

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.

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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.

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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.

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