

Vincenzo Arizza full professor of Zoology

University of Palermo - Department of Biological, Chemical and Pharmaceutical Sciences and Technologies (STEBICEF)
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RESEARCH INTERESTS

Research activities on molecular zoology and comparative immunobiology: In particular has studied the immunology of fish and invertebrates; lectin and hemolysins of sea urchin and tunicates; has studied the inflammatory response of *Ciona intestinalis*, for the proinflammatory molecule and cell (immunohistochemistry, *in situ* hybridization); the cytotoxicity and antimicrobial peptides in echinoderms (*Paracentrotus lividus* and *Holothuria polii* and *tubulosa*), tunicate (*Ciona intestinalis*) and fish (*Dicentrarchus labrax*); the prophenoloxidase activity in ascidians (*Styela plicata*, *Phallusia mamillata* and *Ciona intestinalis*); Biology of immunity in insect (*Rhynchophorus ferrugineus*). Has collaborated to sequence and studying the expression by *in situ* hybridization and real time PCR in *Ciona intestinalis* the genes for collagen IX-like, for Pro-PO and TNF α .

EDUCATION

1986 Degree in Biological science summa cum laude University of Palermo.

PROFESSIONAL EXPERIENCE

1989 - 1990 Laboratory officiant Institute of Zoology, University of Palermo.

1992 Scholarship: CNR - pursue research period to UCLA

1991 - 2001 Associate researcher Dept. Animal Biology - University of Palermo.

1992 Researcher University of California, Los Angeles, Los Angeles

2001 – 2019 Associate Professor Dept. Biological, Chemical and Pharmaceutical Science and Technology (STEBICEF) - University of Palermo.

2019 - present Full Professor Dept. Biological, Chemical and Pharmaceutical Science and Technology (STEBICEF) - University of Palermo.

1996 - Co-founder of Italian Society Developmental and Comparative Immunology.

2013 – 2018 Head of the Section - Biotechnologies for The Environmental and Marine Ecosystem, Euro-Mediterranean Institute of Science and Technology

2013 – 2018 Head of Master degrees in Biodiversity and Evolution, University of Palermo.

2013 – 2018 Head of Master degrees in Biology and Plant Ecology, University of Palermo.

2016 – 2018 Head of Master degrees in Biodiversity and Environmental biology

2018 - present Head of Biological Sciences Degree

2013 – 2015 Vice-Director of Interdepartmental research group CIRITA. University of Palermo

2013 – 2017 Researcher Euro-Mediterranean Institute of Science and Technology (IEMEST)

2015 - 2018 Member Scientific Council CIRITA. University of Palermo

2017 Fellowship Erasmus+ University of Malta

2017 Guest researcher University of Malta

2021 – present Director of Department of Biological, Chemical and Pharmaceutical Sciences and Technologies – University of Palermo

Scientific Memberships

Unione Zoologica Italiana (UZI)

International Society of Developmental and Comparative Immunology (ISDCI)

Italian Society of Comparative and developmental Immunology (SIICSI)

Società italiana di Biologia Marina (SIBM)

Consorzio interuniversitario per le scienze del mare (CONISMA)

Centro interdipartimentale per le ricerche sull'interazione tecnologia-ambiente (CIRITA)

Centro Interuniversitario di ricerca sui cetacei (CIRCE)

Consorzio Nazionale di Ricerca per la Gambericoltura (CONARGA)
Centro Interdipartimentale Studi Europei e Comparastici (CISECOM)
Istituto Euro-Mediterraneo di Scienze e Tecnologie (IEMEST)
Associazione Italian Network for Lagoon Research (LAGUNET)

Awards & Grants

2020 Grant PO Interreg Italia – Malta CORALLO (1.500.000,00 euro)
2019 Grant PO-FESR 1.1.5 SMILING (4.000.000,00 euro)
2018 Grant PO Interreg Italia-Malta BYTHOS (2.500.000 euro)
2017 Grant FEAMP: P.I. Scarti ittici: valorizzazione e sfruttamento biotecnologico (60.000)
2013 - Grant PO-FERS: P.I. DELIVER Drugs Delivering Bone Graft (1.600.000 euro)
2012 - Grant PO-FERS: P.I. - ASTED Anti Staphylococcus epidermidis Devices (500.000 euro)
2011 - Award: Consiglio Direttivo dell'Osservatorio "Giuseppe La Franca" di Partinico Palermo Italy
2009 - Grant Innovascuola: P.I. "Rete Innovazione Tecnologica per Moduli Operativi R.I.T.M.O.".
2007 - Grant: "Carta ittica della zona marina costiera dei Nebrodi" at C.I.R.I.T.A.
2006 - Grant PRIN: "Il repertorio delle lectine nei protocordati. Evoluzione dei meccanismi di riconoscimento e dell'immunità innata"
2006 - Grant ex 60%: P.I. Meccanismi dell'immunità naturale degli invertebrati deuterostomi: ruolo di molecole citochino-simili nella cooperazione tra celomociti in echinoidi
2005 - Grant ex 60%: P.I. Meccanismi dell'immunità naturale degli invertebrati deuterostomi: Cooperazione tra celomoci in echinoidi
2004 - Grant ex 60%: vP.I. Meccanismi dell'immunità naturale in invertebrati deuterostomi: Cooperazione tra celomoci in echinoidi
2003 - Grant ex 60%: P.I. "Identificazione e caratterizzazione dei recettori coinvolti nell'attivazione dei celomociti durante le reazioni di difesa di echinodermi".
2002 - Grant CoRI: P.I. "Biological roles of C3 fragments in fish" at University of Pennsylvania, Philadelphia USA.
2000 - Grant: ex 60% P.I. "Aspetti cellulari nelle attività di difesa degli echinodermi".

Journal referee:

Micromachines
Biomedical and Environmental Sciences
Acta Herpetologica
Journal of Phytopathology
Marine Drugs
PLoS ONE
Comparative biochemistry and physiology. B, Comparative biochemistry
Journal of Histology
Systematic and Applied Microbiology
Aquatic Ecology
Fresenius Environmental Bulletin
Tropical Zoology
Italian Journal of Zoology
Developmental and comparative immunology
Chemosphere
Biomarkers
Italian Journal of Animal Science
Fish & Shellfish Immunology
Aquaculture Research
Aquaculture International

Scientific collaborations

1. Università degli Studi di Padova. Prof. Loriano Ballarin
2. Università degli studi di Palermo, Dipartimento di chimica inorganica (Prof. A. Gianguzza)
3. Università degli studi di Palermo, Servizio di Immunoematologia e Medicina Trasfusionale (SIMT) (prof. Calogero Caruso).
4. Università degli studi di Palermo, Dipartimento STEMBIO, (Prof. Domenico Schillaci).

5. Università degli studi di Palermo, Dipartimento di Scienze della Terra e del Mare (Prof. Gianluca Sarà).
 6. Università degli Studi di Catania, Dipartimento di Scienze chimiche. (dott.ssa Vera Muccilli).
 7. Università dell'Insubria – dott. Maurizio Brivio
 8. CNR Istituto di Biomedicinae e Immunologia molecolare “Alberto Monroy” Palermo (dott. Melchiorre Cervello).
 9. CNR Istituto di Biomedicinae e Immunologia molecolare “Alberto Monroy” Palermo (dott.ssa Caterina Di Sano).
 10. CNR Istituto di Biomedicinae e Immunologia molecolare “Alberto Monroy” Palermo (dott.ssa Valeria Matranga).
 11. CNR 2U.O. Capo Granitola dell'Istituto per l'Ambiente Marino Costiero (dott.ssa G. Buscaino)
 12. Istituto Zooprofilattico Area Diagnostica Sierologica (dott. Domenico Vicari).
 13. Istituto Zooprofilattico Area Diagnostica Specialistica (dott. Vincenzo Ferrantelli).
 14. Istituto Zooprofilattico Centro di Referenza Toxoplasmosi (dott.ssa Maria Vitale)
 15. Università degli studi di Firenze Dip. di Biologia Animale e Genetica, (prof.ssa Rita Cervo).
 16. Università degli studi di Firenze Dip. di Biologia Animale e Genetica, (prof. M. De Pirro).
 17. Laboratory of Comparative Neuroimmunology, Department of Neurobiology, UCLA, Los Angeles, USA (Prof. Edwin L. Cooper).
 18. Center for Biomedical Microbiology, BioCentrum-DTU, Technical University of Denmark (Janus A. J. Haagensen)
 19. Center for Biomedical Microbiology, BioCentrum-DTU, Technical University of Denmark (Søren Molin)
 20. University of Dubrovnik Department of Aquaculture, (dott.ssa Ivana Prusina).
- The Swire Institute of Marine Sciences and School of Biological Sciences, Division of Ecology and Biodiversity,
The University of Hong Kong (dott. Gray. A. Williams)

PUBLICATIONS, WORKSHOP AND CONFERENCES

Books

Book Chapters

1996

1. Parrinello N, Arizza V., Cammarata M, Parrinello DM (1996). Expression and modulation of immunological activity in tunicate hemocyte. In: Stolen J. Modulators of immune responses. p. 391-405, FAIR HAVEN: SOS publications 2000
2. Parrinello N., Arizza V., Cammarata M., Vazzana M., Cooper E. L. (2000). The Biology of Ascidiants. Sawada, H., Yokosawa, H., Lambert, C.C. (Eds.). Immunological activities of ascidian hemocytes. 395-401 (CAP).
3. Parrinello N., Cammarata M., Arizza V., Vazzana M., Cooper E.L. (2000). The New Panorama of Animal Evolution. Legakis A., Sfenthourakis S., Polymeni R., Thessalou-Legaki M. (eds.). How the cell of the invertebrate immune system kills the other cells? 167-175 (CAP). 2001
4. Vizzini A., Arizza V., Cervello M., Chinnici C., Cammarata M., Gambino R., Patricolo E., Parrinello N. (2001) The Biology of Ascidiants. Sawada H., Yokosawa H., Lambert C.C. (Eds.) Identification of type I collagen and cloning of type IX in the ascidian *Ciona intestinalis*. 402-407 Springer-Verlag Tokyo (CAP). 2003
5. Parrinello N, Cammarata M, Arizza V., Vazzana M, Cooper E.L (2003). How do cells of the invertebrate immune system kill other cells? In: Legakis, A., Sfenthhourakis, S., Polymeni, R., Thessalou-Legaki, M. The New Panorama of Animal Evolution. p. 167-175, ISBN: 954-642-164-2 2009
6. Manachini B. Arizza V. Parrinello N. (2009) Sistema immunitario del Punteruolo rosso (*Rhynchophorus ferrugineus*). REPORT ANNO 2008 progetti: FITOPALMINTRO, I FITOfagi delle PALMe di recente INTROduzione nel territorio siciliano; e MEDEA, Metodi per la diagnosi precoce di infestazione da “Punteruolo rosso” delle Palme In: La ricerca scientifica sul Punteruolo rosso e gli altri fitofagi delle palme Vol 1. pp. 133-136. Sbn Pal0217180
7. Manachini B. Arizza V. Parrinello N. (2009) Interazioni tra sistema immunitario del Punteruolo rosso e il batterio entomopatogeno *Bacillus thuringiensis*. Report anno 2008 progetti: FITOPALMINTRO, I FITOfagi delle PALMe di recente INTROduzione nel territorio siciliano; e MEDEA, Metodi per la diagnosi precoce di infestazione da “Punteruolo rosso” delle Palme In: La ricerca scientifica sul Punteruolo rosso e gli altri fitofagi delle palme Vol. 1. pp. 137-140. Sbn Pal0217180 2010
8. Arizza V., Buffa G., Comparetto G. (2010) Un mare d'Amare. Guida alla conoscenza del mare dei suoi abitanti e delle tradizioni della pesca in Sicilia. Asterisco editore pp 1-275. 2011
9. Arizza V., Manachini BRI (2011). Le simbiosi in ambiente marino. In: (a cura di): Stefano De Ranieri CIBM e Bianca Isolani ScientiArs, Vivere insieme sul Pianeta Azzurro. p. 58-64, LIVORNO: Debatte Otello, ISBN: 978-88-6297-090-7 2016
10. Arizza V., Schillaci D. (2016). Echinoderm Antimicrobial Peptides: The Ancient Arms of the Deuterostome Innate Immune System. In: Lessons in Immunity: From Single-cell Organisms to Mammals: 159-76 2018
11. Courtney Smith, L., Arizza V., Barela Hudgell, M.A., (...), Stensvåg, K., Sutton, E. (2018). Echinodermata: The complex immune system in echinoderms. Advances in Comparative ImmunologyJournal

Publications

1. Parrinello N., Arizza V. (1985) Further investigations of Ascidian lectins. *Acta Embryol. Morphol. Exp.* N.s. 6:274-275 (R).
2. Canicattì C. Parrinello N., Arizza V. (1987). Inhibitory activity of sphingomyelin on haemolytic activity of coelomic fluid of *Holothuria polii* (Echinodermata). *Dev. Comp. Immunol.* 11:29-35 (L).
3. Parrinello N., Arizza V. (1988). D-galactose binding lectins from the tunicata *Ascidia malaca*: subunit characterization and evidence for cell surface distribution. *Dev. Comp. Immunol.* 12:495-507 (L).
4. Parrinello N., Arizza V. (1989). Sugar specific cellular lectins of *Phallusia mamillata* hemocytes: purification, characterization and evidence for cell surface localization. *Dev. Comp. Immunol.* 13:113-121 (L).
5. Arizza V., Parrinello N., Schimmenti S. (1991). In vitro release of lectins by *Phallusia mamillata* hemocytes. *Dev. Comp. Immunol.* 15:219-226 (L).
6. Parrinello, N., Arizza V. (1992). Cytotoxic activity of the invertebrate hemocytes with preliminary findings on the tunicate *Ciona intestinalis*. *Boll. Zool.* 59:183-189 (R).
7. Parrinello, N., Arizza V. Cammarata, M., Parrinello D.M. (1993). Cytotoxic activity of *Ciona intestinalis* (Tunicata) hemocytes. Properties of the in vitro reaction against erythrocyte targets. *Dev. Comp. Immunol.* 17:19-27 (L).
8. Arizza V., Parrinello N., Cammarata M., Picciurro A. (1993). Immunochemical localization of cellular lectins in *Phallusia mamillata* hemocytes. *Anim. Biol.* 2:83-90 (L).
9. Cammarata M., Parrinello N., Arizza V. (1993). In vitro release of lectins from *Phallusia mamillata* hemocytes after their fractionation on a density gradient. *J. Exp. Zool.* 266:319-327 (L).
10. Cervello M., Arizza V., Lattuca G., Parrinello N., Matranga V. (1994). Detection of vitellogenin in a subpopulation of sea urchin coelomocytes. *Eur. J. Cell Biol.* 64:314-319 (L).
11. Parrinello N., Cammarata M., Arizza V., Lipari L., (1994). In vitro cytotoxic activity against erythrocytes by ascidians hemocytes: Target/effectector interactions. *Dev. Comp. Immunol.* 18:S. 1 S89 (L).
12. Cammarata M., Arizza V. (1994). Methods for phagocytosis fluorescence quenching in vitro assay for hemocytes in tunicates. *Anim. Biol.* 3:173-174 (L).
13. Arizza V., Cammarata M., Tomasino M.C, Parrinello N. (1995). Phenoloxidase characterization in hemocyte from the solitary ascidian *Styela plicata*. *J. of Invert. Pathol.* 66:297-302 (L).
14. Parrinello N., Cammarata M., Lipari L., Arizza V. (1995). Sphingomyelin-inhabitable natural cytotoxic activity of *Ciona intestinalis* granulocytes towards erythrocyte targets. *Dev. Comp. Immunol.* 19:31-41 (L).
15. Cooper E. L., Arizza V., Cammarata M., Pellerito L., Parrinello N. (1995). Tributyltin affect phagocytic activity of *Ciona intestinalis* hemocytes. *Comp. Biochem. Physiol.* 112C:285-289 (L).
16. Lipari L., Cammarata M., Arizza V., Parrinello D. (1995). Cytotoxic activity of *Styela plicata* hemocytes against mammalian cell targets: I. Properties of the in vitro reaction against erythrocytes. *Anim Biol.* 4:131-137 (L).
17. Cammarata M., Candore G., Arizza V., Caruso C., Parrinello N. (1995). Cytotoxic activity of *Styela plicata* hemocytes against mammalian cell targets: II. Properties of the in vitro reaction against human tumor cell lines. *Anim. Biol.* 4:139-144 (L).
18. Cammarata M, Arizza V. Vazzana M., Parrinello N. (1996). Prophenoloxidase activating system in Tunicate. *It. J. Zool.* 63:345-351 (L).
19. Cervello M., Arizza V., Cammarata M., Parrinello N., Matranga V. (1996). Properties of sea urchin coelomocyte agglutinins. *It. J. Zool.* 63:353-356 (R).
20. Parrinello N. Cammarata M., Arizza V. (1996). Univacuolar refractile hemocytes from the tunicate *Ciona intestinalis* are cytotoxic for Mammalian erythrocytes in vitro. *Biol. Bull.* 190: 418-425 (L).
21. Arizza V., Cooper E.L., Parrinello N. (1997). Circulating hemocytes and pharyngeal explants of *Styela clava* release hemagglutinin in vitro. *J. Marine Biotech.* 5:31-35 (L).
22. Cammarata M., Arizza V., Parrinello N., Candore, G. Caruso C. (1997). Phenoloxidase-dependent cytotoxic mechanism in ascidian (*Styela plicata*) hemocytes active against erythrocytes and K562 tumor cells. *Eur. J. Cell Biol.* 74:302-307 (L).
23. Cammarata M, Arizza V., Savona B., Vazzana M, Parrinello D. (1999). Prophenoloxidase in the hemocytes of *Phallusia mamillata*. *Animal Biology* 8:15-17 (L).
24. Cammarata M., Vazzana M., Cervello M., Arizza V. and Parrinello N. (2000). Spontaneous cytotoxic activity of eosinophilic granule cells separated from peritoneal exudate of *Dicentrarchus labrax*. *Fish & Shellfish Immunology*. 10:143-154 (L).
25. Vizzini A., Arizza V., Cervello M., Cammarata M., Gambino R. and Parrinello N. (2002) Cloning and expression of a type IX-like collagen in tissues of the ascidian *Ciona intestinalis*. *Biochem. Biophys. Acta.* 1577:38-44 (L).
26. Parrinello N., Arizza V., Chinnici C., Parrinello D. Cammarata M. (2003). Phenoloxidases in ascidian hemocytes: characterization of the pro-phenoloxidase activating system. *Comp. Biochem. and Physiol. Part A Molecular & Integrative Physiology* 135:583-591 (L).

27. Arizza V., Giaramita F.T., Parrinello D., Cammarata M., Parrinello N. (2007). Cell cooperation in coelomocyte cytotoxic activity of *Paracentrotus lividus* coelomocytes. *Comp. Biochem. and Physiol. Part A Molecular & Integrative Physiology.* 147:389–394 (L).
28. Parrinello N., Arizza V., Cammarata M., Giaramita F., Pergolizzi M., Vazzana M., Vizzini A., Parrinello D. (2007). Inducible lectins with galectin properties and human IL1 α epitopes opsonize yeast during the inflammatory response of the ascidian *Ciona intestinalis*. *Cell and Tissue Research.* 329:379-390 (L).
29. Parrinello N., Arizza V., Vazzana M., Cammarata M., Giaramita F.T., Di Bella M.L., Vizzini A., Parrinello D. (2007). Separated hemocyte populations from the ascidian *Ciona intestinalis* contain and release in vitro opsonizing Ca++-independent and β -galactoside specific lectins. *Invert. Survival Journal.* 4:55-64 (L).
30. Cammarata M., Parisi M.G., Benenati G., Arizza V., Cillari T., Piazzese D., Gianguzza M., Vazzana M., Vizzini A. and Parrinello N. (2007). In vitro effects of methylmercury on ascidian (*Styela plicata*) immunocyte responses. *Appl. Organometal. Chem.* 21:1022-1028 (L).
31. Vizzini A., Vazzana M., Salerno G., Di Sano C., Macaluso P., Arizza V., Cammarata M., Pergolizzi M., Parrinello N. (2008). FACIT-collagen is expressed by hemocytes and epidermis in the inflammatory response of the ascidian *Ciona intestinalis*. *Dev. Comp. Immunol.* 32:682-692 (L).
32. Cammarata M., Arizza V., Cianciolo C., Parrinello D., Vazzana M., Vizzini A., Salerno G., Parrinello N. (2008) The prophenoloxidase system is activated during the tunic inflammatory reaction of *Ciona intestinalis*, *Cell and Tissue Research.* 333:481-492. (L).
33. Schillaci D., Arizza V., Dayton T., Camarda L., Di Stefano V. (2008) In vitro anti- biofilm activity of *Boswellia* spp. oleogum resin essential oils *Journals of Applied Microbiology* 47:433-438 (L).
34. Arizza V., Zenone A., Giaramita F.T., Rinaldi A., Sarà G. (2008). Heat shock proteins (hsp) in *Brachidontes pharaonis* (mollusca, bivalvia) at varying temperatures. *Biologia Marina Mediterranea* 15:404-405 (L).
35. Celi M., Vazzana M., Salerno G., Di Bella M.L., Arizza V., Parrinello N. (2008). Effects of cadmium on expression of the hsp70 in sea bass (*Dicentrarchus labrax* L., Osteichthyes. Moronidae) blood cells. *Biologia Marina Mediterranea* 15:412-413 (L).
36. Giaramita F.T., Vizzini A., Salerno G., Parrinello D., Arizza V. (2008) Effect of exposure cadmium on the echinoderm *Paracentrotus lividus* (Echinoidea). *Biologia Marina Mediterranea* 15:420-421 (L).
37. Parrinello N., Vizzini A., Arizza V., Salerno G., Parrinello D., Cammarata M., Giaramita F.T., Vazzana M. (2008). Enhanced expression of a cloned and sequenced *Ciona intestinalis* TNF α -like (CiTNF α) gene during the LPS-induced inflammatory response. *Cell and Tissue Research.* 334:305-17 (L).
38. Arizza V., Parrinello D. (2009). Inflammatory hemocytes in *Ciona intestinalis* innate immune response *Invertebrate Survival Journal.* 6:S58-S66 (R).
39. Arizza V., Di Fazio G., Celi M., Parrinello N., Vazzana M. (2009). Cadmium, Copper and Tributyltin effects on fertilization of *Paracentrotus lividus* (Echinodermata). *Ital. J. Anim. Sc.* 8:S. 2:839-841 (L).
40. Vazzana M., Salerno G., Celi M., Vizzini A., Parrinello D., Di Bella M.L., Arizza V. (2009). Effect of in vitro exposure to cadmium and copper on sea bass blood cells. *Ital. J. Anim. Sc.* 8 (SUPPL. 2):884-886 (L).
41. Schillaci D., Arizza V., Parrinello N., Di Stefano V., Fanara S., Muccilli V., Cunsolo V., Haagensen J., Molin S. (2010). Antimicrobial and anti-staphylococcal biofilm activity from the sea- urchin *Paracentrotus lividus*. *J. Appl. Microbiology* 108:17-24 (L).
42. Parrinello N., Vizzini A., Salerno G., Sanfratello M.A., Cammarata M., Arizza V., Vazzana M., Parrinello D. (2010). Inflamed adult pharynx tissues and swimming larva of *Ciona intestinalis* share CiTNF α -producing cells. *Cell and Tissue Research* 341:299–311 (L).
43. Arizza V., Celi M., Calandra G., Sarà G., Buscaino G., Parrinello D., Ferrantelli V., Vazzana M. (2010). In vivo effect of sound waves (200 Hz 100 kHz) on hsp70 expression in blood cells of *Chromis chromis* (Perciformes). *Biol. Mar. Mediter.* 17:346-357 (L).
44. Arizza V., Giaramita F.T., Parrinello D., Vazzana M., Vicari D., Parrinello N. (2010). Sex-dependent variations in the cytotoxic activity of *Paracentrotus lividus* (Echinoidea) coelomocytes. *Biol. Mar. Mediter.* 17:348-359 (L).
45. Manachini B., Arizza V., Parrinello D., Parrinello N. (2011). Hemocytes of *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae) and their response to *Saccharomyces cerevisiae* and *Bacillus thuringiensis*. *J. Invert. Pathol.* 106:360–365 (L).
46. Arizza V., Parrinello D., Giaramita F.T., Cammarata M., Vazzana M., Vizzini A., Parrinello N. (2011). A lytic mechanism based on soluble phospholipases A2 (sPLA2) and β -galactosides specific lectins is exerted by *Ciona intestinalis* (ascidian) unilocular refractile hemocytes against the human K562 cell line and mammalian erythrocytes. *Fish and Shellfish Immunology.* 30:1014-1023 (L).
47. Mazza G., Arizza V., Baracchia D., Barzanti G.P., Benvenuti C., Francardi V., Frandia A., Gherardia F., Longo S., Manachini B., Perito B., Rumine P., Schillaci D., Turillazzi S., Cervo R. (2011). Antimicrobial activity of the Red Palm Weevil *Rhynchophorus ferrugineus*. *Bull. Insectol.* 64:33-41 (L).

48. Manachini B., Vazzana M., Celi M., Arizza V. (2011). *Bacillus thuringiensis* treatment alters larval growth, hemocytes and modulation of Hsp70 in *Rhynchophorus ferrugineus*. IOBC/wprs Bull. 66:53-57 (L).
49. Schillaci D., Vitale M., Cusimano M.G. Arizza V. (2012). Fragments of beta-thymosin from the sea urchin *Paracentrotus lividus* as potential antimicrobial peptides against staphylococcal biofilms. Ann. N.Y. Acad. Sci. 1270:79-85. (L).
50. Manachini B., Schillaci D., Arizza V. (2013). Biological Responses of *Rhynchophorus ferrugineus* (Coleoptera: Curculionidae) to *Steinernema carpocapsae* (Nematoda: Steinernematidae). J. Econom. Entomol. 106:1582-9 (L).
51. Schillaci D., Cusimano M.G., Cunsolo V., Saletti R., Russo D., Vazzana M., Vitale M., Arizza V. (2013). Immune mediators of sea-cucumber *Holothuria tubulosa* (Echinodermata) as source of novel antimicrobial and anti-staphylococcal biofilm agents. AMB Express; 3:35 (L).
52. Arizza V., Schillaci D. (2013). Echinoderm Antimicrobial peptides to contrast human pathogens. Nat. Produc. Chem. Res. 1:109. (R).
53. Schillaci D., Arizza V., Gargano M.L., Venturella G. (2013). Antibacterial activity of *Pleurotus* species. Int. J. Med. Mushrooms 15:591-594 (L).
54. Manachini B., Arizza V., Rinaldi A., Montalto V. and Sarà G. (2013). Eco-physiological response of two marine bivalves to acute exposition of the commercial bt-based pesticide. Mar. Environ. Res. 83:29-37 (L).
55. Arizza V., Vazzana M., Schillaci D., Russo D., Giaramita F.T., Parrinello N. (2013). Gender differences in the immune system activities of sea urchin *Paracentrotus lividus*. Comparative Biochemistry and Physiology - Part A - Molecular & Integrative Physiology. 164:447-455. (L).
56. Vazzana M., Celi M., Tramati C., Ferrantelli V., Arizza V., Parrinello N. (2014). In vitro effect of cadmium and copper on separated blood leukocytes of *Dicentrarchus labrax*. Ecotoxicol. Environmen. Safety. 102:113-120 (L).
57. Sarà G., Milanese M., Prusina I., Sarà A., Angel D.L., Glamuzina B., Nitzan T., Freeman S., Rinaldi A., Palmeri V., Montalto V., Lo Martire M., Gianguzza P., Arizza V., Lo Brutto S., De Pirro M.O., Helmuth B., Murray J., De Cantis S., Williams G.A. (2014). The impact of climate change on mediterranean intertidal communities: losses in coastal ecosystem integrity and services. Reg. Environmental Change 14,S1:S5-S17 (L).
58. Vazzana M., Reas G., Cammarata M., Arizza V., Ferrantelli V., Parrinello N. (2014). Aroclor 1254 inhibits the chemiluminescence response of peritoneal cavity cells from sharpsnout sea bream (*Diplodus puntazzo*). Fish & Shellfish Immunol. 39:498-502. (L).
59. Arizza V., Russo, D., Marrone, F., Sacco, F., Arculeo, M. (2014). Morphological characterization of the blood cells in the endangered Sicilian endemic pond turtle, *Emys trinacris* (Testudines: Emydidae). Italian Journal of Zoology 81:344-353. (L).
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