

NOTIFICATION OF PROPOSED RESEARCH CRUISE

Part A: GENERAL

1. Name of research ship: **RV Pelagia** **Cruise number: 64PE547**

2. Cruise dates: 31 July to 29 August 2025

3a. Operating authority: NIOZ Royal Netherlands Institute for Sea Research
Telephone: (+31) (0)222-369300
Telefax: (+31) (0)222-319674

3b. Operating agent: NIOZ Royal Netherlands Institute for Sea Research
Telephone: (+31) (0)222-369300
Telefax: (+31) (0)222-319674

4. Owner: NIOZ Royal Netherlands Institute for Sea Research

5. Particulars of ship:

name: Pelagia
nationality: Dutch
overall length: 66.00 meters
maximum draught: 4.00 meters
nett tonnage: 1553 NRT
propulsion: 2 diesel electric Elliot White Gill
Bow Thruster
call sign: PGRQ
IMO nr: 9001461

6. Crew: name of master: L. Bliemer / H. Oenema
number of crew: 12

7. Chief scientist: name: Gerhard J. Herndl
addresses: Djerassiplatz 1, 1030 Vienna, Austria
telephone: +43-(0)664-817-5971
e-mail address: Gerhard.herndl@univie.ac.at

**8. Geographical area in which the ship will operate:
(with reference in latitude and longitude)**

North Atlantic from 61.6°N, 17.3°E to 44.22°N, -35.5°E

9. Brief description of purpose of cruise:

Research expedition collecting water samples from surface waters to about 10 m above seafloor; collecting marine snow in the water column to analyse the nutrient concentrations and the microbial community.

10. Names and dates of intended ports of call:

Reykjavik, Iceland; 31 July 2025

Punta Delgado, Azores, Portugal; 29 August 2025

11. Any special logistic requirements at ports of call:

none

Part B: DETAIL

1. Name of research ship: RV Pelagia

2. Cruise dates: 31 July 2025 to 29 August 2025

3. Purpose of research and general operational methods:

The purpose of research is to determine the prokaryotic (bacteria and archaea) community composition in the ambient water and on particles in the oceanic water column from the surface waters to the deep ocean. This will be done by sampling water using a CTD rosette sampler with 24 25-L Niskin flasks and using sediment traps, marine snow catcher, in situ pumps and under underwater vision profiler. The particles and ambient water collected will be chemically analysed for the organic carbon and nitrogen content, amino acid composition and inorganic nutrient content. Jellyfish samples will be collected using vertical net tows from 700 m depth to the surface.

4. Attach chart showing (on an appropriate scale) the geographical area of the intended work, positions of intended stations/hydrographic sections:



The pink dots represent sampling stations, the yellow dots are the position of the Argo floats on 3 March 2025.

5a. Type of samples required:

Water column samples from surface to the deep sea (about 10 m above bottom); samples of particles using marine snow catcher, sediment traps, in situ pumps

5b. Methods by which samples will be obtained (including dredge/core/drill techniques):

Water samples will be collected with 24 25-L Niskin flasks; particles in the water column will be collected using marine snow catcher, sediment traps (deployed only for 2 days) and in situ pumps; zooplankton will be collected using vertical net tows.

6. Details of moored equipment:

Sediment traps will be deployed for 2 days at selected stations.

7. Explosives:

none

8. Detail and reference of:

a. Any relevant previous/future cruises:

DEPOCA in 2023, Transat in 2011, ARCHIMEDES in 2013

b. Any previous published research data relating to the proposed cruise:

(Attach separate sheet if necessary)

- Zhao, Z., F. Baltar, G.J. Herndl, 2024: Decoupling between genetic potential and the metabolic regulation and expression in microbial organic matter cleavage across microbiomes. *Microbiology Spectrum*; doi:10.1128/spectrum.03036-23
- Amano, C., E. Sintes, T. Reinthaler, J. Stefanschitz, M. Kisadur, M. Utsumi, G.J. Herndl, 2022: Limited carbon cycling due to high pressure effects on the deep sea microbiome. *Nature Geosci.*, 15: 1041-1047; doi.org/10.1038/s41561-022-01081-3
- De Corte, D., S. Muck, J. Tiroch, C. Mena, G.J. Herndl, E. Sintes, 2021: Microbes mediating the sulfur cycle in the deep Atlantic Ocean and their link to chemolithoautotrophy. *Environ. Microbiol.*, 23: 7152-7167; doi:10.1111/1462-2920.15759
- Weinbauer, M.G., C. Griebler, H.M. van Aken, G.J. Herndl, 2020: Viral infection of prokaryotic plankton during early formation of the North West Atlantic Deep Water. *Aquat. Microb. Ecol.*, 84: 175-189; doi: doi.org/10.3354/ame01934
- Zhao, Z., F. Baltar, G.J. Herndl, 2020: Linking extracellular enzymes to phylogeny indicates a predominantly particle-associated lifestyle of deep-sea prokaryotes. *Science Advances*, 6: eaaz4354
- Winter, C., N. Köstner, C.-P. Kruspe, D. Urban, S. Muck, T. Reinthaler, G.J. Herndl, 2018: Mixing alters the lytic activity of viruses in the dark ocean. *Ecology*, 99: 700-713
- Bergauer, K., A. Fernandez-Guerra, J.A. Garcia, R.R. Sprenger, R. Stepanauskas, M. Pachiadaki, O.N. Jensen, G.J. Herndl, 2018: Organic matter processing by microbial communities throughout the Atlantic water column as revealed by metaproteomics. *Proc. Natl. Acad. Sci. USA*, 115(3): E400-E408
- Bohdansky, A.B., M.A. Clouse, G.J. Herndl, 2017: Eukaryotic microbes, principally fungi and labyrinthulomycetes, dominate biomass on bathypelagic marine snow. *The ISME J.*, 11: 362-373; doi:10.1038/ismej.2016.113
- Bohdansky, A.B., M.A. Clouse, G.J. Herndl, 2016: Dragon kings of the deep ocean: marine particles deviate markedly from the common number – size spectrum. *Scientific Reports*, 6:22633, doi: 10.1038/srep22633
- Hansman, R.L., T. Dittmar, G.J. Herndl, 2015: Conservation of dissolved organic matter molecular composition during mixing of deep water masses of the northeast Atlantic Ocean. *Mar. Chem.*, 177: 288-297
- Sintes, E., D. De Corte, N. Ouillon, G.J. Herndl, 2015: Macroecological patterns of archaeal ammonia

- oxidizers in the Atlantic Ocean. *Mol. Ecol.*, 24: 4931-4942, DOI: 10.1111/mec.13365
- Arrieta, J.M., E. Mayol, C.M. Duarte, R. Hansman, G.J. Herndl, T. Dittmar, 2015: Dilution limits dissolved organic carbon utilization in the deep ocean. *Science*, 348: 331-333
- De Corte, D., I. Lekunberri, J.A. Garcia, E. Sintes, S. Gonzales, G.J. Herndl, 2014: Linkage between copepods and bacteria in the North Atlantic. *Aquat. Microb. Ecol.*, 72: 215-225
- Muck, S., T. Griessler, N. Köstner, A. Klimiuk, C. Winter, G.J. Herndl, 2014: Fracture Zones in the Mid Atlantic Ridge lead to alterations in prokaryotic and viral parameters in deep-water masses. *Frontiers Microbiol.*, 5: Article 264
- Reinthal, T., X.A. Alvarez-Salgado, M. Alvarez Rodriguez, H.M. van Aken, G.J. Herndl, 2013: Impact of water mass mixing on the biogeochemistry and microbiology of the Northeast Atlantic Deep Water. *Global Biogeochem. Cycles*, 27: 1151-1162

9. Names and addresses of scientists of the coastal state in whose waters the proposed cruise takes place with whom previous contact has been made:

Dr. Marja Koski, Danish Technical University, Copenhagen, Denmark (for Greenland)

10. State:

a. Whether visits to the ship in port by scientist of the coastal state concerned will be acceptable: yes

b. Whether it will be acceptable to carry on board an observer from the coastal state for any part of the cruise and dates and ports of embarkation/-disembarkation:

as the number of berth on RV Pelagia is rather limited, an observer is theoretically possible but would reduce the number of scientists on board

c. When research data from intended cruise is likely to be made available to the coastal state and if so, by what means:

research data are published in data repositories such as Pangea and in the form of peer-reviewed scientific publications

SCIENTIFIC EQUIPMENT

11. Complete the following table - include a separate copy for each coastal state (indicate "Yes" or "No" if applicable)

Marine scientific equipment used	water depth (m)	fisheries research	distance of research to coast in nautical miles			
			< 3	3-12	12-50	50-200
CTD rosette sampler	5-2500	no		no	no	yes
2 Sediment traps	400/900	no		no	no	yes
4 In situ pumps	200/500 /700/1000	no		no	no	yes
Marine snow catcher	200-500	no		no	no	yes
Vertical net tows	700-0	no		no	no	yes
Underwater vision profiler	0-2500	no		no	no	yes
In situ microbial incubator	1000-4000	no		no	no	yes

List of intended sampling stations during Pelagia cruise

Station 7; 63.10°N, -32.10°E
 Station 8; 60.67°N, -36.12°E
 Station 9; 58.00°N, -39.90°E

References