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Directorate for Biological Sciences, Directorate for Engineering,
Directorate for Mathematical and Physical Sciences, and
Directorate for Social, Behavioral and Economic Sciences

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Subject: Joint NSF/EPSRC "sandpit" to address grand challenge topics in synthetic biology

Dear Colleague:

The purpose of this letter is to bring to your attention a new "**Call for Participants**" to take part in an intensive workshop ("**sandpit**") focused on **grand challenge topics in synthetic biology** (<http://www.epsrc.ac.uk/CallsForProposals/JointSyntheticBiology.htm>), recently released by the Engineering and Physical Sciences Research Council (EPSRC) of the United Kingdom (UK).

This call is being issued through the EPSRC's IDEAS Factory, a program aimed at finding new ways to generate highly innovative and more risk-accepting research projects coupled with real-time peer review. The Biological Sciences (BIO), Engineering (ENG), Mathematics and Physical Sciences (MPS), and Social, Behavioral, and Economic Sciences (SBE) Directorates at the National Science Foundation (NSF) are partnering with the EPSRC on this activity—all individuals who are eligible to apply for funding from the NSF are eligible to respond to the EPSRC call.

What is the IDEAS Factory?

The IDEAS Factory

(www.epsrc.ac.uk/ResearchFunding/Opportunities/Networking/IDEASFactory)

is one of a suite of EPSRC programs designed to identify and fund potentially transformative research. Topics can be in any area and are often thematic, but a common feature is that they need a new dimension in thinking. A critical element of this program is the "sandpit" activity, an intensive interactive 5-day workshop during which 20-30 people, selected through an open call for participants, develop research projects to address a grand challenge question. Sandpits are led by a Director with the support of a group of international experts (known as Mentors) chosen by the Director. These individuals forfeit access to funds allocated to the projects that emerge from the sandpit and therefore act as impartial referees in the process. The joint EPSRC-NSF sandpit will follow this model but will be co-directed by two NSF Program Directors. Participants come from a range of disciplines and backgrounds, which fosters interdisciplinary approaches, and have a mix of personal attributes that may increase the transformative nature of the outcomes, such as a willingness to take risks, good

communication skills, and creativity. Outcomes of the sandpit are outlines of research projects that vary in scale and scope, and that complement each other in addressing the grand challenge topic of the sandpit. A special feature of the sandpit process is that funding is set aside at the outset (pending the availability of funds) to support some or all of the research projects that emerge from the sandpit process, depending on research quality and novelty.

What is the focus of the joint NSF-EPSC IDEAS Factory Sandpit?

A particularly promising area of research that is of considerable interest to both the NSF and the EPSC (from both the scientific perspective as well as the ethical and social impacts perspective) is synthetic biology. Synthetic biology is an emerging interdisciplinary field seeking to understand biological functions from the biochemistry of cell growth to the complexities of neural systems and to build biological components, systems or whole cells from fabricated parts. This field has the potential to elucidate the complex design and structural features that permit self propagation within living systems and allow those systems to evolve. Synthetic biology relies on an array of tools and technologies from the life, physical and social sciences as well as engineering—providing a wealth of opportunities for interdisciplinary research efforts.

What happens during the sandpit?

During the sandpit, which is run by professional facilitators, the participants develop research projects on the selected topic, incorporating real-time peer review from the directors and mentors. These projects may, but need not, be collaborations among the participants. A unique feature of the emerging research portfolio is the extent to which the projects complement each other, which results in a more holistic approach to addressing the grand challenge. At the end of the sandpit, the NSF and EPSC will identify which participants will be asked to submit their projects as full proposals. After the sandpit is over, the participants associated with the invited projects will have eight weeks to submit full research proposals to the EPSC and the NSF.

The EPSC and NSF plan to allocate funding to support some or all of the meritorious research projects emerging from the sandpit; however, no one is guaranteed funding by virtue of participating in the sandpit.

How can you apply?

The EPSC has recently disseminated an open call for participants in the synthetic biology sandpit. **Interested individuals should submit a 2-page “Expression of Interest” (EoI) directly to the EPSC by 4:00 pm (submitter’s local time) January 15, 2009.** The EoI form and e-mail address for submitting the form are both found within the call for participants. The EoI form includes questions about experience and expertise as well as questions designed to assess personal attributes such as communication skills, collaborative behavior, and openness to novelty.

Based on these applications a review panel (consisting of the co-Directors, the Mentors, and an occupational psychologist) will select 20-30 diverse participants with a range of disciplines and backgrounds that have a high potential to contribute to research at the interface between disciplines and to develop new and highly original research ideas. Ensuring that the participants are diverse and have a mix of personal attributes increases the group’s willingness to take risks, communicate clearly and openly, and encourages creativity.

For complete details on the deadline dates, dates and venue of the sandpit, review process, and proposal submission dates, please see the "Call for Participants" at (<http://www.epsrc.ac.uk/CallsForProposals/JointSyntheticBiology.htm>). Questions should be addressed to Dr. Patrick Dennis (pdennis@nsf.gov) or Dr. Krastan Blagoev (kblagoev@nsf.gov).

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