

## *Curriculum vitae*

### **Sergio Balzano**



Born in Nocera Inferiore (SA, Italy) on 09/04/1980

Tel.: +39 081 5833325

Fax: +39 081 7641355

e-mail: [sergio.balzano@szn.it](mailto:sergio.balzano@szn.it)

Skype: sergio\_balzano

Linkedin: <https://www.linkedin.com/in/sergio-balzano-a96b7516/>

Researchgate: [https://www.researchgate.net/profile/Sergio\\_Balzano](https://www.researchgate.net/profile/Sergio_Balzano)

**Current Position:** Researcher

**Current Affiliation:**

Department of marine biotechnology, SZN

### **Education/Training/Experience**

<b>Institute and Location</b>	<b>Degree / Function</b>	<b>Year</b>	<b>Field of Study</b>
Università degli studi Parthenope, Napoli	Bachelor and Master degree (laurea vecchio ordinamento)	1998-2004	Marine environmental sciences (scienze ambientali, indirizzo marino)
Stazione zoological Anton Dohrn, Napoli (SZN)	Master thesis (tesi di laurea)	2003-2004	Marine Botany, taxonomy of diatoms
National Oceanography Centre, University of Southampton (United Kingdom).	Ph.D.	2005-2009	Marine microbial biogeochemistry
Station Biologique de Roscoff, CNRS, France	Postdoctoral researcher	2009-2011	Molecular ecology of phytoplankton

Station Biologique de Roscoff, CNRS, France	Postdoctoral researcher	2011-2012	Eukaryotic symbiosis in Radiolaria
School of Biological Sciences, Flinders University, Adelaide (Australia)	Research associate	2012-2014	(1) Microbial ecology, (2) biofouling of reverse osmosis membranes.
Department of marine microbiology and biogeochemistry	Postdoctoral researcher	2014-2018	Marine biological sources and biosynthetic pathways of microalgal lipids
Stazione Zoologica Anton Dohrn (Naples, Italy)	Postdoctoral researcher	2018-2019	Adaptation of benthic microalgae to heavy metal pollution
Department of marine biotechnology, Stazione Zoologica Anton Dohrn	Permanent researcher	2019-present	Metabolic pathways and biotech applications of marine microalgae

### **Appointments and awards**

-Guest scientist at Netherland Institute for Sea Research (NIOZ)

#### *Congress attendance*

2007: European Geoscience Union, Vienna. Poster presentation

2009: International Society for Microbial Ecology (ISME). Cairns, Australia, oral presentation

2010: American Society for Limnology and Oceanography, San Juan (Porto Rico) oral presentation

2012 : Ecole Thématique Expert Génomique Environnementale. Aussois, France (poster presentation).

2015: Gordon Research Conference: environmental microbiology. Boston (US), poster presentation

2016: Gordon Research Conference: marine microbiome. Girona (Spain), poster presentation

2016: Marine microbiome discovery and innovation. Berlin, Germany, oral presentation.

2017: International conference for Algal Biomass, Biofuel, and Bioproducts. Miami, US, poster

2018: International conference for Algal Biomass, Biofuel, and Bioproducts. Seattle, US. Oral presentation

2019: Associazione Italiana per lo Studio delle Microalghe (AISAM). Poster presentations and participation as committee member

#### *Fieldwork*

- Oceanographic cruise on the North Atlantic (Porcupine Abyssal Plain, June 2007)
- Seasonal sampling of water on the Coorong Lagoon (South Australia 2013-2014)
- Oceanography cruise on the Baltic Sea (May 2016)
- Sampling of coastal seawater and sediment in the Gulf of Naples (June 2020).

#### *Courses*

### *Workshops*

- September 2010, Bigelow, USA: workshop on single cell genomics
- April 2012, Grenoble, France: workshop on environmental genomics
- September 2013, Adelaide, Australia: workshop on bioinformatics
- RNA-seq data analyses workshop (Leiden, September 2016)

### **Students' Supervision**

- April to June 2011. Melanie Chanoine, internship: Intraspecific variability of the dominant Arctic algae by ITS sequencing
- October 2012 to January 2013: Camille Moreau, internship: chemical and biological changes during seawater pre-treatment for reverse osmosis.
- March to August 2013: Xavier Denis, internship: production of Transparent Exopolymer Particles from phytoplankton.
- March to July 2013: Hugo Compas, internship: evolution of chemical and biological parameters in Penneshaw desalination plant.
- April to July 2013: Elsa Abs, internship: microbial communities in the Coorong Lagoon.
- February to August 2013: Tamar Jamieson, Honours: Bacterial colonisation and Transparent Exopolymer Particles production from reverse osmosis membrane.
- January to June 2014: Louis Thiot, Honours. Development of molecular fingerprinting techniques for screening eukaryotic diversity
- May to September 2019: Martina Blasio, scholarship. Microbial community composition in heavy metal contaminated sediments.
- October 2019 to present: Martina Blasio, PhD student: Aliphatic polymers from *Nannochloropsis* spp., biosynthesis and biotechnological application

### **Participation in projects**

- Bio-transformation of trace elements in aquatic systems (BIOTRACS). Participation as PhD student (2005-2008). Investigating the role of microbial population in the cycling of iron and manganese in marine aggregates.  
<https://cordis.europa.eu/project/id/514262>.
- MALINA. How do changes in ice cover, permafrost, and UV radiation impact biodiversity and biogeochemical fluxes in the Arctic Ocean. Participation as postdoctoral researcher (2009-2012): culture-dependent and culture-independent techniques for the appraisal of photosynthetic nano and picoeukaryotes in the Arctic.  
<http://www.obs-vlfr.fr/malina/>
- MicroB3 project: Marine Biodiversity, bioinformatics, biotechnology. Participation as postdoctoral researcher (2012): transcriptome analyses to evaluate host-symbiont relationships in Radiolaria. <https://www.microb3.eu>
- National Centre of Excellence in Desalination Australia (NCEDA). Participation as postdoctoral researcher (2012-2014): assessing the biofouling role of microbes in the desalination system; from the intake pipe to the reverse osmosis membranes.
- Long chain diols as novel organic proxies for paleoclimate reconstructions. Participation as postdoctoral researcher (2014-2018): biological sources and biosynthetic pathways of long chain alkyl diols in seawater.  
<https://cordis.europa.eu/project/id/339206/results/it>

## Project writing experience

- 2013: Microbial diversity in South Australia hypersaline environments (2013). Grant not awarded
- 2013: National Centre of Excellence in Desalination Australia (NCEDA). Project administrator dynamic of biofouling formation in RO membrane; Characterisation of the main precursors, microbial succession, inhibition, and sustainability. Grant not awarded
- 2019. Application for a Norma J Lang Early Career Fellowship. Grant not awarded
- 2019: sviluppo di sistemi innovative integrati per lo studio della diversità microbica ed il suo potenziale biotecnologico in ecosistemi marini ad elevato impatto antropico. Participant. Awaiting evaluation
- 2020: Bando progetti di ricerca Centro Ricerche ed Infrastrutture marine avanzate in Calabria (CRIMAC). Microalgae based products for aquaculture feed (MICROPRO). Participation as principal investigator. Waiting evaluation
- 2020: Bando progetti di ricerca Centro Ricerche ed Infrastrutture marine avanzate in Calabria (CRIMAC). MICROalgae-heavy METal Interaction and potential for phycoremediation (MICROMET). Participation as research partner. Waiting evaluation
- 2020: inNovatIve strateGy for High-performing CO<sub>2</sub> capTure and biocompound production. Participation as research partner. Waiting evaluation
- 2021: Search for plastic-degrading enzymes in plastisphere microbial communities from the Gulf on Naples (PLAZY)

## Publications

Author of 30 peer-reviewed publications, and first author in 15 of them. H-index 13, total citations 839 (as on November 2020)

2002, Internship report: étude de l'accumulation des sediment sur les berges des lacs Nguène et Kamalété, Au Gabon. Université de Perpignan. 20 pages. Supervisor Prof. P. Giresse

2002, Internship report: étude de la distribution spatio temporelle du phytoplankton. Université de la Méditerranée, Marseille. 30 pages. Supervisor Prof. B Queguiner.

2004, Master thesis: morfologia, filogenesi e biogeografia del genere Skeletonema (Bacillariophyta). Tesi di laurea, Stazione Zoologica Anthon dohrn. 150 pages. Supervisors: Wiebe HCF Kooistra and Diana Sarno.

2009, PhD thesis: the role of microbial populations in the cycling of elements from marine aggregates. University of Southampton. 240 pages. Supervisors: Peter J Statham, Richard D Pancost, and Jon R Lloyd.

## List of peer-reviewed publications

- Sarno D, Kooistra WHCF, **Balzano S**, Hargraves PE and Zingone A (2007). Diversity in the genus *Skeletonema* (Bacillariophyceae): III. Phylogenetic position and morphological variability of *Skeletonema costatum* and *Skeletonema grevillei*, with the description of *Skeletonema ardens* sp. nov. *The Journal of Phycology* 43:156-170.
- Kooistra WHCF, Sarno D, **Balzano S**, Gu H, Andersen AR and Zingone A (2008). Global Diversity and Biogeography of *Skeletonema* species. *Protist.* 159: 177-193
- Balzano S**, Statham PJS, Pancost RD, Lloyd JR. (2009) Role of microbial populations in the release of reduced iron and manganese to the water column from marine aggregates. *Aquatic Microbial Ecology* 54:291-303
- Balzano S**, Pancost RD, Lloyd JR, Statham PJ. (2011) Changes in fatty acid composition in degrading algal aggregates. *Marine Chemistry* 124: 2-13
- Balzano S**, Kooistra WHCF and Sarno D (2011). Effects of salinity on the growth rate and morphology of ten *Skeletonema* strains. *Journal of Plankton Research.* 33(6): 937-945
- Balzano S**, Marie D, Gourvil P and Vaultot D (2012). Composition of the summer photosynthetic pico and nanoplankton communities in the Beaufort Sea assessed by T-RFLP and sequences of the 18S rRNA gene from flow cytometry sorted samples. *The ISME journal*, 6, 1480-1498
- Balzano S**, Gourvil P, Siano R, Chanoine M, Lessard S, Sarno D, Marie D, Vaultot D. (2012) Diversity of cultured photosynthetic flagellates in the northeast Pacific and Arctic Oceans in summer. *Biogeosciences* 9 (11) 4553-4571
- Balzano S**, Le Lan C, Ellis A, Compas H, Jamieson T, Newton K, Brown M, Leterme SC (2014). Evaluation of transparent exopolymer particles and microbial communities found post-UV light, multimedia and cartridge filtration pre-treatment in a SWRO plant. *Desalination and Water treatment* 2014:1-13
- Balzano S**, Corre E, Decelle J, Sierra R, Wincker P, Da Silva C, Poulain J, Pawlowski J, Not F. (2015). Transcriptome analyses to investigate symbiotic relationships between marine protists. *Frontiers in Microbiology* 6 (98):1-17
- Balzano S**, Abs E, Leterme SC (2015). Protist diversity along a salinity gradient in a coastal lagoon. *Aquatic Microbial Ecology* 74:263-277
- Balzano S**, Ellis AV, Le Lan C, Leterme SC (2015). Seasonal changes in phytoplankton on the north-eastern shelf of Kangaroo Island (South Australia) in 2012 and 2013. *Oceanologia* 57: 251—262
- Le Lan C, Ellis AV, Jamieson T, Blok AJ, Hemraj D, Allais L, **Balzano S**, Leterme S. (2015). Analysis of raw and pre-treated seawater for potential biofouling precursors. *Desalination* 373: 71–78

- Percopo I, Ruggiero V, **Balzano S**, Siano R, Gourvil P, Vaultot D and Sarno D (2016). *P. arctica* sp. nov., a new cold-water cryptic *Pseudo-nitzschia* species within the *P. pseudodelicatissima* complex. *Journal of Phycology*: 52 (2): 184-199
- Jamieson T, Ellis AV, Khodakov DA, **Balzano S**, Hemraj DA, Leterme SC. (2016) Bacterial production of transparent exopolymer particles 1 during static and laboratory-based cross-flow experiments. *Environmental Science: Water Research & Technology*: 2, 376–382
- Balzano S**, Percopo I, Siano R, Gourvil P, Marie D, Vaultot D, Sarno D. (2017) Morphological and genetic diversity of diatoms in the Beaufort Sea with high contributions from the *Chaetoceros neogracilis* species complex. *The Journal of Phycology* 53: 161-187
- Balzano S.**, Villanueva L., de Bar M., Sinninghe Damste J. S., Schouten S. (2017). Impact of culturing conditions on the abundance and composition of long chain alkyl diols in species of the genus *Nannochloropsis*. *Organic Geochemistry* 108: 9-17
- Lattaud J, Kirkels F., Peterse F., Freymond C., Eglinton T., Mollenhauer G., **Balzano S.**, Villanueva L., Sinninghe Damsté J., Schouten S. (2018). Long-chain diols in rivers: distribution and potential biological sources. *Biogeosciences*, 15, 4147–4161
- Balzano S.**, Lattaud J., Rampen S., Bale N., Schouten S. (2018). A quest for the biological sources of long chain alkyl diols in the western tropical North Atlantic Ocean. *Biogeosciences* 15: 5951–5968
- Gu H., Li X., Luo Z., Chomérat N., Sarno D., Gourvil P., **Balzano S.**, Siano R (2018) *Adenoides sinensis*, a new and dwelling dinoflagellate species from China. *Phycologia* 57 (2): 179–190
- Decelle, J., H. Stryhanyuk, B. Gallet, G. Veronesi, M. Schmidt, **S. Balzano**, S. Marro, C. Uwizeye, P.-H. Jouneau, J. Lupette, J. Jouhet, E. Maréchal, Y. Schwab, N. L. Schieber, R. Tucoulou, H. Richnow, G. Finazzi and N. Musat (2019). "Algal Remodeling in a Ubiquitous Planktonic Photosymbiosis." *Current Biology* 29(6): 968-978.e964.
- Yau S, Lopes dos Santos A, Eikrem W, Gériques Ribeiro C, Gourvil P, Balzano S, Escande M-L, Moreau H, Vaultot D. *Mantoniella beaufortii* and *Mantoniella baffinensis* sp. nov. (Mamiellales, Mamiellophyceae), two new green algal species from the high arctic (2019). *Journal of Phycology*: <https://doi.org/10.1111/jpy.12932>
- Smerilli A, **Balzano S**, Maselli M, Blasio M, Orefice I, Galasso C, Sansone C, Brunet C. Antioxidant and photoprotection networking in the coastal diatom *Skeletonema marinoi* (2019). Antioxidant: 10.3390/antiox8060154
- Balzano S.**, Villanueva L., de Bar M., Sahonero Canavesi D.X., Yildiz C., Engelmann J.C., Marechal E., Lupette J., Sinninghe Damsté J.S., Schouten S. (2019). Biosynthesis of Long Chain Alkyl Diols and Long Chain Alkenols in *Nannochloropsis* spp. (Eustigmatophyceae). *Plant and Cell Physiology* (in press, doi:10.1093/pcp/pcz078)
- Lattaud J, Erdem Z, Weiss G, Rush D, **Balzano S**, Chivall D, van der Meer M, Hopmans EC, Sinninghe Damsté JS, Schouten S. Hydrogen isotopic ratios of long-chain diols reflect salinity (2019). *Organic Geochemistry*: 10.1016/j.orggeochem.2019.103904

- Balzano S**, Sardo A, Blasio M, Chahine TB, Dell'Anno F, Sansone C, Brunet C. Microalgal metallothioneins and phytochelatins and their potential use in bioremediation (2020). *Frontiers in Microbiology*: 10.3389/fmicb.2020.00517
- Abdala Asbun A, Besseling MA, **Balzano S**, van Bleiswijk J, Witte H, Villanueva L, Engelmann JC. Cascabel: a flexible, scalable and easy-to-use amplicon sequence data analysis pipeline (2020). *Frontiers in Genetics*: doi: 10.3389/fgene.2020.489357
- Massicotte P, Amon R, Antoine D, Archambault P, **Balzano S**, Bélanger S, Benner R, Boeuf D, Bricaud A, Bruyant F, Chaillou G, Chami M, Charrière B, Chen J, Claustre H, Coupel P, Delsaut N, Doxaran D, Ehn J, Fichot C, Forget M-H, Fu P, Gagnon J, Garcia N, Gasser B, Ghiglione J-F, Gorsky G, Gosselin M, Gourvil P, Gratton Y, Guillot P, Heipieper HJ, Heussner S, Hooker SB, Huot Y, Jeanthon C, Jeffrey W, Joux F, Kawamura K, Lansard B, Leymarie E, Link H, Lovejoy C, Marec C, Marie D, Martin J, Massé G, Matsuoka A, McKague V, Mignot A, Miller WL, Miquel J-C, Mucci A, Ono K, Ortega E, Panagiotopoulos C, Papakyriakou T, Picheral M, Piepenburg D, Prieur L, Raimbault P, Ras J, Reynolds RA, Rochon A, Rontani JF, Schmechtig C, Schmidt S, Sempéré R, Shen Y, Song G, Stramski D, Stroud D, Tachibana E, Thirouard A, Tolosa I, Tremblay J-E, Vaïtilingom M, Vaultot D, Vaultier F, Volkman JK, Vonk JE, Xie H, Zheng G, Babin M. (2020). The Malina oceanographic expedition: How do changes in ice cover, permafrost and UV radiation impact biodiversity and biogeochemical fluxes in the Arctic Ocean?. *Earth System Science Data* <https://doi.org/10.5194/essd-2020-252>
- Rastelli E, Dell'Anno F, Tangherlini M, Corinaldesi C, Sansone C, Brunet C, **Balzano S**, Ianora A, Musco L, Montereali M, Dell'Anno A. (in press). Highly contaminated marine sediments can host rare bacterial taxa potentially useful for bioremediation *Frontiers in microbiology*. DOI: 10.3389/fmicb.2021.584850
- Balzano S.**, Jamieson T, Leterme SC. (in press). Changes in microbial communities during seawater pre- treatment within a desalination plant. *Aquatic Microbial Ecology* <https://doi.org/10.3354/ame01958>.
- Lattaud J, **Balzano S**, van der Meer MTJ, Villanueva L, Hopmans EC, Sinninghe Damsté JS, Schouten S. (submitted). Sources and seasonality of long-chain diols in a temperate lake (Lake Geneva). *Organic Geochemistry*
- Balzano S**, Sardo A (submitted). Bioinformatic prediction of putative metallothioneins in microbial eukaryotes. *Aquatic Microbial Ecology*.