

Gerardo Della Sala



Born in Avellino (Italy) on 11/02/1984

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Current Position: Researcher - III level

Current Affiliation:

Department of Ecosustainable Marine Biotechnology, Stazione Zoologica Anton Dohrn, Napoli (Italy)

Education/Training/Experience

Institute and Location	Degree / Function	Year	Field of Study
Department of Pharmacy, University of Naples Federico II, Napoli (Italy)	Master	2003-2009	Pharmaceutical Chemistry and Technology
Department of Pharmacy, University of Naples Federico II, Napoli (Italy)	Ph.D.	2010-2013	Pharmaceutical Sciences
Department of Pharmacy, University of Naples Federico II, Napoli (Italy)	Postdoc	2013-2017	Chemistry, biosynthesis, and bioactivity of marine natural products
Laboratory of Preclinical and Translational Research, IRCCS-CROB, Rionero in Vulture (Italy)	Senior Researcher	2017-2020	Cancer metabolism and bioenergetics Anticancer drug discovery from marine natural products
Department of Marine Biotechnologies, Stazione Zoologica Anton Dohrn, Napoli (Italy)	Researcher III level	2021-present	Chemistry, biosynthesis, and bioactivity of marine natural products

Appointments and awards

National and international scientific projects

- Participation to the following projects:
 - H2020-FNR-11-2020: SECRETED, *Sustainable Exploitation of bio-based Compounds Revealed and Engineered from naTural sources* - grant number 101000794.
 - LIFE20 ENV/IT/000572: LIFE SEDREMED, *Bioremediation of contaminated sediments in coastal areas of ex-industrial sites*.
- Principal Investigator of 3 Current Research Projects – funded by the Italian Ministry of Health to IRCCS CROB:
 - Assessing the bioenergetic profile of human osteosarcoma cancer stem cells as a potential target for cancer therapy (2019-2020; code 2759971).
 - Marine natural products as anticancer drugs: mechanistic investigation in solid tumor models (2020; code 2761547).
 - Valutazione dell'azione antitumorale degli inibitori delle casein chinasi 1 (CK1) in linee cellulari (2018-2019; code 2759987).
- Participation as Postdoctoral Researcher/PhD student to the following projects:
 - SEALEADS: Identification, expression, and engineering of biosynthetic genes for the sustainable production of novel lead compounds in anticancer research from marine sources - STAR program 2014, funded by Compagnia San Paolo and Università degli Studi di Napoli Federico II.
 - FARMABIONET: Rete integrata per le biotecnologie applicate a molecole ad attività farmacologica. (P.O.R. FESR 2007/2013), funded by Regione Campania;
 - BlueGenics – From gene to bioactive product: Exploiting marine genomics for an innovative and sustainable European blue biotechnology industry” (EC FP7 - KBBE - 2012: n.311848), funded by European Community.
 - NATPHARMA – Reinforcement of research potential for the realisation of a complete drug development scheme from natural compounds” (EC FP7 - REGPOT - 2008: n. 229893), funded by European Community.

Reviewer for scientific journals

Member of the Reviewer Board of MDPI Marine Drugs

Reviewer for MDPI Molecules, Biomolecules, and Antibiotics

Abroad research

2015 – Scientific expedition coordinated by Prof. J.R. Pawlick (UNC Wilmington, USA) - Mote Tropical Research Laboratory, Summerland Key (Florida, USA).

2014 – Prof. J. Piel laboratory - Institute of Microbiology ETH Zürich, Switzerland.

Affiliations

Member of the Italian Group of Biomembrane and Bioenergetics (GIBB)

PhD Students' Supervision

2022 –Department of Ecosustainable Marine Biotechnology, Stazione Zoologica Anton Dohrn (Italy).

Supervisor of the Phd Project: *Unlocking the Biosynthetic Machinery for Bioactive Natural Products in Marine Extremophiles: Metabologenomic Approaches to Biotechnological Production.*

Students' Supervision

2010–2017 - Department of Pharmacy, University of Naples “Federico II” (Italy).

Lab supervision, training, supervision of dissertations and theses of undergraduate students (number of students: 15).

Teaching activities

2010–2017 - Teaching Assistant at the Department of Pharmacy, University of Naples “Federico II”. (Italy). Teaching subjects: Organic Chemistry, Spectroscopic Analysis of Organic Compounds, Inorganic General Chemistry, Chemistry of Natural Products; Laboratory Lessons to undergraduate students, examinations.

Organization of scientific meetings

2021, July – Member of the Scientific and Organizing Committee – 4th International Summer School on Natural Products (ISSNP), Naples, Italy.

2017, July - Member of the Organizing Committee – 2nd International Summer School on Natural Products (ISSNP), Naples, Italy.

2015, July - Member of the Organizing Committee - 1st International Summer School on Natural Products (ISSNP), Naples, Italy.

Publications

Author of 31 publications on ISI-journals (h index: 13) and 1 book chapter.

List of publications of the last 10 years:

Peer-reviewed publications

Caruso F, Tedesco P, Della Sala G, Palma Esposito F, Signore M, Canese S, Romeo T, Borra M, Gili C and de Pascale D. Science and Dissemination for the UN Ocean Decade Outcomes: Current Trends and Future Perspectives. *Front. Mar. Sci.* 2022.

Della Sala G, Coppola D, Virgili R, Vitale GA, Tanduo V, Teta R, Crocetta F and de Pascale D Untargeted Metabolomics Yields Insights Into the Lipidome of *Botrylloides niger* Herdman, 1886, An Ascidian Invading the Mediterranean Sea. *Front. Mar. Sci.* 2022; 9:865751. doi: 10.3389/fmars.2022.865751.

Della Sala G, Pacelli C, Agriesti F, Laurenzana I, Tucci F, Tamma M, Capitanio N, Piccoli C. Unveiling Metabolic Vulnerability and Plasticity of Human Osteosarcoma Stem and Differentiated Cells to Improve Cancer Therapy. *Biomedicines.* 2022; 10(1):28. <https://doi.org/10.3390/biomedicines10010028>.

Caso A, da Silva FB, Esposito G, Teta R, Della Sala G, Cavalcanti LPAN, Valverde AL, Martins RCC, Costantino V. Exploring Chemical Diversity of *Phorbas* Sponges as a Source of Novel Lead Compounds in Drug Discovery. *Marine Drugs.* 2021; 19(12):667. <https://doi.org/10.3390/md19120667>.

- Teta R, Della Sala G, Esposito G, Stornaiuolo M, Scarpato S, Casazza M, Anastasio A, Lega M, Costantino V. Monitoring Cyanobacterial Blooms during the COVID-19 Pandemic in Campania, Italy: The Case of Lake Avernus. *Toxins*. 2021; 13(7):471. <https://doi.org/10.3390/toxins13070471>.
- Palma Esposito F, Giugliano R, Della Sala G, Vitale GA, Buonocore C, Ausuri J, Galasso C, Coppola D, Franci G, Galdiero M, de Pascale D. Combining OSMAC Approach and Untargeted Metabolomics for the Identification of New Glycolipids with Potent Antiviral Activity Produced by a Marine *Rhodococcus*. *Int J Mol Sci*. 2021;22(16):9055. doi: 10.3390/ijms22169055.
- Della Sala G, Horchani M, Caso A, D'Aria F, Esposito G, Laurenzana I, Giancola C, Costantino V, Jannet HB, Romdhane A. Molecular Docking and Biophysical Studies for Antiproliferative Assessment of Synthetic Pyrazolo-Pyrimidinones Tethered with Hydrazide-Hydrazones. *Int J Mol Sci*. 2021;22(5):2742. doi: 10.3390/ijms22052742.
- Scarpato S, Teta R, Della Sala G, Pawlik JR, Costantino V, Mangoni A. New Tricks with an Old Sponge: Feature-Based Molecular Networking Led to Fast Identification of New Stylissamide L from *Stylissa caribica*. *Mar Drugs*. 2020;18(9):443. doi: 10.3390/md18090443.
- Della Sala G, Mangoni A, Costantino V, Teta R. Identification of the Biosynthetic Gene Cluster of Thermoactinoamides and Discovery of New Congeners by Integrated Genome Mining and MS-Based Molecular Networking. *Front Chem*. 2020; 8:397. doi: 10.3389/fchem.2020.00397.
- Della Sala G, Imperatore C, Casertano M, Luciano P, Aiello A, Laurenzana I, Piccoli C, Menna M. *In Vitro* Antiproliferative Evaluation of Synthetic Meroterpenes Inspired by Marine Natural Products. *Mar Drugs*. 2019; 17(12):684. doi: 10.3390/md17120684.
- Tataranni T, Mazzoccoli C, Agriesti F, De Luca L, Laurenzana I, Simeon V, Ruggieri V, Pacelli C, Della Sala G, Musto P, Capitanio N, Piccoli C. Deferasirox drives ROS-mediated differentiation and induces interferon-stimulated gene expression in human healthy haematopoietic stem/progenitor cells and in leukemia cells. *Stem Cell Res Ther*. 2019; 10(1):171. doi: 10.1186/s13287-019-1293-y.
- Caso A, Esposito G, Della Sala G, Pawlik JR, Teta R, Mangoni A, Costantino V. Fast Detection of Two Smenamide Family Members Using Molecular Networking. *Mar Drugs*. 2019; 17(11):618. doi: 10.3390/md17110618.
- Tataranni T, Agriesti F, Pacelli C, Ruggieri V, Laurenzana I, Mazzoccoli C, Della Sala G, Panebianco C, Paziienza V, Capitanio N, Piccoli C. Dichloroacetate Affects Mitochondrial Function and Stemness-Associated Properties in Pancreatic Cancer Cell Lines. *Cells*. 2019; 8(5):478. doi: 10.3390/cells8050478.
- Teta R, Della Sala G, Esposito G, Via CW, Mazzoccoli C, Piccoli C, Bertin MJ, Costantino V, Mangoni A. A joint molecular networking study of a *Smenospongia* sponge and a cyanobacterial bloom revealed new antiproliferative chlorinated polyketides. *Org Chem Front*. 2019; 6(11):1762-1774. doi: 10.1039/C9QO00074G.
- Esposito G, Teta R, Della Sala G, Pawlik JR, Mangoni A, Costantino V. Isolation of Smenopyrone, a Bis- γ -Pyrone Polypropionate from the Caribbean Sponge *Smenospongia aurea*. *Mar Drugs*. 2018; 16(8):285. doi: 10.3390/md16080285.
- Menna M, Imperatore C, Mangoni A, Della Sala G, Tagliatalata-Scafati O. Challenges in the configuration assignment of natural products. A case-selective perspective. *Nat Prod Rep*. 2019; 36(3):476-489. doi: 10.1039/c8np00053k.
- Della Sala G, Agriesti F, Mazzoccoli C, Tataranni T, Costantino V, Piccoli C. Clogging the Ubiquitin-Proteasome Machinery with Marine Natural Products: Last Decade Update. *Mar Drugs*. 2018; 16(12):467. doi: 10.3390/md16120467.

- Britstein M, Saurav K, Teta R, Della Sala G, Bar-Shalom R, Stoppelli N, Zoccarato L, Costantino V, Steindler L. Identification and chemical characterization of N-acyl-homoserine lactone quorum sensing signals across sponge species and time. *FEMS Microbiol Ecol.* 2018; 94(2). doi: 10.1093/femsec/fix182.
- Schirmeister T, Oli S, Wu H, Della Sala G, Costantino V, Seo EJ, Efferth T. Cytotoxicity of Endoperoxides from the Caribbean Sponge *Plakortis halichondrioides* towards Sensitive and Multidrug-Resistant Leukemia Cells: Acids vs. Esters Activity Evaluation. *Mar Drugs.* 2017; 15(3):63. doi: 10.3390/md15030063.
- Della Sala G, Teta R, Esposito G, Pawlik JR, Mangoni A, Costantino V. Zeamide, a Glycosylinositol Phosphorylceramide with the Novel Core Arap(1 β →6)Ins Motif from the Marine Sponge *Svenzea zeai*. *Molecules.* 2017; 22(9):1455. doi: 10.3390/molecules22091455.
- Costantino V, Della Sala G, Saurav K, Teta R, Bar-Shalom R, Mangoni A, Steindler L. Plakofuranolactone as a Quorum Quenching Agent from the Indonesian Sponge *Plakortis* cf. *lita*. *Mar Drugs.* 2017; 15(3):59. doi: 10.3390/md15030059.
- Teta R, Romano V, Della Sala G, Picchio S, De Sterlich C, Mangoni A, Di Tullio G, Costantino V, Lega M. Cyanobacteria as indicators of water quality in Campania coasts, Italy: a monitoring strategy combining remote/proximal sensing and in situ data. *Environ Res Lett.* 2017; 12 (2): 024001. doi: 10.1088/1748-9326/aa5649.
- Teta R, Della Sala G, Mangoni A, Lega M, Costantino V. Tracing cyanobacterial blooms to assess the impact of wastewaters discharges on coastal areas and lakes. *Int J Sustain Dev Plann.* 2016; 11 (5):804. doi: 10.2495/SDP-V11-N5-804-811.
- Della Sala G, Esposito G, Teta R, Caso A, Bourguet-Kondracki ML, Pawlik JR, Mangoni A, Costantino V. Chlorinated Thiazole-Containing Polyketide-Peptides from the Caribbean Sponge *Smenospongia conulosa*: Structure Elucidation on Microgram Scale. *Eur J Org Chem.* 2016; 16: 2871. doi: 10.1002/EJOC.201600370.
- Teta R, Della Sala G, Glukhov E, Gerwick L, Gerwick WH, Mangoni A, Costantino V. Combined LC-MS/MS and Molecular Networking Approach Reveals New Cyanotoxins from the 2014 Cyanobacterial Bloom in Green Lake, Seattle. *Environ Sci Technol.* 2015; 49(24):14301-10. doi: 10.1021/acs.est.5b04415.
- Esposito G, Teta R, Miceli R, Ceccarelli LS, Della Sala G, Camerlingo R, Irollo E, Mangoni A, Pirozzi G, Costantino V. Isolation and assessment of the in vitro anti-tumor activity of smenothiazole A and B, chlorinated thiazole-containing peptide/polyketides from the Caribbean sponge, *Smenospongia aurea*. *Mar Drugs.* 2015; 13(1):444-59. doi: 10.3390/md13010444.
- Della Sala G, Hochmuth T, Teta R, Costantino V, Mangoni A. Polyketide synthases in the microbiome of the marine sponge *Plakortis halichondrioides*: a metagenomic update. *Mar Drugs.* 2014; 12(11):5425-40. doi: 10.3390/md12115425.
- Teta R, Irollo E, Della Sala G, Pirozzi G, Mangoni A, Costantino V. Smenamides A and B, chlorinated peptide/polyketide hybrids containing a dolapyrrolidinone unit from the Caribbean sponge *Smenospongia aurea*. Evaluation of their role as leads in antitumor drug research. *Mar Drugs.* 2013; 11(11):4451-63. doi: 10.3390/md11114451.
- Della Sala G, Hochmuth T, Costantino V, Teta R, Gerwick W, Gerwick L, Piel J, Mangoni A. Polyketide genes in the marine sponge *Plakortis simplex*: a new group of mono-modular type I polyketide synthases from sponge symbionts. *Environ Microbiol Rep.* 2013; 5(6):809-18. doi: 10.1111/1758-2229.12081.

Costantino V, Della Sala G, Mangoni A, Perinu C, Teta R. Blurring the Boundary between Bio- and Geohopanoids: Plakohopanoid, a C32 Biohopanoid Ester from *Plakortis cf. lita*. *Eur J Org Chem*. 2012; 27:5171. doi: 10.1002/EJOC.201200676.

Teta R, Della Sala G, Renga B, Mangoni A, Fiorucci S, Costantino V. Chalinulasterol, a chlorinated steroid disulfate from the Caribbean sponge *Chalinula molitba*. Evaluation of its role as PXR receptor modulator. *Mar Drugs*. 2012 Jun;10(6):1383-90. doi: 10.3390/md10061383.

Book chapter

Della Sala G, Teta R, Esposito G, Costantino V. Chapter 1 - The Chemical Language of Gram-Negative Bacteria. In: Tommonaro G., editor. Quorum Sensing. Academic Press; London, UK: 2019. pp. 3–28. doi: 10.1016/B978-0-12-814905-8.00001-0.