Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Professor Dr Nicole Dubilier

Name: **Nicole Dubilier**

Research Priorities: Marine biology, deep-sea research, symbioses between bacteria and invertebrates, chemosynthetic symbioses, ocean biodiversity and ecology

Nicole Dubilier is a German-American marine biologist and deep-sea researcher. She studies symbioses between bacteria and marine invertebrates. Her research delivers key insights into microbial symbioses and their importance for the oceans' ecosystem.

Academic and Professional Career

since 2013	Director and Head, Department of Symbiosis, Max Planck Institute for Marine Microbiology, Bremen, Germany
since 2012	Professor for Microbial Symbiosis, Department of Biology/Chemistry, University of Bremen, Bremen, Germany
since 2012	Associate Professor, MARUM – Centre for Marine Environmental Studies, University of Bremen, Bremen, Germany
2007 - 2013	Head, Research Group "Symbiosis", Max Planck Institute for Marine Microbiology, Bremen, Germany
2004 - 2005	Visiting Professor, Université Pierre *et* Marie Curie, Paris, France
2002 - 2006	Coordinator, International Max Planck Research School of Marine Microbiology, Max Planck Institute for Marine Microbiology, Bremen, Germany
2001 - 2006	Research Associate, Department of Molecular Ecology, Max Planck Institute for Marine Microbiology, Bremen, Germany
1997 - 2001	Postdoctoral Fellow, Max Planck Institute for Marine Microbiology, Bremen, Germany

1995 - 1996	Research Assistant, University of Hamburg, Hamburg, Germany
1993 - 1995	Postdoctoral Fellow, Harvard University, Cambridge, USA
1992	PhD in Marine Zoology, University of Hamburg, Hamburg, Germany
1990 - 1993	Research Associate, University of Hamburg, Hamburg, Germany
1985	Degree in Biology, University of Hamburg, Hamburg, Germany

Functions in Scientific Societies and Committees

since 2023	Member, Executive Committee “Tyler Prize for Environmental Achievement”, University of Southern California, Los Angeles, USA
since 2022	Member, Scientific Advisory Board, Singapore Centre for Environmental Life Sciences Engineering, Singapore
since 2021	Member, Scientific Advisory Board, Mediterranean Institute for Advanced Studies (IMEDEA), Spanish National Research Council (CSIC), Spain
since 2021	Member, Presidential Committee “Governance”, Max Planck Society, Munich, Germany
since 2020	Member, Presidential Committee “Tenure Track”, Max Planck Society, Munich, Germany
since 2020	Member, Senate Committee “Leadership Review”, Max Planck Society, Munich, Germany
since 2020	Member, Perspectives Committee, Biology & Medicine Section, Max Planck Society, Munich, Germany
since 2020	Member, Scientific Council, Stazione Zoologica Anton Dohrn Napoli, Naples, Italy
2020 - 2022	President, International Society of Microbial Ecology (ISME)
2018 - 2020	Vice-President, ISME
since 2018	Member, Board of Trustees, GEOMAR – Helmholtz Centre for Ocean Research, Kiel, Germany
since 2018	Member, Selection Committee “Alexander von Humboldt Professorships”, Alexander von Humboldt Foundation, Bonn, Germany
since 2018	Member, Executive Board, International Society of Microbiology
since 2017	Member, Board of Directors, House of Science, Bremen, Germany
2016 - 2017	Chairperson, General Meeting Planning Committee, American Society of Microbiology (ASM), USA
2014 - 2015	Vice-Chairperson, General Meeting Planning Committee, ASM, USA

2014 - 2017	Member, Presidential Committee “Junior Scientists”, Max Planck Society, Munich, Germany
since 2010	Member, General Meeting Planning Committee, ASM, USA
2012 - 2018	Member, Steering Committee, Symposium of Aquatic Microbial Ecology (SAME), Delft, the Netherlands
since 2008	Member, Working Group 135 “Hydrothermal Energy Transfer and its Impact on the Ocean Carbon Cycle”, Scientific Committee on Oceanic Research (SCOR), International Cooperation in Ridge-Crest Studies (InterRidge)
since 2007	Member, Advisory Board, MARUM – Centre for Marine Environmental Studies, University of Bremen, Bremen, Germany
2005 - 2012	Member, Steering Committee, InterRidge
2005 - 2007	Chairperson, Biology Working Group, InterRidge
2006 - 2010	Member, Steering Committee, Census of Marine Life Project ChEss (Biogeography of Deep-Water Chemosynthetic Ecosystems)
2006 - 2008	Member, Steering Committee, European Regional Group, ChEss
2003 - 2009	Counsellor, International Symbiosis Society (ISS)
	Member, Editorial Boards: Applied and Environmental Microbiology, Environmental Microbiology, FEMS Microbial Ecology, ISME Journal, Marine Genomics, mBio

Project Coordination, Membership in Collaborative Research Projects

since 2019	Vice-Spokesperson, Cluster of Excellence (EXC) 2077 “The Ocean Floor – Earth's Uncharted Interface”, German Research Foundation (DFG), Germany
2016 - 2019	Subproject “The life cycle of the deep-sea Bathymodiolus metaorganism: symbiont transmission and colonization of the host gill epithelium”, Collaborative Research Centre (CRC) 1182, DFG, Germany
2014 - 2019	Principal Investigator, Advanced Grant “BATHYBIOME The Symbiome of Bathymodiolus Mussels from Hydrothermal Vents: From the Genome to the Environment”, European Research Council (ERC)
since 2007	EXC 309 “The Ocean in the Earth System – MARUM – Centre for Marine Environmental Studies”, DFG, Germany
2007 - 2012	Subproject “Biosignatures in precipitates and altered rocks at hydrothermal systems of the Mid-Atlantic Ridge: organic geochemistry, microbiology and petrography”, Priority Programme (PP) 1144, DFG, Germany

2007 - 2010	Subproject “Investigations on population genetics and the influence of hydrothermal activity on bivalve growth at MAR hydrothermal vents”, PP 1144, DFG, Germany
2004 - 2006	Subproject “Tectono-magmatic evolution and fluid geochemistry and biology in hydrothermal vent fields of the Mid-Atlantic between 4 and 11°S m (M64/1)”, PP 511, DFG, Germany
2003 - 2011	Subproject “Gas chemistry and carbon cycling at hydrothermal systems along the Mid-Atlantic Ridge: time- and space-referenced biogeochemical and isotopic investigations”, PP 1144, DFG, Germany
2003 - 2011	Subproject “Geobiological coupling between hydrothermal vent fluids and symbiotic primary producers at spreading axes”, PP 1144, DFG, Germany

Honours and Awarded Memberships

2024	Award for Environmental Research, ASM, USA
since 2022	Member, Academy of Sciences and Humanities, Hamburg, Germany
2022, 2021, 2020, 2018, 2016, 2015, 2013, 2012	Excellence Award for Teaching, International Max Planck Research School of Marine Microbiology (MarMic), Bremen, Germany
2020	Excellence Professor Award, Petersen Foundation, New York City, USA
2019	Plymouth Marine Science Medal Lecture, Plymouth Marine Laboratory (PML), Plymouth, UK
since 2018	Member, European Molecular Biology Organization (EMBO)
since 2015	Member, German National Academy of Sciences Leopoldina, Germany
since 2015	Member, European Academy of Microbiology
2014	Gottfried Wilhelm Leibniz Prize, DFG, Germany
2013	Investigator Award, Marine Microbiology Initiative, Gordon and Betty Moore Foundation, Palo Alto, USA
since 2013	Member, American Academy of Microbiology, USA
since 2010	Member, AcademiaNet, Swiss National Science Foundation, Switzerland

Research Priorities

Nicole Dubilier is a German-American marine biologist and deep-sea researcher. She studies symbioses between bacteria and marine invertebrates. Her research delivers key insights into

microbial symbioses and their importance for the oceans' ecosystem.

Nicole Dubilier investigates symbioses – different species that mutually benefit from living in a shared environment – in marine invertebrates. Such creatures include, for example, mussels and worms, which inhabit hot springs in the deep sea. These creatures host bacteria in their bodies, which in turn provide their hosts with energy and nourishment, thus helping them survive. Some hosts are so dependent on these bacteria that they can even survive without a mouth and any kind of digestive tract.

As the deep sea is a very dark environment, the symbioses are usually with what are known as chemosynthetic bacteria. Unlike plants, these bacteria can create energy without help from sunlight. Instead, they use energy sources such as methane or hydrogen sulphide. This allows the bacteria and their hosts to make extreme environments their habitat. The research of Nicole Dubilier and her team has shown that chemosynthetic symbioses are widespread in marine environments. She was the first to discover that some hosts accommodate several different symbionts, which interact in a finely coordinated manner. In recent studies she has shown that chemosynthetic symbionts can use hydrogen gas and even toxic carbon monoxide as energy sources.

Nicole Dubilier has participated in numerous expeditions at sea and led international research trips, during which, for example, deep sea hot springs were investigated using underwater robots, and gutless worms were gathered from the sands of tropical coral reefs. She uses a broad range of modern techniques in her lab work, drawing on methods from molecular biology, physiology, and image analysis.

Her research has shown how diverse chemosynthetic symbioses can be, how successful microorganisms are at obtaining numerous different hosts as partners, and how many animal species benefit from these symbioses. Nicole Dubilier wants to continue learning about these symbioses, as they play a key role in the biodiversity and ecology of oceans. In addition, research into sea creatures can help us better understand the manifold and far more complex symbioses in humans.