



Environmental 'Omics Synthesis Projects

Announcement of Opportunity

Issued on: 20th July 2018

Full Proposals deadline: 4pm on 19 September 2018

1. Summary

The Natural Environment Research Council (NERC) in collaboration with the Science and Technology Facilities Council (STFC) is inviting proposals for Synthesis projects in Environmental 'Omics.

The aim of the call is to support synthesis activities including workshops (project development and team-building), meetings (including direct end-user engagement), and/or laboratory exchanges, and to support piloted research work that may be necessary as proof-of-concept activities. The projects must generate tractable outputs that may range across national/international policy proposals, perspective/review articles leading to major interdisciplinary research proposals. Activities that exploit synthesis to address issues of global importance are encouraged.

This call has a total budget of £300K (80% FEC) and supported projects will have a maximum 12-month duration and a budget of £30-50K (80% FEC). It is expected that 6-10 proposals will be supported within this budget.

Successful projects must start, as a condition of funding on 1 January 2019, and must finish by 30 December 2019.

2. Background

The NERC and STFC supported "Mathematics & Informatics for Environmental Omic Data Synthesis" programme was defined by the NERC Environmental Omics Strategy Final Report published in 2011¹. The report noted developments of 'omics technologies including genomic, transcriptomic, proteomic, and metabolomic approaches, provided the ability to characterise on a molecular level critical detail of how organisms and communities respond to and interact with the environment. Following the report, the programme 'Mathematics & Informatics for Environmental Omic Data Synthesis' – known as the Environmental Omics Synthesis (EOS)

¹ ['Omics Strategy Final Report and Recommendations'](#)

programme - was supported to develop the fundamental knowledge needed to integrate large volumes of 'omic data into wider environmental analyses to address new research questions.

The EOS programme is based on NSF style synthesis centres, but with the aim to unify and support investments in 'omics and provide strategic oversight at the community level. This call is part of the EOS programme, and supports the development of an 'omics community skilled at integrating data with that of other disciplines and technologies and across scale. Synthesis, defined as the extraction of otherwise unobtainable insight from a combination of disparate elements², and which uses increasingly large and complex data is a critical approach to understanding and addressing societal problems as we enter the big data era of environmental science³. The contribution and benefits of environmental synthesis, with a focus on integration of 'omics data, are both UK-wide and global in scope, and projects that deliver synthesis should provide the impetus for innovation through the coordination and integration of data and expertise. Knowledge arising from synthesis will help deliver solution driven, responsible management of the environment.

The continued partnership between the environmental and technology research communities within the EOS programme will allow synthesis activities that cut across NERC and STFC science disciplines and address the societal challenges identified by the Research Councils and UKRI more widely.

This call, within the EOS programme will provide an opportunity to integrate 'omics approaches into wider challenges for the environment, and will address the programmes goals through:

- Addressing new research questions, including areas of environmental science where the full potential for omics has not yet been harnessed;
- Promoting 'omic informatics as a professional niche within environmental research through wider community engagement and knowledge transfer from other research communities;
- Realising opportunities created by 'omics technologies and to ensure that their full potential is brought to bear on current and future science challenges;
- Provide underpinning knowledge in support of multiple science areas that cut across NERC's strategic science themes: biodiversity; climate systems; Earth system science; environment, pollution & human health; natural hazards; sustainable use of natural resources and technologies.

Projects should reflect the NERC/STFC partnership delivering benefits across a broad subject scope whilst addressing both national and global agendas and demonstrating strong and well-integrated foundation in environmental science, engaging with substantial long-term observational programmes, linking with national facilities and demonstrating extensive international reach where appropriate.

The outputs of this call are expected to be:

² Sidlauskas et al., 2009, [Linking Big: the continuing promise of evolutionary synthesis, Evolution,64\(4\),871-880](#)

³ Baron et al., 2017, [Synthesis Centers as Critical Research Infrastructure, BioScience, DOI:](#)

- The continued development of a world leading community of environmental 'omics scientists capable of working at an interdisciplinary level and across scale;
- New approaches and understanding to big societal challenges within the environment;
- Innovative approaches to using big data sets and merging environmental omics data with wider datasets

3. Scope

3.1 Programme objectives

The aim of this programme is to provide a fresh approach using 'synthesis centre' activities involving environmental 'omics and other data, to environmental challenges, especially those perceived as intractable under other methodologies. Environmental 'omics and bioinformatics lend themselves to a synthesis approach, as they are broad in scope and study rapidly changing scientific landscapes. Environmental 'omics is founded on integration of multiple technologies being applied in novel ways. Bioinformatics integrates biological data and information technologies, again in ways that are novel to both areas of research. The objectives of the programme are:

- to stimulate innovative approaches to environmental issues of benefit to the broader research community;
- to promote knowledge exchange and further long-term collaborative frameworks between research communities;
- to enhance UK leadership in integrated environmental research; and
- to generate innovations with benefit to the wider research community.

To deliver these, each project is expected to involve the following additional requirements:

- communication and dissemination of findings through specific outputs (position papers, case studies or syntheses reports).
- engagement with associated activities (e.g. meetings, seminars etc.).
- participation in public engagement and dissemination activities.

A principal mechanism of synthesis delivery in the US NSF model is through sustained working groups addressing a particular theme through a series of workshops and meetings and generation of small proof-of-concept work. Such groups, typically composed of 10-15 participants, are key to identifying and developing novel research approaches. Applicants are encouraged to consider the use of such a model in their applications as they have been shown to produce substantive review publications and stronger outputs.

3.2 Proposal requirements

The continual development of the capacity and capability of 'omics technologies provide Environmental researchers, together with those involved with the business of the environment, new opportunities both powering discovery and by also providing tools and solutions. This program recognises the need for assembling interdisciplinary working groups to ensure these 'omics advances are leveraged to address key environmental research questions.

4. Programme requirements

4.1 Programme funding

NERC has a budget of £300K (80% FEC) to support this call. Each project may request funding between £30-50K (80% FEC). It is expected that 6-10 proposals will be supported within this budget.

4.2 Implementation and delivery

Projects should be 3-12 months in duration and start no-later than January 2019.

4.3 Knowledge Exchange and Impact

Knowledge exchange (KE) is vital to ensure that environmental research has wide benefits for society, and should be an integral part of any research.

All applicants must consider how they will or might achieve impact outside the scientific community and submit this with their application as a [Pathways to Impact](#) statement, with associated delivery costs where relevant. Pathways to Impact activities do not have to be cost-incurring; it is not a requirement to include funded activities. Any funds required to carry out any proposed, outcome-driven activities identified within the Pathways to Impact **must** be fully justified within the Justification of Resources statement.

The Pathways to Impact will identify those who may benefit from or make use of the research, how they might benefit or make use of the research, and methods for disseminating data, knowledge and skills in the most effective and appropriate manner.

An acceptable Pathways to Impact is a condition of funding. Grants will not be allowed to start unless unacceptable Pathways to Impact are enhanced to an acceptable level within 2 months of notification of the panel outcome.

All funded projects may also be required to engage with programme-wide KE activities, in which case appropriate funding for which will be provided by the programme.

4.4 Data Management

The [NERC Data Policy](#) must be adhered to, and an [outline data management plan](#) produced as part of proposal development. NERC will pay the data centre directly on behalf of the programme for archival and curation services, but applicants should ensure they request sufficient resource to cover preparation of data for archiving by the research team.

4.5 Reporting requirements

As with all NERC grant holders, there will be a requirement to report through the RCUK reporting system; this is required annually and continues for up to five years post grant end.

5. Application process

5.1 How to apply

Closing Date: 19 September 2018

Full proposals must be submitted using the Research Councils' Joint Electronic Submission system (Je-S). Applicants should select Proposal Type - 'Standard Proposal' and then select the Scheme – 'Directed' and the Call – 'Omics 2018'.

The Environmental 'Omics Synthesis Projects call will close on JeS at 4pm GMT on 19 September 2018 and it will not be possible to submit to the call after this time. Applicants should leave enough time for their proposal to pass through their organisation's Je-S submission route before this date. Any proposal that is incomplete, or does not meet NERC's eligibility criteria or follow NERC's submission rules (see [NERC Grants Handbook](#)), will be office rejected and will not be considered.

All attachments, with the exception of letters of support and services/facilities/equipment quotes, submitted through the Je-S system must be completed in single-spaced typescript of minimum font size 11 point (Arial or other sans serif typeface of equivalent size to Arial 11), with margins of at least 2 cm. Please note that Arial narrow, Calibri and Times New Roman are not allowable font types and any proposal which has used either of these font types within their submission will be rejected. References and footnotes should also be at least 11 point font and should be in the same font type as the rest of the document. Headers and footers should not be used for references or information relating to the scientific case. Applicants referring to websites should note that referees may choose not to use them.

Applicants should ensure that their proposal conforms to all eligibility and submission rules, otherwise their proposal may be rejected without peer review. More details on NERC's submission rules can be found in the [NERC research grant and fellowships handbook](#) and in the [submission rules](#) on the NERC website.

Please note that on submission to council ALL non PDF documents are converted to PDF, the use of non-standard fonts may result in errors or font conversion, which could affect the overall length of the document.

Additionally where non-standard fonts are present, and even if the converted PDF document may look unaffected in the Je-S System, when it is imported into the Research Councils Grants System some information may be removed. We therefore recommend that where a document contains any non-standard fonts (scientific notation, diagrams etc), the document should be converted to PDF prior to attaching it to the proposal.

No associated studentships can be requested under this call.

The expected start date for projects funded under this Announcement of Opportunity is 1 January 2019.

In addition to the standard Je-S pro forma each proposal should include the following documents:

1. A **Case for Support** comprising:

- a) a common **Previous Track Record** incorporating all Research organisations involved in this proposal (up to **2 sides of A4**)
- b) a common **Description of the Proposed Project** (up to **4 sides of A4** including all necessary tables, references and figures) to include:

- i) Underlying rationale and scientific issues to be addressed.
 - ii) Specific objectives of the project, including their relevance to objectives of the call.
 - iii) Methodology and approach.
 - iv) Risks and mitigation strategies.
 - v) Programme and/or plan of research, evidence of access to required facilities, data, collections.
2. A common **Justification of Resources** (up to **2 sides of A4**). This should be for all UK Research Organisations involved, for all Directly Incurred Costs, Investigator effort, use of pool staff resources, any access to shared facilities and equipment. For further information of what to include in the Justification of Resources, see section E in the [NERC Research Grants Handbook](#).
3. A common **Pathways to Impact** (up to **2 sides of A4**), detailing:
- a) those who may benefit or make use of the research;
 - b) how they might benefit and/or make use of the research; and
 - c) methods for disseminating data/knowledge/skills in the most effective and appropriate manner.
- Full details of the requirements for [Pathways to Impact](#), and a suggested template can be found on the NERC website. The costs of knowledge exchange activities in the plan should be fully integrated into the proposal costings and justified in the Justification of Resources section.
4. A common **Outline Data Management Plan** (up to **1 side of A4**). This section includes information about how the project will manage data produced and identify data sets of long term value that should be made available to the relevant data centre for archiving and reuse at the end of the grant. Further guidance regarding [NERC's Data Policy](#) is available.
5. **Project Partner Letter(s) of Support** (up to **2 sides of A4 each**). A Letter of Support is required from each named Project Partner. This letter should confirm that the support and facilities required to enable the associated collaborations will be made available. No other letters of support should be attached.
6. A **CV** (up to **2 sides of A4**) for each named PI, Co-I, research staff post and Visiting Researcher.

Joint proposals are not permitted under this call.

5.2 Eligibility

Normal individual eligibility applies and is in Section C of the [NERC research grant and fellowships handbook](#). Research Organisation eligibility rules are in Section C of the handbook.

NERC research and fellowship grants for all schemes may be held at approved UK Higher Education Institutions (HEIs), approved Research Council Institutes (RCIs) and approved

Independent Research Organisations (IROs). Full details of [approved RCIs and IROs](#) can be found on the RCUK website.

Investigators may be involved in no more than two proposals submitted to this call and only one of these may be as the lead Principal Investigator.

6. Assessment Process

Proposals will be assessed by an Assessment Panel consisting of the EOS AG with independent oversight by NERC and STFC Officers.

The primary assessment criteria will be Excellence and Fit to Scheme. Feedback will be provided to both successful and unsuccessful applicants.

7. Timetable

Stage	Date
Announcement published	20 th July 2018
Deadline for submission of full proposals	19 September 2018
Assessment panel meets	October 2018
Latest start date for projects	1 January 2019

8. Contact

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