

Why is Dstl interested in synthetic biology?

Today the UK faces adversaries whose tactics change rapidly and employ ever more varied, advanced and innovative technologies. This demands rapid evolution in our response, both tactically and in the technologies we deploy to combat the threats. We must therefore continuously examine the balance and quantity of our research and development (R&D) investment to meet these changing circumstances.

Scientific understanding and the technologies that emerge from this improved knowledge are growing at an ever increasing pace and offer a wide diversity of solutions to this evolving threat environment. Our task is to anticipate, prepare and meet the forthcoming challenges by being highly innovative, agile and flexible in our approach to defence science and technology based R&D. This must be complemented by rapid exploitation to yield military advantage with an ever increasing tempo.

Synthetic biology has many potential applications to help address defence-related problems, as a rapidly developing underpinning technology. The MOD would like to gain an understanding, not of where the field is currently, but where it could contribute in the future. In turn this will give an understanding of what step-changes may occur as the technology develops, and what potential applications we could consider using it for.

Should my project have obvious defence applications?

Not necessarily, but the assessment panel will take this into account. We would expect applicants to think about defence and national security applications of their projects.

What sort of applications will the MOD be wanting synthetic biology to help with?

We do not wish to limit researchers' thinking as to the future applications that synthetic biology could be used to address. However, there are some obvious areas we have identified to show the types of applications that are of military interest. While we would like to gain an appreciation of the potential longer-term military applications, we do not necessarily want to see an applied output from the currently proposed work.

Medical

Prevention and therapy of infectious diseases is important in an era of biological threats. In the present day, synthetic biology has been used to make Artemisinin, a known anti-malarial drug, for which no synthetic route exists. In future, synthetic biology may be able to create completely novel classes of antimicrobials. This will meet an ongoing need for antimicrobials (antibiotics and antivirals) to overcome increasing problems with resistance. To complement this, platforms for needle-free drug or vaccine delivery, and enhancing resistance to infection by modification of immune responses are also desirable. To guide therapy, diagnostics are required: synthetic biology may produce diagnostic platforms that are easy to use, cheap, robust, and accurate. Approaches to decontaminate contaminated areas (and people) are required that are safe for the environment, yet effective. The contaminant in question may be biological, chemical or radiological.

Approaches to manage and heal wounds of a variety of types are required eg blast and ballistic. This does not include classical tissue engineering, but could include novel synthetic biology approaches to tissue engineering.

Materials

Lightweight, low-cost materials are desirable for many purposes. Recently, spider's silk protein was produced by a synthetic biology approach: this may have application in new lightweight armour, for example. Any development that reduces the burden on the soldier is desirable, but reducing weight on vehicles while maintaining protection is also of interest and may be addressed by novel materials produced by synthetic biology. These materials may have further "smart" attributes, such as stealth or self-decontamination. However, we are only interested in how synthetic biology approaches can address these ends, rather than materials themselves.

Energy

Much work is currently focussed on alternative fuels. Rather than this accepted use, we are interested in synthetic biology approaches to lightweight power storage (ie new approaches to replace batteries) or immediate power generation.

Must I include Dstl staff as co-applicants/collaborators in my project?

No, but they are not excluded as collaborators if you wish. Co-applicants need to be eligible for Research Council funding.

Does this initiative fall under the terms of the Joint Grants Scheme?

No, this managed mode call is being run according to the call document. It is being run RCUK SSC Ltd, and managed by BBSRC (as lead Research Council) on behalf of all funders.

Can I submit more than one application as Principal Investigator?

In order to manage demand and expectations, we would expect applicants to submit no more than two applications as Principal Investigator.

Is the upper financial limit fixed?

In line with fEC requirements, we do not set a fixed upper limit; rather an *indicative* value is provided to give applicants an idea of the size of grant we expect to award. Applications significantly (i.e. 10%) over the indicative value may be withdrawn prior to peer review as not fitting the scope of the call.

Do projects need to be multidisciplinary?

Projects should have the appropriate expertise needed to manage/direct/undertake the research proposed. We are actively encouraging multidisciplinary projects in this call, as demonstrated by the breadth of funders involved.

I do not have an existing staff member who can take on this project. Can I still apply?

Yes, but note that we would expect the projects to start as near to 1 May 2012 as possible. Please contact BBSRC to discuss this further.

What is the additional Powerpoint slide for?

The Powerpoint slide is a one-page summary of the proposal and will be used principally by Dstl to report to the MOD customer on the work that their money is helping to fund. It will therefore need to outline your work in a non-technical manner that can be understood by non- scientists

Can I request more money if I want to do a 24-month project?

No, the indicative upper limit is £120k, irrespective of whether a project is 12 or 24 months. You should, therefore, think carefully whether you wish to submit a 24 month proposal. Please contact us for further discussion.

If you have further questions, please contact david.mcallister@bbsrc.ac.uk