

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II  
Scuola Politecnica e delle Scienze di Base  
Dipartimento di Biologia



Curriculum Vitae - Anna Di Cosmo

**Full Professor of Zoology, Department of Biology. University of Naples “Federico II”,  
Complesso Monte S. Angelo, Via Cinthia, 80126, Napoli - Italy**

**e-mail:**

**phone number:**

**Education and training**

Bachelor in Biological Sciences, University of Naples “Federico II”  
Specialization in Microbiology, at the Faculty of Medicine, Universtà di Napoli Federico II  
Training in Immunohistochemistry London at the Hammersmith Hospital.  
Pearce’s Group

**Academic Position**

**Full Professor of Zoology**, University of Naples “Federico II”

**Professional experience**

**Visiting researcher:** Centre for Molecular Biology and Neuroscience (CMBN) & Department of Anatomy, Institute of Basic Medical Sciences (IMB) University of Oslo Lab Group Jon Storm-Mathisen (1996).

**Visiting researcher:** Centro Oceanográfico de Vigo (IEO) Vigo, Spain , Lab Group Dott. Jose Iglesias Estevez (2000-2002)

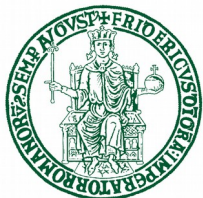
**Visiting professor:** University Lancashire, Department of Biology, Lab Group Prof. William Winlow (2004)

**Visiting professor** Veterinary School University Liverpool, Lab Group Prof. Richard Morris (2005)

**Visiting professor** University Kuopio Finland, Lab Group Dott. Japo Jussila (2007)

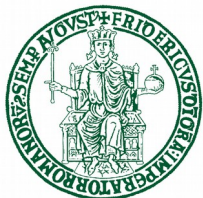
**Visiting professor** Dept. Cell Biology & Anatomy Cumming School of Medicine University of Calgary Lab Group Prof. Naweed Syed (2009)

**Visiting professor** University of Florida – department of neuroscience , College medicine – The Whitney Laboratory for marine Bioscience , St. Augustine, Fl Group Prof. Leonid Moroz (2016)



## Publications

1. Maione, A.; de Alteriis, E.; Carraturo, F.; Galdiero, S.; Falanga, A.; Guida, M.; Di Cosmo, A.; Maselli, V.; Galdiero, E. The Membrantropic Peptide gH625 to Combat Mixed *Candida albicans/Klebsiella pneumoniae* Biofilm: Correlation between In Vitro Anti-Biofilm Activity and In Vivo Antimicrobial Protection. *J Fungi (Basel)* 2021, 7, doi:10.3390/jof7010026.
2. Maselli V, Galdiero E, Salzano AM, Scaloni A, Maione A, Falanga A, Naviglio D, Guida M, Di Cosmo A, Galdiero S (2020a) OctoPartenopin: Identification and Preliminary Characterization of a Novel Antimicrobial Peptide from the Suckers of *Octopus vulgaris*. *Mar Drugs* 18
3. Maselli V, Polese G, Al-Soudy AS, Buglione M, Di Cosmo A (2020b) Cognitive Stimulation Induces Differential Gene Expression in *Octopus vulgaris*: The Key Role of Protocadherins. *Biology (Basel)* 9
4. Scandurra A, Pinelli C, Fierro B, Di Cosmo A, D'Aniello B (2020) Multimodal signaling in the visuo-acoustic mismatch paradigm: similarities between dogs and children in the communicative approach. *Anim Cogn* 23: 833-841
5. Winters GC, Polese G, Di Cosmo A, Moroz LL (2020) Mapping of neuropeptide Y expression in *Octopus* brains. *Journal of Morphology* 281: 790-801
6. Zupo V, Scibelli S, Mutalipassi M, Ruocco N, Esposito F, Macina A, Polese G, Di Cosmo A, Costantini M (2020) Coupling feeding activity, growth rates and molecular data shows dietetic needs of *Ciona robusta* (Ascidiacea, Phlebobranchia) in automatic culture plants. *Scientific Reports* 10
7. Coppola, F., A. Bessa, B. Henriques, T. Russo, A. Soares, E. Figueira, P. Marques, G. Polese, A. Di Cosmo, E. Pereira & R. Freitas, 2020. Oxidative stress, metabolic and histopathological alterations in mussels exposed to remediated seawater by GO-PEI after contamination with mercury. *Comparative biochemistry and physiology Part A, Molecular & integrative physiology* 243:110674 doi:10.1016/j.cbpa.2020.110674.
8. Maselli, V., A. S. Al-Soudy, M. Buglione, M. Aria, G. Polese & A. Di Cosmo, 2020. Sensorial Hierarchy in *Octopus vulgaris*'s Food Choice: Chemical vs. Visual. *Animals (Basel)* 10(3) doi:10.3390/ani10030457.
9. Di Cosmo A., Paolucci M., Maselli V. (2020) Hormones May Shape Sexual Behavior in Cephalopods. In: *Advances in Invertebrate (Neuro)Endocrinology (2-volume set) A Collection of Reviews in the Post- Genomic Era*. Editors: Saleuddin S., Lange A.B., Orchard I. Apple Academic Press. ISBN: 9781771888097.
10. Buglione M, Petrelli S, Maselli V, Trapanese M, Salvemini M, Aceto S, Di Cosmo A, Fulgione D (2019) Fixation of genetic variation and optimization of gene expression: The speed of evolution in isolated lizard populations undergoing Reverse Island Syndrome. *PlosOne*, <https://doi.org/10.1371/journal.pone.0224607>
11. D'Aniello, B, Di Cosmo, A, Scandurra, A, Pinelli, C (2019) Mosaic and Concerted Brain Evolution: The Contribution of Microscopic Comparative Neuroanatomy in Lower Vertebrates. *Frontiers in Neuroanatomy*, 13,(25)
12. Winlow, W., Di Cosmo, A. (2019) Editorial: Sentience, Pain, and Anesthesia in Advanced Invertebrates. *Frontiers in Physiology*, 10(6)
13. Di Cosmo A., Maselli V., and Polese G. (2018). *Octopus vulgaris*: An Alternative in



Evolution. Results and Problems in Cell Differentiation 65, 585-598. Book Chapter in "Marine Organisms as Model Systems in Biology and Medicine"; Publisher: Springer Verlag. ISBN 978-3-319-92486-1.

14. Zupo, V., Glaviano, F., Paolucci, M., Ruocco, N., Polese, G., Di Cosmo, A., Costantini, M. & Mutalipassi, M. 2019, "Roe enhancement of *Paracentrotus lividus*: Nutritional effects of fresh and formulated diets", *Aquaculture Nutrition*, vol. 25, no. 1, pp. 26-38.

15. Scandurra, A., Alterisio, A., Di Cosmo, A., D'Ambrosio, A. & D'Aniello, B. 2019, "Ovariectomy impairs socio-cognitive functions in dogs", *Animals*, vol. 9, no. 2.

16. Pinto, J., Costa, M., Leite, C., Borges, C., Coppola, F., Henriques, B., Monteiro, R., Russo, T., Di Cosmo, A., Soares, A.M.V.M., Polese, G., Pereira, E. & Freitas, R. 2019, "Ecotoxicological effects of lanthanum in *Mytilus galloprovincialis*: Biochemical and histopathological impacts", *Aquatic Toxicology*, , pp. 181-192.

17. Juárez OE, López-Galindo L, Pérez-Carrasco L, Lago-Lestón A, Rosas C, Di Cosmo A, et al. (2019) *Octopus maya* white body show sex-specific transcriptomic profiles during the reproductive phase, with high differentiation in signaling pathways. *PLoS ONE* 14(5): e0216982.

18. Magliozzi, L., Maselli, V., Almada, F., Di Cosmo, A., Mollo, E., & Polese, G. (2019). Effect of the algal alkaloid caulerpin on neuropeptide Y (NPY) expression in the central nervous system (CNS) of *Diplodus sargus*. *Journal of Comparative Physiology. a, Neuroethology, Sensory, Neural, and Behavioral Physiology*. DOI: 10.1007/s00359-019-01322-8.

19. Polese G., Semprucci F., Campoli L., Maselli V., Ribera d'Alcalà M., Balsamo M., Di Cosmo A. (2018) Meiofaunal assemblages of the bay of Nisida and the environmental status of the Phlegraean area (Naples, Southern Italy). *Marine Biodiversity*, 48 (1): 127-137. DOI: 10.1007/s12526-017-0818-9.

20. Di Cosmo A, Bertapelle C, Porcellini A, Polese G. Magnitude Assessment of Adult Neurogenesis in the *Octopus vulgaris* Brain Using a Flow Cytometry-Based Technique. *Front Physiol*. 2018;9:1020–10. doi:10.3389/fphys.2018.01050.

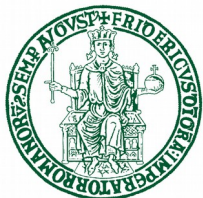
21. Maselli V., Xu F., Syed N., Polese G., Di Cosmo A. (2018) A novel approach to primary cell culture for *Octopus vulgaris* neurons. *Frontiers in Physiology*, 9:220; DOI: 10.3389/fphys.2018.00220.

22. Zupo V, Glaviano F, Paolucci M, et al. Roe enhancement of *Paracentrotus lividus*: Nutritional effects of fresh and formulated diets. *Aquacult Nutr*. 2018;25(1):26-38. doi:10.1111/anu.12826.

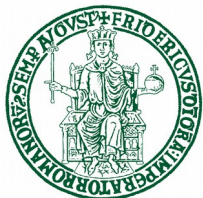
23. Scandurra A, Alterisio A, Di Cosmo A, D'Aniello B. Behavioral and Perceptual Differences between Sexes in Dogs: An Overview. *Animals*. 2018;8(9):151–26. doi:10.3390/ani8090151.

24. Winlow W, Polese G, Moghadam H-F, Ahmed IA, Di Cosmo A. Sense and Insensibility – An Appraisal of the Effects of Clinical Anesthetics on Gastropod and Cephalopod Molluscs as a Step to Improved Welfare of Cephalopods. *Front Physiol*. 2018;9:37–24. doi:10.3389/fphys.2018.01147.

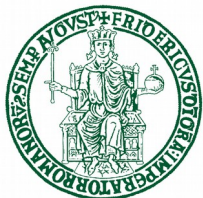
25. Bertapelle C, Polese G, Di Cosmo A (2017) Enriched Environment Increases PCNA and PARP1 Levels in *Octopus vulgaris* Central Nervous System: First Evidence of Adult Neurogenesis in Lophotrochozoa. *J Exp Zool B Mol Dev Evol*. 2017 Jun;328 (4):347-359. doi: 10.1002/jez.b.22735.



26. Anna Di Cosmo and Gianluca Polese (2017) Neuroendocrine–Immune Systems Response to Environmental Stressors in the Cephalopod *Octopus vulgaris* Front. Physiol. 2016 Doi , doi:10.3389/fphys.2016 00434
27. Polese,G, Bertapelle, C., Di Cosmo, A (2016) Olfactory organ of *Octopus vulgaris*: morphology, plasticity, turnover and sensory characterization. *Biology Open* (5), 611-619
28. POLESE, G., BERTAPELLE C., DI COSMO A. (2015) Role of olfaction in *Octopus vulgaris* reproduction. *GENERAL AND COMPARATIVE ENDOCRINOLOGY* (210);55-62
29. Di COSMO, A.,BERTAPELLE,C., POLESE, G.,ZULLO, A., PALUMBO, A. (2015) *Cefalopodi*, Capitolo, 5.6Eds Silvio Garattini,Giuliano Grignaschi,Fabio Luzi, Federica RivaEdizionePVI
30. POLESE G, WINLOW W, DI COSMO A., Dose-Dependent effects of the clinical anesthetic isofluorane on *Octopus vulgaris*: a contribution to cephalopod welfare. *J Aquat Anim Health*. 2014 26 (4),285-94
31. DI COSMO,A. and POLESE, G. (2014) Cephalopods Meet Neuroecology: The role of chemoreception in *Octopus vulgaris* reproductive behavior.117-132. ISBN:978-1-62948-970-4Eds. Anna Di Cosmo and William Winlow. Nova Scince Publishers, Inc.New York,USA
32. FIORITO G, AFFUSO A, ANDERSON DB, BASIL J, BONNAUD L, BOTTA G, COLE A, .... DI COSMO A, ...(2014). Cephalopods in neuroscience: regulations, research and the 3Rs. *INVERTEBRATE NEUROSCIENCE* 14 (1), 13-36
33. TRONCONE L, DE LISA E, BERTAPELLE C, PORCELLINI A, LACCETTI P, POLESE G, DI COSMO (2014). A Morphofunctional characterization and antibacterial activity of haemocytes from *Octopus vulgaris*. *JOURNAL OF NATURAL HISTORY*, 1 – 19
34. DE MAIO A, NATALE E, ROTONDO S, DI COSMO A, FARAONE-MENNELLA MR. (2014) Vault-poly-ADP-ribose polymerase in the *Octopus vulgaris* brain: A regulatory factor of actin polymerization dynamic. *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology* 166: (1) 40 – 47.
35. DE LISA E, SALZANO A.M., MOCCIA F., SCALONI A, DI COSMO A. (2013). Sperm-attractant peptide influences the spermatozoa swimming behavior in internal fertilization in *Octopus vulgaris*. *The Journal of experimental Biology*. 216 (12), 2229-2237
36. DE LISA E., CARELLA F., DE VICO G., DI COSMO A. (2013)The gonadotropin releasing hormone (GnRH) like molecule in prosobranch *Patella caerulea*: potential biomarker of endocrine disrupting compounds in marine environment. (2013). *ZOOLOGICAL SCIENCE*, vol. 30, p. 135-140, ISSN: 0289-0003
37. DI COSMO, A POLESE G (2013) Molluscan Bioactive Peptides. In: Ron Nachaman. *Handbook of Biologically Active Peptides*. p. 1-10, Baton Rouge, LA:Abba Kastin, ISBN: 9780123850959.
38. DE LISA E., DE MAIO E., MOROZ L.L., MOCCIA F., FARAONE MENNELLA M.R., AND DI COSMO A.(2012). Characterization of novel cytoplasmic PARP in the brain of *Octopus vulgaris* . *THE BIOLOGICAL BULLETIN*, vol. 222, p. 176-181, ISSN: 0006-3185
39. DE LISA E., PAOLUCCI M., DI COSMO A. (2012). Conservative nature of oestradiol signalling pathways in the brain lobes of *Octopus vulgaris* involved in reproduction, learning and motor coordination. *JOURNAL OF NEUROENDOCRINOLOGY*, p. 275-284, ISSN: 0953-8194, doi: 10.1111/j.1365-2826.2011.02240.
40. DI CRISTO C, DI DONATO P, PALUMBO A, D'ISCHIA M, PAOLUCCI M, DI COSMO A (2010). Steroidogenesis in the brain of *Sepia officinalis* and *Octopus vulgaris*.. *FRONTIERS IN BIOSCIENCE*, vol. E2, p. 673-683, ISSN: 1093-9946



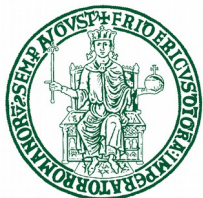
41. Coccia E, De Lisa E, Di Cristo C, Di Cosmo A, Paolucci M (2010). Effects of estradiol and progesterone on the reproduction of the freshwater crayfish *Cherax albidus*. THE BIOLOGICAL BULLETIN, p. 36-47, ISSN: 0006-3185
42. Moccia F, Cristo CD, Di Cosmo A. (2009) Lost in phototransduction: a few facts and hypotheses on cephalopod photoresponse. Front Biosci (Schol EdJun) 1;1:319-28.
43. Moccia F, Di Cristo C, Winlow W, Di Cosmo A. (2009) GABA(A)- and AMPA-like receptors modulate the activity of an identified neuron within the central pattern generator of the pond snail *Lymnaea stagnalis*. Invert Neurosci. 9(1):29-41
44. Di Cristo C, De Lisa E, Di Cosmo A. (.2009) Control of GnRH expression in the olfactory lobe of *Octopus vulgaris*. Peptides;30(3):538-44.
45. Di Cristo C, De Lisa E, Di Cosmo A. (2009) GnRH in the brain and ovary of *Sepia officinalis*. Peptides.;30(3):531-7.
46. Di Cristo, C., Paolucci, M., Di Cosmo, A. (2008) Progesterone Affects Vitellogenesis in *Octopus vulgaris* The Open Zoology Journal Volume 1;pp.29-36 (8)
47. DI CRISTO C, FIORE G, SCHEINKER V, ENIKOLOPOV G, D'ISCHIA M, PALUMBO A, DI COSMO A. (2007). Nitric Oxide Synthase expression in the central nervous system of *Sepia officinalis*: an *in situ* hybridization study. EUROPEAN JOURNAL OF NEUROSCIENCE. vol. 26, p. 1599-1610, ISSN: 0953-816X, doi: 10.1111/j.1460-9568.2007.05765
48. Di Cristo C, Di Cosmo A. (2007). Neuropeptidergic control of *Octopus* oviducal gland. PEPTIDES. Vol. 28, pp. 163-8.
49. Di Cosmo A, Di Cristo C, MESSENGER J.B. (2006). L-Glutamate and its Ionotropic Receptors in the Nervous System of Cephalopods. CURRENT NEUROPHARMACOLOGY. Vol. 4, pp. 305-312. Review
50. DI COSMO A., DI CRISTO C. (2006). Molluscan bioactive peptides. In: AA.VV. Handbook of Biologically Active Peptides. ISBN: 0-12-369442-6. : Abba Kastin Ed., New York (UNITED STATES).
51. DI COSMO A., DI CRISTO C. (2006). Molluscan peptides and reproduction. In: AA.VV. Handbook of Biologically Active Peptides. Abba Kastin Ed., New York (UNITED STATES).
52. FIORE G, DI CRISTO C, MONTI G, AMORESANO A, COLUMBANO L, PUCCI P, CIOFFI FA, DI COSMO A., PALUMBO A, D'ISCHIA M. (2006). Tubulin nitration in human gliomas. NEUROSCIENCE LETTERS. vol. 394, pp. 57-62.
53. CUOMO A, DI CRISTO C, PAOLUCCI M, DI COSMO A., TOSTI E. (2005). Calcium currents correlate with oocyte maturation during the reproductive cycle in *Octopus vulgaris*. JOURNAL OF EXPERIMENTAL ZOOLOGY (on line). vol. 303, pp. 193-202.
54. DI CRISTO C, VAN MINNEN J, DI COSMO A. (2005). The presence of APGWamide in *Octopus vulgaris*: a possible role in the reproductive behavior. PEPTIDES. vol. 26, pp. 53-62.
55. SCHEINKER V, FIORE G, DI CRISTO C, DI COSMO A., D'ISCHIA M, ENIKOLOPOV G, PALUMBO A. (2005). Nitric oxide synthase in the nervous system and ink gland of the cuttlefish *Sepia officinalis*: molecular cloning and expression. BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS. vol. 338, pp. 1204-1215.
56. DI COSMO A., PAOLUCCI M, DI CRISTO C. (2004). N-methyl-D-aspartate receptor-like immunoreactivity in the brain of *Sepia* and *Octopus*. JOURNAL OF COMPARATIVE NEUROLOGY. vol. 477, pp. 202-219.



UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II  
Scuola Politecnica e delle Scienze di Base  
Dipartimento di Biologia



57. DI COSMO A. (2003). A novel model to study the role and biochemical properties of nNOS: the nervous system of cephalopods. In: AA.VV. Recent Research Developments in Biochemistry. vol. 4, pp. 405-421. KERALA: Research Signpost.
58. DI COSMO A., DI CRISTO C., MESSENGER J.B.. (2003). NOS in the cephalopod "cerebellum". JOURNAL OF PHYSIOLOGY. vol. 547P, pp. PC2.
59. DI CRISTO C, DELLI BOVI P, DI COSMO A. (2003). Role of FMRFamide in the reproduction of *Octopus vulgaris*: molecular analysis and effect on visual input. PEPTIDES. vol. 24, pp. 1525-1532.
60. FIORE G, POLI A, DI COSMO A., D'ISCHIA M, PALUMBO A. (2003). Dopamine in the ink defence system of *Sepia officinalis*: biosynthesis, vesicular compartmentation in mature ink gland cells, nitric oxide (NO)/cGMP-induced depletion and fate in secreted ink. BIOCHEMICAL JOURNAL.
61. C. DI CRISTO, M. PAOLUCCI, DI COSMO A. (2002). GnRH and FMRFamide: two neuro-bioactive molecules involved in *Octopus vulgaris* reproduction. JOURNAL OF PHYSIOLOGY. vol. 543P, pp. 2P-3P.
62. C. DI CRISTO, M. PAOLUCCI, J. IGLESIAS, J. SANCHEZ, DI COSMO A. (2002). Presence of FMRFamide and GnRH immunoreactivity in the reproductive tracts of *Octopus vulgaris*. JOURNAL OF EXPERIMENTAL ZOOLOGY. vol. 292, pp. 267-276.
63. DI COSMO A., C. DI CRISTO, M. PAOLUCCI. (2002). A estradiol-17 $\beta$  receptor in the reproductive system of the female of *Octopus vulgaris*: characterization and immunolocalization. MOLECULAR REPRODUCTION AND DEVELOPMENT. vol. 61, pp. 367-375.
64. FARAONE MENNELLA MR, FARINA B, IRACE MV, DI CRISTO C, DI COSMO A. (2002). Histone H1-like protein and a testis-specific variant in the reproductive tracts of *Octopus vulgaris*. MOLECULAR REPRODUCTION AND DEVELOPMENT. vol. 63, pp. 355-365.
65. PALUMBO A, FIORE G, DI CRISTO C, DI COSMO A., D'ISCHIA M. (2002). NMDA receptor stimulation induces temporary alpha-tubulin degradation signaled by nitric oxide-mediated tyrosine nitration in the nervous system of *Sepia officinalis*. BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS. vol. 293, pp. 1536-1543.
66. PAOLUCCI M, DI CRISTO C, DI COSMO A. (2002). Immunological evidence for progesterone and estradiol receptors in the freshwater crayfish *Austropotamobius pallipes*. MOLECULAR REPRODUCTION AND DEVELOPMENT. vol. 63, pp. 55-62.
67. DI COSMO A., C. DI CRISTO, M. PAOLUCCI. (2001). Sex steroid hormone fluctuations and morphological changes of the reproductive system of the female of *Octopus vulgaris* throughout the annual cycle. JOURNAL OF EXPERIMENTAL ZOOLOGY. vol. 289, pp. 33-47.
68. DI COSMO A., DI CRISTO C. (2001). Neuropeptidergic control of the optic gland in *Octopus vulgaris*: APGWamide immunoreactivity. JOURNAL OF PHYSIOLOGY. vol. 531P, pp. 165P.
69. E. TOSTI, DI COSMO A., A. CUOMO, C. DI CRISTO, G. GRAGNANIELLO. (2001). Progesterone induces activation in *Octopus vulgaris* spermatozoa. MOLECULAR REPRODUCTION AND DEVELOPMENT. vol. 59, pp. 97-105.
70. L. ABATE, E. BERTOLUCCI, M. CONTI, DI COSMO A., C. DI CRISTO, G. METTIVIER, C. MONTESI, P. RUSSO. (2001). Quantitative dynamic imaging of biological



UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II  
Scuola Politecnica e delle Scienze di Base  
Dipartimento di Biologia



processes with solid state radiation detectors. IEEE TRANSACTIONS ON MEDICAL IMAGING. vol. 47, pp. 1907-1910.

71. VITALE S., DI CRISTO C., BUONOMO T., DI COSMO A., CIMINI V. (2001). Calretinin-like immunoreactivity (CR-like IR) in the brain of Octopus. EUROPEAN JOURNAL OF HISTOCHEMISTRY. vol. 45, pp. 75.

72. DI COSMO A., C. DI CRISTO, A. PALUMBO, M. D'ISCHIA, J.B. MESSENGER. (2000). Nitric Oxide Synthase (NOS) in the brain of the cephalopod Sepia officinalis. JOURNAL OF COMPARATIVE NEUROLOGY. vol. 428, pp. 411-427.

73. PALUMBO A., POLI A., DI COSMO A., D'ISCHIA M. (2000). N-methyl -D-aspartate receptor stimulation activates tyrosinase and promotes melanin synthesis in the ink gland of the cuttlefish Sepia officinalis through the nitric oxide/cGMP signal transduction pathway. THE JOURNAL OF BIOLOGICAL CHEMISTRY. vol. 275, pp. 16885-16890.

74. PALUMBO, DI COSMO A., A. POLI, C. DI CRISTO, M. DISCHIA. (1999). The glutamate-nitric oxide - cyclic GMP signaling pathway in the CNS of the cuttlefish Sepia officinalis. ACTA PHYSIOLOGICA SCANDINAVICA. vol. 167, pp. P-169.

75. DI COSMO A., G. NARDI, C. DI CRISTO, A. DE SANTIS, J.B. MESSENGER. (1999). Localization of L-glutamate and L-glutamate-like receptors at the squid giant synapse. BRAIN RESEARCH. vol. 839, pp. 213-220.

76. PALUMBO A., DI COSMO A., POLI A., DI CRISTO C., D'ISCHIA M. (1999). A calcium/calmodulin-dependent nitric oxide synthase, NMDAR2/3 receptor subunits, and glutamate in the CNS of the cuttlefish Sepia officinalis: localization in specific neural pathways controlling the inking system. JOURNAL OF NEUROCHEMISTRY. vol. 73, pp. 1254-1263.

77. DI COSMO A., DI CRISTO C. (1998). Neuropeptidergic control of the optic gland in Octopus vulgaris: FMRamide and GnRH immunoreactivity. JOURNAL OF COMPARATIVE NEUROLOGY. vol. 398, pp. 1-12.

78. DI COSMO A., PAOLUCCI M., DI CRISTO C., BOTTE V., CIARCIA G. (1998). Characterization and immunolocalization of 3H-progesterone binding activity in the reproductive system of the female of Octopus vulgaris. MOLECULAR REPRODUCTION AND DEVELOPMENT. vol. 50, pp. 451-460.

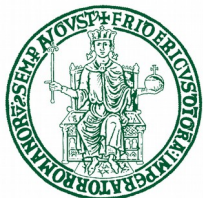
79. PALUMBO, DI COSMO A., I. GESUALDO, M. D'ISCHIA. (1997). A calcium-dependent nitric oxide synthase and NMDAR1 glutamate receptor in the ink gland of Sepia officinalis. A hint to a regulatory role of nitric oxide in melanogenesis?. BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS. vol. 235, pp. 429-432.

80. PALUMBO, DI COSMO A., I. GESUALDO, V.J. HEARING. (1997). Subcellular localization and function of melanogenic enzymes in the ink gland of Sepia officinalis. BIOCHEMICAL JOURNAL. vol. 418, pp. 567-578.

81. D'ANIELLO, DI COSMO A., C. DI CRISTO, L. ANNUNZIATO, L. PETRUCCELLI, G. FISHER. (1996). Involvement of D-aspartic acid in the synthesis of testosterone in rat testes. LIFE SCIENCES. vol. 59, pp. 97-104.

82. D'ANIELLO A., DI COSMO A., DI CRISTO C., ASSISI L., BOTTE V. (1996). Occurrence of sex steroid hormones and their binding proteins in Octopus Vulgaris Lam. BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS. vol. 227, pp. 782-788. 0

83. D'ANIELLO, G. NARDI, A. DE SANTIS, A. VETERE, DI COSMO A., R. MARCHELLI, A. DOSSENA, G. FISHER. (1995). Free L-amino acids and D-Aspartate content in the nervous system of the cephalopoda. A comparative study. COMPARATIVE BIOCHEMISTRY AND



UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II  
Scuola Politecnica e delle Scienze di Base  
Dipartimento di Biologia



PHYSIOLOGY. PART B, BIOCHEMISTRY & MOLECULAR BIOLOGY. vol. 122B, pp. 661-666.

84. LOGUERCIO, DI COSMO A., A. DE SANTIS, G. NARDI. (1995). Glutathione suppresses spontaneous activity in the frog spinal cord. *NEUROREPORT*. vol. 6, pp. 1669-1673.

85. D'ANIELLO A., DI COSMO A., DI CRISTO C., FISHER G. (1995). D-aspartate in the male and female reproductive system of *Octopus vulgaris* Lam. *GENERAL AND COMPARATIVE ENDOCRINOLOGY*. vol. 100, pp. 69-72.

86. DI COSMO A., C. DI CRISTO, A. DE SANTIS, A. DANIELLO. (1994). D-Aspartate-like immunoreactivity in the optic lobe of the Octopus. *JOURNAL OF PHYSIOLOGY*. vol. 88, pp. 51.

87. BIANCHI S., DI COSMO A., IAMUNNO. G. (1988). Fluorescence Histochemical and Ultrastructural research on the monoaminergic neurosecretory cells of the earthworm *Octolasmus complanatum* (Annelida: Oligochaeta). *GENERAL AND COMPARATIVE ENDOCRINOLOGY*. vol. 71, pp. 243-256.

### Recent Book

1. Di Cosmo, A., and Polese, G. (2014). "Cephalopods meet neuroecology: the role of chemoreception in *Octopus vulgaris* reproductive behaviour," in *Neuroecology and Neuroethology in Molluscs – The Interface Between Behaviour and Environment*, eds A. Di Cosmo and W. Winlow (New York, NY: NOVA Science Publisher), 117–132.

2. Di Cosmo A., Paolucci M., Maselli V. (2019, in press) Hormones May Shape Sexual Behavior in Cephalopods. In: *Advances in Invertebrate (Neuro)Endocrinology (2-volume set) A Collection of Reviews in the Post-Genomic Era*. Editors: Saleuddin S., Lange A.B., Orchard I. Apple Academic Press. ISBN: 9781771888097.

3. Di Cosmo A., Maselli V., and Polese G. (2018). *Octopus vulgaris: An Alternative in Evolution. Results and Problems in Cell Differentiation* 65, 585-598. Book Chapter in "Marine Organisms as Model Systems in Biology and Medicine"; Publisher: Springer Verlag. ISBN 978-3-319-92486-1.

### Educational activities

#### Teaching Università di Napoli, FedericoII

Zoology, Marine Biodiversity, Ethology Biomonitoring, Biosensors, Parasitology, Protozoology, Microbiology, Aquaculture.

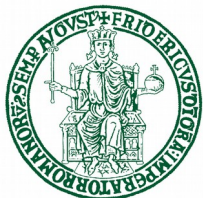
#### Course for graduate and PhD students

Language: Italian and English

### Mentoring

Mentor to Postdoctoral fellows:





**UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II**  
**Scuola Politecnica e delle Scienze di Base**  
**Dipartimento di Biologia**



2001-2004 Di Cristo Carlo- Current position: Assistant Professor, University of Sannio Benevento  
2009-2013 Troncone Luca  
2014- 2016 Bertapelle Carla

**Tutor of PhD Thesis**

2020-today HEETHAKA KRISHANTHA SAMEERA DE ZOYSA (Zoology)  
2018-today Alsayed Alsoudy Mohamed Mostafa (Zoology)  
1997-2000 Di Cristo Carlo (Marine Zoology)  
2005-2008 De Lisa Emilia (Marine Zoology)  
2011-2015 Bertapelle Carla) (Behavior of marine organisms- Cephalopods)  
2012-2016 Campoli Ludovica (Meiofaunal communities)  
2018 -2021 Al Sayed Al Soudy (Behavior of marine organisms- Cephalopods)

**Thesis/Advisor to undergraduate students:**

> 100 undergraduates students (the list can be supplied on a request)

**Academic Committees**

**University of Sannio, Benevento, Italy**

2001-2005 Faculty member

**University of Napoli Federico II, Napoli, Italy**

2006-2016 Faculty member

2010-present **Member of University Ethical Committee Expertise Cephalopods**

2016-2018 **Scientific Director of Zoological Museum of The Università degli Studi di Napoli Federico II**

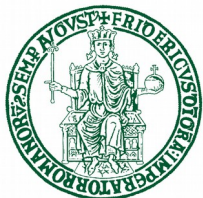
2016- present **Coordinator of Master's Degree in Course in Biology and Ecology of the Marine Environment and Sustainable Use of Marine Resources**

2017 – present **Member of Doctoral Committee in Biology – Università degli Studi di Napoli Federico II**

**Editorial activities**

- Associate Editor for Animals - (ISSN 2076-2615) MDPI
- Associate Editor for Frontiers in physiology – Aquatic Physiology Marine Science - present
- Editor of “Neuroecology and Neuroethology in Molluscs The interface between Behaviour and Environment” Marine Biology, Published by Nova Science Publishers, Inc. New York (2014)
- Review Editor of Frontiers in Experimental Endocrinology - present
- Managing Editor of a special issue of the journal “Frontiers in Bioscience” entitled “Brain plasticity in non-vertebrate animals”- (2006-2010)

**Ad hoc referee of several international peer-reviewed journals:**



UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II  
Scuola Politecnica e delle Scienze di Base  
Dipartimento di Biologia



The Journal of Comparative Neurology, Peptides, Journal of Zoology, Aquaculture, Molecular Reproduction and Development, Journal of Invertebrate Biology, European Journal of Neurochemistry, The Journal of Experimental Biology, Invertebrate Reproduction and Development, Scientia Marina., Aquaculture

**Grant Reviewer:**

**2013 FIRB- Italian Education Ministry**

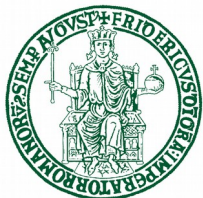
**2015 ACHN OCTOCON DocSci.; ACHN, BUILDING THE EUROPEAN RESEARCH AREA (ERA) AND FRANCE'S INTERNATIONAL ATTRACTIVENESS**

**2015 CIG ZCA161BF8E –TIS innovation park- Italiand Science Foundation**

**Research support**

2018 - Scientific Coordinator of the project “Taxonomic identification of specimens of precious coral, pearls and biogenic gems with a molecular approach” for the Department of Biology, University of Naples Federico II with the I’Istituto Gemmologico Italiano (IGICOM) and Barhain Institute for Pearls and Gemstones (DANAT).

- 2009 - Scientific Coordinator “The mechanism whereby  $Ca^{2+}$  signalling promotes axonal regrowth” – Compagnia di S. Paolo–Neuroscience program. Current
- 2009 - Local Coordinator of research program - First-year national program of fisheries and aquaculture 2007-2009 (MIPAF)-Monitoring of marine ecosystems using bivalve molluscs as indicators of water pollution aimed at the safety of production.
- 2008 - Co-Scientific Coordinator A. Di Cosmo, Moroz L.L. Whitheney University, Florida "Neuronal Transcriptome from *Octopus vulgaris*." Research Project Funded by the Province of Benevento and the University of Naples Federico II for a period of four years (€ 25,000.00)
- 2007 - International Coordinator together with Prof. Lisa Hall, University of Cambridge, of a project entitled “Development of new remotely controlled biosensors for water monitoring” funded by Provincia of Benevento for the period 2007-2008.
- 2005 - Scientific Coordinator of a research program supported by the Regione Campania (LR 5, ex 41/94), entitled: "Fertilisation in *Octopus vulgaris*: oocyte maturation and chemical communication between sperms and eggs.
- 2003 - International Coordinator of a Basic Research Program (FIRB), entitled “The cerebellum and movement control in *Octopus vulgaris*” funded by Ministry of the University and Research for the period 2003-2007.
- 2002 - Scientific Coordinator of a research program supported by the Regione Campania (LR 41/94), entitled: “Development of an integrated aquaculture system for marine and freshwater species.
- 2002 - National Coordinator of a Research Program of National Relevant Interest (PRIN 2002-2004, Ministry of the University and Research), entitled: “Neurosteroids in the nervous system of cephalopods: occurrence, oxidative and nitrosative modifications and functions” (150.000,00 €).



UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II  
Scuola Politecnica e delle Scienze di Base  
Dipartimento di Biologia



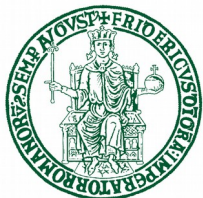
- 2000 - Local Coordinator of a Research Program of National Relevant Interest (PRIN 2000-2002, Ministry of the University and Research), entitled: "Progesterone receptor: a hint for parallel evolution?"(100.000,00 €)

**Scientific societies affiliations memberships:**

- Italian Society of Zoology (UZI) and elected member to represent the Association in the National project SPERA "Sperimentare per Curare" dedicated to animal welfare in experimentation
- ESMB European Society of Marine Biotechnology
- ESCE European Society of Comparative Endocrinology
- CIAC Cephalopod International Advisory Council

**National and International Meeting (2012-15)- Invited speaker**

- DI COSMO, A Lecture (2015) From Neuropeptides to Steroids: molecules and pathways involved in *Octopus vulgaris* reproduction. Workshop 4; Physiology of reproduction, 8-9 Novembre Hakodate-Hokkaido.Giappone
- POLESE, G. and DI COSMO, A Lecture (2015) Olfactory organ and its role in *Octopus vulgaris* reproduction Workshop 4; Physiology of reproduction, 8-9 Novembre Hakodate-Hokkaido.Giappone
- BERTAPELLE, C., POLESE, G., DI COSMO, A. Lecture (2015) *Octopus vulgaris* brain as a model to study adult neurogenesis. YOUMARES 6 A journey into the blue – Ocean Research and innovation 16-18 September University/NW1 Bremen, Germany
- POLESE, G. BERTAPELLE C., DI COSMO A., (2015) Central and peripheral control of reproduction in *Octopus vulgaris* and involvement of chemical perception. 76° Congresso Uzi, 15-18 Settembre, Viterbo, Italia
- DI COSMO, A., WIRZ, A., PISCITELLI, M. (2015). UZI and SPERA. First steps together. WORKSHOP SPERA Organizer: DI COSMO A. Uzi, 15-18 Settembre Viterbo, Italia
- DI COSMO A. Delegato UZI : Ruolo dell'UZI nel Progetto SPERA. II Congresso NAZIONALE, 18 Giugno, Roma. Italia
- POLESE, G., WINLOW, W. BERTAPELLE, C., DI COSMO, A. (2015). Anesthesia and Care of cephalopods used as laboratory animals. XXII AISAL SYMPOSIUM: Innovation in laboratory animals science. The future is now. 22-24 Ottobre Napoli, Italia
- DI COSMO A. (2015) Training and education: the importance of having a handbook written in the national language by local researches. Come Autore corrispondente del Capitolo 5 :5.6 Cefalopodi. 4<sup>th</sup> International Congress of the Basel Declaration Society: Research on animals in the frontline: Transparency and public engagement. 1-2 Ottobre Roma. Italia.
- Campoli, L. Bertapelle, C., Ardizio, P., Polese, G., Di Cosmo, A. (2014). First survey of Meiofaunal communities in Porto Paone, Nisida. In: uzi 2014, Bari, Italia
- Polese, G., Troncone, L. Bertapelle, C., Di Cosmo, A. (2013). *Octopus vulgaris* as model of central and peripheral control of reproduction in molluscs. In: ICCE 2013 Barcellona, Spain.



UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II  
Scuola Politecnica e delle Scienze di Base  
Dipartimento di Biologia

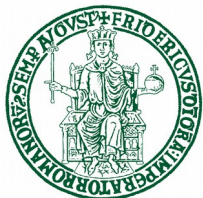


- Polese G., Ulloa Severino F. P., Willow W., Di Cosmo A. (2012). Anesthesia of *Octopus vulgaris* with the volatile general anesthetic isoflurane.. In: Cephalopod International Advisory Council Symposium X (CIAC 2012). Florianópolis, Santa Catarina, Brazil, 27/10-02/11, p. 5-5
- Anna Di Cosmo, Gianluca Polese, Francesco Paolo Ullua Severino and William Winlow (2012). Behavioral effects of clinical doses of the general anesthetic isoflurane on *Octopus vulgaris*. In: Molluscan neuroscience in the genomic Era: from gastropods to cephalopods. The Scripps Research Institute Jupiter, Florida, 16-19 maggio 2012, p. 129
- Troncone L., De Lisa E., Polese G., Di Cosmo A. (2012). IDENTIFICATION OF THE ANTIMICROBIAL ACTIVITY FROM *OCTOPUS VULGARIS* HAEMOCYTES. . In: Cephalopod International Advisory Council Symposium (CIAC 2012). Florianópolis, Santa Catarina, Brazil, 27/10. 02/11/2012, p. 7
- Bertapelle C., Troncone L., Moroz L. L., Polese G., Di Cosmo A. (2012). NEUROPEPTIDES ANALYSIS OF *OCTOPUS VULGARIS* TRANSCRIPTOME: OCT-PEDAL PEPTIDE EXPRESSION IN CNS LOBES INVOLVED IN MOTOR COORDINATION. In: Cephalopod International Advisory Council Symposium X (CIAC 2012). Florianopolis, Santa Catarina, Brazil, 27/10-02/11/2012, p. 8
- Troncone L., Bertapelle C., Ulloa Severino F.P., Ciccarelli I., Ciccarelli N., Polese G., Di Cosmo A. (2012). Research on Cephalopods: Past, Present and Future Perspectives. In: CephRes 2012. Vico Equense (Na), 19-23/04/12, p. 1
- De Lisa E., Salzano M. A., Moccia F., Scaloni A., Di Cosmo A. (2012). SPERM-ATTRACTANT PEPTIDE INFLUENCES THE SPERMATOZOA SWIMMING BEHAVIOUR IN INTERNAL FERTILIZATION IN *OCTOPUS VULGARIS*. In: Cephalopod International Advisory Council Symposium (CIAC 2012). Florianópolis, Santa Catarina, Brazil, 27/10- 02/11/2012, p. 6
- Polese G., Ulloa Severino F.P., Troncone L., Bertapelle C., Di Cosmo A. (2012). Topology, morphology and function of olfactory organ in *Octopus vulgaris*.. In: Molluscan Neuroscience in the Genomic Era: From Gastropods to Cephalopods. Scripps, Florida, 15-19/05/12, p. 1

### Major Achievements during the last 5 years:

My own work and interests span topics on the biological diversity, its evolution, and its preservation through research at all levels, from genes to ecosystems.

- 1) First demonstration of **adult neurogenesis** in cephalopod *Octopus vulgaris*
- 2) First protocol for cell culture of cephalopod *Octopus vulgaris*.
- 3) First demonstration of **the presence and functional role of sex steroids and their receptors** in the reproductive system of cephalopod *Octopus vulgaris*.
- 4) First demonstration of **OCT-GnRH** in the nervous system of *O. vulgaris*
- 5) Established the presence for the first time of **neurosteroids** in the nervous system of *O.vulgaris*.
- 6) Established the functional role of a **sex steroids and their receptors** in the nervous system of *O.vulgaris*.
- 7) First demonstration of the role of **17  $\beta$ -Estradiol** in the regulation of memory and learning process in the nervous system of *O. vulgaris*



- 8) First demonstration of the combined regulation by 17  $\beta$ -Estradiol and oct-GnRH in the *O.vulgaris* reproduction.
- 9) First demonstration of the non-genomic mechanism of 17  $\beta$ -Estradiol and his receptors and their involvement in the motor coordination in *O.vulgaris*.
- 10) Evidence for the presence of a new site for memory storage, the otic lobes, in the *O.vulgaris* nervous system.
- 11) The first demonstration of chemotaxis role in indirect internal fertilization in *O.vulgaris*.
- 12) The first octopus sperm attractant peptide has been characterized Octo-SAP's properties showing that chemotaxis occurred in a concentration-dependent manner, the sperm moved up the concentration gradient towards areas of high Octo-SAP concentration.
- 13) The first movie of tiny Octopus sperm movements under the action of Octo-SAP.
- 14) First demonstration of the role of olfactory organ in *O.vulgaris*.
- 15) First demonstration of the control of olfactory organ by olfactory lobe in *O.vulgaris*.
- 16) First survey of the meiofaunal communities of Nisida and environmental status of the Flegrean area.
- 17) The first contribute to cephalopod welfare using isofluorane as anesthetic

#### Broad impact from Prof. Di Cosmo research

- **ATTRACTING STORED OCTOPUS SPERM**  
[jeb.biologists.org/content/216/12/iii](http://jeb.biologists.org/content/216/12/iii) N Stead - 201
- Sperm Hoarders: Why Animals Store Semen  
<http://voices.nationalgeographic.com/2013/06/12>
- **Octopus sperm attractant peptides: In vivo fertilization ...**  
[about.cusabio.com/c-15959.html](http://about.cusabio.com/c-15959.html)
- **IS SMELL THE KEY TO AN OCTOPUS'S HEART? | OCTOPUS ...**  
[blogs.scientificamerican.com/octopus.../is-smell-.th](http://blogs.scientificamerican.com/octopus.../is-smell-.th)
- [mentalfloss.com/article/.../how-knock-out-octopus](http://mentalfloss.com/article/.../how-knock-out-octopus)
- [fisheries.org/tag/anna-di-cosmo](http://fisheries.org/tag/anna-di-cosmo)
- CLOSE ENCOUNTER OF THE THIRD KIND  
<http://www.taz.de/Humboldt-Kalmare-sind-anpassungsfahig-/%21152069/>  
GLOBESTORIES

#### Opinion Letters

- Pain threshold A Di Cosmo NEW SCIENTIST 221 (2960), 32-32 (2014)