



Industrial Biotechnology for Improving Production of Higher Value Chemicals: Guidance notes

Call status

Open for applications

Call launch date

5 November 2019

Application deadline

Call Closes: 16 January 2020, 16:00 BST

Summary

BBSRC invite applications to a funding call in Industrial Biotechnology for Improving Production of Higher Value Chemical. There is up to **£2M** available for grants to support short collaborative projects of between **12 to 24 months** with a value up to **£250K**.

The call will support research translation to address challenges in applying bioprocesses for improving the production of higher value chemicals and aims to accelerate the de-risking of IB processes and help bridge the gap to larger-scale projects and further public or private investment.

Multidisciplinary and collaborative projects will enable the translation of research into industrial processes, supporting the development of post-proof of concept research progressing it towards technology readiness levels (TRLs) 3, 4 and 5. Collaborations with industry will be compulsory to help direct research toward industrially relevant challenges and support the translation of bioprocesses into an industrial environment.

Contact

Name: Dr Hayley Moulding, Innovation and Skills Manager, Business Interaction Unit

Email: hayley.moulding@bbsrc.ukri.org

Background

The UK Chemicals industry generates £9bn gross value added (GVA) per year, employs 105,000 people, and is one of the highest energy intensive industrial sectors. There is a strong industry driver to reduce carbon emissions, and consumer demand for more sustainable products, which move away from using fossil-based carbon to manufacture chemicals. These increased drivers for sustainability mean that the industry is open to innovation that will lead to more sustainable manufacturing practices.

Modern bioscience technologies and multidisciplinary approaches have the potential to enable the industry to address this challenge, through the production of chemicals via bioprocesses, and the manufacturing of bio-based chemicals from non-fossil fuel-based feedstocks. This approach can reduce emissions and address sustainability issues by reducing demands on fossil fuels, lowering the energy costs of traditional chemical process, and permitting the development of novel materials with improved properties.

UK Government strategies also support these changes, for example through the [UK Clean Growth Strategy](#) which highlights the impact of the chemicals industry and includes priorities for low carbon innovation, clean energy innovation, energy efficiency, carbon capture usage and storage and zero waste by 2050. The [UK Bioeconomy Strategy](#), which recognises the potential of bioscience and has the vision that in 2030 the UK is a global leader in developing, manufacturing, using and exporting bio-based solutions. In addition, the [Chemistry Council's strategy](#) states that biotechnology has an increasing role to play in the chemicals industry delivering advanced materials and molecules, creating a pipeline of green supply chains including waste to feedstocks and supporting clean growth by rebuilding cost competitive and carbon efficient supply chains.

Industry is open to innovation that will lead to more sustainable manufacturing practices. However, currently the economic case for the application of many of these innovations only works for higher value chemicals vs commodity chemicals produced in bulk with lower market values. The value of products need to compensate for the investment required to apply new technologies and infrastructure, such that chemicals produced in this way can compete with those manufactured traditionally.

The consultation highlighted funding gaps in support of further collaborative partnerships beyond the BBSRC Networks in Industrial Biotechnology and Bioenergy (NIBB) activities to move research up TRLs and enable industrial engagement. Many of the fundamental biosciences and engineering problems could be addressed by funding to support translation of new discoveries towards TRLs 4 and 5 with advisory and in kind contributions helping direct research towards industry relevant challenges.

The projects funded through this call will accelerate the de-risking of IB processes and help bridge the gap to larger-scale projects and further public or private investment.

Scope

Scientific Scope

BBSRC consulted with industry and the academic community to better understand BBSRC's role in enabling bioscience to support the desired innovation, building on investments in this area to date. The consultation led to a report which provides an overview of the current drivers within the sector. The report outlines the research challenges that need to be addressed in applying bioprocessing to improve the production of higher value chemicals (see **pages 14 – 16**). The consultation also highlighted the support required to address these research challenges and this call aims to address some of those gaps.

The full report of this consultation exercise can be found [here](#).

Projects should focus on the production of speciality, performance/effect, and fine chemicals that are considered to be of high market value. Examples of these include (but are not exclusive to):

- surfactants
- polysaccharides
- micronutrients
- natural flavour and fragrances
- silks
- next generation adhesives
- protein structures
- chelates
- butanol acetone for esters and solvents
- active pharmaceutical ingredients (APIs)
- pharmaceutical intermediates
- antibiotics
- peptides
- enzymes
- hormones.

Macromolecular proteins for therapeutic use are out of scope. Commodity chemicals made in bulk which have multiple different applications and have a low market value are also out of scope.

Research projects must address challenges in manufacturing a chemical using a biological process i.e. using microorganisms or enzymes. The bioprocess can be used in the conversion of either biomass feedstocks or precursor chemicals to chemicals or biological products e.g. peptides and enzymes. The bioprocess should address one of the following three drivers:

- I. **Manufacturing higher quality products** e.g. producing chiral molecules with high levels of stereo-selectivity or reducing levels of impurities giving a higher quality/ purer product.
- II. **Reducing manufacturing costs** e.g. by reducing the number of stages required in multiple stage processes, reducing downstream purification costs due to fewer impurities, lowering energy costs by avoiding the need for extreme temperatures, or reducing/avoiding the need for co-factors and/or heavy metals catalysts.
- III. **Sustainability:** bioprocesses can lead to more sustainable products and manufacturing methods by those outlined in II as well as utilising bio-based/waste feedstocks and providing alternatives to harvesting crops that can have high environmental impact through high water consumption or land clearance.

Project Scope

Projects funded through this call should aim to make significant steps towards translation of research into industrial processes. These short projects will enable the translation of research into industrial processes by accelerating the de-risking of industrial biotechnology processes in the chemicals sector demonstrating their potential to industry and investors. To ensure that research is addressing industry relevant challenges, it is compulsory to have a collaborative industry partner. There is flexibility in the form of industrial contributions to enable a range of

companies to be involvement in projects including SMEs. Details of industry partner collaborations is outlined in the next section.

Industry partners collaborations

It is a compulsory condition of the call that all applications include a collaborating industry partner to ensure projects are focused on industry need and taking an industrially relevant approach. Industry partners must also provide meaningful in-kind and/ or cash contributions to support their active involvement in the project. Eligible in-kind contributions, are outlined in the [BBSRC Grants Guide section 2.24](#) and can include but are not limited to:

- intellectual input to the development of a project proposal
- the salaries of the personnel working directly on the project
- materials consumed in the course of the project
- access to equipment
- provision of data, software or materials

Applicants should ensure that they fully address the contribution of the industry collaborator to the project as outlined in the [BBSRC Grants Guide section 2.17](#) in particular how that collaboration will increase the likely impacts of the project.

To assist this, applicants should include the following within their application:

- details of the industry partner's contribution to the proposal development
- project delivery included in the case for support, pathways to impact and letter(s) for support from the industry partner(s)
- a letter of support signed by the institution's Technology Transfer Office (or equivalent) included outlining the management of the outputs of the proposed research.

Details of what to include in the TTO and industry partner letters of support can be found in the [BBSRC Grants Guide section 2.14](#)

Collaborative agreements must be put in place to enable all parties to better understand their roles on the project and the nature of the industry collaboration, it is important for collaborative agreements to be implemented to clarify the IP rights (IPR) position. BBSRC does not need to see these but applicants are advised to carefully consider these arrangements, discuss, and agree them where necessary with project partners in developing the grant proposal, in order to protect their best interests. University and business collaboration support tools including the [Lambert toolkit](#) can be accessed via the Intellectual Property Office.

Applicants are strongly advised to contact their Technology Transfer Office (or equivalent) for advice and support. BBSRC will make awards on the understanding that the project partner will commit the resources to the project as described in their Letter of Support. Where such commitment cannot be fulfilled BBSRC expects that equivalent support and resources will be found in the duration of the project.

Applicant eligibility

In order to be eligible for an award, proposed applications should:

- fulfil the standard BBSRC eligibility criteria outlined in the [BBSRC Grants Guide](#)

- include a collaborating industry partner to help direct research toward industrially relevant challenges and support the translation of bioprocesses into an industrial environment. A signed copy of the collaboration agreement should be submitted to BBSRC within three months of the proposed start time of the project.

Project monitoring evaluation

In order to capture the outputs and impacts of the projects grant holders will be asked to invite a BBSRC representative to their final project management meeting. If a project is to last between 18- and 24-months grant holders should invite a BBSRC representative to attend a mid-term project management meeting. Grant holders will also be asked to submit a project completion form outlining the project achievements and outcomes relevant to industry. The form will be provided to grant holders at the start of the project.

Application process

The call has one stage of application, including a panel meeting, but with no external peer review. Proposals are invited from **5 November 2019** with a closing date of **16 January 2020**.

To ensure a proposal is submitted on time we suggest that it should be sent to your institution's Je-S submitter pool approximately a week before this deadline. Please note that we are unable to accept late submissions.

Guidance on completing the full proposal submission can be found on the Je-S Website. For any JeS related queries, please refer to the Je-S Handbook, or contact the Je-S helpdesk:

Email: JeSHelp@je-s.ukri.org

Phone: +44 (0) 1793 444164

All attachments must be completed using standard font and margin sizes. The sections of the form not mentioned below should be completed in accordance with standard practice when applying for BBSRC grants, further details can be found via the BBSRC Grants Guide. Incomplete applications may be withdrawn from consideration.

Submit your proposal through the Research Councils' Joint Electronic Submission (Je-S) system by **4pm on 16 January 2020**. Late applications will not be accepted.

General information about the application form

Please note that in addition to typing directly into the free text boxes on the application form, you can copy and paste text from word documents. You should ensure that you consider any character length restrictions.

The sections of the form not mentioned below should be completed in accordance with standard practice when applying for BBSRC grants, further details can be found via the BBSRC Grants Guide.

In order to see the BBRSC Fund call in Je-S, select the 'Documents' section on the right-hand side and then under the 'Functions' section select 'New Document' and follow the options from the drop-down menus:

Applicants should select the following from the Je-S menus:

1. Log in the Joint Electronic System (Je-S)
2. Select Council: BBSRC
3. Select Document Type: Standard Proposal
4. Select Scheme: Standard
5. Select Call: 201BHIGHERVALUECHEMICALS
6. Select 'Create Document'

Applications must be submitted by UK Research Organisations that are eligible to receive funding from BBSRC. Information about eligible organisations is available on the [UKRI website](#).

Applicants are required to complete the proposal pro forma in Je-S and the following attachments as appropriate:

- Case for Support
- Letters of Support – see further guidance
- Workplan
- CVs
- Justification of Resources
- Data Management Plan
- Collaborating Industry Partner letter of support
- Technology Transfer Office (TTO) letter of support
- Letters of support

Please see [Annex 1](#) for further information.

Applications should be prepared and submitted by the lead research organisation (RO), but should be co-created with input from all investigators and project partners and should represent the proposed work of the entire consortia.

Applications should largely be completed in the normal way, following the guidance in Annex 1 and the [Je-S Handbook](#).

Confidentiality and Disclosure

BBSRC takes all reasonable steps to ensure that the contents of applications are treated as confidential. Applicants must ensure that the title and summary of the proposed project are worded in such a way as to protect commercially confidential or sensitive areas, as project summaries and personal data from the first page of successful applications will normally be transferred to publicly available databases.

The following details will be transferred for all funded projects:

- Title and project summary
- Institution

- Name(s) of applicant(s)
- Name of any project partners
- The value of the award
- Start and end dates, and duration of the award

BBSRC must be notified in writing at the application stage if you do not wish personal data or information that could affect Intellectual Property Rights to be transferred to the databases.

Applicants must abide by the principles of good scientific practice.

Useful links:

See our full [terms and conditions](#) on the UKRI website.

See our [grants guide](#) for further information.

Log into [Je-s](#)

Assessment criteria

Scientific assessment of research quality will be undertaken by UK and overseas experts in the field from academia, Government and/or industry, against all the following criteria:

- Scientific excellence
- Industrial and stakeholder relevance
- Relevance to BBSRC strategy
- Economic and Social impact
- Timeliness and promise
- Value for money
- Staff training potential of the project (where resources are requested for postdoctoral or other research staff).

This refers specifically to BBSRC Grants Guide, *Assessment of applications*, [under section 4.62](#).

Contacts

Email IB HVC mailbox: ib.highvaluechemicals@bbsrc.ukri.org

Name: Dr Alexandra Amey, Associate Head of Business Interaction, Business Interaction Unit, Capability and Innovation Domain

Email: alexandra.amey@bbsrc.ukri.org

Tel: +44 1793 413254

Name: Dr Hayley Moulding, Innovation and Skills Manager, Capability and Innovation Domain

Email: hayley.moulding@bbsrc.ukri.org

Tel: +44 1793 413037

By post: Business Interaction Unit, Capability and Innovation Domain, UK Innovation and Research (UKRI), Biotechnology and Biological Sciences Research Council (BBSRC), Polaris House North Star Avenue, Swindon, SN2 1UH, UK

Date	Activity	Link	Notes
5 November	Industrial Biotechnology for Improving Production of Higher Value Chemicals Call Open		Opening of the funding call
8 November, 12:00	Closing date for the Registration to the Town Hall Meeting for Industrial Biotechnology for Improving Production of Higher Value Chemicals Call	https://bbsrc.ukri.org/funding/filter/town-meeting-industrial-biotechnology-for-improving-production-of-higher-value-chemicals/ https://app.keysurvey.co.uk/f/1444494/1598/	Registration to the Town Meeting in Holiday Inn Regent's Park, London
19 November, 10:00-16:30	Town Hall Meeting for Industrial Biotechnology for Improving Production of Higher Value Chemicals Call	https://bbsrc.ukri.org/funding/filter/town-meeting-industrial-biotechnology-for-improving-production-of-higher-value-chemicals/	Town Meeting in Regent's Park, London
16 January 2020, 16:00	Closing date for call applications to the Industrial Biotechnology for Improving Production of Higher Value Chemicals Call		Closing date for applications to funding call

Timetable

Annex 1: Attachments

A number of the required supporting document attachments need to either be jointly prepared by the entire project team (for example, the Case for Support), or to be provided by the project partners (for example, the project partner letter of support). All supporting documents need to be uploaded before the application can be submitted, prior to the closing date. You should discuss this requirement with members of the project team as early as possible. This is particularly important if, for example, there are internal sign-off processes before partnering organisations can provide formal letters of support to the application.

Attachment	Maximum page length	Attachment type on Je-S submission	Notes
Case for Support	8 sides of A4	Case for Support	
Workplan	1 side of A4	Workplan	
CVs	2 sides of A4	CV	Please collate all CVs in a single document
Justification of Resources	2 sides of A4	Justification of Resources	
Data Management Plan	1 side of A4	Data Management Plan	
Collaborating Industry Partner letter of support	2 sides of A4 per partner	Letter of Support	
Technology Transfer Office (TTO) letter of support	No limit	Letter of Support	
Letters of support	No limit	Letter of Support	Only directly relevant Letters of Support should be submitted (i.e. other potential users that may not be directly involved in the project itself but provide additional evidence of support for the proposed work.)

CASE FOR SUPPORT (Maximum 8 sides of A4)

References and figures should be included within the 8-page limit of the description of the project and should not be submitted as an additional document(s) or annex. Suggestions for the page lengths of attachments can be found in the [grants guide](#) for further information.

The information provided in the Case for Support should relate to the applicant and all partners involved in the project and should include the following information.

GANTT CHART - (MAXIMUM 1 SIDE OF A4) (TO BE UPLOADED AS WORK PLAN)

Provide a Gantt chart, or similar, to illustrate the project plan.

CVs - (Maximum 2 sides of A4 per person)

A CV must be submitted for each named applicant.

JUSTIFICATION OF RESOURCES - (Maximum 2 sides of A4)

It is mandatory to include a justification for the resources that have been requested; guidance can be found [here](#). In particular, where aspects of the project are being outsourced, then further details should be provided of the work, including any associated tendering process.

TTO LETTER OF SUPPORT

A statement of support must be included from the Technology Transfer Office (TTO or equivalent) detailing why the proposed work is needed. They should include details of any matched funding they will provide to support the activity and any additional support that might add value to the work. The Committee will be looking for a strong statement of commitment from the TTO in the host institution taking the project forward.

The TTO support letter must also detail any relationships with academic, industrial or other partners relevant to the project.

PROJECT PARTNER LETTER OF SUPPORT

A letter of support from each project partner named in the application must be included, confirming their support for the proposed project, confirming any financial or in-kind contributions to be made and outlining their role in the project.

LETTER OF SUPPORT

A letter of support may be included from other potential users that may not be directly involved in the project itself but provide additional evidence of support for the proposed work.

OTHER DOCUMENTS:

Other permissible supporting documents may include summary documents of the following: Patent Filings; Freedom to Operate reports; Market Research reports of direct relevance to the application.

Other permissible documents may include a data management plan that clearly details how you will comply with BBSRC's published Data Sharing Policy. The policy, and detailed guidance notes, can be viewed at: <https://bbsrc.ukri.org/documents/data-sharing-policy-pdf/> (up to 1 side of A4).