GUIDANCE FOR APPLICANTS

The Environmental Biotechnology Network – a BBSRC/EPSRC NIBB

Proof of Concept (PoC) Award

Biotechnology and Biological Sciences Research Council

Engineering and Physical Sciences Research Council

CONTENTS

Introduction

Background

The Biotechnology and Biological Sciences Research Council (BBSRC), in association with the Engineering and Physical Sciences Research Council (EPSRC), have committed approximately £11M to fund six unique networks for a second phase of Networks in Industrial Biotechnology and Bioenergy (NIBB Phase II).

The second phase of the BBSRC NIBB will continue to build capacity and capability in the UK, supporting research and translation in biologically based manufacturing. Their aim is to continue to foster collaboration between academic researchers and business at all levels, in order to find new approaches through excellent research to tackle research challenges and help deliver key benefits in IBBE. Details of all of the Networks can be found on the BBSRC website (https://bbsrc.ukri.org/research/programmes-networks/research-networks/nibb/).

- Algae-UK: Exploiting the algal treasure trove
- BBNet: Biomass Biorefinery Network
- CCNet: Carbon Recycling - Converting waste derived GHG into chemicals, fuels and animal feed
- E3B: Elements of Bioremediation, Biomanufacturing & Bioenergy – Metals in Biology
- EBNet: Environmental Biotechnology Network
  HVB: High Value Biorenewables Network

The Networks will run from 2019 to 2024, will provide flexible funding for projects and are open to new members throughout their lifetime.

About EBNet

Microbial systems provide a range of environmental protection and bioremediation services, forming the basis for some of the world's largest industries across the Water-Wastes-Soil nexus. Development of such systems to date has been largely empirical and incremental, but the pace is changing in response to the need to match expanding global demand with finite resources. There are also new challenges to address, ranging from the emergence of new micro-pollutants to the requirement for efficient closed-loop systems that combine treatment with resource recovery.

The current revolution in biological and analytical sciences is creating tools that give unprecedented insights into these systems from genetic to community level, and into factors that can potentially be used to control and harness them. At the same time, new approaches allow enhanced measurement and modelling of engineering phenomena such as mixing and mass transfer, while advances in materials science and separation technologies offer the potential for selectively retaining microbial biomass and/or removing final and intermediate metabolic products. These developments thus offer a chance to optimise existing treatment processes and to create more sustainable 'future-proof' technologies in new areas of application. Successful exploitation of these opportunities depends, however, on bringing together an enhanced knowledge of the underlying science with the ability to apply this in large-scale engineered systems, which must meet both societal expectations and increasingly stringent economic and environmental requirements.

The aim of EBNet is thus to develop and strengthen links between advanced molecular and applied microbiology, engineering and systems optimisation to maximise the societal impacts and benefits. Its overall goal is to take fundamental discovery science towards practical application in key areas of the human/environment interface.

Principal Investigator

- Professor Sonia Heaven, University of Southampton, Faculty of Engineering and the Environment

Co-Investigators

- Professor Frederic Coulon, Cranfield University, School of Water, Energy and Environment
- Professor Tom Curtis, Newcastle University, School of Engineering
- Dr Tony Gutierrez, Heriot-Watt University, School of Engineering and Physical Science
- Dr Jhuma Sadhukhan, University of Surrey, Centre for Environmental Strategy

Themes

EBNet consists of 3 interlocking themes. They are:

- Pollutants and media covering both traditional and emerging pollutants;
- Biosciences to engineering to develop and improve technology for pollution control, resource recovery and bioenergy generation;
- Technology interfaces for process integration, techno-economic and sustainability assessment.

In order to fall within the scope of EBNet, please be guided by the following expanded theme information. This is not exhaustive and other exciting proposals will be considered. If your proposal does not align, but still falls within the purview of Environmental Biotechnology, do contact the Network Managers for guidance before putting together a proposal – we may be able to reassure you or signpost you to an alternative NIBB better suited to your needs.

Context

Over 100 years ago, the UK led the industrialised world in the construction of wastewater treatment plants for the protection of public health and receiving waters. Since that time, these biological processes have been further modified to provide engineered solutions for industrial wastewaters, urban wastes, contaminated land remediation, and more recently for resource recovery and integration into bio-refinery concepts. These empirically-developed unit processes have proved remarkably effective, but it is increasingly clear that they are inefficient in resource recovery, energy consumption, and removal of a range of emerging pollutants. A combination of using new materials and techniques, harnessing newly discovered bio-transformations, and tuning the biology of conventional ones is opening up opportunities to rethink the way we process both municipal and industrial wastewaters and remediate contaminated sites.

Themes: Pollutants and media – Chairs: Dr Tony Gutierrez, Prof Fred Coulon

Pollutants enter the environment from both point and diffuse sources: the former are easier to monitor and control, but still represent significant discharges of priority substances that are not removed in current treatment systems. These are diverse with respect to their molecular structure, chemistry and toxicology, and include emerging pollutants such as microplastics, microfibers, nanoparticles, surfactants, petrochemicals, pharmaceuticals and other endocrine-disruptors. Once out in the environment, they are even more problematic.

There is a worldwide legacy of contaminated land where options for remediation are still limited; more recently, the eyes of the world have turned to the problems of gross contamination by plastics in the ocean, rivers and lakes which has further raised the awareness of the potentially more serious

pollution of the biosphere by wastes and recalcitrant breakdown products. The potential for technological solutions is on the horizon and is likely to rapidly develop with increasing public concern and new scientific tools of investigation and a deeper understanding of the issues. It has long been known that microbial communities can adapt to remove certain pollutants (c.f. removal of certain organics in slow sand filtration) Empirical strategies for selection and enhancement of biodegradation of targeted materials are well established, and now we also have the ability to specifically genetically engineer microbes to perform specific functions. Such adapted or engineered communities can also now be contained through physical interventions, such as membrane technologies, biofilm formation on support structures or granulation, and their selectivity and endurance maintained by nutrient or culture condition manipulations. The development of bio-based remediation could provide environment-friendly and cost-effective solutions with advantages over most conventional chemical and physical remediation strategies. There are rapidly expanding fields of interest in this area. For example, for the remediation of contaminated soils the use of nanomaterials in combination with advanced biotechnology have proved successful in translocation of pollutants to a point of treatment, thus making bioremediation techniques more effective. Another emerging field is enhancement of biotechnological methods by combination with electrokinetic remediation where a number of synergistic effects may occur.

The matrix of pollutant type, environmental medium and treatment choices is large, and much of the work in this this theme is to: identify key pollutants and potential emerging technologies for their treatment; to prioritise the research and develop a road map and white paper for implementation; and to identify and interact with all stakeholders in promoting solutions and influencing policy. The theme links closely to the Bioscience to Engineering and the Technological Interface themes which concern the development of environmentally acceptable, sustainable and cost effective remediation and preventative technologies to completely degrade pollutants, recover them or transform them into less damaging forms.

Themes: Biosciences to engineering – Chairs: Prof Tom Curtis, Prof Sonia Heaven

The current pace of change in biological and analytical sciences amounts to a revolution in our ability to see into microbial systems and creates an urgent need for improved understanding across different disciplines.

All current environmental biotechnologies and many (although not all) plausible future ones are open systems comprising microbial communities that are immensely powerful, but also immensely complex. This complexity arises from a challenging combination of numbers (>1018 in a typical commercial bioreactor), taxonomic diversity and trophic interaction. As these systems depend on the concerted activities of many microbial species, they are difficult to optimise; nevertheless, they are likely to continue to dominate wastewater and waste treatment as well as bioremediation of soil and water. The combination of low-cost sequencing and novel visualisation technologies, together with an enormous increase in the quality, capability and accessibility of bioinformatics tools is now allowing us to begin to characterise these mixed communities. This is turn is leading to a variety of approaches on how to deal with the resulting expansion in data availability.

It is possible that, even if one day we can achieve a complete census of the organisms present, we will still not fully understand the community or be able to predict how it will work based simply on this information. One approach to overcome this is to develop a universal body of theory to describe such systems. This does not suppose a complete understanding, but it may permit the development of predictive models and thus tools to aid in design and management of complex microbial systems.

The way forward is to find solid quantitative measures that can be empirically linked to outcomes or used in validation of theory as a basis for design. The toolkit to do this is expanding as quantitative methods become available and affordable, resulting in a shift towards more effective and impactful research. These changes will be further accelerated by the increasing 'commoditisation of sequencing' through ongoing investments by BBSRC and others such as the European Bioinformatic Institute (EBI) in providing online automated bioinformatics tools.

Another approach is through hypothesis-driven research that considers the physiology, metabolic pathways and thermodynamics of the reactions involved. A significant number of studies exist on the metagenomics of treatment. Despite this effort, however, there are still only a few examples where population structure has been linked to anything more than broad functionality, although changes in community structure can in some cases be directly linked to process failure. Mapping the relationship between the gene sequences that determine the phylogenetic characteristics of a group and its metabolic functionality is still proving to be an elusive goal. Metatranscriptomics, when directly associated with metagenomic data, identifies those genes that are actively transcribed by a community, and therefore potentially allows prediction of active metabolism in response to spatial or temporal environmental gradients. Metaproteomics allows us to identify the actual microbial proteins that are post-transcriptionally regulated and translated under particular conditions and thus provides a tool that allows us to explore new biochemical pathways, as well as monitoring metabolic activities within the community. Metabolomics provides an instantaneous snapshot of metabolic profile of cells and this technique, along with mass spectrophotometry, is currently being applied to better understand the reactions in anaerobic digesters. There is thus potential in using these advanced biomolecular tools for mapping of functionality in treatment processes or even to develop rapid diagnostic bio-molecular markers for monitoring performance and stability.

Current advances in engineering and materials science, while not as dramatic as those in biological and analytical sciences, are providing new tools for measurement and modelling of e.g. mixing and mass transfer, while advances in materials science and separation technologies create the potential to retain biomass and/or selectively remove final and intermediate metabolic products. This is a highly interactive process, since such changes will profoundly modify the reactor environment in which microbially-mediated reactions occur. The need to link factors such as flow regime and boundary conditions with the nature and performance of microbial communities adds another layer of complexity in understanding these systems, and one in which we have only begun to scratch the surface, but also offers further routes to process innovation and improvement.

The goal of this theme is therefore to facilitate the translation of advances in fundamental science into technological solutions and process enhancements. The planned activities involve bringing scientists and engineers together to foster understanding and exchange of critical concepts and information. Every core member of the proposed Network has a story of how outstanding figures in one field sometimes lack even a basic comprehension of limiting parameters in another, or of how these will affect the application, performance and, in some cases, even the feasibility of the process under study: this is all the more critical given the highly interlinked nature of microbial processes with the environment they occur in. The theme aims to make these interdisciplinary connections and identify the most promising interactions where knowledge exchange could move discovery science towards higher TRL. This will require close interaction with the Pollutants and Media theme on priorities, the Technology Interfaces theme on feasibility and acceptability of proposed innovations, and with industry end-users on effective means of technology translation and implementation.

Themes: Technology interfaces – Chair: Dr Jhuma Sadhukhan

This theme brings together the critical areas of process integration and techno-economic assessment with societal and environmental aspects.

Process integration modelling is a powerful tool for optimising energy and materials usage in industry, and has become imperative in any complex process system. Tools such as Pinch Analysis for heat, water, hydrogen and carbon integration, and computer-aided process engineering using the industry-standard Aspen Plus® simulation software for full process energy and utility stream integration have, however, only rarely been applied in optimisation of the complex process trains used in the water and waste management industries. Adopting and adapting these tools would provide a means of establishing a baseline, against which process development and optimisation can be benchmarked. Process models should also be developed to accompany translational research on new or optimised processes, to give valuable insights into commercialisation potential and to build business confidence to invest in transition technology to a more circular economy. A circular economy model, as a way of maintaining "the value of products, materials and resources in the economy as long as possible" and minimising "the generation of waste" (EU Circular Economy Action Plan, 2015) could be embedded in biotechnology businesses by applying the concept of process integration in the form of integrated bio-refineries. One essential function of the Network will therefore be to create and strengthen links between data-owners and process systems modellers.

The environmental biotechnological processes with which EBNet is concerned are at the interface between human activity and the environment, protecting our water, land and atmosphere whilst also offering the potential for resource recovery and circulation from wastes and wastewaters. To date, life cycle sustainability assessment (LCSA), encompassing the (environmental) life cycle assessment (LCA), life cycle costing (LCC) and social life cycle assessment (S-LCA), (ISO14040, 14041, 14044 and 26000) has been the most powerful and holistic methodology to design and optimise a 'whole intertwined system of value chains' based on optimal trade-off between the three pillars of environmental, economic and social sustainability, respectively. In spite of the whole system holistic aspect of the LCSA methodology, complexity and limited resources have constrained its widespread adoption and adaptation. Applying the LCSA methodology is essential to embark upon a robust circular economy and also for the implementation of global commitments taken by the United Nations, such as the 17 Sustainable Development Goals. The system boundary has to step up from a linear process or product life to a circular life by consideration of upgradability, recyclability and the identification of added value resources (at least by-products) rather than wastes. The substitution of alternative large-scale technologies to replace 'conventional' systems and the use of novel biotechnological remediation and value addition techniques requires wider scrutiny of the societal impacts of these changes. Current and future developments also require direct economic analysis of the processes, which can be further linked to a wider systems boundary taking account of LCC and the regulatory and economic instruments (e.g. renewable obligation, effluent and landfill charges etc.). Such assessments are important tools in establishing and controlling policy drivers and for setting appropriate regulation, and must go hand in hand with technology developments and new market opportunities. Impacts on society and individuals from successful technology implementation cover a range of real or perceived risks associated with the development of modified or synthetic biological communities: pollution incidents, fugitive greenhouse gas emissions and intrusion from new biotechnology plants; transport logistics, odour from plant operation and disposal of residual biosolids; and also include new opportunities for business and social entrepreneurship.

This theme will therefore interact strongly with both Pollutants and Media, in terms of contributing tools and insights for policy support; and with Biosciences to Engineering, to allow replacement of empirical relationships in the modelling of bioprocesses with improved descriptions of process behaviour and functionality.

Proof of Concept (PoC) Award

What is a PoC Award?

The EBNet PoC award scheme is a BBSRC/EPSRC-funded initiative aimed at supporting innovation and research. An amount of **£750,000** has been made available to EBNet for this purpose to be allocated over the course of this 5 year network. Awards range from up to **£50K** for single discipline, to **£100K** for cross discipline (multi-institution) and **£25K** for desk-based studies. These are paid at 80% FEC.

These are intended to enable accelerated innovation and progression through the Technology Readiness Levels (TRL). See the appendix for more details on TRL's. The initial TRL should be in the range 1-4, with progression expected. Projects which will not be funded might include the exploration of a novel theoretical idea or the development of basic principles through experimentation. Projects which would be considered include translational development of high risk, high reward ideas through:

- early proof of concept (lab based)
- late proof of concept (trial based)
- technology refined and ready for real trials

However, merely adding to existing evidence for safety, efficacy and regulatory data on a fully developed pre-existing process would not be considered, nor would transitions from pilot scale to market.

All proposals must show how interdisciplinary contributions enhance the research value. We encourage you to hold a group meeting or workshop within your institution to develop ideas ahead of the call. We have funds available to support this. Do contact us for details.

PoCs may only be awarded to UK-based academics and the concept should be within the remit of Environmental Biotechnology, as determined by the Executive Group (EG). Joint applications will be considered. The project timescale can range from 3-12 months' duration, but may not exceed 12 months. Only 20% may be sub-contracted. Equipment purchase is not allowed. You are expected to be able to explore your concept largely with the facilities already at your disposal.

Ultimately, the best projects will be those which are 'high risk, high reward' and have potential as the basis or springboard for new, exciting translational research with real industrial or societal potential. These awards should act as a starting point for further larger funding bids in the topic.

Applications should also fall within the remit of the BBSRC and/or EPSRC, specifically with an Industrial Biotechnology aspect. Thus, there should be some biological/engineering aspect or impact of the project and this should be of some relevance either directly or indirectly to the BBSRC Delivery Plan. If in doubt, please contact EBNet for guidance.

See:
http://www.bbsrc.ac.uk/funding/grants/remit/
https://epsrc.ukri.org/funding/applicationprocess/basics/remit/

Eligibility

PoC Awards may be applied for by any EBNet member who is a member of academic staff or equivalent and is eligible to receive BBRSC/EPSRC funding. Eligibility guidelines can be found at www.bbsrc.ac.uk/web/FILES/Guidelines/grants-guide.pdf.

Applications may come from individuals or groups and be a mix of industry and academia, but must have a single lead academic contact, as the funds are awarded to a single academic partner.

All participants named on the application must be members of EBNet and based in the UK. To register as an EBNet member, visit www.ebnet.ac.uk, or contact Angela Bywater/Dr Louise Byfield at EBNet@EBNet.ac.uk for further details. Membership is free and you can join at any time.

If you have questions regarding your eligibility, please contact us.

Application Process

How to apply

Application is through a simple application form available from http://ebnet.ac.uk/ or by emailing EBNet@EBNet.ac.uk.

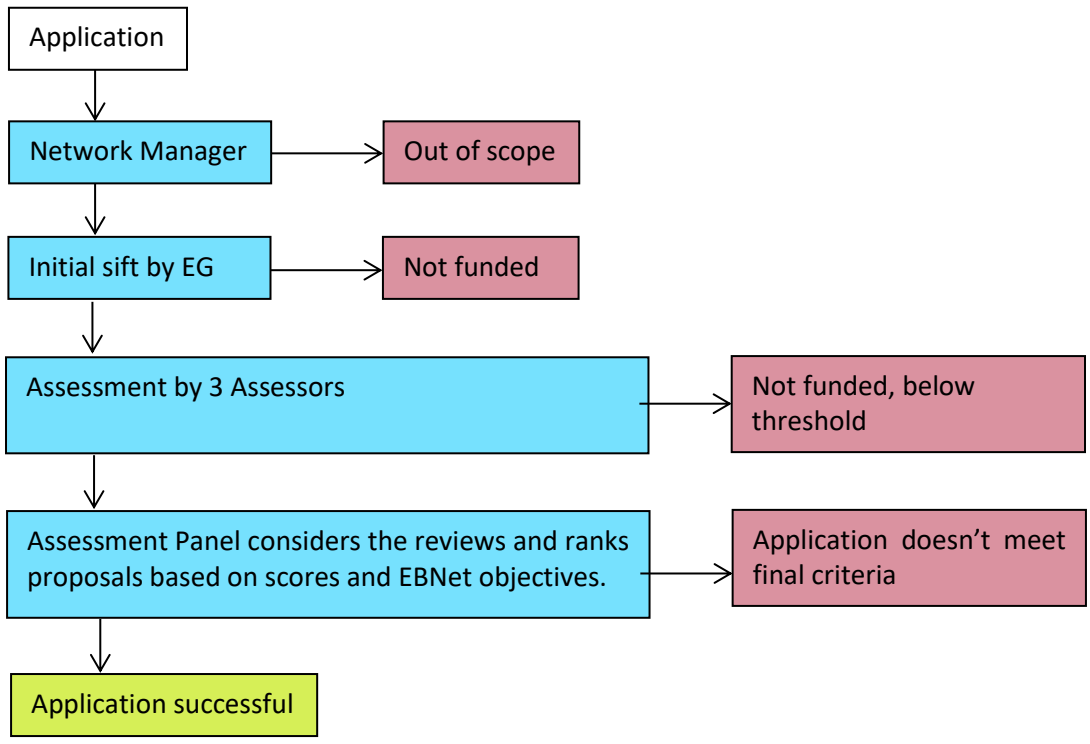
Applications should be sent to EBNet@EBNet.ac.uk as a Word or PDF email attachment and will be acknowledged by email upon receipt with a reference number (POCYYYYXX) which should be used in any further correspondence. If an acknowledgement is not received in good time, please contact the Network Managers directly to ensure your application is processed before the call deadline.

PoC Calls

Calls for PoC Award applications will be announced on the EBNet website and details sent by Newsletter to EBNet members. The call timelines will be as advertised. The first call will be open; subsequent calls may be themed at the discretion of the EG.

The funding limit for the call is set in advance. Since the amount of money requested for each Award is variable, it is anticipated that after the successful proposals are funded, some excess money – insufficient to fully fund the next qualifying proposal – will remain. This money will be rolled over to the next EBNet call. Entirely at its own discretion, the Executive Group may instead choose to release further funds to provide support for an Award application that could otherwise not be fully funded.

Process for PoC review



Submissions will first be sifted by the Network Managers to ensure they are consistent with the aims and objectives of the Network.

Should an excessive number of bids be received, there will be an initial sift by non-conflicted members of the Executive Group (or their substitutes) in order to limit the number sent for full review.

Three reviewers will be sought from the pool of potential reviewers which may include Steering Group members, academic EBNet members, the applicant's own suggested reviewers, the International Advisory Group or experts as recommended by the EG. Reviewers will be expected to adhere to the highest standards of scientific integrity as laid down by the BBSRC (https://bbsrc.ukri.org/about/policies-standards/good-scientific-practice/).

The Assessment Panel will be formed from members of the Executive Group (or their substitutes) and members from the Steering Group. Should fewer than 2 reviews be obtained before the Assessment Panel meeting, the bid will be additionally reviewed by a member of the Panel. The panel will rank the proposals according to their final average scores and the reviewers' comments, combined with their personal expertise and knowledge, with recommendations for funding taking into account EBNet objectives.

Successful proposals will be passed to BBSRC for final approval. We aim to respond to applications within 6-8 weeks of submission.

Feedback is not normally returned to the applicant. No reapplications are permitted from the same (or highly similar) bid in future calls. Exceptionally, where a bid of merit is identified by the Assessment Panel, feedback may be given, along with an invitation to resubmit to the next call in the light of that feedback.

The PoC Application Form

General Guidance

This section explains the structure of the application form and offers guidance on the information to include in each section.

The purpose of the application form is to obtain enough information on the project to enable assessors to understand how well it aligns with the Network objectives and how competitive it is with other applications, especially in the areas of scientific merit, value for money, industrial relevance and potential for collaboration and bridge-building between disciplines.

No appendices are permitted.

To help you, the guidance below provides an explanation of what is required for each field. The guidance notes are not intended to be exhaustive; you should develop your own responses based on your skills, knowledge and experience. You may refer to other sections of the form in your answers if this will help avoid repetition. Incomplete forms will be rejected.

Once filled in, the application can be returned to EBNet@EBNet.ac.uk by email as a Word attachment or PDF. Please do not send a scanned document.

Application form field guidance

PoC Application Form		
Required Fields	**Guidance**	**Maximum word limits/ further clarification**
Application details		
Proposal Title	Please give a title for your application. The title may be made publically available.	Word limit - 25
Proposal Summary	Please summarise the aims of your project. This may be made publically available. It is important to make the concept you wish to investigate clear at this point. We recommend that you invest some time on this section to clarify exactly what idea or concept will be investigated and how.	Word limit – 250
Contact details – Applicant(s)		
Contact Details – Applicant(s)	Enter the full name, job title, address, postcode, e-mail address, telephone number and research group/discipline/Institution of the **Lead Academic** between EBNet and the proposal. This will be the grant holder (Primary Investigator-PI) in the event of a successful bid. For a cross-disciplinary bid, repeat these contact details for the **second academic partner (co-investigator)**. Ensure PI and Co-I are clearly identified.	No word limit. The grant holder will be responsible for accounting for the expenditure of funds for all award types.
Please confirm that you are a member EBNet	Where there is more than one applicant, all must be members of EBNet. In a cross-	Yes/No

and eligible for BBSRC/EPSRC funding	disciplinary bid, both must be eligible to receive funding. See Eligibility	
Are you aware of any conflicts of interest that should be considered with regard to this proposal – e.g. associations with Executive Group (EG) members?	If 'Yes' give details. This section enables us to manage potential conflicts of interest (CoI) during the review process. A current list of Executive Group members will be published on the website. A potential CoI may occur if an applicant is: employed by the same institution as the EG member or actively involved in a research collaboration or otherwise working closely together in past 4 years, as co-author or PhD supervisor.	Yes/No and separate space for details of any conflict of interest.
Contact details – Further Applicant(s) *This section is to record participation of **industrial** partner(s), if present*		
Please confirm that you are an EBNet member.	Further applicant(s) must be members of EBNet. See Eligibility	Yes/No
Name	Enter the full name, address, postcode, e-mail address and telephone number of the partner(s). A signed letter of support is required from each of the industrial partner(s).	No word limit. Participation of an industrial partner is not required but is welcome.
Organisation	Enter company name	
Geographical base	Industry only. State region or country of operation.	Free text
Company reference number	This can be obtained from Companies House	This is generally an 8 digit number
Employee headcount at your company	Pick one of the given options. Use full-time equivalent positions	
Turnover	Pick one. This should be from the latest financial year.	
Chosen Theme		
Chosen Theme	The theme you select will help us determine which experts will assess your proposal. Multiple themes are allowed: in this instance, number them, with the most important as 1.	Please select one or more
Chosen Award		
Chosen Award (select one)	Desk-based study (max. £25K) Single discipline (max. £50K) Cross-disciplinary (max. £100K)	Mark relevant one with an 'x'
If cross-disciplinary:	If this is a cross-disciplinary application, specify the two or more partner disciplines in the collaboration. Justify the requirement for a cross-disciplinary approach and explain the reasons for the general budgetary allocation between the academic partners. Note that a thorough explanation is required, particularly if the budget split is very uneven.	No word limit. This will be used to evaluate whether this is a genuine collaboration between partners and the value of the cross-disciplinary approach.
Suggested Reviewer(s)		

Suggested reviewer(s) – name and email contact	If you wish, you may enter the full name and contact details of academic reviewer(s) of your choice. This could be anyone you believe has the specialist knowledge necessary to assess your application. We may approach them to aid in our review process.	No word limit. Optional
Proposal Details		
Proposal timings	Please provide an estimated start date (dd/mm/yy) and duration of the project in months (12 months max.). This enables us to comply with funder reporting requirements.	If successful, the actual start date will be finalised with EBNet at a later date.
Gateway question 1: How does this application align within the EBNet scope?	Give the main aim of your project and summarise the proposed methodology and potential outcomes. Provide as much detail as possible for reviewers to assess your proposed project and ensure that the industry problem is clearly stated and that the proposed work is clearly defined.	Word limit – 200
Gateway question 2: What Technology Readiness Levels does this project encompass?	Projects must aim to advance TRL levels. State the current TRL level and explain in what way this will be raised by the end of the project. See Appendix for TRL definition.	Word limit - 150
Aims, methodology and outcomes	Please give the main aim of your project and summarise the proposed methodology. Outline the processes/ equipment/ mechanisms to be used and the expected outcomes. Outline any ethical/social or animal testing issues, if applicable.	Word limit - 2 pages No pictures or diagrams.
Reference list	You may put your references here and refer to them in the text.	5 references max.
Proposal Section *Each of the following questions is worth 10 points for a total of 40 points. You may refer to previous sections in your answer to avoid repetition. State the number of words in each section.*		
Question 1: Scientific merit		
Outline relevant prior experimental/technical evidence and explain how the previous results lead to the proposed project. You should outline: the extent to which your proposal is supported by excellent underpinning science; the value to the wider EBNet community of any proposed expansion of scientific knowledge. The methodology should be clearly explained and appropriate to achieve your objectives.		Word limit – 400 Score – 10 points
Question 2: Value for Money		
This section is for you to describe the anticipated project costs, detailing contributions from the project participants. You should describe how the resources requested, relative to the anticipated scientific, economic and societal gains, represent an attractive investment of public funds. Explain how your requested resources are appropriate for successful delivery of your project's objectives. Outline a strategy for the results of the project to be disseminated or continued in future work.		Word limit – 400 Score – 10 points

The highest marks for "value for money" will be awarded to those who provide a clear breakdown between staff costs, consumables, sub-contracting of services etc. and explain why this constitutes good value. Our funder states that up to 20% of PoC project value can be subcontracted to industry to buy a service or to an SME to facilitate involvement. PoC funding **cannot be used to purchase any equipment**. Purchase of consumables is acceptable. A consumable can be defined as an item that is used up during or would not normally be expected to last beyond the lifetime of the project.	
Question 3: Industrial relevance	
You should outline how and to what extent your project addresses an important and relevant industrial/commercial/societal challenge. For example, what are the deliverables and over what timescale will they be relevant to the needs of industry or wider society? Describe the EBNet objectives that you are seeking to address. Address any issues arising in regard to implementation, translation or scale –up.	Word limit – 400 Score – 10 points
Question 4: Potential for collaboration and bridge building between disciplines	
Explain how your research idea is likely to lead to future collaborative research or implementation. Outline your plans for further development and future collaboration. Please specify what lasting gains might result from the project – perhaps in the form of continued association, larger research grants or industrial take-up. How will your findings be disseminated to the wider community?	Word limit – 400 Score – 10 points
Financial Details	
Financial Breakdown - Academic	
There are three sections for financials: the first is for the Lead Academic who will be the grant holder; the second is to be used for the Second Academic Partner (Co-I) for cross-disciplinary applications only; the third is used to record any cash/in-kind contributions from further applicants, likely industrial partners. Whether this is a single or cross-disciplinary bid, please fill in the GRAND TOTAL figures for 100% and 80% FEC. Should the application be successful, note that any significant alteration to the total cross-disciplinary split between the academic partners will need to be authorised **in advance** by EBNet. Please provide a brief financial breakdown of your proposal according to BBSRC requirements in pounds sterling (incl. VAT). The rules on VAT for universities can be complex, with research activity and consumables classed separately – please seek specialist advice from your institution if unclear. Full guidance on BBSRC requirements can be found in section 5 of the Grants Guide. A notable exception is that PoC funding cannot be used to purchase equipment. This means equipment of any kind, even single complete pieces under £10k. Funds are paid at 80% FEC. The 'Details' column can be used for any breakdown of an individual cost as outlined below. There is also extra space in the 'further details' section for any other relevant information. Staff costs should be at official university approved costings, e.g. 3 days/Mr A N Other: Technician/£120/day = £360. Travel costs should state the purpose of travel, e.g. 3 progress meetings for 2 staff/£100pp = £600.	

Consumables should be broadly defined e.g. Media and lab consumables £500; specific equipment time £400. Salary, travel and purchase of consumables (defined as 'an item used up in the course of the project') are acceptable. The figure in the total of the 'EBNet Contrib. @ 80% FEC' column is the figure requested from EBNet and the maximum figure invoiced to the Network at the end of the project.
Finance/Research Office contact: It is helpful for us to have the contact name and email address of the person responsible for invoicing and the person responsible for signing the grant acceptance letter, if known.
Financial Breakdown – Contribution from further applicant(s)
Please specify the value of any contribution to the project from other project participants, in cash or in kind. Other contributions are not essential but are welcome. Industry partner(s) must provide a letter of support to be attached to the application.

Brief tips and hints

All PoC bids must clearly state their concept and how it is to be tested in the "Proposal details". This is expanded on in the "Questions 1-4". However, the initial summary section is the first point of contact between your bid and reviewers/panel members, so please use it to make the core concept crystal clear. Industrial collaboration, whilst welcome, is not essential but an awareness of the industrial/societal context and potential TRL impact of the research is required. The expectation is that funded bids will build a platform for further research.

If there is any question that your bid may have received overlapping funding or be a continuation of previously funded work, please make quite clear in what way it is distinct. Members of the Assessment Panel have overlapping expertise in Environmental Biotechnology, but may not be specialists in your field – therefore make sure that the context and relevance of your bid is clearly understandable to a non-specialist to enable a wide discussion of its merit. Acronyms must be clearly defined.

We strongly recommend that you leave time before you submit to get your bid checked either by a colleague or your own institution's specialist research bid assistance service. This will pick up any obvious typos. Any queries and uncertainties can be clarified *in advance* of the Call deadline by contacting the Network Managers who will be happy to assist. Minor reasonable amendments may be made to bids sent in advance of the Call deadline. For example, a missing section or incorrectly applied financial category might be picked up by the Network Managers and queried. However, no changes may be made to submissions after the Call deadline has passed.

Checklist

Please ensure that you have sent us all documents. The following checklist may be helpful.

Please check….	√
PoC Application (as Word or PDF)	
Letter of Support* from industry partner(s) – if present	
Are all named applicants EBNet members?	
Does the finance section reconcile? Do all totals add up correctly?	

*See Section 2.14 BBSRC Grant Guide for guidance

If the Award is successful

Offer, contract and collaboration agreement

If successful, the Lead Academic (PI) will be informed via email and provided with a reference number (POCYYYYxx) which should be used on all further correspondence. Any further stipulations specific to the offer will also be outlined. The Lead Academic will also be sent a Conditional Grant Offer Letter. This must be signed and returned **within 3 months** to indicate acceptance of the award.

Should the PoC be a collaboration, there must be a Collaboration Agreement in place. The Collaboration Agreement should be created between the project participants and it should incorporate the operation and exploitation of the outcomes of the project. EBNet does not need to see a copy, but you are required to state that you have in place a document specifying the relative contributions to, and IP ownership issues regarding, the project. EBNet accepts that any Intellectual Property arising from the bid is owned by the applicants.

It can take some time to reach agreement on this document within the consortium participants, especially considering the involvement of applicants' legal and finance departments. You are therefore strongly advised to allow sufficient time. An example of collaboration agreement can be found on the Lambert Agreement website at: http://www.ipo.gov.uk/lambert.

Before the project begins, a start date must be agreed with the EBNet Network Manager. Projects **must** be completed within 12 months of this date or the specified duration, whichever is shorter. No expenditure will be reclaimable for activities outside of this period. This is a BBSRC/EPSRC requirement.

Please be aware that PoC funds could be counted as *de minimis* aid and so industrial partners need to ensure they are not in breach of d*e minimis* aid rules (https://www.gov.uk/state-aid) through their participation. This refers to the level of public subsidy a private company may legally be afforded.

Special notes for £100K Cross-disciplinary awards.

These will be paid in full to the Lead Academic. We would expect the collaboration agreement to exist between partners from different institutions to reallocate these funds as seen fit for each project. EBNet do not need to see this agreement but must be assured it exists. Note that EBNet will only dispense monies to the designated lead (PI) on the application. Thereafter, responsibility for further sub-dividing the monies lies with the lead academic's institution.

The overall budgetary split, as specified in the application, must be adhered to. Any significant deviation to this MUST be approved in advance by EBNet. Thus, for a 60/40% split between University A and University B, we might award up to £100K to the Lead Academic. The Lead Academic is solely responsible for all subsequent communication, reports and invoicing. Thereafter, provided no more than £60K of EBNet funding is spent by University A, and no more than £40K by University B, we would be satisfied that the split was adhered to. Should there be a significant underspend for one partner, it would not affect that cap for the other.

However, if EBNet were asked to approve a Final Report where one partner was claiming for more than their designated budgetary split, we would query and may refuse that element. Using the above example, should the Final Report state that £80K of funding was actually allocated to University A and £20K to University B, EBNet would query. In that case, we would consider that £20K was fairly allocated to University B and £60K would be our total liability to University A. Without prior written agreement to a change, the other £20K would be forfeit.

We appreciate that projects evolve over time and that unforeseen circumstances arise. Changes may be discussed at any time by email with the Network Managers and we strongly advise all significant

issues to be raised with us immediately, as well as through the Interim Report to allow us to help manage any situations as they arise.

Reporting and Invoicing

A brief Interim Report will be requested from the Lead Academic to summarise progress at the halfway point of the project where the project length is 8 months or greater.

Once the project is completed, the Lead Academic must submit a Final Report on the work carried out and the resources used, which must be countersigned by the collaborator in the case of a cross-disciplinary award.

This includes a brief publishable summary for use by the BBSRC/EPSRC, posting on the EBNet website and other promotional activities. Please include as a separate attachment high-resolution, copyright-free images or photographs, if possible. Photographs contained within the report are not generally suitable for us to utilise for publicity purposes. Awardees are encouraged to produce a short informal video and some calls may stipulate this.

The Final Report will be passed to the Executive Group to be signed off prior to funds being released. An invoice must accompany the Final Report to enable transfer of funds. The invoice figure must agree with that shown on the financials in the Final Report.

Invoices will not be forwarded for payment until the Final Report has been approved.

There is the expectation that project participants will engage with the Network in later dissemination activities e.g. via Network events. During its lifetime, EBNet may also send an occasional survey in order to ascertain any additional impact from the award, such as publications, conference attendance, product development, commercial spin-outs, products of commercial interest, further funding applications and so on. These are for EBNet reporting purposes back to BBSRC/EPSRC funders.

Data Protection Regulations

The PI of the BBSRC/EPSRC NIBB grant has the responsibility for keeping data relating to the grant secure and safe. Copies of the applications will be made available to the BBSRC/EPSRC, who will use this information for research related activities, including but not limited to, transfer of funds, statistical analysis in relation to evaluation of the BBSRC/EPSRC NIBB, study of trends and policy and strategy studies.

Copies will also be made available to reviewers, the Executive Group and Management Board for the purpose of assessment and evaluation such as processing the proposal, the award of any consequential grant and for the payment, maintenance and review of the grant.

They will be expected to adhere to the highest standards of scientific integrity as laid down by the BBSRC. These include guidelines for data sharing: https://bbsrc.ukri.org/about/policies-standards/data-sharing-policy/ and good scientific practice: https://bbsrc.ukri.org/about/policies-standards/good-scientific-practice/ .

To meet the Research Councils' obligations for public accountability and the dissemination of information, details of funded awards may also be made available on the Research Councils' websites and other publically available databases, and in reports, documents and mailing lists.

Contact Details

For any queries, please email the Network Managers, Angela Bywater/Dr Louise Byfield at EBNet@EBNet.ac.uk or telephone 02380 591281. Post can be directed to us at Building 178, Room

5019, Boldrewood Innovation Campus, University of Southampton, Burgess Road, Southampton, Hants. SO16 7QF

Appendix – TRL Levels

	Description	Defining activities	TRL achieved when
TRL 1	Basic principles observed and reported: Transition from scientific research to applied research.	Basic scientific principles observed. Research Hypothesis formulated. Scientific background and rationale for the research. Fundamental scientific investigation within an academic environment.	Potential outcomes and use of research is defined (e.g. clear elevator pitch).
TRL 2	Technology concept and/or application formulated: Applied research. Theory and scientific principles are focused on specific application area to define the concept.	Applied scientific investigation within an academic environment. Preparation for technology needs (market dependant). Analytical techniques to test reproducibility of research. Practical concepts or applications are formulated, markets identified. Patent applications filed to protect invention. Basic process/product specifications drawn up.	The relevance of the research to an application has been proven. The value of the technology to a customer is defined.
TRL 3	Analytical and experimental critical function and/or characteristic proof-of concept: Proof of concept and demonstration of technical feasibility	Technology development within an academic environment. Demonstrate reproducibility of technique and or technology Analytical studies to predict the performance of separate elements of the technology in appropriate context. Patent applications filed to protect invention. Preliminary techno-economic modelling. Explore commercial partnerships or collaboration opportunities. Data collection in line with industry expectations e.g. electronic lab books, analytical equipment records.	The technology concept has been proven but process components have not been integrated. The value of the technology to a customer is confirmed (e.g. market need and opportunity).
TRL 4	Component/subsystem validation in laboratory environment	Technology development within an industrial (or industry simulated) environment Bench scale validation. Basic technological components are integrated to provide evidence that the concept will work. Build data on reproducibility of process. Implementation of GLP processes. Understand the impact of the regulatory impact on the process. Scale up issues are understood, and mitigation plans developed. Initial techno-economic analysis using process data. Market analysis performed.	The technology concept has been proven with basic component integration. An investment case to attract private investment has been developed.
TRL 5	System/subsystem/component validation in relevant environment:	Technology development within an industrial environment (technology transferred to commercial partner and undertaken by their staff to test robustness of science and process). Basic technological components are integrated with reasonably realistic supporting elements. End to end process validation to provide evidence that the concept will work. Pilot scale experimentation. Detailed techno-economic analysis. Detailed market analysis performed.	The technology transferred to an industrial environment. A refined investment case to attract private investment has been developed.