

BBSRC NETWORKS IN INDUSTRIAL BIOTECHNOLOGY AND BIOENERGY (BBSRC NIBB) PHASE II

CALL FOR PROPOSALS

SUMMARY

1. The Biotechnology and Biological Sciences Research Council (BBSRC) and its partners (EPSRC, InnovateUK) are committed to supporting the application of outstanding research to the challenges of industrial biotechnology and bioenergy (IBBE) including bioprocessing and biorenewables, for the benefit of the UK and more widely.
2. In 2014, BBSRC (with support from EPSRC) committed £18M to fund 13 unique collaborative **Networks in Industrial Biotechnology and Bioenergy (BBSRC NIBB)** as a means to develop a world-leading programme in IBBE for the UK. The BBSRC NIBB have proved to be an outstanding success for the UK, playing an essential role in the emerging UK Bioeconomy, making the UK an attractive international locus for IBBE research and translation towards industrial application through support from InnovateUK.
3. To build on the success so far, BBSRC will continue to support networking activities (including the use of pump-priming funds) for a further five years and invites proposals for networks using biologically based approaches across three themes, manufacturing, bioremediation and bioenergy.
4. Similar to the first phase, the purpose of the Phase II IBBE Networks is 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. The science will use a range of approaches including the application of genomic, systems and synthetic biology as well as the underpinning sciences such as biochemistry, enzymology, metabolism and microbiology.
5. The Networks should work across the discipline boundaries of biology, chemistry and engineering; the participation of other disciplines including mathematics, computational modelling, environmental science, economics and social science is strongly encouraged.
6. Networks will be encouraged to work across the Technology Readiness Levels (TRL) 1-4 with the aim of transitioning excellent fundamental research towards higher TRLs.

Summary timeline

Launch date for Call for Proposals	4 December 2017
Community Meeting	17 January 2018
Closing date for Expression of Interest	24 January 2018 16:00
Assessment of Expression of Interest	March 2018
Closing date for Full proposals (invitation only)	Spring 2018
Assessment of Full proposals	Summer 2018
Research grants awarded	October 2018
Projects start	1 January 2019

NETWORKS IN INDUSTRIAL BIOTECHNOLOGY AND BIOENERGY (BBSRC NIBB) CALL FOR PROPOSALS (PHASE II)

INTRODUCTION

7. The Biotechnology and Biological Sciences Research Council (BBSRC) in association with EPSRC wish to build on the current successes of the BBSRC NIBB by supporting a second phase of networking activities via a number of cross-disciplinary, community-building Networks as part of its continuing strategy in supporting IBBE.
8. The continued expansion of IBBE approaches and expertise will underpin the development of a sustainable UK bioeconomy with the potential to maintain future energy security, create innovative bio-based products and increase the efficiency of a wide range of manufacturing processes, generating sustainable economic growth and creation of jobs. A brief description of IBBE as it relates to this call is provided in **Annex 2**.
9. The second phase of the BBSRC NIBB will continue to foster collaborative activities between academic researchers and businesses at all levels to identify and develop new approaches to tackle major research challenges and help deliver key benefits in IBBE. The excellent science involved will include the application of genomic, systems and synthetic biology as well as the underpinning sciences such as biochemistry, enzymology, metabolism and microbiology. The Networks will be cross-disciplinary, working across the discipline boundaries of biology, chemistry and engineering. Participation from other disciplines including mathematics, computational modelling, environmental science, economics and social science is strongly encouraged.
10. BBSRC has allocated up to £10M for this second phase networking initiative and aims to fund a number of Networks of varying scales focusing on a broad range of fundamental and strategic challenges and questions facing the IBBE area. Networks will operate for up to 5 years and are expected to become self-sustaining beyond this.

BACKGROUND

11. In 2014, BBSRC (with support from EPSRC) committed £18M to fund 13 unique collaborative **Networks in Industrial Biotechnology and Bioenergy (BBSRC NIBB)** as a means to develop a world-leading programme in IBBE for the UK. The BBSRC NIBB have proved to be an outstanding success for the UK, playing an essential role in the emerging UK Bioeconomy, making the UK an attractive international locus for IBBE research and translation towards industrial application.
12. 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.**

OBJECTIVES FOR THE CALL FOR NETWORKS IN INDUSTRIAL BIOTECHNOLOGY AND BIOENERGY PHASE II

13. The objectives of this call for proposals are:
 - *To support* a number of Networks in industrial biotechnology and bioenergy and through them, continue to facilitate the development and growth of internationally competitive cross-disciplinary communities capable of undertaking innovative research and attracting further investment from UK and international sources.
 - *To provide* the resources to support proof of concept funding for a range of research projects identified by the Networks, ultimately leading to more competitive, collaborative, cross-disciplinary and integrative research proposals to BBSRC and elsewhere particularly in the areas of manufacturing, bioremediation and bioenergy.
 - *To encourage* the interaction between the academic research base and technology-deploying, associated value-chain and end-user businesses, promoting the translation of research particularly involving genomic, systems and synthetic biology.
 - *To enable* the supported Networks to provide the leadership to develop, in collaboration with business, challenges to be addressed through national and international competitive funding mechanisms taking their research further towards commercialisation.

WHAT SHOULD A PHASE II NETWORK DELIVER?

14. Phase II Networks should include a range of activities and mechanisms to deliver the objectives of this call for proposals. **Detailed plans for the governance structure, including the development, assessment and monitoring of proof of concept/flexible fund funding is an essential component of the proposal.**
15. Networks will be encouraged to work across the Technology Readiness Levels (TRL) 1-4 with the aim of transitioning excellent fundamental research towards higher TRLs.
16. Examples of activities and mechanisms that applicants may wish to consider are listed in **Annex 3.**

NETWORK MEMBERSHIP

17. Each Network should have members from the relevant academic and business communities covering the disciplines of biology, chemistry and engineering. Networks should comprise a diversity of expertise and experience and may include international researchers, Government Departments and other stakeholders, as appropriate. Networks should include participation at all levels including, where appropriate, postdoctoral and postgraduate researchers as well as more senior members. Applicants should also consider the wider impacts of work undertaken by the Network and include representatives from the environmental, economic and social science communities.
18. Successful Networks are intended to be “open” in that participation by other interested members will be encouraged throughout the life of the Network in order to develop the community as it matures. How new members can join the Network should be described within the full proposal.

EXPECTED OUTPUTS OF THE NETWORKS 2019-2024

The main **outputs** are expected to include:

- **Improved community interactions** (academic and business) through communication and co-ordination across a number of major research areas relevant to IBBE.
 - **Wider cross-disciplinary integrative participation** (bioscience, chemistry and engineering are the minimum disciplines to be covered) to address major research areas but also including environmental, economic and social sciences.
 - **Establishment of the UK as an internationally recognised partner of choice** in each research area by formation of a nucleus of like-minded people, deploying genomic, systems biology and synthetic biology approaches.
 - **Deployment of community expertise** to construct high quality grant proposals for a range of opportunities both nationally and internationally, using genomics, synthetic and systems biology approaches.
 - **Preliminary experiments to explore ideas and generate initial data to construct competitive grant proposals** through proof of concept funding, encouraging participation from different disciplines as well as business, leading to grant proposals for national and international funding opportunities
 - **Provide important links between business and academic researchers**, extending knowledge exchange with business, promoting translation of research in the IBBE area and leading to proposals to relevant support schemes.
 - **Provide input into UK (and EU) policy**, by providing evidence and expertise as appropriate.
 - **Support personal development of Network members** through participation of individuals at all levels and providing all members with exposure to other disciplines and research communities.
19. Each Network will be expected to disseminate the outcomes of its activities widely and appropriately (e.g. through meetings, web pages, newsletters or published reports). Each Network’s Principal Investigator (PI) will also be expected to play a leading role with BBSRC, providing BBSRC with advice on issues related to the subject of the Network, promoting opportunities in IBBE, including presentations and dissemination of information at meetings such as grant holders’ workshops.

FUNDING

20. Up to £10M is available for this call and it is expected to support a number of networks of varying sizes focusing on a broad range of fundamental and strategic biologically based questions and challenges facing the IBBE area. Funding awarded to each Network will depend on the size of the community, proposed activities and degree of business engagement.
21. Networks will be expected to demonstrate clear strategic relevance to IBBE and address most or all of the following requirements:
- A portfolio of existing grant support relevant to the Network research area (including BBSRC and other sponsors).
 - Demonstrable evidence of business interest in the Network research area.
 - A track record of successfully working with business and translation of relevant research with business (from TRL 1 to TRL 4).
 - A critical mass of researchers (academic and business based) involved in the Network research area.
 - Well established international links.

HOW TO APPLY

Expression of Interest/Intention to submit

22. Applicants are required to make an **Expression of Interest** indicating the intentions of their network, including aims, coverage and community to be supported and likely funding required to meet these aims. Applicants should complete and submit the Expression of Interest proforma available as a download.
23. Expressions of Interest (including the proforma) should be submitted through the Je-S system (see external links). Applicants should select the following from the Je-S menus:
- | | |
|------------------------|---|
| Select Council: | BBSRC |
| Select Document Type: | Outline Proposal |
| Select Scheme: | Standard Outline |
| Select Call/Type/Mode: | 2018 Networks in Industrial Biotechnology and Bioenergy OUTLINE |
24. Applicants submitting or planning to submit an expression of interest will be required to attend and present their ideas at a Community meeting to gain community support and backing for their proposal.
25. Expressions of interest will be assessed by an expert panel comprising representatives of the national and international community. Successful applicants will be invited to submit a full stage proposal based on the expert panel recommendations.
26. Expressions of interest (with their initial and potentially limited information) will be judged by the expert panel on the strength of their approach to meeting the objectives of the BBSRC NIBB call. Particular significance will be placed on a robust and appropriate governance structure and flexible fund allocation mechanism. The Panel

will recommend proposals for support based on the above criteria while ensuring a broad portfolio (both scientific and business) of Networks relevant to the UK.

Applicant Eligibility

27. The Network PI (and host Institution) must satisfy BBSRC's standard eligibility conditions (as described in Section 3 of the BBSRC Grants Guide) and will be responsible for the development and directorship of the Network. Up to five Co-investigators (also satisfying BBSRC's standard eligibility criteria) may be named in the proposal if the Network is to be directed jointly. Guidance will be provided by BBSRC as to the required role of any Co-I listed on the grant. Co-I's must have a specific role which should be described in each case.
28. Any industry collaborators supporting the Network with a cash or in-kind contribution (such as a clear role on any advisory board) should provide a letter of support.

WHAT YOU CAN APPLY FOR: ELIGIBLE COSTS

29. The following are a guide to what applicants are able to request in support of their networking proposal.

Director salaries and research support costs

30. The Director of the Network should be the named PI on the proposal and under full economic costing may request funds to cover their salary costs for the time spent developing and directing the Network. Requests may also be made for up to five co-investigators to assist the Network's Director in this. Co-Investigators must have a defined role within the Network to justify their inclusion. Costs can be requested for an appropriately skilled Network Managers (full or part-time) to be responsible for activities such as the day-to-day Network management, event coordination, and website development for the Network.
31. The time spent on directing and managing the Network should be reasonable and is not expected to form the majority of costs of the proposal. The salary costs of Network members should **NOT** be included in the proposal.

Network events

32. Costs for supporting and facilitating meetings and events can be requested and associated costs should be justified.
33. Salaries and events costs will represent the "main grant".

Proof of concept studies/Flexible fund

34. Proof of concept funds or flexible funds for allocation by the Network may also be requested. These funds can be used for projects ranging from feasibility studies or to provide preliminary data through to desk-based studies (e.g. the value of different substrates and products, the theoretical yields of different metabolic pathways) and visits to learn new techniques. Activities should not duplicate already available funding streams (i.e. FLIP; <http://www.bbsrc.ac.uk/FLIP>).
35. Flexible funds should be used to address key issues in the area of the Network that are relevant to IBBE which should strengthen the quality, collaborative (including

industry involvement) and cross-disciplinary nature of future innovative and novel grant proposals to BBSRC (and elsewhere). How these project proposals will be assessed and selected for funding and how the projects' progress and outcomes will be monitored should be clearly described.

36. Flexible funds will be funded at the 80% level by BBSRC and should be allocated at the 80% level for each project, by the Network host institution. The Institution where the research is to be undertaken should be responsible for the 20% shortfall. As these are research-based projects, they can include a component to cover estates and indirect costs for the relevant institution.
37. The flexible funding will be managed as a separate part of the main grant and will be held by BBSRC until requested (at any time) by the host institution to fund Network-selected proof of concept proposals. All funds will be reimbursed at least 3 months in arrears and an audit trail is essential for the reimbursement.
38. Estates and indirect costs can be claimed on the "main grant" and should be included on the basis of "non-laboratory costs"

Summary of eligible costs:

- As a community support role, the salary for the Network Manager(s) can be requested at 100% FEC.
- Costs for supporting events such as room hire, catering, etc. that will be used for the benefit of the wider community rather than just the host Institution are eligible to be requested at 100% FEC.
- General estates and indirect cost are eligible for inclusion in the "main grant" as non-laboratory costs only.
- Flexible funds are also eligible for estates and indirect costs (at 80% fEC).
- Proof of Concept funds will be held by BBSRC until requested.
- Virement of funds between 100% and 80% headings will not be allowed.

FULL PROPOSAL

39. Full proposals will be requested on the basis of an "invitation only". Feedback and guidance on the coverage and level of funding requested will be provided to network proposals successful at the expression of interest stage; however the Office is happy to discuss your proposal in advance of the submission deadline (see contact details).

Case for support

40. A Case for Support of up to 10 sides of A4 is permitted. This should address all aspects of how the proposed Network will deliver, manage and govern the expected outputs of a Network as described in this Call Text. Figures, diagrams and a management plan are included in this 10 side limit.
41. BBSRC recommend that you use typefaces Arial, Helvetica or Verdana and a strict minimum font size of 11 must be used for the entire Case for Support, Justification of Resources and CVs (excluding text on diagrams and the use of mathematical symbols). A minimum of single line spacing and standard character spacing must be used. Margins must not be less than 2cm.

42. Applications should be submitted through the Je-S system (see external links). Applicants should select the following from the Je-S menus:

Select Council: BBSRC
Select Document Type: Standard Proposal
Select Scheme: Standard Proposal
Select Call/Type/Mode: 2018 Networks in Industrial Biotechnology and Bioenergy

43. The application should include all standard attachments (Pathways to Impact statement, applicants CVs, letters of support; and justification of resources) as detail in the BBSRC Grants Guide (<http://www.bbsrc.ac.uk/funding/apply/grants-guide.aspx>). Applicants should refer to the Je-S help text <http://je-s.rcuk.ac.uk/Handbook/index.htm>.

Cover Letter

44. Full proposals should include a covering letter providing an explanation of how feedback provided on the Expression of Interest by the “Outline Sift Panel” has been addressed.

Additional Documentation

45. The following documents should be uploaded using the attachment type “Other Attachment”.

Interested Participants

46. An expanded table of interested participants in the format below should be submitted. For the “Expertise” column please state the participants’ general area of expertise e.g.: Biology/Biochemistry; Engineering; Chemistry; Mathematics; Economics; Social Science; Policy. Please **ONLY** include letters of support from Industry offering in-kind (or cash) contributions or members of the advisory/management board.

Name	Institution	Position	Expertise
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NIBB Exceptions Spreadsheet

47. Applicants must complete the “NIBB Exceptions Spreadsheet” to detail the costs that will be requested at 100%. The calculated total value of exceptions must be entered under the “Exceptions” heading on the BBSRC Proforma and must not be included under the normal headings. The “NIBB Exceptions Spreadsheet” should be should be uploaded using the attachment type “Other Attachment”. Further guidance is provided in the spreadsheet

Assessment Process and Closing Date

48. The assessment of the full proposals is by Panel alone (no external peer review) and may involve the use of an interview between the Panel and the PI and any co-investigator.

49. The closing date for the full proposals will be **during April 2018** and assessment will take place during **Summer 2018**.

Assessment Criteria

1. The expert panel will be asked to prioritise the **full** proposals based on the following:
 - **Governance structure** to manage and deploy resources
 - **Leadership and inclusivity** – using and deploying appropriate community interactions across the academic discipline-supply and value chain business axis, across the career span and encompassing social, environmental and economic issues.
 - **Financial resources** requested and how these will be deployed over lifetime of proposal
 - **Management of resources** including staff, funding, relationships and support mechanisms and how outcomes of activities are recorded and communicated
 - **Communication** tools to ensure regular contact with community and recruiting new members
 - **Promotion of the UK to an international community** – use resources to increase profile of UK IBBE community worldwide.
 - **Impact** – able to demonstrate a track record and impact in their field.

Interviews may be utilised for the applicants – at discretion of the review Panel and BBSRC office.

MONITORING PROGRESS OF THE NETWORKS

50. The resulting Networks will be expected to provide BBSRC with an invitation to all events and information on flexible fund projects (via the nibb@bbsrc.ac.uk mailbox).
51. Representatives from the Networks will be expected to attend relevant grant holders' workshops when requested and be accountable to their communities; describing how the resources had been deployed, the progress made and the plans for subsequent years.
52. Data is required from the BBSRC NIBB for grant monitoring purposes. There is a requirement for BBSRC NIBB activities to be reported quarterly but information should be updated throughout the lifetime of the BBSRC NIBB as and when relevant. The extranet used by the current BBSRC NIBB will continue to be the main portal for data from BBSRC NIBB Phase II.

TIMELINE

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Industrial Biotechnology

1. Industrial Biotechnology is a set of cross-disciplinary technologies that use biological resources for producing and processing materials and chemicals (including biorenewables and biopharmaceuticals) for non-food applications. These resources can be derived from the tissues, cells, enzymes and genes of plants, algae, marine life, fungi and micro-organisms.
2. BBSRC aims to support the development of basic and strategic research to underpin innovative manufacturing routes to prepare biopharmaceuticals (i.e. bioprocessing), high-value chemicals (such as pharmaceutical intermediates, anti-microbial compounds, flavours and fragrances), industrial chemicals or platform chemicals from renewable feedstocks (including: algae, crop wastes, food and municipal waste, animal wastes and perennial biomass) rather than fossil hydrocarbon sources and utilising biological processes.
3. Industrial Biotechnology is also a way to reduce dependency on petrochemicals and helping the UK to become a low carbon economy, thereby contributing to the targets for reducing emission of green-house gases.

Bioenergy: generating new replacement fuels for a greener, sustainable future

4. Bioenergy is a renewable form of energy generated from materials derived from biological sources. Bioenergy is increasingly being recognised as having an important role in helping the UK to maintain its energy security. Moreover, increasing the deployment of bioenergy within the UK will also play an important part in helping the UK to achieve its ambitious targets for reductions in green-house gas emissions, as set out in the Climate Change Act 2008.
5. BBSRC's interests are focussed on supporting research projects that aim to develop liquid transportation fuels, biogases and biologically generated electricity derived from a wide range of different biological feedstocks including: algae, crop wastes, food and municipal waste, animal wastes and perennial biomass. All BBSRC funded research should inform on the development of sustainable, advanced biofuels ("second-generation" and beyond).
6. BBSRC does not support bioenergy research where the feedstock is derived from material that could be used for the human food chain or animal feed or where the feedstock would be used for combustion or non-biological processing.

Examples of how to deliver the objectives of this call:

7. Provide an appropriate governance structure to manage and deploy the resources including the proof of concept funding.
8. Include a broad range of disciplines necessary to address the subjects or challenges identified.
9. Offer a series of structured activities that build bridges between disciplines and find creative ways to enable knowledge sharing and collaboration between academic researchers and those in the technology-deploying, associated value chain supporting and end-user businesses.
10. Provide a forum for discussion and development of cross-disciplinary research projects involving proof of concept studies.
11. Provide a forum for the development of major integrated grant proposals based on the proof of concept studies, directed to the IB Catalyst and elsewhere.
12. Provide regular updates on the development of the research area, nationally and internationally (e.g. through a newsletter).
13. Support an annual meeting of the leading scientists from the UK, including some from overseas, open to the UK community providing an update on the latest research findings.
14. Provide appropriate mechanisms to develop international linkages and collaborations where relevant.
15. Collect the outputs from the emerging proof of concept studies and collaborations, including tracing those through to full grant proposals and provide case studies where appropriate.
16. Host and actively maintain an up-to-date, visually appealing, informative, website promoting UK research in the chosen research area and national/ international funding opportunities. (BBSRC will advise on the branding of the web site).
17. Establish a mechanism to recruit new members as the Network develops.
18. Support and encourage the participation and development of related PDRAs and students.
19. Participate and/or organise outreach activities to engage non-specialised audiences in discussions related to the Network area.