi: 10.1002/pmic.201100113. Epub 2011 Dec 9.

PubMed PMID: 22065591.

35: Di Fusco M, Federico R, Boffi A, Macone A, Favero G, Mazzei F. Characterization and application of a diamine oxidase from *Lathyrus sativus* as component of an electrochemical biosensor for the determination of biogenic amines in wine and beer. *Anal Bioanal Chem*. 2011 Aug;401(2):707-16. doi: 10.1007/s00216-011-5131-z. Epub 2011 Jun 5. PubMed PMID: 21644017.

36: di Salvo ML, Contestabile R, Safo MK. Vitamin B(6) salvage enzymes: mechanism, structure and regulation. *Biochim Biophys Acta*. 2011 Nov;1814(11):1597-608. doi: 10.1016/j.bbapap.2010.12.006. Epub 2010 Dec 20. Review. PubMed PMID: 21182989.

37: Droghetti E, Nicoletti FP, Bonamore A, Sciamanna N, Boffi A, Feis A, Smulevich G. The optical spectra of fluoride complexes can effectively probe H-bonding interactions in the distal cavity of heme proteins. *J Inorg Biochem*. 2011 Oct;105(10):1338-43. doi: 10.1016/j.jinorgbio.2011.07.007. Epub 2011 Jul 28. PubMed PMID: 21867665.

38: Fiorillo A, Federico R, Polticelli F, Boffi A, Mazzei F, Di Fusco M, Ilari A, Tavladoraki P. The structure of maize polyamine oxidase K300M mutant in complex with the natural substrates provides a snapshot of the catalytic mechanism of polyamine oxidation. *FEBS J*. 2011 Mar;278(5):809-21. doi: 10.1111/j.1742-4658.2010.08000.x. Epub 2011 Jan 25. PubMed PMID: 21205212.

39: Florio R, di Salvo ML, Vivoli M, Contestabile R. Serine hydroxymethyltransferase: a model enzyme for mechanistic, structural, and evolutionary studies. *Biochim Biophys Acta*. 2011 Nov;1814(11):1489-96. doi: 10.1016/j.bbapap.2010.10.010. Epub 2010 Nov 5. Review. PubMed PMID: 21059411.

40: Fontana M, Blarzino C, Pecci L. Formation of 3-nitrotyrosine by riboflavin photosensitized oxidation of tyrosine in the presence of nitrite. *Amino Acids*. 2012 May;42(5):1857-65. doi: 10.1007/s00726-011-0905-3. Epub 2011 Apr 11. PubMed PMID: 21479936.

41: Frasconi M, Chichiarelli S, Gaucci E, Mazzei F, Grillo C, Chinazzi A, Altieri F. Interaction of ERp57 with calreticulin: Analysis of complex formation and effects of vancomycin. *Biophys Chem*. 2012 Jan;160(1):46-53. doi: 10.1016/j.bpc.2011.09.003. Epub 2011 Sep 17. PubMed PMID: 21996511.

42: Gianni S, Haq SR, Montemiglio LC, Jürgens MC, Engström Å, Chi CN, Brunori M, Jemth P. Sequence-specific long range networks in PSD-95/discs large/ZO-1 (PDZ) domains tune their binding selectivity. *J Biol Chem*. 2011 Aug 5;286(31):27167-75. doi: 10.1074/jbc.M111.239541. Epub 2011 Jun 8. PubMed PMID: 21653701; PubMed Central PMCID: PMC3149310.

43: Giardina G, Castiglione N, Caruso M, Cutruzzolà F, Rinaldo S. The *Pseudomonas aeruginosa* DNR transcription factor: light and shade of nitric oxide-sensing mechanisms. *Biochem Soc Trans*. 2011 Jan;39(1):294-8. doi: 10.1042/BST0390294. PubMed PMID: 21265791.

44: Giardina G, Montioli R, Gianni S, Cellini B, Paiardini A, Voltattorni CB, Cutruzzolà F. Open conformation of human DOPA decarboxylase reveals the mechanism of PLP addition to Group II decarboxylases. *Proc Natl Acad Sci U S A*. 2011 Dec

20;108(51):20514-9. doi: 10.1073/pnas.1111456108. Epub 2011 Dec 5. PubMed PMID: 22143761; PubMed Central PMCID: PMC3251144.

45: Giordano C, Sansone A, Masi A, Masci A, Mosca L, Chiaraluce R, Pasquo A, Consalvi V. Inhibition of amyloid peptide fragment A $\beta$ 25-35 fibrillogenesis and toxicity by N-terminal  $\beta$ -amino acid-containing esapeptides: is taurine moiety essential for in vivo effects? *Chem Biol Drug Des.* 2012 Jan;79(1):30-7. doi: 10.1111/j.1747-0285.2011.01259.x. Epub 2011 Nov 16. PubMed PMID: 21995332.

46: Giuffrè A, Borisov VB, Mastronicola D, Sarti P, Forte E. Cytochrome bd oxidase and nitric oxide: from reaction mechanisms to bacterial physiology. *FEBS Lett.* 2012 Mar 9;586(5):622-9. doi: 10.1016/j.febslet.2011.07.035. Epub 2011 Aug 3. Review. PubMed PMID: 21821033.

47: Grancara S, Battaglia V, Martinis P, Viceconte N, Agostinelli E, Toninello A, Deana R. Mitochondrial oxidative stress induced by Ca<sup>2+</sup> and monoamines: different behaviour of liver and brain mitochondria in undergoing permeability transition. *Amino Acids.* 2012 Feb;42(2-3):751-9. doi: 10.1007/s00726-011-0991-2. Epub 2011 Jul 30. PubMed PMID: 21805134.

48: Grieco P, Luca V, Auriemma L, Carotenuto A, Saviello MR, Campiglia P, Barra D, Novellino E, Mangoni ML. Alanine scanning analysis and structure-function relationships of the frog-skin antimicrobial peptide temporin-1Ta. *J Pept Sci.* 2011 May;17(5):358-65. doi: 10.1002/psc.1350. Epub 2011 Feb 18. PubMed PMID: 21337476.

49: Haq SR, Chi CN, Bach A, Dogan J, Engström Å, Hultqvist G, Karlsson OA, Lundström P, Montemiglio LC, Strømgaard K, Gianni S, Jemth P. Side-chain interactions form late and cooperatively in the binding reaction between disordered peptides and PDZ domains. *J Am Chem Soc.* 2012 Jan 11;134(1):599-605. doi: 10.1021/ja209341w. Epub 2011 Dec 16. PubMed PMID: 22129097.

50: Ilari A, Baiocco P, Messori L, Fiorillo A, Boffi A, Gramiccia M, Di Muccio T, Colotti G. A gold-containing drug against parasitic polyamine metabolism: the X-ray structure of trypanothione reductase from *Leishmania infantum* in complex with auranofin reveals a dual mechanism of enzyme inhibition. *Amino Acids.* 2012 Feb;42(2-3):803-11. doi: 10.1007/s00726-011-0997-9. Epub 2011 Aug 11. PubMed PMID: 21833767; PubMed Central PMCID: PMC3266496.

51: Ilari A, Alaleona F, Petrarca P, Battistoni A, Chiancone E. The X-ray structure of the zinc transporter ZnuA from *Salmonella enterica* discloses a unique triad of zinc-coordinating histidines. *J Mol Biol.* 2011 Jun 17;409(4):630-41. doi: 10.1016/j.jmb.2011.04.036. Epub 2011 Apr 21. PubMed PMID: 21530543.

52: Kaiser A, Khomutov AR, Simonian A, Agostinelli E. A rapid and robust assay for the determination of the amino acid hypusine as a possible biomarker for a high-throughput screening of antimalarials and for the diagnosis and therapy of different diseases. *Amino Acids.* 2012 May;42(5):1651-9. doi: 10.1007/s00726-011-0859-5. Epub 2011 Mar 1. PubMed PMID: 21360085.

53: Keeney JT, Swomley AM, Harris JL, Fiorini A, Mitov MI, Perluigi M, Sultana R, Butterfield DA. Cell cycle proteins in brain in mild cognitive impairment: insights into progression to Alzheimer disease. *Neurotox Res.* 2012

Oct;22(3):220-30. doi: 10.1007/s12640-011-9287-2. Epub 2011 Nov 15. Review. PubMed PMID: 22083458.

54: Macone A, Fontana M, Barba M, Botta B, Nardini M, Ghirga F, Calcaterra A, Pecci L, Matarese RM. Antioxidant properties of aminoethylcysteine ketimine decarboxylated dimer: a review. *Int J Mol Sci.* 2011;12(5):3072-84. doi: 10.3390/ijms12053072. Epub 2011 May 12. PubMed PMID: 21686170; PubMed Central PMCID: PMC3116176.

55: Malgieri G, Zaccaro L, Leone M, Bucci E, Esposito S, Baglivo I, Del Gatto A, Russo L, Scandurra R, Pedone PV, Fattorusso R, Isernia C. Zinc to cadmium replacement in the A. thaliana SUPERMAN Cys<sub>2</sub> His<sub>2</sub> zinc finger induces structural rearrangements of typical DNA base determinant positions. *Biopolymers.* 2011 Nov;95(11):801-10. doi: 10.1002/bip.21680. Epub 2011 May 25. PubMed PMID: 21618209.

56: Mangoni ML, Carotenuto A, Auriemma L, Saviello MR, Campiglia P, Gomez-Monterrey I, Malfi S, Marcellini L, Barra D, Novellino E, Grieco P. Structure-activity relationship, conformational and biological studies of temporin L analogues. *J Med Chem.* 2011 Mar 10;54(5):1298-307. doi: 10.1021/jm1012853. Epub 2011 Feb 14. PubMed PMID: 21319749.

57: Mangoni ML. Host-defense peptides: from biology to therapeutic strategies. *Cell Mol Life Sci.* 2011 Jul;68(13):2157-9. doi: 10.1007/s00018-011-0709-3. Epub 2011 May 17. Review. PubMed PMID: 21584810.

58: Mangoni ML, Shai Y. Short native antimicrobial peptides and engineered ultrashort lipopeptides: similarities and differences in cell specificities and modes of action. *Cell Mol Life Sci.* 2011 Jul;68(13):2267-80. doi: 10.1007/s00018-011-0718-2. Epub 2011 May 15. Review. PubMed PMID: 21573781.

59: Marsango S, Bonaccorsi di Patti MC, Barra D, Miele R. Evidence that prokineticin receptor 2 exists as a dimer in vivo. *Cell Mol Life Sci.* 2011 Sep;68(17):2919-29. doi: 10.1007/s00018-010-0601-6. Epub 2010 Dec 14. Erratum in: *Cell Mol Life Sci.* 2011 Sep;68(17):2931. PubMed PMID: 21161321.

60: Martinis P, Zago L, Maritati M, Battaglia V, Grancara S, Rizzoli V, Agostinelli E, Bragadin M, Toninello A. Interactions of melatonin with mammalian mitochondria. Reducer of energy capacity and amplifier of permeability transition. *Amino Acids.* 2012 May;42(5):1827-37. doi: 10.1007/s00726-011-0903-5. Epub 2011 Apr 8. PubMed PMID: 21476076.

61: Martinis P, Battaglia V, Grancara S, Dalla Via L, Di Noto V, Saccoccio S, Agostinelli E, Bragadin M, Grillo MA, Toninello A. Further characterization of agmatine binding to mitochondrial membranes: involvement of imidazoline I2 receptor. *Amino Acids.* 2012 Feb;42(2-3):761-8. doi: 10.1007/s00726-011-0992-1. Epub 2011 Jul 29. PubMed PMID: 21800257.

62: Mastromarino P, Cacciotti F, Masci A, Mosca L. Antiviral activity of *Lactobacillus brevis* towards herpes simplex virus type 2: role of cell wall associated components. *Anaerobe.* 2011 Dec;17(6):334-6. doi: 10.1016/j.anaerobe.2011.04.022. Epub 2011 May 20. PubMed PMID: 21621625.

63: Mastronicola D, Giuffrè A, Testa F, Mura A, Forte E, Bordi E, Pucillo LP,

Fiori PL, Sarti P. *Giardia intestinalis* escapes oxidative stress by colonizing the small intestine: A molecular hypothesis. *IUBMB Life*. 2011 Jan;63(1):21-5. doi: 10.1002/iub.409. Epub 2011 Jan 13. PubMed PMID: 21280173.

64: Mazzola L, Bemporad E, Misiano C, Pepe F, Santini P, Scandurra R. Surface analysis and osteoblasts response of a titanium oxi-carbide film deposited on titanium by ion plating plasma assisted (IPPA). *J Nanosci Nanotechnol*. 2011 Oct;11(10):8754-62. PubMed PMID: 22400255.

65: Montanari A, De Luca C, Di Micco P, Morea V, Frontali L, Francisci S. Structural and functional role of bases 32 and 33 in the anticodon loop of yeast mitochondrial tRNA<sup>Leu</sup>. *RNA*. 2011 Nov;17(11):1983-96. doi: 10.1261/rna.2878711. Epub 2011 Sep 13. PubMed PMID: 21914842; PubMed Central PMCID: PMC3198592.

66: Montioli R, Fargue S, Lewin J, Zamparelli C, Danpure CJ, Borri Voltattorni C, Cellini B. The N-terminal extension is essential for the formation of the active dimeric structure of liver peroxisomal alanine:glyoxylate aminotransferase. *Int J Biochem Cell Biol*. 2012 Mar;44(3):536-46. doi: 10.1016/j.biocel.2011.12.007. Epub 2011 Dec 19. PubMed PMID: 22198249.

67: Morrone A, Giri R, Toofanny RD, Travaglini-Allocatelli C, Brunori M, Daggett V, Gianni S. GB1 is not a two-state folder: identification and characterization of an on-pathway intermediate. *Biophys J*. 2011 Oct 19;101(8):2053-60. doi: 10.1016/j.bpj.2011.09.013. PubMed PMID: 22004760; PubMed Central PMCID: PMC3192981.

68: Morrone A, McCully ME, Bryan PN, Brunori M, Daggett V, Gianni S, Travaglini-Allocatelli C. The denatured state dictates the topology of two proteins with almost identical sequence but different native structure and function. *J Biol Chem*. 2011 Feb 4;286(5):3863-72. doi: 10.1074/jbc.M110.155911. Epub 2010 Nov 29. PubMed PMID: 21118804; PubMed Central PMCID: PMC3030387.

69: Mosca L, Rotili D, Tempera I, Masci A, Fontana M, Chiaraluce R, Mastromarino P, d'Erme M, Mai A. Biological effects of MC2050, a quinazoline-based PARP-1 inhibitor, in human neuroblastoma and EBV-positive Burkitt's lymphoma cells. *ChemMedChem*. 2011 Apr 4;6(4):606-11. doi: 10.1002/cmdc.201000536. Epub 2011 Mar 1. PubMed PMID: 21365766.

70: Natella F, Maccone A, Ramberti A, Forte M, Mattivi F, Matarese RM, Scaccini C. Red wine prevents the postprandial increase in plasma cholesterol oxidation products: a pilot study. *Br J Nutr*. 2011 Jun 28;105(12):1718-23. doi: 10.1017/S0007114510005544. Epub 2011 Feb 4. PubMed PMID: 21294933.

71: Nicoletti FP, Droghetti E, Boechi L, Bonamore A, Sciamanna N, Estrin DA, Feis A, Boffi A, Smulevich G. Fluoride as a probe for H-bonding interactions in the active site of heme proteins: the case of *Thermobifida fusca* hemoglobin. *J Am Chem Soc*. 2011 Dec 28;133(51):20970-80. doi: 10.1021/ja209312k. Epub 2011 Dec 5. PubMed PMID: 22091531.

72: Pagnini C, Corleto VD, Mangoni ML, Pillozzi E, Torre MS, Marchese R, Carnuccio A, Giulio ED, Delle Fave G. Alteration of local microflora and  $\alpha$ -defensins hyper-production in colonic adenoma mucosa. *J Clin Gastroenterol*. 2011 Aug;45(7):602-10. doi: 10.1097/MCG.0b013e31820abf29. PubMed PMID: 21346603.



73: Palermo R, Checquolo S, Giovenco A, Grazioli P, Kumar V, Campese AF, Giorgi A, Napolitano M, Canettieri G, Ferrara G, Schininà ME, Maroder M, Frati L, Gulino A, Vacca A, Screpanti I. Acetylation controls Notch3 stability and function in T-cell leukemia. *Oncogene*. 2012 Aug 16;31(33):3807-17. doi: 10.1038/onc.2011.533. Epub 2011 Nov 28. PubMed PMID: 22120716.

74: Palladino P, Scaglione GL, Arcovito A, Maria Vitale R, Amodeo P, Vallone B, Brunori M, Benedetti E, Rossi F. Neuroglobin-prion protein interaction: what's the function? *J Pept Sci*. 2011 May;17(5):387-91. doi: 10.1002/psc.1333. Epub 2011 Feb 4. PubMed PMID: 21294227.

75: Papa S, Brunori M. Allosteric cooperativity in respiratory proteins. *Biochim Biophys Acta*. 2011 Oct;1807(10):1251-2. doi: 10.1016/j.bbabi.2011.05.010. Epub 2011 May 13. PubMed PMID: 21605543.

76: Paulis D, Maras B, Schininà ME, di Francesco L, Principe S, Galeno R, Abdel-Haq H, Cardone F, Florio T, Pocchiari M, Mazzanti M. The pathological prion protein forms ionic conductance in lipid bilayer. *Neurochem Int*. 2011 Aug;59(2):168-74. doi: 10.1016/j.neuint.2011.04.008. Epub 2011 Jun 6. PubMed PMID: 21683106.

77: Perli E, Giordano C, Tuppen HA, Montopoli M, Montanari A, Orlandi M, Pisano A, Catanzaro D, Caparrotta L, Musumeci B, Autore C, Morea V, Di Micco P, Campese AF, Leopizzi M, Gallo P, Francisci S, Frontali L, Taylor RW, d'Amati G. Isoleucyl-tRNA synthetase levels modulate the penetrance of a homoplasmic m.4277T>C mitochondrial tRNA(Ile) mutation causing hypertrophic cardiomyopathy. *Hum Mol Genet*. 2012 Jan 1;21(1):85-100. doi: 10.1093/hmg/ddr440. Epub 2011 Sep 26. PubMed PMID: 21945886.

78: Perluigi M, Butterfield DA. Oxidative Stress and Down Syndrome: A Route toward Alzheimer-Like Dementia. *Curr Gerontol Geriatr Res*. 2012;2012:724904. doi: 10.1155/2012/724904. Epub 2011 Nov 29. PubMed PMID: 22203843; PubMed Central PMCID: PMC3235450.

79: Perluigi M, Butterfield DA. The identification of protein biomarkers for oxidative stress in Down syndrome. *Expert Rev Proteomics*. 2011 Aug;8(4):427-9. doi: 10.1586/EPR.11.36. Review. PubMed PMID: 21819296.

80: Perluigi M, di Domenico F, Fiorini A, Cocciolo A, Giorgi A, Foppoli C, Butterfield DA, Giorlandino M, Giorlandino C, Schininà ME, Coccia R. Oxidative stress occurs early in Down syndrome pregnancy: A redox proteomics analysis of amniotic fluid. *Proteomics Clin Appl*. 2011 Apr;5(3-4):167-78. doi: 10.1002/prca.201000121. Epub 2011 Feb 24. PubMed PMID: 21360684.

81: Perugia G, Ciccariello M, Pirolli F, Chinazzi A, Teodonio S, Borgoni G, Croce F, Liberti M. Paraurethral leiomyoma. *Urology*. 2012 Apr;79(4):e51-2. doi: 10.1016/j.urology.2011.08.004. Epub 2011 Oct 19. PubMed PMID: 22014968.

82: Pino S, Costanzo G, Giorgi A, Di Mauro E. Sequence complementarity-driven nonenzymatic ligation of RNA. *Biochemistry*. 2011 Apr 12;50(14):2994-3003. doi: 10.1021/bi101981z. Epub 2011 Mar 16. PubMed PMID: 21361363.

83: Porcelli L, Gilardi F, Laghezza A, Piemontese L, Mitro N, Azzariti A, Altieri F, Cervoni L, Fracchiolla G, Giudici M, Guerrini U, Lavecchia A, Montanari R, Di

Giovanni C, Paradiso A, Pochetti G, Simone GM, Tortorella P, Crestani M, Loiodice F. Synthesis, characterization and biological evaluation of ureidofibrate-like derivatives endowed with peroxisome proliferator-activated receptor activity. *J Med Chem*. 2012 Jan 12;55(1):37-54. doi: 10.1021/jm201306q. Epub 2011 Dec 2. PubMed PMID: 22081932.

84: Radoul M, Bykov D, Rinaldo S, Cutruzzolà F, Neese F, Goldfarb D. Dynamic hydrogen-bonding network in the distal pocket of the nitrosyl complex of *Pseudomonas aeruginosa* cd1 nitrite reductase. *J Am Chem Soc*. 2011 Mar 9;133(9):3043-55. doi: 10.1021/ja109688w. Epub 2011 Feb 10. PubMed PMID: 21309511.

85: Rinaldo S, Giardina G, Castiglione N, Stelitano V, Cutruzzolà F. The catalytic mechanism of *Pseudomonas aeruginosa* cd1 nitrite reductase. *Biochem Soc Trans*. 2011 Jan;39(1):195-200. doi: 10.1042/BST0390195. PubMed PMID: 21265772.

86: Rinaldo S, Sam KA, Castiglione N, Stelitano V, Arcovito A, Brunori M, Allen JW, Ferguson SJ, Cutruzzolà F. Observation of fast release of NO from ferrous d<sub>1</sub> haem allows formulation of a unified reaction mechanism for cytochrome cd<sub>1</sub> nitrite reductases. *Biochem J*. 2011 Apr 1;435(1):217-25. doi: 10.1042/BJ20101615. PubMed PMID: 21244362.

87: Robin S, Arese M, Forte E, Sarti P, Giuffrè A, Soulimane T. A sulfite respiration pathway from *Thermus thermophilus* and the key role of newly identified cytochrome c<sub>550</sub>. *J Bacteriol*. 2011 Aug;193(15):3988-97. doi: 10.1128/JB.05186-11. Epub 2011 Jun 10. PubMed PMID: 21665981; PubMed Central PMCID: PMC3147519.

88: Saccoccia F, Angelucci F, Boumis G, Brunori M, Miele AE, Williams DL, Bellelli A. On the mechanism and rate of gold incorporation into thiol-dependent flavoreductases. *J Inorg Biochem*. 2012 Mar;108:105-11. doi: 10.1016/j.jinorgbio.2011.11.005. Epub 2011 Nov 27. PubMed PMID: 22166353; PubMed Central PMCID: PMC3396563.

89: Sarti P, Forte E, Mastronicola D, Giuffrè A, Arese M. Cytochrome c oxidase and nitric oxide in action: molecular mechanisms and pathophysiological implications. *Biochim Biophys Acta*. 2012 Apr;1817(4):610-9. doi: 10.1016/j.bbabi.2011.09.002. Epub 2011 Sep 14. Review. PubMed PMID: 21939634.

90: Siglioccolo A, Paiardini A, Piscitelli M, Pascarella S. Structural adaptation of extreme halophilic proteins through decrease of conserved hydrophobic contact surface. *BMC Struct Biol*. 2011 Dec 22;11:50. doi: 10.1186/1472-6807-11-50. PubMed PMID: 22192175; PubMed Central PMCID: PMC3293032.

91: Singh R, Spyraakis 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.

92: Spadaccio C, Di Domenico F, Perluigi M, Lusini M, Giorgi A, Schininà ME, Blarmino C, Covino E, Chello M, Coccia R. Serum proteomics in patients with diagnosis of abdominal aortic aneurysm. *Cardiovasc Pathol*. 2012 Jul-Aug;21(4):283-90. doi: 10.1016/j.carpath.2011.09.008. Epub 2011 Nov 21. PubMed PMID: 22104004.

93: Spadaccio C, Rainer A, Trombetta M, Centola M, Lusini M, Chello M, Covino E, De Marco F, Coccia R, Toyoda Y, Genovese JA. A G-CSF functionalized scaffold for stem cells seeding: a differentiating device for cardiac purposes. *J Cell Mol Med*. 2011 May;15(5):1096-108. doi: 10.1111/j.1582-4934.2010.01100.x. Epub 2010 Jun 1. PubMed PMID: 20518852.

94: Stevanato R, Cardillo S, Braga M, De Iulii A, Battaglia V, Toninello A, Agostinelli E, Vianello F. Preliminary kinetic characterization of a copper amine oxidase from rat liver mitochondria matrix. *Amino Acids*. 2011 Feb;40(2):713-20. doi: 10.1007/s00726-010-0708-y. Epub 2010 Aug 5. Erratum in: *Amino Acids*. 2012 Jun;42(6):2531. PubMed PMID: 20686801.

95: Sultana R, Robinson RA, Di Domenico F, Abdul HM, St Clair DK, Markesbery WR, Cai J, Pierce WM, Butterfield DA. Proteomic identification of specifically carbonylated brain proteins in APP(NLh)/APP(NLh) × PS-1(P264L)/PS-1(P264L) human double mutant knock-in mice model of Alzheimer disease as a function of age. *J Proteomics*. 2011 Oct 19;74(11):2430-40. doi: 10.1016/j.jprot.2011.06.015. Epub 2011 Jun 25. PubMed PMID: 21726674; PubMed Central PMCID: PMC3199338.

96: Tabbene O, Kalai L, Ben Slimene I, Karkouch I, Elkahoui S, Gharbi A, Cosette P, Mangoni ML, Jouenne T, Limam F. Anti-candida effect of bacillomycin D-like lipopeptides from *Bacillus subtilis* B38. *FEMS Microbiol Lett*. 2011 Mar;316(2):108-14. doi: 10.1111/j.1574-6968.2010.02199.x. Epub 2011 Jan 13. PubMed PMID: 21204933.

97: Tavladoraki P, Cona A, Federico R, Tempera G, Viceconte N, Saccoccio S, Battaglia V, Toninello A, Agostinelli E. Polyamine catabolism: target for antiproliferative therapies in animals and stress tolerance strategies in plants. *Amino Acids*. 2012 Feb;42(2-3):411-26. doi: 10.1007/s00726-011-1012-1. Epub 2011 Aug 28. Review. PubMed PMID: 21874532.

98: Testa F, Mastronicola D, Cabelli DE, Bordi E, Pucillo LP, Sarti P, Saraiva LM, Giuffrè A, Teixeira M. The superoxide reductase from the early diverging eukaryote *Giardia intestinalis*. *Free Radic Biol Med*. 2011 Oct 15;51(8):1567-74. doi: 10.1016/j.freeradbiomed.2011.07.017. Epub 2011 Jul 29. PubMed PMID: 21839165.

99: Turano C, Gaucci E, Grillo C, Chichiarelli S. ERp57/GRP58: a protein with multiple functions. *Cell Mol Biol Lett*. 2011 Dec;16(4):539-63. doi: 10.2478/s11658-011-0022-z. Epub 2011 Aug 11. Review. PubMed PMID: 21837552.

100: Valente S, Tomassi S, Tempera G, Saccoccio S, Agostinelli E, Mai A. Novel reversible monoamine oxidase A inhibitors: highly potent and selective 3-(1H-pyrrol-3-yl)-2-oxazolidinones. *J Med Chem*. 2011 Dec 8;54(23):8228-32. doi: 10.1021/jm201011x. Epub 2011 Nov 7. PubMed PMID: 22017497.

101: Vascotto C, Bisetto E, Li M, Zeef LA, D'Ambrosio C, Domenis R, Comelli M, Delneri D, Scaloni A, Altieri F, Mavelli I, Quadrifoglio F, Kelley MR, Tell G. Knock-in reconstitution studies reveal an unexpected role of Cys-65 in regulating APE1/Ref-1 subcellular trafficking and function. *Mol Biol Cell*. 2011 Oct;22(20):3887-901. doi: 10.1091/mbc.E11-05-0391. Epub 2011 Aug 24. PubMed PMID: 21865600; PubMed Central PMCID: PMC3192867.

102: Vollaro S, Landi D, Di Girolamo M, Passarelli F, Rossini PM, Bellelli A, Lupoi D. The diagnosis challenge of cerebral amyloid angiopathy: case series. *Amyloid*. 2011 Jun;18 Suppl 1:211-3. doi: 10.3109/13506129.2011.574354079. Erratum in: *Amyloid*. 2011 Jun;18 Suppl 1:213. PubMed PMID: 21838491.

103: Yu Z, Bekker M, Tramonti A, Cook GM, van Ulsen P, Scheffers DJ, de Mattos JT, De Biase D, Luirink J. Activators of the glutamate-dependent acid resistance system alleviate deleterious effects of YidC depletion in *Escherichia coli*. *J Bacteriol*. 2011 Mar;193(6):1308-16. doi: 10.1128/JB.01209-10. Epub 2011 Jan 7. PubMed PMID: 21216990; PubMed Central PMCID: PMC3067629.