

Dipartimento di Scienze Biochimiche "A. Rossi Fanelli" Attività di Ricerca e Pubblicazioni Scientifiche 2012

L'attività di ricerca del Dipartimento di Scienze Biochimiche "A. Rossi Fanelli" nell'anno 2012 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 2012 sono testimoniate da oltre 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: Angelaccio S, Florio R, Consalvi V, Festa G, Pascarella S. Serine Hydroxymethyltransferase from the Cold Adapted Microorganism *Psychromonas ingrahamii*: A Low Temperature Active Enzyme with Broad Substrate Specificity. *Int J Mol Sci*. 2012;13(2):1314-26. doi: 10.3390/ijms13021314. Epub 2012 Jan 25. PubMed PMID: 22408393; PubMed Central PMCID: PMC3291962.

4: Arese M, Magnifico MC, Mastronicola D, Altieri F, Grillo C, Blanck TJ, Sarti P. Nanomolar melatonin enhances nNOS expression and controls HaCaT-cells bioenergetics. *IUBMB Life*. 2012 Mar;64(3):251-8. doi: 10.1002/iub.603. Epub 2012 Jan 23. PubMed PMID: 22271455.

5: 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.

- 6: Barba M, Sobolev AP, Zobnina V, Bonaccorsi di Patti MC, Cervoni L, Spiezia MC, Schininà ME, Pietraforte D, Mannina L, Musci G, Polticelli F. Cupricyclins, novel redox-active metallopeptides based on conotoxins scaffold. *PLoS One*. 2012;7(2):e30739. doi: 10.1371/journal.pone.0030739. Epub 2012 Feb 3. PubMed PMID: 22319584; PubMed Central PMCID: PMC3272027.
- 7: Barone E, Cenini G, Sultana R, Di Domenico F, Fiorini A, Perluigi M, Noel T, Wang C, Mancuso C, St Clair DK, Butterfield DA. Lack of p53 decreases basal oxidative stress levels in the brain through upregulation of thioredoxin-1, biliverdin reductase-A, manganese superoxide dismutase, and nuclear factor kappa-B. *Antioxid Redox Signal*. 2012 Jun 15;16(12):1407-20. doi: 10.1089/ars.2011.4124. Epub 2012 Feb 21. PubMed PMID: 22229939; PubMed Central PMCID: PMC3329952.
- 8: Barone E, Di Domenico F, Sultana R, Coccia R, Mancuso C, Perluigi M, Butterfield DA. Heme oxygenase-1 posttranslational modifications in the brain of subjects with Alzheimer disease and mild cognitive impairment. *Free Radic Biol Med*. 2012 Jun 1-15;52(11-12):2292-301. doi: 10.1016/j.freeradbiomed.2012.03.020. Epub 2012 Apr 17. PubMed PMID: 22549002; PubMed Central PMCID: PMC3377854.
- 9: 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.
- 10: Basciani S, Watanabe M, Mariani S, Passeri M, Persichetti A, Fiore D, Scotto d'Abusco A, Caprio M, Lenzi A, Fabbri A, Gnassi L. Hypogonadism in a patient with two novel mutations of the luteinizing hormone β -subunit gene expressed in a compound heterozygous form. *J Clin Endocrinol Metab*. 2012 Sep;97(9):3031-8. doi: 10.1210/jc.2012-1986. Epub 2012 Jun 21. PubMed PMID: 22723313.
- 11: 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.
- 12: Bertollini C, Murana E, Mosca L, D'Erme M, Scala F, Francioso A, Catalano M, Limatola C, Bregestovski P, Di Angelantonio S, Ragozzino D. Transient increase in neuronal chloride concentration by neuroactive aminoacids released from glioma cells. *Front Mol Neurosci*. 2012 Nov 26;5:100. doi: 10.3389/fnmol.2012.00100. eCollection 2012. PubMed PMID: 23189038; PubMed Central PMCID: PMC3505843.
- 13: Boumis G, Giardina G, Angelucci F, Bellelli A, Brunori M, Dimastrogiovanni D, Saccoccia F, Miele AE. Crystal structure of Plasmodium falciparum thioredoxin reductase, a validated drug target. *Biochem Biophys Res Commun*. 2012 Sep 7;425(4):806-11. doi: 10.1016/j.bbrc.2012.07.156. Epub 2012 Aug 6. PubMed PMID: 22889878.
- 14: 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.

- 15: Bramucci E, Paiardini A, Bossa F, Pascarella S. PyMod: sequence similarity searches, multiple sequence-structure alignments, and homology modeling within PyMOL. *BMC Bioinformatics*. 2012 Mar 28;13 Suppl 4:S2. doi: 10.1186/1471-2105-13-S4-S2. PubMed PMID: 22536966; PubMed Central PMCID: PMC3303726.
- 16: Brunori M. The Bohr effect before Perutz. *Biochem Mol Biol Educ*. 2012 Sep-Oct;40(5):297-9. doi: 10.1002/bmb.20629. Epub 2012 Aug 1. PubMed PMID: 22987550.
- 17: Brunori M, Gianni S, Giri R, Morrone A, Travaglini-Allocatelli C. Morphogenesis of a protein: folding pathways and the energy landscape. *Biochem Soc Trans*. 2012 Apr;40(2):429-32. doi: 10.1042/BST20110683. Review. PubMed PMID: 22435825.
- 18: Butterfield DA, Perluigi M, Reed T, Muharib T, Hughes CP, Robinson RA, Sultana R. Redox proteomics in selected neurodegenerative disorders: from its infancy to future applications. *Antioxid Redox Signal*. 2012 Dec 1;17(11):1610-55. Epub 2012 Jan 18. Review. PubMed PMID: 22115501; PubMed Central PMCID: PMC3448942.
- 19: 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.
- 20: Calinescu C, Mondovi B, Federico R, Ispas-Szabo P, Mateescu MA. Carboxymethyl starch: Chitosan monolithic matrices containing diamine oxidase and catalase for intestinal delivery. *Int J Pharm*. 2012 May 30;428(1-2):48-56. doi: 10.1016/j.ijpharm.2012.02.032. Epub 2012 Mar 3. PubMed PMID: 22402476.
- 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: Castiglione N, Rinaldo S, Giardina G, Stelitano V, Cutruzzolà F. Nitrite and nitrite reductases: from molecular mechanisms to significance in human health and disease. *Antioxid Redox Signal*. 2012 Aug 15;17(4):684-716. doi: 10.1089/ars.2011.4196. Epub 2012 Mar 16. Review. PubMed PMID: 22304560.
- 23: Cellini B, Oppici E, Paiardini A, Montioli R. Molecular insights into primary hyperoxaluria type 1 pathogenesis. *Front Biosci (Landmark Ed)*. 2012 Jan 1;17:621-34. Review. PubMed PMID: 22201765.
- 24: Chi CN, Bach A, Strømgaard K, Gianni S, Jemth P. Ligand binding by PDZ domains. *Biofactors*. 2012 Sep-Oct;38(5):338-48. doi: 10.1002/biof.1031. Epub 2012 Jun 7. Review. PubMed PMID: 22674855.

25: Chi CN, Haq SR, Rinaldo S, Dogan J, Cutruzzolà F, Engström Å, Gianni S, Lundström P, Jemth P. Interactions outside the boundaries of the canonical binding groove of a PDZ domain influence ligand binding. *Biochemistry*. 2012 Nov 6;51(44):8971-9. doi: 10.1021/bi300792h. Epub 2012 Oct 23. PubMed PMID: 23046383.

26: Cocciolo A, Di Domenico F, Coccia R, Fiorini A, Cai J, Pierce WM, Mecocci P, Butterfield DA, Perluigi M. Decreased expression and increased oxidation of plasma haptoglobin in Alzheimer disease: Insights from redox proteomics. *Free Radic Biol Med*. 2012 Nov 15;53(10):1868-76. doi: 10.1016/j.freeradbiomed.2012.08.596. Epub 2012 Sep 7. PubMed PMID: 23000119.

27: Colotti G, Ilari A, Boffi A, Morea V. Metals and Metal derivatives in Medicine. *Mini Rev Med Chem*. 2012 Apr 17. [Epub ahead of print] PubMed PMID: 22512556.

28: Costanzo G, Saladino R, Botta G, Giorgi A, Scipioni A, Pino S, Di Mauro E. Generation of RNA molecules by a base-catalysed click-like reaction. *Chembiochem*. 2012 May 7;13(7):999-1008. doi: 10.1002/cbic.201200068. Epub 2012 Mar 30. PubMed PMID: 22474011.

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30: De Biase D, Pennacchietti E. Glutamate decarboxylase-dependent acid resistance in orally acquired bacteria: function, distribution and biomedical implications of the gadBC operon. *Mol Microbiol*. 2012 Nov;86(4):770-86. doi: 10.1111/mmi.12020. Epub 2012 Sep 20. PubMed PMID: 22995042.

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33: De Marco F, Bucaj E, Foppoli C, Fiorini A, Blarzino C, Filipi K, Giorgi A, Schininà ME, Di Domenico F, Coccia R, Butterfield DA, Perluigi M. Oxidative stress in HPV-driven viral carcinogenesis: redox proteomics analysis of HPV-16 dysplastic and neoplastic tissues. *PLoS One*. 2012;7(3):e34366. doi: 10.1371/journal.pone.0034366. Epub 2012 Mar 28. PubMed PMID: 22470562; PubMed Central PMCID: PMC3314612.

34: Di Domenico F, Casalena G, Jia J, Sultana R, Barone E, Cai J, Pierce WM, Cini C, Mancuso C, Perluigi M, Davis CM, Alkayed NJ, Butterfield DA. Sex differences in brain proteomes of neuron-specific STAT3-null mice after cerebral ischemia/reperfusion. *J Neurochem*. 2012 May;121(4):680-92. doi:

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