



NATIONAL SCIENCE FOUNDATION
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NSF 18-039

Dear Colleague Letter: NSF-USDA-BBSRC Joint Funding Opportunity - Early Concept Grants for Exploratory Research (EAGERs) to Develop Breakthrough Ideas and Enabling Technologies to Advance Crop Breeding and Functional Genomics

January 5, 2018

Dear Colleagues:

The National Science Foundation (NSF) Biological Sciences Directorate (BIO), the U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) and the UK's Biotechnology and Biological Sciences Research Council (BBSRC) have established a joint funding opportunity to support the development of breakthrough technologies that will enable significant advances in crop breeding. This opportunity aims to make high impact changes in the ability to translate basic knowledge of plant genomics to practical outcomes in crops of economic importance to the participating countries.

This NSF-BIO, USDA-NIFA and BBSRC Joint Activity is soliciting *Early Concept Grants for Exploratory Research (EAGER)* proposals to support development of breakthrough ideas and technologies to speed the development for new crop varieties. There remain significant bottlenecks to improving crop varieties even if new traits or natural variants are identified, such as producing hybrids, understanding recombination, and epigenetic inheritance as examples. Translation of basic knowledge to practical outcomes can be accelerated by key emerging technologies that exploit genomics rapidly and effectively. This EAGER opportunity invites proposals to overcome these barriers to crop breeding in **highly innovative and transformative ways**. Investigators considering this opportunity should articulate how the enabling technologies would be used to improve crop breeding.

Areas of research that await breakthrough advances and are appropriate for this EAGER opportunity include, but are not limited to, the following:

- Advancing genome editing technology to generate new phenotypes for greater genetic gain
- Achieving reliable and high throughput production of doubled haploids from genotypes that are currently recalcitrant to chromosome doubling to accelerate the breeding process in cereals and other crops
- Controlling and understanding meiotic recombination to tap into inaccessible genetic resources in areas of low recombination and enabling whole genome manipulation

Modifying epigenetic inheritance to facilitate phenotypic changes related to environmental responses

- Understanding mechanisms of heterosis, thereby generating and exploiting hybrid vigor for crop improvement

For this EAGER opportunity, emphasis should be on developing enabling technologies that will impact crops or model crop systems. Projects that focus solely on sequencing will not be considered. Funded projects relevant to the goals of the International Wheat Yield Partnership (IWYP) will be invited to become [IWYP Aligned Projects](#).

Proposed studies should be potentially transformative and must be considered "high-risk, high-payoff" to achieve the goal of making technological breakthroughs to promote crop breeding. Studies should be compatible with the budget (up to \$300,000 for US components and up to £200,000 for UK components) and time limits (2 years) of the EAGER funding mechanism. For collaborative US/UK EAGER projects, BBSRC will fund UK researchers up to £200,000 and NSF or NIFA will fund US researchers up to \$300,000 including indirect costs. US only EAGERS are limited to \$300,000 total including indirect costs. Further details are provided below for budgetary limits for UK partners. EAGER proposals may originate from US-UK partnerships or from US-only applicants. EAGERS solely involving UK applicants are not permitted. For more information on EAGERS, please review NSF Proposal & Award Policies & Procedures Guide ([PAPPG](#)).

EAGER SUBMISSION PROCESS

EAGER proposals will be submitted in a two step process:

1. Submission of two-page summary of EAGER proposal concept (Summary): Inquiries will be accepted from a Principal Investigator (PI) or a consortium of Investigators led by a PI at an eligible institution in the US or UK. Standard BBSRC eligibility criteria, as described in section 3 of the BBSRC grants guide (<http://www.bbsrc.ac.uk/documents/grants-guide/>) are further described below.

International collaboration between US and UK investigators is encouraged, but not required. EAGER submissions by only UK participants will not be accepted. Interested PIs are required to email a two-page summary of the idea to be considered for a full proposal. The two-page Summary should be submitted as a pdf file with a filename in the format "PILastName_PIFirstName_PIIInstitution.pdf" to btppitch@nsf.gov by March 14, 2018 at 5:00 PM proposer's local time. US investigators may be listed as PI or coPI on no more than two Summaries; UK investigators may be listed on only one Summary (see BBSRC-specific details below).

The Summary should consist of three pages including a front title page plus two pages of text. A template for the front title page is available as a link on the NSF Plant Genome Research Program website. The text of the Summary should include the following information:

1. Background
2. Intellectual Merit

3. Goals and Specific Aims
4. Contributions of the US and UK partners to achieve the goals, when applicable
5. Broader Impacts that includes a statement of downstream impact with long-term potential for translation to breeding improvement

All submitted material, including references and figures, must be included within the two-page Summary and must be prepared in a minimum 10 point font size and with margins at least an inch wide in all dimensions. The Summary will be reviewed internally by NSF/BIO, USDA/NIFA, and by experts appointed by BBSRC.

2. Submission of EAGER proposal: PIs whose submitted Summaries best meet the goals of this DCL will be encouraged to submit full proposals. All proposals will be submitted to NSF using Fastlane, and should be submitted according to NSF EAGER guidelines described in the NSF Proposal and Awards Policy and Procedures Guide 18-1 ([PAPPG](#)).

This is an interagency partnership between NSF/BIO and USDA/NIFA, and through a Lead Agency agreement between NSF/BIO and BBSRC; therefore, meritorious proposals may be selected by one of the agencies for consideration. Successful applications will then be forwarded to the appropriate agency for funding in accordance with each agency's terms and conditions. Applicants selected for funding may be required to provide additional information. Subsequent grant administration procedures will be in accordance with the individual policies of the awarding agency. Information on NIFA's policies and procedures is in [NIFA's Policy Guide](#). Information about BBSRC policies and procedures may be found in the [BBSRC grants guide](#).

Special notes concerning UK applicants: Standard BBSRC eligibility criteria, as described in section 3 of the [BBSRC grants guide](#) will be applied to the UK component of applications submitted to this call. Higher Education Institutions (HEIs) and Research Council Institutes (RCIs) that are normally eligible to apply for research grants are eligible to apply to this call. Applications with non-eligible UK partners will not be considered for funding.

The UK component of applications should be costed on the basis of full economic costs (fEC). If the grant is awarded, BBSRC will provide funding on the basis of 80% of fEC. UK components of applications are limited to one UK Principal Investigator and are limited to £200k for 2 years (80% fEC amount). UK Principal Investigators may only be involved in one application each. Successful UK applicants will be required to submit an additional form through the Je-S system, and will receive awarded BBSRC grants in Pounds Sterling. These grants will be subject to standard Research Council Grants Terms and Conditions.

For more information or questions, please contact one of the following:

- Anne Sylvester, Program Director, Plant Genome Research Program, NSF at asylvest@nsf.gov or 703-292-7168
- Ed Kaleikau, National Program Leader, Division of Plant Systems, Institute of Food Production and Sustainability, NIFA at ekaleikau@nifa.usda.gov or 202-401-1931
- Paul Wiley, Senior International Programme Manager, International Relations Unit BBSRC, Polaris House, North Star Avenue, Swindon, SN2 1UH, UK, +44 (0)1793 413379,

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Sincerely,
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