15 Early-Stage Researcher (ESR) positions are available as part of the MSCA ETN '4D-REEF'

**PAST, PRESENT AND FUTURE OF TURBID REEFS IN THE CORAL TRIANGLE**

We are pleased to advertise 15 Early-Stage Researcher (PhD) positions to begin in Oktober/November 2019, as part of the MSCA Innovative Training Network "Past, present and future of turbid reefs in the Coral Triangle (4D-REEF)**"***.* All the positions correspond to three or four years hiring depending on the institute, and require the enrolment in a PhD programme enhancing their career perspectives in both the academic and non-academic sector. Each ESR will crucially gain inter-sectoral experience in an individual ESR research project. In addition to their individual doctoral projects, all ESRs will benefit from an **exciting training programme** comprising an integrated curriculum of local and network wide training activities related to the development of scientific knowledge and the enhancement of transferable skills. At the core of the training programme lie the research projects conducted by the ESRs, which are enhanced by all other training events and activities the consortium provides during the project's life span.

**Project Objectives**

Using a variety of paleo-ecological and present-day data, 4D REEF investigates the hypothesis that turbid coastal environments provide a refuge for coral reefs in periods of warm climate. The key questions are:

1) What was the biodiversity of turbid reefs in the past and in what habitats did the reefs grow in past warmer periods of the Earth's history, and how does this compare to the present?

2) What are the environmental constraints on ecosystem functions of turbid reefs?

3) How can we use information from past reefs to better understand the future trajectories of modern coral reefs, and apply this towards reef restoration actions?

By answering these questions, we aim to understand the role of turbid reefs for the future of marine ecosystems in the Coral Triangle as they respond to anthropogenic environmental change.

More information about 4D-REEF is available at: https://www.naturalis.nl/en/4d-reef

**Eligibility criteria**

EU eligibility criteria for candidates: Candidates can be of any nationality, but in order to be eligible for the positions the following criteria apply to all applicants: 1) The applicant shall at the time of recruitment be in the first four years of his/her research career and have not been awarded a doctoral degree. 2) The applicant must not have resided or carried out his/her main activity in the country of the host institute for more than 12 months in the 3 years immediately prior to the recruitment.

**Candidates profile**

Candidates most hold a master degree in Earth and/or Life sciences or other relevant topic for the project. Specific selection criteria are indicated with the individual projects.

- Applicants can be of any nationality.

- Applicants must have an ability to understand and express themselves in both written and spoken English to a level that is sufficiently high for them to derive the full benefit from the network training.

- Applicants must be eligible to enrol on a PhD programme at the host institution (or at a designated university in case the host institution is a non-academic organisation).

**Benefits**

The benefits of this project for you and the future of your career are manyfold, here's a few key aspects that 4D-REEF can offer you:

- Working on the forefront of many aspects of the (paleo)ecology of turbid reefs and the environments they develop in, applying innovative techniques.

- You will be employed by the host organisation for 36 or in some cases 48 months.

- A competitive salary plus allowances. Moreover, funding is available for technical and personal skills training and participation in international research events.

- You will benefit from the designed training programme offered by the host organisation and the consortium.

- You will participate in international secondments to other organisations within the 4D-reef network and in outreach activities targeted at a wide audience.

- You will be part of an international research consortium of over > 25 researchers

**Application**

To apply, visit our website https://www.naturalis.nl/en/4d-reef, and go to the specific ESR profile and follow specific instructions provided. Some positions will open later than others, depending on the start date.

For further information please contact Dr Willem Renema (programme coordinator) (willem.renema@naturalis.nl) or the contact persons indicated with the positions.

**Host institutes and sub-projects**

| **Available position** | **Host** | **Project title** |
|---|---|---|
| ESR 1 | University of Aveiro (Portugal) | Composition and function of sediment microbial communities in coral reef environments (will open soon) |
| ESR 2 | Naturalis Biodiversity Center (the Netherlands) | Temporal dynamics in benthic foraminifera assemblages in Holocene to modern turbid coral reefs: integrating morphological with molecular techniques |
| ESR 3 | The Natural History Museum (United Kingdom) | Composition and ecology of microgastropod assemblages in relation to reef habitat quality |
| ESR 4 | Max Planck Institute for Marine Microbiology (Germany) | Habitat structure and spatial ecology in modern turbid reefs (position already closing 26 august 2019) |
| ESR 5 | Leibniz Centre for Tropical Marine Research (Germany) | Ecological implications of shifts from hard corals to turf algae in modern turbid reefs |
| ESR 6 | University of Bristol (United Kingdom) | Modelling environmental controls on coral species distribution in the Coral Triangle |
| ESR 7 | Naturalis Biodiversity Center (the Netherlands) | Quantifying Neogene habitat variability in the Coral Triangle |
| ESR 8 | Ocean-Maps | Visualizing scientific data of the underwater in three and four dimensions |

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| | GmbH (Austria) | |
| ESR 9 | The Natural History Museum (United Kingdom) | Growth rates, bioerosion, and the diversity of reef corals |
| ESR 10 | Leibniz Centre for Tropical Marine Research (Germany) | Depositional modelling and sequence stratigraphy of greenhouse Pliocene reefs |
| ESR 11 | University of Granada (Spain) | Historical assessment of coralline algae as triggers for coral settlement |
| ESR 12 | Naturalis Biodiversity Center<br>(the Netherlands) | Assessing current and past reef accretion rates in turbid reefs off Makassar (Sulawesi, Indonesia) |
| ESR 13 | Goethe Universität Frankfurt (Germany) | Seasonally-resolved palaeoenvironmental time-series from microsampled corals, molluscs and foraminifera |
| ESR 14 | Deltares (the Netherlands) | Using past and current reef response to physical stressors for model-based forecasting of reef distribution |
| ESR 15 | University of Bristol (United Kingdom) | Modelling climate, oceanography, and carbonate production of corals in the Pliocene |

**ESR 11**

Project title: **Historical assessment of coralline algae as triggers for coral settlement**

**Host**: Departamento de Estratigrafía y Paleontología, Universidad de Granada (Spain)

**Supervisors**: Dr Juan C. Braga (co-supervisor Dr Viviana Peña Freire, Universidade da Coruña, Spain)

Coralline algae (CCA) are main builders in coral reefs. Certain species of CCA enhance coral recruitment by chemically inducing coral settlement and subsequent development. Total CCA cover might be used to indicate reef health and management effectiveness. However, the CCA diversity in turbid reefs is poorly known and only few data exist about the importance of CCA in maintaining coral recruitment and reef accretion. In a historical perspective, Pliocene to Holocene fossil reefs will provide the opportunity to quantitatively evaluate the relevance of CCA crusts in the accretion of healthy reef frameworks in large-scale time intervals.

**Objectives of the individual project**

Acquisition of expertise with respect to molecular and morphological techniques to identify CCA. Specific question: Which is the CCA diversity in turbid reefs and how does it compare with that of reefs growing in clear waters?

To quantitatively assess the CCA cover and identify the CCA assemblages in space and time in Pliocene to Holocene reefs. Specific question: Is the CCA in turbid reefs significantly different from that of clear-water ones?

To identify the inductive CCA in turbid reefs and to quantitatively assess their relevance in these reefs, both modern and fossil. Specific question: Is the role of inductive CCA relevant in turbid reefs?

**Expected results**

Understanding the long-term significance of inductive CCA in growth and maintenance of coral reefs might help in predicting future scenarios for different degrees of reduction of CCA cover due to ecosystem alteration. CCA assemblages will help to interpret palaeoenvironments and their changes throughout time.

More information about 4D-REEF is available at: https://www.naturalis.nl/en/4d-reef

**Secondments**: Natural History Museum (London, UK), ZMT (Bremen, Germany)

**Field training**: Sulawesi (Indonesia), Cebu (Philippines)

**Eligibility criteria**

EU eligibility criteria for candidates: Candidates of any nationality. In order to be eligible for the position the following criteria applies to all applicants: 1) The applicant shall at the time of recruitment be in the first four years of his/her research career and have not been awarded a doctoral degree. 2) The applicant must not have resided or carried out his/her main activity in Spain for more than 12 months in the 3 years immediately prior to the recruitment.

**Candidate profile**

Candidates must hold a master degree in Life sciences or other relevant topics for the project. We are looking for highly motivated students with good communication skills. Experience with molecular biology (high throughput sequencing) will be highly valued.

Special remarks: European diving license required; related training is provided in case qualification is lacking.

**For any queries you may have, please contact:**

Please feel free to contact Juan C. Braga. jbraga@ugr.es

**How to apply?**

Please send your application to Juan C. Braga before 1 October 2019: jbraga@ugr.es

And to: http://ofpi.ugr.es