

Energy Biosciences Institute 2014 Call for Preproposals



The Energy Biosciences Institute (EBI) is a research institute hosted jointly by UC Berkeley, Lawrence Berkeley National Laboratory, and University of Illinois at Urbana- Champaign and funded by the energy company BP.

The EBI will allocate financial support through a two-stage, competitive, peer-reviewed process. PIs are invited to submit preproposals addressing topics that are complementary to, or build upon currently-funded EBI research.

Submitters are strongly encouraged to review existing research programs and projects:

<http://www.energybiosciencesinstitute.org>

The submission deadline for preproposals is **April 30, 2014**. Details and links are included below.

TOPICS OF INTEREST

The EBI has ongoing interest and encourages proposals in all areas related to bioenergy, biofuels, and fossil fuel bioprocessing, including environmental and socioeconomic issues. In addition to interest in novel ideas that complement and/or enhance ongoing research, PIs are strongly encouraged to propose entirely new ideas that relate broadly to the field of bioenergy.

While the EBI has a growing interest in socioeconomic and environmental issues related to Brazil, there will be a separate call later this year to solicit collaborative preproposals in these areas.

In addition to our interest in novel topics, each year we suggest a few specific areas to help inform researchers who might not see a natural link between their research area and bioenergy. The following topics have been identified as areas of interest:

Fuel Production

Process design and/or engineering: The goal of developing a more cost-effective and less energy intensive process for fuel production leads to interest in the following areas:

- a. Continuous reactor design for lignin-sugar separation, yeast fermentation and ABE fermentation
- b. Novel approaches for separation of various product streams (e.g. butane-diol, anti-fouling membranes, improved extractants for ABE fermentation)
- c. Development of novel methods and/or identification of biomarkers for on-line, at-line monitoring sugarcane fermentations or detection of process upsets, including stress, contamination, genetic drift.
- d. Technologies to capture energy from waste streams associated with advanced biofuels production (e.g. biogas from stillage).

Organism development: Given the key role yeast species have in the fermentation process, the following topics are of interest:

- a. Anaerobic xylose and arabinose utilization
- b. Strategies for creating organisms with the ability to inhibit or outcompete wild yeast populations, as well as methods for selecting for yeast in Brazilian fermenters to address hygiene issues.
- c. Physiological characterization of yeast grown in continuous culture
- d. Physiological consequences of encapsulation/immobilization of yeast to optimize performance
- e. Determination, characterization and strategies for mitigating the impact of reactive oxygen species in the performance/robustness of fermentation organisms in hydrolysates
- f. Novel inducible/transient mutagenesis systems for temporally modulating genetic diversity in adaptive evolution experiments
- g. Optimization of yeast for fermentation of high mannose feedstocks

Chemical routes to fuels and lubricants: The following areas of interest stem from a desire to increase the variety and novelty of potential end-products through new processes

- a. Catalysts for conversion of ethanol to higher mass products
- b. Improved methods for dehydration of sugars to HMF and furfural

Enzymatic studies: To overcome existing challenges in biological routes to depolymerization and synthesis, the following areas are of interest:

- a. Understanding the contribution of proteases, both intracellular and extracellular, to issues of heterologous expression and defining structures/targets for modification of proteins to increase expression/stability.
- b. Overcoming lignin binding to cellulases

Fossil Fuel Microbiology

- a. Microbial corrosion of pipelines and other equipment used in the energy industry
- b. Small molecule inhibitors of ATP sulfurylase.

SUBMISSION PROCESS

Faculty are invited to submit preproposals using the online proposal submission website at <https://ebiweb.berkeley.edu/logon.cfm>. Submissions will be reviewed by the EBI executive committee and science advisors for relevance to the research mission of the EBI,

Details on scope, format, timelines, procedures and related matters can be found below and on the EBI web site at www.energybiosciencesinstitute.org/content/proposal-process. Please address administrative or submissions questions to Anne Krysiak (annekrysiak@berkeley.edu).

PIs should follow the submission instructions on the submission site. In addition to providing an introduction, background, anticipated outcomes and project description, the preproposal should provide an estimate of the number of FTEs required to carry out the proposed research, the timeframe and an estimated annual budget (it is expected that this will be a rough estimate and is only for EBI planning purposes, however estimates should include indirect costs). Preproposals submitted without the requested information will not be considered.

Preproposals will be reviewed for fit to the goals of the EBI, originality, potential impact, and feasibility. Because “Energy Biosciences” is an emerging field, we will consider proposals that are exploratory and high risk if the potential for scientific advances is high. The purpose of the preproposals is to identify ideas that are within the scope and funding capabilities of the EBI while minimizing the time and effort invested by applicants. PIs will be notified by email as to whether preproposals are “accepted for full submission” or declined, and feedback will be minimal.

Preproposals that are considered to be a good fit to EBI goals will be invited to submit a detailed proposal (seven pages maximum) with a specific budget and timeline. The proposals will undergo external confidential peer review by colleagues with expertise in the subject matter of the proposals. Proposals reviewed favorably for technical merit will be considered for funding by the Executive Committee of the EBI.

The principal investigators of supported projects will be expected to provide annual progress reports similar to those requested by some federal agencies. Additionally, it is expected that individuals supported in whole or in part by EBI funding will present seminars describing their research in public meetings, including a series of meetings organized by the EBI to encourage communication among researchers interested in bioenergy.

All funded research will be conducted under the terms and conditions of the EBI contract, available on the EBI website:

http://www.energybiosciencesinstitute.org/sites/default/files/EBI_Contract.pdf