

# Curriculum Vitae of Luigi Vezzulli

## FIELDS OF SCIENTIFIC COMPETENCE, EDUCATION AND CAREER

### Personal

Orcid number: [orcid.org/0000-0002-4368-1454](https://orcid.org/0000-0002-4368-1454)

### Main fields of interest and competence

- 1) Marine Microbiology
- 2) *Vibrio cholerae* ecology and pathogenicity
- 3) Ecology and pathogenicity of vibrios associated to diseases in marine invertebrates
- 4) Climate change and *Vibrio* species

### Education, work experience and career

**October 2014-present:** Associate Professor in SSD BIO/19 “General Microbiology” at the University of Genoa, Genoa (IT).

**Dec 2005-September 2014:** University researcher in SSD BIO/19 “General Microbiology” at the University of Genoa, Genoa (IT).

**April 2005-December 2005:** Fellowship in Ecology (research in Microbial Ecology) at the Laboratory of Ecology (DIPTERIS), University of Genoa.

**March 2003-March 2005:** Post-doc position in SSD BIO/19 “General Microbiology” at the Laboratory of Microbiology (DIBISAA) of the University of Genoa.

**November 2000-October 2003:** PhD in Marine Sciences at the Laboratory of Ecology (DIPTERIS), University of Genoa. Thesis: Microbial bioremediation of fish-farm impacted marine sediments

**February 2000-October 2000:** Fellowships in Ecology (research in Microbial Ecology) at the Laboratory of Ecology (DIPTERIS), University of Genoa.

**February 1999- January 2000:** National Service, Cremona (IT)

**April 1998-January 1999:** Leonardo da Vinci studentship (from April 1998 to September 1998) and Part-Time position as a CPR plankton analyst (from September 1998 to January 1999) at the Sir Alister Hardy Foundation for Ocean Science (SAHFOS) (tutor: Prof Philip Chris Reid), Plymouth, England (UK).

**1998** University degree (Laurea) 110/110 in Biological Sciences at the University of Ancona (Italy). Thesis: “Response of the bacterial community and analysis of organic matter in the Northern Adriatic frontal system: comparison between areas differently influenced by river input”.

**1992:** High School Diploma (Istituto Tecnico Agrario)

### Visiting scientist experience

- 2005-** Visiting scientist (May) at the Marine Molecular Microbiology & Biotechnology Group IAMC-CNR (tutor: Prof Michail Yakimov) (Messina, Italy) (research on molecular methods applied to the study of marine microbial communities).
- 2001-** Visiting scientist (1 November to 30 December) at the School of Applied Biological and Chemical Sciences (Laboratory of Molecular Microbiology and Biotechnology) (tutor: Prof Ibrahim Banat), University of Ulster, Northern Ireland (UK) (research on microbial bioremediation of hydrocarbon-contaminated soils and organic rich sediments).
- 2000-2002-2003-2004-2010-2012-2013-2014-2105-2016-2018** Visiting scientist (from 1 week to 1 month) at the Sir Alister Hardy Foundation for Ocean Science (SAHFOS), Plymouth, England (UK) (research on the macroecology of pathogenic vibrio populations)

### **Abilitazione Scientifica Nazionale (ASN; National Scientific Qualification)**

On 06/04/2017 Luigi Vezzulli obtained the National Scientific Qualification for full Professorships (I fascia, valid until 06/04/2023, art. 16, comma 1, Legge 240/10).

## **RESEARCH ACTIVITY**

### **SUMMARY**

- Academic age: 17 years (period 2002-2018)
- Total number of international publications (incl. publ in press): **73**  
*Number of publications authored as first name: 27*  
*Number of publications authored as last name: 5*  
*Number of publications as corresponding author: 24*  
*Total impact factor (SCI Journal Citation Reports 2016) = 214*  
*H index Scopus = 26*
- Number of chapters in International books: **4**
- Italian scientific habilitation indices (source SCOPUS):  
*N articoli 10 anni precedenti (dal 2008): 46*  
*indice H 15 anni precedenti (dal 2003): 24*  
*Citazioni 15 anni precedenti (dal 2003): 1675*
- Luigi Vezzulli is first author of the scientific software WinCPR (<http://www.network-research-group.org/wincpr/>) that is a collaborative development between the University of Genoa, the Sir Alister Hardy Foundation for Ocean Science (Plymouth, UK) and the University of Plymouth.

### **Research activity**

The research activity of Luigi Vezzulli is mainly focused on the study of the biology and ecology of pathogenic bacteria belonging to the genus *Vibrio*. Research conducted in this field explored the mechanisms of persistence and survival strategies of *Vibrio* bacteria in the aquatic environment. Studies have shown that zooplankton and other aquatic organisms represent important environmental reservoirs and/or hosts of *V. cholerae* and other *Vibrio* species. In particular, research on molecular determinants that are responsible

for *V. cholerae* interaction with environmental substrates highlighted the role of outer membrane proteins in mediating *V. cholerae* adhesion to chitin containing substrates. Special attention was given to N-acetyl glucosamine-binding protein A (GbpA) of *V. cholerae* which is involved in colonization of both human intestinal cells and environmental chitin surfaces via the same binding specificity. The *gbpA* gene is located in a non mobile region of chromosome II and was found ubiquitously in *V. cholerae*. The gene is also present in *V. vulnificus* and *V. parahaemolyticus* with conserved and species specific hypervariable regions. These properties make *gbpA* a good phylogenetic marker for human pathogenic *Vibrio* species and allowed the development of new molecular protocols for detection and quantification of *V. cholerae* in complex environmental matrices (including historical formalin-fixed environmental samples). Studies on GbpA showed that this ligand plays an important role in *V. cholerae* interaction with its main environmental reservoirs in coastal water (e.g. copepods). Moreover, due to the upregulation exerted by temperature on its expression, GbpA is likely to contribute to the enhanced *V. cholerae* colonization capability of zooplankton organisms at high environmental temperature, thus partially explaining the role of ocean warming in promoting the spread of these bacteria in the aquatic environment. Ongoing research in this field is devoted to study possible use of GbpA as a component of vaccine against *V. cholerae* in collaboration with the University of Maryland (USA) and the Centre of Biotechnology of the University of Maputo (Mozambique).

In the field of non-human diseases research activity was devoted to study *Vibrio* species that cause diseases in marine animals (e.g. corals and bivalves). Studies were conducted to assess the role of thermodependant *Vibrio* pathogens in mass mortality events of benthic invertebrates in the NW Mediterranean Sea which are related to sea surface temperature anomalies registered during the recent years. Such studies resulted in the identification of the TAV24 *Vibrio* strain, later identified as *V. coralliilyticus*, which was demonstrated to trigger mass mortality events of the purple gorgonian *Paramuricea clavata*, a key structuring species of the coralligenous assemblages in the NW Mediterranean Sea. Ongoing activity in this field is carried out in collaboration with the Australian Institute of Marine Sciences (AIMS) aimed at the genotypic and phenotypic characterization of the TAV24 strain and the assessment of involved virulence factors using transposon and site-specific mutagenesis. In the field of bivalve diseases ongoing activity in collaboration with IFREMER (France) and other European Institutes (in the frame of European projects FP7-BIVALIFE and Horizon 2020-VIVALDI) is focused on the study of the biology and ecology of *Vibrio splendidus* and *Vibrio aestuarianus* which are involved in abnormal mortality events of the Pacific oyster *Crassostrea gigas* in the Atlantic ocean. Particular focus was given to the study of *V. aestuarianus* and *V. splendidus* interaction with bivalve hemocytes and other bivalve defense mechanisms. Major findings in this field resulted in the identification of a mussel serum opsonin (matching the protein precursor of *Mytilus edulis* extrapallial protein -EP) directed towards D-mannose binding bacterial ligands that were shown to mediate *V. aestuarianus* 01/032 interactions with *M. galloprovincialis* haemocytes. In the presence of *M. galloprovincialis* EP protein (MgEP), *C. gigas* haemocytes killed *V. aestuarianus* 01/032 almost as efficiently as mussel phagocytes. These findings suggest that the different sensitivity of 01/032 strain to the antibacterial activity of oyster and mussel haemolymph might partly depend on the fact that *C. gigas* serum lacks MgEP-like opsonins.

In the field of *Vibrio* ecology research was also conducted to study the effects of ocean warming on natural *Vibrio* populations through the development of a novel approach which is based on the molecular analysis of formalin-fixed samples from the historical

Continuous Plankton Recorder (CPR) archive. The CPR archive, which is based at the Sir Alister Hardy Foundation for Ocean Science (SAHFOS) in Plymouth (UK), is one of the longest and most geographically extensive collection of marine plankton samples in the world. For the first time prokaryotic DNA was recovered from CPR samples that had been stored for up to ~50 years in a formalin-fixed format. Protocols were developed for the application of microbiological molecular techniques (e.g. PCR-based and Next Generation Sequencing techniques) on archived CPR samples. Using such protocols we were able to demonstrate that there was an increase in the numbers of vibrios over the past half century, probably a two or threefold increase, correlated with the increase in climate temperature, and then correlated with outbreaks of vibrio infections that have been recorded in the medical records. These findings provide support for the view that global warming is having a strong impact on the composition of marine prokaryotic communities with potential important implications for human and animal health.

Early research of Luigi Vezzulli was focused on the study of microbial ecology and bioremediation of organic-rich marine ecosystems. In 2011 Luigi Vezzulli developed the WinCPR software, a gridded database of plankton abundance in the North Sea compiled from monthly sampling by the Continuous Plankton Recorder (CPR) Survey (WinCPR is freely available at <http://cpr.cscan.org/>).

### **Publications in International Journals**

1. **Vezzulli L\***, Povero P and Fabiano M (2002). The distribution and biochemical composition of biogenic particles across the subtropical Front in June 1993 (Azores-Madeira region, Northeast Atlantic). *Scientia Marina*, 66(3), 205-214. *\*corresponding author*
2. **Vezzulli L\***, Chelossi E, Riccardi G and Fabiano M (2002). Bacterial community structure and activity in fish farm sediments of the LigurianSea (Western Mediterranean). *Aquaculture International*, 10(2), 123-141. *\*corresponding author*
3. Chelossi E, **Vezzulli L**, Milano A, Branzoni M, Fabiano M, Riccardi G and Banat IM (2003)- Antibiotic resistance of benthic bacteria in fish-farm and control sediments of the Western Mediterranean. *Aquaculture*, 219, 83-97.
4. Danovaro R, Corinaldesi C, La Rosa T, Luna GM, Mazzola A, Mirto S, **Vezzulli L** and Fabiano M (2003). Aquaculture impact on benthic microbes and organic matter cycling in coastal Mediterranean sediments: a synthesis. *Chemistry and Ecology*, 19(1), 59-65.
5. **Vezzulli L\***, Fabiano M, Granelli V and Moreno M (2003). Influence of large spectrum environmental contamination on the micro-meio-benthic assemblages in harbour sediments of the LigurianSea. *Chemistry and Ecology*, 19(4), 233-246. *\*corresponding author*
6. **Vezzulli L\*** and Reid PC (2003). The CPR survey (1948-1997): a gridded database browser of plankton abundance in the North Sea. *Progress in Oceanography*, 58(2-4), 327-336. *\*corresponding author*
7. **Vezzulli L\***, Marralle D, Moreno M and Fabiano M (2003). Sediment organic matter and meiofauna community response to long-term fish-farm impact in the LigurianSea (Western Mediterranean). *Chemistry and Ecology*, 19(6), 431-440. *\*corresponding author*

8. Doglioli A, Magaldi M, **Vezzulli L** and Tucci S (2004). Development of a numerical model to study the dispersion of wastes coming from a marine fish farm in the Ligurian Sea (Western Mediterranean). *Aquaculture*, 231(1-4), 215-235.
9. Fabiano M, Vassallo P, **Vezzulli L**, Salvo VS and Marques JC (2004). Temporal and spatial change of Exergy and Ascendency in different benthic marine ecosystems. *Energy*, 29, 1697-1712.
10. Fabiano M, Marin V, Misic C, Moreno M, Salvo VS and **Vezzulli L\*** (2004). Sedimentary Organic matter and bacterial community in microtidal mixed beach of the Ligurian Sea (NW Mediterranean). *Chemistry and Ecology*, 20(6), 423-435. *\*corresponding author*
11. **Vezzulli L\***, Pruzzo C and Fabiano M (2004). Response of the bacterial community to in-situ bioremediation of organic-rich sediments. *Marine Pollution Bulletin*, 49(9-10). 740-751. *\*corresponding author*
12. Gallizia I, **Vezzulli L** and Fabiano M (2004). Oxygen supply for biostimulation of enzymatic activity In organic-rich marine ecosystems. *Soil Biology and Biochemistry*, 36, 1645-1652.
13. Gallizia I, **Vezzulli L** and Fabiano M. (2005). Evaluation of different bioremediation protocols to enhance decomposition of organic polymers in harbour sediments. *Biodegradation*, 16(6), 569-579.
14. **Vezzulli L\***, Bartoli M, Nizzoli D, Fanciulli G, Viaroli P and Fabiano M. (2005) – Relationships between macroalgal biomass and microbiological quality of water in a phytotreatment pond. *Hydrobiologia*, 550, 211-219. *\*corresponding author*
15. Bartoli M, Nizzoli D, **Vezzulli L**, Naldi M, Fanciulli G, Viaroli P and Fabiano M. (2005) – Dissolved oxygen and nutrient budgets in a phytotreatment pond colonised by *Ulva* spp. *Hydrobiologia*, 550, 199-209.
16. Bartoli M, Nizzoli D, Naldi M, **Vezzulli L**, Porrello S, Lenzi M and Viaroli P. (2005) – Inorganic nitrogen control in wastewater treatment ponds from a fish farm (Orbetello, Italy): Denitrification versus *Ulva* uptake. *Marine Pollution Bulletin*, 50(11), 1386-1397.
17. **Vezzulli L\*** and Fabiano M. (2006) – Sediment biochemical and microbial variables for the evaluation of trophic status along the Italian and Albanian Continental Shelves. *Journal of the Marine Biological Association of the United Kingdom*, 86, 27-37. *\*corresponding author*
18. Vassallo P, Fabiano M, **Vezzulli L**, Sandulli R, Marques JC and Jørgensen SE (2006). Assessing the health of coastal marine ecosystem: a holistic approach based on sediment micro and meiobenthic measures. *Ecological Indicators*, 6(3), 525-542.
19. **Vezzulli L\***, Bartoli M, Nizzoli D, Naldi M, Fanciulli G, Viaroli P and Fabiano M. (2006). A simple tool to help decision making in infrastructure planning and management of phytotreatment ponds for the treatment of nitrogen-rich water. *Water SA*, 32(4), 605-609. *\*corresponding author*

20. Perfumo A, Banat IM, Marchant R and **Vezzulli L** (2007). Thermally enhanced approaches for bioremediation of hydrocarbon contaminated soils. *Chemosphere*, 66(1): 179-184.
21. Pruzzo C, **Vezzulli L**, Colwell RR (2008). Global impact of *Vibrio cholerae* interactions with chitin. *Environmental Microbiology*, 10(6): 1400-1410.
22. Moreno M, Ferrero TJ, Gallizia I, **Vezzulli L**, Albertelli G, Fabiano M (2008). An assessment of the spatial heterogeneity of environmental disturbance within an enclosed harbour through the analysis of meiofauna and nematode assemblages. *Estuarine, Coastal and Shelf Science*, 77: 565-576.
23. **Vezzulli L\***, Pezzati E, Repetto B, Stauder M, Giusto G and Pruzzo C (2008). A general role for surface membrane proteins in attachment to chitin particles and copepods of environmental and clinical vibrios. *Letters in Applied Microbiology*, 46: 119-125.  
\*corresponding author
24. **Vezzulli L\***, Moreno M, Marin V, Pezzati E, Bartoli M, Fabiano M (2008). Organic waste impacts of capture-based Atlantic bluefin tuna aquaculture at an exposed site in the Mediterranean Sea. *Estuarine, Coastal and Shelf Science*, 78: 369-384. \*corresponding author
25. **Vezzulli L**, Guzmán CA, Colwell RR, Pruzzo C (2008). Dual role colonization factors connecting *Vibrio cholerae*'s lifestyles in human and aquatic environments open new perspectives for combating infectious diseases. *Current Opinion in Biotechnology*, 19: 254-259.
26. Marin V, Moreno M, Vassallo P, **Vezzulli L**, Fabiano M (2008). Development of a multi-step indicator-based approach (MIBA) for the assessment of environmental quality of harbours. *ICES Journal of Marine Science*, 65: 1436-1441.
27. Moreno M, **Vezzulli L**, Marin V, Laconi P, Albertelli G, Fabiano M (2008) The use of meiofauna diversity as indicators of pollution in harbours. *ICES Journal of Marine Science*, 65: 1428-1435.
28. **Vezzulli L**, Repetto B, Pezzati E, Stauder M, Giusto G, Pruzzo C (2008) Adhesins acquired in the aquatic environment and *Vibrio cholerae* colonization of intestinal cells. *Microbial Ecology in Health and Disease*, 20(4): 193-196.
29. **Vezzulli L\***, Zotti M, Marin V, Moreno M, Pezzati E, Fabiano M (2009). Swash Zone Interstitial Water is a reservoir of fungal microorganisms in a Mediterranean beach (Genoa city, Italy). *Marine Biodiversity Records*, 2:e19. \*corresponding author
30. Pusceddu A, Dell'Anno A, **Vezzulli L**, Fabiano M, Saggiomo V, Cozzi S, Catalano G, Guglielmo L (2009) Microbial loop malfunctioning in the annual sea ice at Terra Nova Bay (Antarctica). *Polar Biology*, 32: 337–346.
31. Bartoli M, **Vezzulli L**, Nizzoli D, Azzoni R, Porrello S, Moreno M, Fabiano M, Viaroli P (2009) Short-term effect of oxic to anoxic transition on benthic microbial activity and solute fluxes in organic-rich phytotreatment ponds. *Hydrobiologia* 629: 123–136.

32. **Vezzulli L\***, Pezzati E, Moreno M, Stauder M , Fabiano M and Pruzzo C (2009). Molecular ecology of marine sediments: determination of Real-Time PCR efficiency for quantifying microbial cells. *Chemistry and Ecology* 25: 285–292. \*corresponding author
33. **Vezzulli L\***, Pezzati E, Moreno M, Fabiano M, Pane L, Pruzzo C and the VibrioSea consortium (2009) Benthic ecology of *Vibrio* spp. and pathogenic *Vibrio* species in a coastal Mediterranean environment (La Spezia Gulf, Italy). *Microbial Ecology* 58: 808–818. \*corresponding author
34. Stauder M, **Vezzulli L\***, Pezzati E, Repetto B, Pruzzo C (2010) Temperature affects *Vibrio cholerae* O1 El Tor persistence in the aquatic environment via an enhanced expression of GbpA and MSHA adhesins. *Environmental Microbiology Reports* 2: 140–144. \*corresponding author
35. **Vezzulli L\***, Pruzzo C, Huq A, Colwell RR (2010) Environmental reservoirs of *Vibrio cholerae* and their role in cholera. *Environmental Microbiology Reports* 2: 27–33. \*corresponding author
36. Spagnoli F, Dell'Anno A, De Marco A, Dinelli E, Fabiano M, Gadaleta MV, Iannig C, Loiaconoc F, Manini E, Marini M, Mongelli G, Rampazzo G, Rivaro P, **Vezzulli L** (2010). Biogeochemistry, grain size and mineralogy of the Central and Southern Adriatic Sea sediments: a review. *Chemistry and Ecology* 26: 19–44.
37. Cattaneo Vietti R, Albertelli G, Aliani S, Bava S, Bavestrello G, Benedetti Cecchi L, Bianchi CN, Bozzo E, Capello M, Castellano M, Cerrano C, Chiantore M, Corradi N, Cocito S, Cutroneo L, Diviacco G, Fabiano M, Faimali M, Ferrari M, Gasparini GP, Locritani M, Mangialajo L, Marin V, Moreno M, Morri C, Orsi Relini L, Pane L, Paoli C, Petrillo M, Povero P, Pronzato R, Relini G, Santangelo G, Tucci S, Tunesi L, Vacchi M, Vassallo P, **Vezzulli L**, Wurtz M (2010). The LigurianSea: present status, problems and perspectives. *Chemistry and Ecology* 26: 319-340.
38. **Vezzulli L\***, Previati C, Pruzzo C, Marchese A, Bourne DG, Cerrano C and the VibrioSea consortium (2010). *Vibrio* infections triggering mass mortality events in a warming Mediterranean Sea. *Environmental Microbiology* 12(7): 2007-2019. \*corresponding author
39. Stauder M, Papetti A, Daglia M, **Vezzulli L**, Gazzani G, Varaldo PE, Pruzzo C (2010). Inhibitory activity by barley coffee components towards streptococcus mutans biofilm. *Current Microbiology*, 61(5): 417-421
40. Moreno M, Semprucci F, **Vezzulli L**, Balsamo M, Fabiano M, Albertelli G (2011). The use of nematodes in assessing ecological quality status in the Mediterranean coastal ecosystems. *Ecological indicators*, 11: 328-336.
41. Huete-Stauffer C, Vielmini I, Palma M, Navone A, Panzalis P, **Vezzulli L**, Misic C, Cerrano C (2011). *Paramuricea clavata* (Anthozoa, Octocorallia) loss in the Marine Protected Area of Tavolara (Sardinia, Italy) due to a mass mortality event. *Marine Ecology and Evolutionary Perspective*, 32: 107-116.
42. **Vezzulli L\***, Brettar I, Pezzati E, Reid PC, Colwell RR, Höfle MG, Pruzzo C (2012).

Long-term effects of ocean warming on the prokaryotic community: evidence from the vibrios. *The ISME Journal*, 6: 21-30. \*corresponding author

43. Signoretto, C, Canepari P, Stauder M, **Vezzulli L** and Pruzzo C (2012). Functional foods and strategies contrasting bacterial adhesion. *Current Opinion in Biotechnology*, 23:160-167.

44. Stauder M., Huq A., Pezzati E, Grim CJ, Ramoino P, Pane L, Colwell RR, Pruzzo C, **Vezzulli, L** (2012). Role of GbpA protein, an important virulence-related colonization factor, for *Vibrio cholerae*'s survival in the aquatic environment. *Environmental Microbiology Reports*, 4:439-445.

45. **Vezzulli L**, Colwell RR, Pruzzo C (2013) Ocean warming and spread of pathogenic vibrios in the aquatic environment. *Microbial Ecology*, 65(4), 817-825.

46. Losi V, Moreno M, Gaozza L, **Vezzulli L**, Fabiano M, Albertelli G (2013) Nematode biomass and allometric attributes as indicators of environmental quality in a Mediterranean harbour (Ligurian Sea, Italy) *Ecological Indicators* 30, 80–89

47. **Vezzulli L\***, Pezzati E, Huete-Stauffer C, Pruzzo C, Cerrano C (2013) 16SrDNA Pyrosequencing of the Mediterranean Gorgonian *Paramuricea clavata* Reveals a Link among Alterations in Bacterial Holobiont Members, Anthropogenic Influence and Disease Outbreaks. *Plos One* 8(6), e67745. \*corresponding author

48. Balbi T, Fabbri R, Cortese K, Smerilli A, Ciacci C, Grande C, **Vezzulli L**, Pruzzo C, Canesi L (2013) Interactions between *Mytilus galloprovincialis* hemocytes and the bivalve pathogens *Vibrio aestuarianus* 01/032 and *Vibrio splendidus* LGP32. *Fish and Shellfish Immunology* 35(6), 1906-1915

49. Wilson B, Muirhead A, Bazanella M, Huete-Stauffer C, **Vezzulli L**, Bourne DG (2013) An Improved Detection and Quantification Method for the Coral Pathogen *Vibrio coralliilyticus*. *Plos One* 8(12): e81800

50. Canesi L, Pezzati E, Stauder M, Grande C, Bavestrello M, Papetti A, **Vezzulli L**, Pruzzo C (2013) *Vibrio cholerae* interactions with *Mytilus galloprovincialis* hemocytes mediated by serum components. *Frontiers in Microbiology* 4:371

51. **Vezzulli L**, Pezzati E, Stauder M, Stagnaro L, Venier P, Pruzzo C (2015) Aquatic Ecology of the Oyster Pathogens *Vibrio splendidus* and *Vibrio aestuarianus*. *Environmental Microbiology* 17(4): 1065–1080.

52. **Vezzulli L\***, Stauder M, Grande C, Pezzati E, Verheye HM, Owens NJP, Pruzzo C (2015) gbpA as a novel qPCR target for the species-specific detection of *Vibrio cholerae* O1, O139, non-O1/non-O139 in Environmental, Stool, and Historical Continuous Plankton Recorder Samples. *Plos One*, 10(4): e0123983. doi:10.1371/journal.pone.0123983. \*corresponding author

53. Huete-Stauffer C, Valisano L, Gaino E, **Vezzulli L**, Cerrano C (2015). Development of long-term primary cell aggregates from Mediterranean octocorals. *In Vitro Cellular and Developmental Biology – Animal* 51(8):815-26.



54. Le Roux F, Wegner M, Baker Austin C, **Vezzulli L**, Osorio CR, Amaro C, Ritchie J, Defoirdt T, Destoumieux-Garzon D, Blokesch M, Mazel D, Jacq A, Cava F, Gram L, Wendling C, Strauch E, Kirschner A, Huehn S (2015) The Emergence of *Vibrio* pathogens in Europe: Ecology, Evolution and Pathogenesis (Paris, 11-12 March 2015). *Frontiers in Microbiology* 6:830. doi: 10.3389/fmicb.2015.00830.
55. **Vezzulli L**, Pezzati E, Brettar I, Höfle M, Pruzzo C. (2015). Effects of global warming on *Vibrio* ecology. *Microbiology Spectrum* 3(2):VE-0004-2014. doi:10.1128/microbiolspec.VE-0004-2014.
56. Pezzati E, Canesi L, Damonte G, Salis A, Marsano F, Grande C, **Vezzulli L**, Pruzzo C (2015) Susceptibility of *Vibrio aestuarianus* 01/032 to the antibacterial activity of *Mytilus* hemolymph: identification of a serum opsonin involved in mannose-sensitive interactions. *Environmental Microbiology* 17(11):4271-4279.
57. Pozzolini M, Scarfi S, Ghignone S, Mussino F, **Vezzulli L**, Cerrano C, Giovine M (2016) Molecular characterization and expression analysis of the first Porifera tumor necrosis factor superfamily member and of its putative receptor in the marine sponge *Chondrosia reniformis*. *Developmental and Comparative Immunology* 57, 88-98.
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59. Cogliati M, D'Amicis R...**Vezzulli L**.. Colom MF (59 authors) (2016). Environmental distribution of *Cryptococcus neoformans* and *Cryptococcus gattii* around the Mediterranean basin. *FEMS Yeast Research*, 16(4): 1-12.
60. **Vezzulli L\***, Grande C, Reid PC, Hélaouët P, Edwards M, Höfle MG, Brettar I, Colwell RR, Pruzzo C (2016) Climate influence on *Vibrio* and associated human diseases during the past half-century in the coastal North Atlantic. *Proc Natl Acad Sci USA* 23;113(34):E5062-71. \*corresponding author
61. **Vezzulli L\***, Grande C, Tassistro G, Brettar I, Höfle MG, Pereira RPA, Mushi D, Pallavicini A, Vassallo P, Pruzzo C (2017) Whole-genome enrichment provides deep insights into *Vibrio cholerae* metagenome from an African river. *Microbial Ecology*, 73(3):734-738. \*corresponding author
62. Cogliati M, Puccianti E, Montagna MT, De Donno A, Susever S, Ergin C, Velegraki A, Ellabib MS, Nardoni S, Macci C, Trovato L, Dipineto L, Rickerts V, Akcaglar S, Mlinaric-Missoni E, Bertout S, Venc AFC, Sampaio AC, Criseo G, Ranque S, Cerikcioglu N, Marchese A, **Vezzulli L**, Ilkit M, Desnos-Ollivier M, Pasquale V, Polacheck I, Scopa A, Meyer W, Ferreira-Paim K, Hagen F, Boekhout T, Dromer F, Varma A, Kwon-Chung KJ, Inacio J, Colom MF (2017). Fundamental niche prediction of the pathogenic yeasts *Cryptococcus neoformans* and *Cryptococcus gattii* in Europe. *Environmental Microbiology* 19(10): 4318-4325.

63. **Vezzulli L\***, Stagnaro L, Grande C, Tassistro G, Canesi L, Pruzzo C (2018) Comparative 16SrDNA gene-based microbiota profiles of the Pacific oyster (*Crassostrea gigas*) and the Mediterranean mussel (*Mytilus galloprovincialis*) from a shellfish farm (Ligurian Sea, Italy). *Microbial Ecology* 75(2): 495-504. \*corresponding author
64. Balbi T, Cortese K, Ciacci C, Bellese G, **Vezzulli L**, Pruzzo C, Canesi L (2018) Autophagic processes in *Mytilus galloprovincialis* hemocytes: Effects of *Vibrio tapetis*. *Fish Shellfish Immunol* 73:66-74.
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- Balbi T, Auguste M, Cortese K, Montagna M, Borello A, Pruzzo C, Vezzulli L, Canesi L. Responses of *Mytilus galloprovincialis* to challenge with the emerging marine pathogen *Vibrio coralliilyticus* (2019). *Fish and Shellfish Immunology* 84: 352-360
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71. Cogliati M, Desnos-Ollivier M, McCormick-Smith I, Dromer F... **Vezzulli L**, Ilkit M, Pasquale V, Polacheck I, Lockhart SR (in press) Genotypes And Population Genetics Of *Cryptococcus Neoformans* And *Cryptococcus Gattii* Species Complexes In Europe And The Mediterranean Area. *Fungal Genetics and Biology*

72. Massabò D , Danelli SG, Brotto P, Comite A, Costa C, Di Cesare A, Doussin JF, Ferraro F, Formenti P, Gatta E, Negretti L, Oliva M, Parodi F, **Vezzulli L**, Prati P. ChAMBRé: a new atmospheric simulation Chamber for Aerosol Modelling and Bio-aerosol Research. *Atmospheric Measurements & Techniques*, In press

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74. Balbi T, Auguste M, Cortese K, Montagna M, Borello A, Pruzzo C, **Vezzulli L**, Canesi L. Responses of *Mytilus galloprovincialis* to challenge with the emerging marine pathogen *Vibrio coralliilyticus*. *Fish and Shellfish Immunology*, In press

### Chapter in International books

● James D. Oliver, Carla Pruzzo, Luigi Vezzulli, James B. Kaper" *Vibrio Species*," Food Microbiology: Fundamentals and Frontiers, 4th Ed. Edited by M. P. Doyle and R. L. Buchanan © 2013 ASM Press, Washington, ISBN-10: 1555816266, D.C. doi:10.1128/9781555818463.ch16

● Ingrid Brettar, Manfred G. Höfle, Carla Pruzzo, Luigi Vezzulli. Climate Change Effects on Planktonic Bacterial Communities in the Ocean ISBN: 978-1-910190-31-9—From Structure and Function to Long-term and Large-scale Observations, "Climate Change and Microbial Ecology: Current Research and Future Trends" Ed. Edited by Jürgen Marxsen Justus Liebig University, Giessen, Germany, © 2015 Caister Academic Press, Norfolk, UK

● Luigi Vezzulli, William H. Wilson, Carla Pruzzo (2017). Investigating the macroecology of emerging *Vibrio* pathogens in the ocean using the Continuous Plankton Recorder technology. In CIESM 2017. Searching for Bacterial Pathogens in the Digital Ocean. CIESM Workshop Monograph n 49 [F. Briand, ed.], 158 p., CIESM Publisher, Monaco.

● Ceccarelli D, Amaro C, Romalde JL, Suffredini E, Vezzulli L " *Vibrio Species*," Food Microbiology: Fundamentals and Frontiers, 5th Ed. Edited by Francisco Diez-Gonzalez © 2018 ASM Press, Washington, In press

### Development of scientific softwares

SAHFOS WinCPR v.1.1

www version

**Vezzulli L.**, Dowland PS, Reid PC, Hylton EK (2007). Gridded database browser of North Sea plankton, Version 1.1: fifty four years (1948-2001) of monthly plankton abundance from the Continuous Plankton Recorder (CPR) survey. Sir Alister Hardy Foundation, Plymouth, UK. At URL: <http://cpr.cscan.org/>

CD version

**Vezzulli L.**, Dowland PS, Reid PC, Hylton EK (2007). Gridded database browser of North Sea plankton, Version 1.1: fifty four years (1948-2001) of monthly plankton abundance

from the Continuous Plankton Recorder (CPR) survey [CD-ROM]. Sir Alister Hardy Foundation, Plymouth, UK.

### **Ongoing International collaboration**

- Rita R. Colwell Maryland Pathogen Research Institute and 3Center of Bioinformatics and Computational Biology, University of Maryland, College Park, MD 20742, USA.
- Anwar Huq. University of Maryland, College Park, MD 20742, USA
- Ingrid Brettar, Manfred Höefle, Carlos A. Guzman, Helmholtz Centre for Infection Research, Dept. Vaccinology and Applied Microbiology, Braunschweig, Germany
- Philip Chris Reid. Sir Alister Hardy Foundation for Ocean Science (SAHFOS), Plymouth, UK
- David G. Bourne, Australian Institute of Marine Science Townsville (Australia)
- Monique Pommepuy, Dominique Hervio. Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER) Laboratoire Microbiologie, Brest France
- Tristan Renault. Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER), Laboratoire de Génétique et Pathologie (LGP), Avenue de Mus de Loup, 17390 La Tremblade, France.
- Ibrahim Banat, School of Biomedical Sciences, University of Ulster, UK
- Micha Ilan, Department of Zoology, Tel Aviv University, Israel
- Mauro Colombo, Centre of Biotechnology, University Eduardo Mondlane, Maputo, Mozambique
- Jaime Martinez Urtaza, Centre for Environment, Fisheries and Aquaculture Science (CEFAS), UK
- Willie Wilson, Marine Biological Association (MBA), Plymouth, UK

## **CONFERENCE AND SYMPOSIA**

### **SUMMARY**

- Luigi Vezzulli has contributed with **22** oral communications in national (**12**) and international (**10**) conference and symposia, in **12** of which as invited (**9**) or keynote-invited (**3**) speaker including invitation in prestigious international conferences such as “ASM general meeting 2018”, “Vibrio international meeting 2014” and “AGU fall meeting 2012”
- Luigi Vezzulli has given **6** Invited seminars at National (**2**) and International (**4**) Institutions
- Luigi Vezzulli has been member of organizing committee of **1** international conference and participated to **3** scientific courses

(+) Participation in form of oral presentation

(++) Participation in form of invited/keynote oral presentation

(chair) Session chair

- Ecosystem Effects of Fishing, ICES/SCOR Symposium, 15-19 March 1999, Montpellier, France
- (+) Congresso Nazionale Associazione Italiana di Oceanologia e Limnologia, September 2000, Garda, Italy

- 2° Convegno Nazionale delle Scienze del Mare, 22-25 November 2000, Genoa, Italy
- (+) 36th Congress Commission Internationale Pour l'Exploration Scientifique de la Mer Mediterranée (CIESM), 24-28 September 2001, Monte Carlo
- Congress European Federation of Marine Science and Technology societies (EFMS), 27-29 September 2002, Athens, Greece
- Aquaculture Europe 2002 Conference, 16-19 October, Trieste, Italy
- 8th Symposium on Aquatic Microbial Ecology. 25-30 October 2002, Taormina, Italy
- Southern European Coastal Lagoons: the influence of river basin-coastal zone interactions international conference, 10-12 November 2003, Ferrara, Italy
- Royal Society's Summer Science Exhibition, 5-8 July 2004, London, England
- XV Congresso Nazionale della Società Italiana di Ecologia (SITE), 12-14 September 2005, Turin, Italy
- VII Congresso Annuale della Federazione Italiana delle Scienze della Vita (FISV), 22-25 September 2005, Riva del Garda, Italy
- (++) Euro-Mediterranean meetings-the innovation for an economic and sustainable development in the Mediterranean Sea, 3-4 October 2005, Izmir, Turkey
- (+) Second International Symposium on research and management of eutrophication in coastal ecosystems, 20-23 June 2006, Nyborg, Denmark
- Vibrio 2010 international symposium, 28 November-1 December 2007, Paris, France
- (+) X Congresso Annuale della Federazione Italiana delle Scienze della Vita (FISV), 24-27 September 2008, Riva del Garda, Italy
- (+) XVIII Congresso Nazionale della Società Italiana di Ecologia (SITE), 1-3 September 2008, Parma, Italy
- (++) 37° Congresso Nazionale della Società Italiana di Microbiologia, 11-14 October 2009, Turin, Italy
- Vibrio 2009 International Symposium, 4-6 November 2009, Rio de Janeiro, Brazil
- (+) Bertinoro meeting di Microbiologia Ambientale, 21-22 May 2010, Bertinoro, Italy
- (+) XX Congresso Nazionale della Società Italiana di Ecologia (SITE), 27-30 September 2010, Roma, Italy
- Vibrio in the Environment 2010 International Symposium, 7-12 November 2010, Biloxi (Mississippi), USA
- Preventing the adverse health impacts of climate change: What public health interventions really work and what do not? 16-17 June 2011, ECDC, Stockholm, Sweden
- (++) 11th International Conference on Copepoda, 10-15 July 2011, Merida (Yucatan), Mexico
- Convegno SIMGBM, 21-23 September 2011, Pisa, Italy
- (chair) "Lower invertebrates symbiosis with microorganisms" international workshop Eilat (and Tel Aviv) 26 February-2 March 2012
- (++) International Symposium "Pathogenic Vibrio spp. in Northern European Waters", 31 May-1 June 2012, Koblenz, Germany
- Convegno FISV, 24-27 September 2012, Pisa, Italy
- (+) 40° Congresso Nazionale della Società Italiana di Microbiologia, 7-10 October 2012, Riccione, Italy
- (+) AGU Fall Meeting 2012, 3-7 December 2012, San Francisco, USA
- First EMBO Conference on Aquatic Microbial Ecology (SAME13), 8-13 September 2013, Stresa, Italy
- (+) Convegno SIMGBM, 8-21 September 2013, Ischia, Italy
- (++) 41° Congresso Nazionale della Società Italiana di Microbiologia, 13-16 October 2013, Riccione, Italy
- (++) Vibrio 2014 International Symposium, 1-4 April 2014, Edinburgh, UK
- (++) Vibrio European workshop, 11-12 March 2015, Paris, France

- (++) Convegno SIMGBM, 23-26 September 2015, Ravenna, Italy
- (++) Convegno Next Generation Sequencing (NGS), Esperienze del gruppo di lavoro a Genova, Ospedale Galliera, 15th January 2016, Genoa, Italy (Invited speaker)
- (+) 1° Congresso Nazionale Congiunto SITE - UZI - SIB, 30 August-2 September 2016, Milan, Italy
- (++) 45° Congresso Nazionale della Società Italiana di Microbiologia, 27-30 September 2017, Genova, Italy
- (chair) Convegno SIMGBM, 17-20 September 2017, Palermo, Italy
- (++) The impact of climate change on marine ecosystems workshop held at the Monaco Yacht club, 12-14 October 2017, Principality of Monaco.
- (++) ASM Microbe 2018, 7-11 June 2018, Atlanta, USA

### **Keynote/invited speaker at conferences and symposia**

- **2005**: “Integrated assessment of recently identified risk factors for food safety improvement in mussel farming” Euro-Mediterranean meetings-the innovation for an economic and sustainable development in the Mediterranean Sea, 3-4 October 2005, Izmir, Turkey (Invited speaker).
- **2009**: “Interazioni microbiche nell’ambiente marino: aspetti emergenti”. 37° Congresso Nazionale della Società Italiana di Microbiologia, 11-14 October 2009, Turin, Italy (Invited speaker)
- **2011**: “Interactions between vibrios and copepods: effects on pathogen persistence, survival and transmission to humans” 11th International Conference on Copepoda, 10-15 July 2011, Merida (Yucatan), Mexico (Key-note speaker)
- **2012**: “Effect of global warming on *Vibrio* spp. in the temperate marine environment” International Symposium "Pathogenic *Vibrio* spp. in Northern European Waters", 31 May-1 June 2012, Koblenz, Germany (Key-note speaker)
- **2013**: “Dall’ambiente all’uomo: Evoluzione e Selezione di caratteristiche di virulenza In *Vibrio cholerae*”, 41° Congresso Nazionale della Società Italiana di Microbiologia, 13-16 October 2013, Riccione, Italy (Invited speaker)
- **2014**: “Macroecology of vibrios in the temperate northern hemisphere linked to ocean warming”, *Vibrio* 2014 conference, 1-4 April 2014, Edinburgh (UK) (Key-note speaker)
- **2015**: “*Vibrio* and Climate change: what's relevant for Europe?” *Vibrio* European workshop, 11-12 March 2015, Paris, France (Invited speaker)
- **2015**: “Ocean warming and spread of pathogenic vibrios in the aquatic environment” Convegno SIMGBM, 23-26 September 2015, Ravenna, Italy (Invited speaker)
- **2016**: “Genotipizzazione diretta di *Vibrio cholerae* nelle acque mediante NGS” Convegno Next Generation Sequencing (NGS), Esperienze del gruppo di lavoro a Genova, Ospedale Galliera, 15th January 2016, Genoa, Italy (Invited speaker)
- **2017**: “Ecology and spread of human pathogenic *Vibrio* in the marine environment and link with climate change”, 45° Congresso Nazionale della Società Italiana di Microbiologia, 27-30 September 2017, Genova, Italy (Invited speaker)
- **2017**: “Ocean warming and spread of pathogenic vibrios in the aquatic environment”, The impact of climate change on marine ecosystems workshop held at the Monaco Yacht club, 12-14 October 2017, Principality of Monaco (Invited speaker)
- **2018**: “Ocean warming and the Global *Vibrio* threat”, ASM Microbe 2018, 7-11 June 2018, Atlanta, USA (Invited speaker)

### **Invited seminars at National and International Institutions**

- **2013:** “Ecology of Vibrios in the light of Climate Change” seminary at the Helmholtz Centre for Infection Research (HZI), 4st June 2013, Braunschweig, Germany
- **2013:** “Ecology of Vibrios in the light of Climate Change” seminary at the Marine Biological Association and SAHFOS, 21st February 2013, Plymouth, UK
- **2014:** “Vibrios and Climate Change”, seminary at CNR-ISMAR, 25 March 2014, Venice, Italy
- **2014:** “Aquatic microbes and Human health in the light of Climate change: the “Vibrio” case study” seminary at EPFL, 25 November 2014, Lausanne, Switzerland
- **2015:** “Vibrio and CPR: an update!” seminary at the Sir Alister Hardy Foundation for Ocean Science, 24st February 2015, Plymouth, UK
- **2017:** “Pathogenic Vibrios in the Marine Environment” seminary at University of Milano-Bicocca, 18st December 2017, Milan, IT

### **Membership in Organizing Committee of National/International conferences and symposia**

- 2013: member of the local Organizing Committee of the First EMBO Conference on Aquatic Microbial Ecology (SAME13), 8-13 September 2013, Stresa, Italy

### **Participation to national and international courses**

- **2003:** Participation to the course “Detecting multivariate changes in biological assemblages: experimental design and data analysis”, Prof. M.J. Anderson (University of Auckland, New Zealand), Prof. L. Benedetti-Cecchi (University of Pisa, Italy), Prof. K.R. Clarke and P. Somerfield (Plymouth Marine Laboratory, UK), from 26 May to 6 June, University of Lecce (Italy).
- **2009:** Participation to the course “Advanced bioinformatics”, 5-6 October 2009, Fondazione per le Biotecnologie ([www.fobiotech.org](http://www.fobiotech.org)), Torino (Italy).
- **2010:** Participation to the course “Mini Corso 454 New Generation Sequencing La tecnologia, le applicazioni, i vantaggi”. 13 May 2012, University of Genoa (Italy).

## **RESEARCH PROJECT**

### **SUMMARY**

- since 2005 Luigi Vezzulli has been principal investigator and/or coordinator of research unit of **7** national (**3**) and international (**4**) research projects including project funded by prestigious international organizations such as the European community (FP7 and H2020 programmes), the Royal Society (UK) and the National Geographic Society (USA)
- since 2005 Luigi Vezzulli has also participated to **9** research projects funded by National (**5**), European (**2**) and International organizations (**2**)
- Luigi Vezzulli is currently participating to 4 pending project applications submitted to national (**2**) and international (**2**) organizations as principal investigator/coordinator of research unit (**2**) or research partner (**2**)

### **Principal Investigator of National Research Projects**

- **2006** ATENEIO DI GENOVA (**Principal investigator**): "Mechanism of horizontal gene transfer of *Vibrio* spp in mussels" funded by the University of Genoa (euro 8,077) (2006).
- **2011** ATENEIO DI GENOVA (**Principal investigator**): "Climate and infectious disease: effects of ocean warming on the global ecology and biogeography of *Vibrio* pathogens" funded by "University of Genoa" Principal investigator: Luigi Vezzulli (euro 7,011).

### Principal Investigator of European Research Projects

- **2013-2017** SEVENTH FRAMEWORK PROGRAMME (**Coordinator of research unit**): "Protecting the health of Europeans by improving methods for the detection of pathogens in drinking water and water used in food preparation (AQUAVALENS)" funded by "European FP7 topic-KBBE-2012-6", Principal investigator: Paul Hunter (University of East Anglia, England), coordinator of the research unit of Univ. Genoa since 2015 onward: Luigi Vezzulli (euro 250,511).
- **2018-2022** HORIZON 2020 (**Coordinator of research unit**): "Controlling Microbiomes Circulations For Better Food Systems (CIRCLES)" funded by "European Horizon 2020 Call: H2020-SFS-2018-2020, Principal investigator: Marco Candela (Univ. Bologna, Italy), coordinator of the research unit: Luigi Vezzulli (euro 100,000).

### Principal Investigator of other International Research Projects

- **2012-2014** ITALIAN MINISTRY OF FOREIGN AFFAIRS (**Principal investigator**): "The mesophotic zone: Conservation tool and new drugs frontier" funded by the Italian Ministry of Foreign Affairs within the the Joint Italian-Israeli R&D programme (euro 20,000).
- **2014-2015** ROYAL SOCIETY (UK) (**Co-Principal investigator**): "Global Scale Macroecology of Human *Vibrio* pathogens (GLOBALVIBRIO)" funded by the Royal Society (UK) within the International Exchanges Scheme - 2013/R2 (GBP 12,000) (2014:2015).
- **2018** NATIONAL GEOGRAPHIC SOCIETY (USA) (**Principal investigator**): "Macroecology of *Vibrio cholerae* in Lake Tanganyika". funded by "National Geographic Society (USA)" (USD 30,000).

### Participation to national research projects

- **2005-2008** ITALIAN MINISTRY OF EDUCATION, UNIVERSITY AND RESEARCH (**Participant**) "Innovative model for integrated management of marine fish farm to improve food safety and environmental quality (ALLITTIMA)" funded by "Italian Ministry of Education, University and Research" Programme "Fondo Integrativo Speciale per la Ricerca (FISR)", Principal investigator: Biancamaria Poli, coordinator of the research unit: Mauro Fabiano (euro 197,115)
- **2008** ATENEIO DI GENOVA (**Participant**): "Mass mortality events of benthic invertebrates in the Mediterranean Sea: environmental stress and/or microbial infections?" funded by "University of Genoa", Principal investigator: Carlo Cerrano (euro 6,000).
- **2010-2012** ITALIAN MINISTRY OF EDUCATION, UNIVERSITY AND RESEARCH (**Participant**): "Ruolo dell'ambiente marino nella selezione di batteri patogeni per l'uomo: il"



caso dell'adesina p53 di *Vibrio cholerae*" funded by "Italian Ministry of Education, University and Research" Programme PRIN 2008, Principal investigator: Lleo' Fernandez Maria Del Mar, coordinator of the research unit: Carla Pruzzo (euro 52,527).

- **2013-2014** ITALIAN MINISTRY OF EDUCATION, UNIVERSITY AND RESEARCH (**Participant**) "Integrate Research on Antarctic Silverfish Ecology in the Ross sea" funded by "Italian Ministry of Education, University and Research" Programma Nazionale di Ricerche in Antartide, Call 2013, Principal investigator: Marino Vacchi (ISMAR-CNR).

- **2015-2018** ITALIAN MINISTRY OF EDUCATION, UNIVERSITY AND RESEARCH (**Participant**) "Discovery of novel antimicrobial compounds from unexplored marine environments as a source of innovative antimicrobial approaches to address the global threat of antibiotic resistance" funded by "Italian Ministry of Education, University and Research" Programma SIR, Call 2014, Principal investigator: Filomena De Luca (University of Siena), (euro 344,036)

### Participation to European research projects

- **2010-2013** SEVENTH FRAMEWORK PROGRAMME (**Participant**): "Controlling of infectious diseases in oysters and mussels in Europe (BIVALIFE)" funded by "European FP7-topic KBBE. 2010.1.2-08", Principal investigator: Tristan Reanault (IFREMER France), coordinator of the research unit: Carla Pruzzo (euro 201,000).

- **2016-2019** HORIZON 2020 (**Participant**): "Preventing and mitigating farmed bivalve diseases (VIVALDI)" funded by "European Horizon 2020 Call: H2020 — H2020-SFS-2015-2, Principal investigator: Isabelle Arzul (IFREMER, France), coordinator of the research unit: Carla Pruzzo (euro 199,230).

### Participation to other international research projects

- **2011** NATIONAL GEOGRAPHIC SOCIETY (USA) (**Participant**): "The exploration of the Mediterranean mesophotic zone: a new frontier for biodiversity discovery". funded by "National Geographic Society (USA)" Principal investigator: Carlo Cerrano (USD 20,000).

### No peer-review research contract

- **2010** STUDIO TECNICO LANTERI (**Principal investigator**): "Detection, isolation and genotyping of *Legionella pneumophila* serogroup 1 in water" funded by Studio Tecnico Lanteri (Sanremo) (euro 2,170).

### Pending submitted project applications

- **2018 Royal Society** (International Collaboration Awards 2018). project title: Challenging the Cholera paradigm in Africa with Continuous Plankton Recorder (CHOLCPR). Requested Funding £225,372.00 (co-principal investigator)

- **2018 PRIN bando 2017**. project title: Emergence of virulence and antibiotic-resistance vectors in coastal and deep sea marine environments and analysis of the mechanisms and conditions underlying their spread and evolution. Requested Funding € 176,836 (coordinator of research unit)

- **2018 CARIPLO 2018.** project title: Novel wastewater disinfection treatments to mitigate the spread of antibiotic resistance in agriculture (warfare). Requested Funding € 70,000 (research partner)

- **2017 MAECI Italia-Cina 2017.** Efficiency of different disinfection processes in the removal of antibiotic resistance determinants in experimental pilot systems and full-scale. Requested Funding € 83,250 (research partner)

## PRIZES, AWARDS AND IMPACT ON INTERNATIONAL MEDIA

### SUMMARY

- In 2005 Luigi Vezzulli was elected as “Honorary Fellow” by the Sir Alister Hardy Foundation for Ocean Science-SAHFOS (since April 2018 Marine Biological Association) in Plymouth (UK)

- In 2011 Luigi Vezzulli was awarded a SAHFOS Associated Researcher in recognition of his work with the Foundation on ‘Global Scale Macroecology of *Vibrio* pathogens

- In 2013 Luigi Vezzulli was awarded a FEMS Invited Speaker Meeting Grant (ISMG) to present a key-note lecture at VIBRIO 2014, Edinburgh (UK)

- Some research work conducted by Luigi Vezzulli as a lead author have received lot of publicity from international media including international newspapers (e.g. El País, The Whashington post, New scientist etc), blogs (e.g. the Huffington post), and prestigious scientific societies (e.g. National Geographic Society, USA). Some papers by Luigi Vezzulli was awarded a cover image in scientific journals. In January 2018 a study lead by Luigi Vezzulli has been highlighted via the NASA Image of the Day feature on the NASA website

## FOUNDATION AND PARTICIPATION IN PRIVATE COMPANIES

Luigi Vezzulli is a co-founder of the MICAMO srl (Corso Andrea Podestà 12/9 - 16128 Genova, Italia, P.IVA 02050300991, <http://www.micamo.com>). MICAMO (Microbiologia Ambientale e Molecolare) is a University SPIN-OFF founded in 2011 working in the biotechnological sector. MICAMO focus its activity in the application and development of Innovative technology for the detection and control of microbial pathogens in water and food. Supportive documentation regarding Luigi Vezzulli contribution in MICAMO srl is attached to this application in scanned PDF format

## OTHER TITLES

### SUMMARY

- Luigi Vezzulli is member of the editorial board of the scientific journal “Frontiers in Environmental Health” and is scientific reviewers for several scientific journals including high impact factor journals such as Nature Climate Change and ISMEJ

- Luigi Vezzulli has been project reviewer for the Natural Environment Research Council (UK) and the National Science Foundation (USA) and member of selection boards for the Italian National Research Council (CNR) and the Zoological Station Anton Dohrn, Naples (SZN)
- Since 2018 is member of the steering committee of the “Italian Society for General Microbiology and Microbial Biotechnology” (S.I.M.G.B.M.)
- Luigi Vezzulli is member of **4** national (**2**) and international (**2**) scientific societies

### **Participation as member of editorial board in scientific Journals**

Since February 2014 member of the editorial board of "Frontiers in Environmental Health"

### **Scientific Reviewer**

Nature Climate Change, ISME Journal, Environmental Microbiology and Environmental Microbiology report, Scientific reports, Microbial Ecology, Journal of Applied Microbiology, Annals of Microbiology, PlosONE, Water Research, Marine Pollution Bulletin, Continental Shelf Research, Journal of Environmental Management, Deep-Sea Research Part II, Process Biochemistry, Journal of Plankton Research, Water SA, Hydrobiologia etc.

### **Project reviewer**

Luigi Vezzulli has been project reviewer for the Natural Environment Research Council (UK) and the National Science Foundation (USA)

### **Membership of selection board of Italian research Institutes**

Luigi Vezzulli has been member of selection boards for the Italian National Research Council (CNR) and the Zoological Station Anton Dohrn, Naples (SZN)

### **Membership of steering committee of scientific societies**

- 2018-2019 Member of steering committee of the Italian Society of General Microbiology (S.I.M.G.B.M.)

### **Membership of scientific societies**

- Italian Society for General Microbiology and Microbial Biotechnology (S.I.M.G.B.M.)
- Italian Society of Microbiology (S.I.M)
- John Snow Society London (UK)
- American Society of Microbiology (ASM)(USA)

## **TEACHING**

### **SUMMARY**

- Since 2006 Luigi Vezzulli has held official courses in Microbiology at the School of Science of the University of Genoa for a total of **115 CFU** and has participated as lecturer in different Post-Lauream master courses and in Italian national PAS and TFA programs for public teachers
- Since 2001 Luigi Vezzulli has been tutor/advisor for **32** graduate thesis and **5** PhD thesis at the University of Genoa and other Italian Universities
- Luigi Vezzulli has been tutor of **2** visiting research fellowships funded by foreign Universities
- Since 2008 Luigi Vezzulli has been board member in Doctoral Schools at the University of Genoa as well as member of commissions for evaluation and defense of doctoral dissertation in national and international PhD schools
- Since 2016 Luigi Vezzulli is member of the “commissione scientifica” and “commissione orientamento” of the Department of Earth, Environmental and Life Science (DISTAV) of the University of Genoa

### **Official academic courses at the University of Genoa**

Since 2006 Luigi Vezzulli has held official courses in Microbiology at the school of science of the University of Genoa for a total of **115 CFU**:

- **2017/2018**: lecturer for teaching the course “**Environmental Microbiology (5 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2017/2018**: lecturer for teaching the course “**Environmental Microbiology (6 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2016/2017**: lecturer for teaching the course “**Environmental Microbiology (5 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2016/2017**: lecturer for teaching the course “**Environmental Microbiology (6 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2015/2016**: lecturer for teaching the course “**Environmental Microbiology (5 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2015/2016**: lecturer for teaching the course “**Environmental Microbiology (6 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2014/2015**: lecturer for teaching the course “**Environmental Microbiology (5 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2014/2015**: lecturer for teaching the course “**Environmental Microbiology (6 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2013/2014**: lecturer for teaching the course “**Environmental Microbiology (5 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2013/2014**: lecturer for teaching the course “**Environmental Microbiology (6 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2012/2013**: lecturer for teaching the course “**Environmental Microbiology (5 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2012/2013**: lecturer for teaching the course “**Environmental Microbiology (6 CFU)**”, Degree in Biological Sciences, University of Genoa.

- **2011/2012**: lecturer for teaching the course “**Environmental Microbiology (5 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2011/2012**: lecturer for teaching the course “**Environmental Microbiology (6 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2010/2011**: lecturer for teaching the course “**Environmental Microbiology (5 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2010/2011**: lecturer for teaching the course “**Environmental Microbiology (6 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2009/2010**: lecturer for teaching the course “**Environmental Microbiology (4 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2009/2010**: lecturer for teaching the course “**Environmental Microbiology (2 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2009/2010**: lecturer for teaching the course “**Applied Microbiology (3 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2008/2009**: lecturer for teaching the course “**Environmental Microbiology (4 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2008/2009**: lecturer for teaching the course “**Environmental Microbiology (2 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2007/2008**: lecturer for teaching the course “**Environmental Microbiology (4 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2007/2008**: lecturer for teaching the course “**Environmental Microbiology (2 CFU)**”, Degree in Biological Sciences, University of Genoa.
- **2006/2007**: lecturer for teaching the course “**Environmental Microbiology (4 CFU)**”, Degree in Environmental Sciences, University of Genoa.
- **2006/2007**: lecturer for teaching the course “**Environmental Microbiology (2 CFU)**”, Degree in Biological Sciences, University of Genoa.

#### **Lectures in Master courses (Post-Lauream)**

- **2004**: lecturer (6 h) in “Microbial community in fish-farm environments” within the Master Aquicultura: risorse, impatto e gestione (MARIG 2004) (University of Genoa and Universidad Austral de Chile).
- **2004**: lecturer (4 h) in “Microbial bioremediation of organic rich sediments within the Master Scienza e tecnologia per lo sviluppo sostenibile in siti contaminati (University of Parma).
- **2007-2009-2010**: lecturer (6 h) in “Fundamentals of Microbiology” within the Master II Level “Water Treatment Innovative Membrane Technologies and Conventional Processes For Waste And Drinking Water Treatment” (University of Genoa, Master Director: Prof. G. Capanelli).
- **2010**: lecturer (6 h) in “Microbial Pathogen in Aquaculture” within the Master II Level “Applicazioni tecnologiche per la gestione della qualità e sicurezza alimentare dei prodotti tipici territoriali e del mare”; Regione Liguria, CBA-Centro Biotecnologie Avanzate, Genova
- **2018**: lecturer (2 h) in “Fundamentals of Microbiology and Microbial Metabolisms” within the Master II Level “Management of Chemicals” - approccio integrato al regolamento REACH ed altre normative europee sulle sostanze chimiche”; POR FSE 2014-2020 codice ARGE17-361/5/1, Genova

#### **Lectures in “Percorso abilitante speciale (PAS)” and “Tirocinio Formativo Attivo (TFA)” Italian national programs for public school teachers**

- **2014** lecturer in “Fundamentals of Microbiology” (1CFU) within the “**Percorso abilitante speciale (PAS)**” Italian national programme.
- **2015** lecturer in “Fundamentals of Microbiology” (1CFU) within the “**Tirocinio Formativo Attivo (TFA)**” Italian national programme

### **Tutorship of graduate and doctorate thesis**

Since 2001 Luigi Vezzulli has been tutor/advisor for **32** graduate thesis and **5** PhD thesis in Environmental Sciences and Biological Sciences at the University of Genoa and other Italian Universities

### **Tutorship of visiting research fellowships funded by foreign Universities**

- **2012 (June to August)**: Esther Rubio Portillo (PhD student at University of Alicante Spain) – Project: study of *Vibrio* spp. populations in *Oculina patagonica* and in *Cladocora caespitosa* in the Western Mediterranean Sea.
- **Sep 2018- Sep 2020**: Dr. Aide Lasa (Postdoc student at the University of Santiago de Compostela, Spain) – Project: Investigating polymicrobial infection diseases in shellfish: metagenetic analysis of the “microbiome” and “vibriome” in contrasting bivalve species (*Crassostrea gigas* and *Mytilus galloprovincialis*) differently affected by abnormal mortality episodes in Europe

### **Board membership in Doctorate schools**

- **2008**: Scientific board member: doctorate degree course in “GENETICA ONCOLOGICA E BIOLOGIA DEL DIFFERENZIAMENTO”, [DOT0511141], University of Genoa
- **2009/2012**: Scientific board member: doctorate degree course in “GENETICA”, [DOT0911723], University of Genoa
- **2013/-**: Scientific board member: doctorate degree course in “SCIENZE E TECNOLOGIE PER L'AMBIENTE E IL TERRITORIO (STAT) [DOT1311038], University of Genoa

### **Membership of commissions for evaluation and defense of doctoral dissertation in national and international PhD schools**

- **2014**: Member of the final evaluation commission, PhD school in Environmental Science XXVI, XXVII cycles, 11 December 2014, University of Urbino, Urbino (Italy)
- **2018**: External PhD examiner of the PhD thesis: “study of a polymicrobial disease in the cupped oyster *Crassostrea gigas*” Adèle James (Laboratoire de biologie intégrative des modèles marins Station Biologique de Roscoff, Roscoff France)

### **Membership of internal University academic commissions**

Since 2016 Luigi Vezzulli is member of the “commissione scientifica” and “commissione orientamento” of the Department of Earth, Environmental and Life Science (DISTAV) of the University of Genoa