

DARPA-BAA-16-50

Frequently Asked Questions

Last Updated: 9/1/16

GENERAL INFORMATION

Q: If my research is relevant in this field, but is not geared specifically to meet these goals, is there a solicitation that I can respond to?

A: Yes. DARPA/BTO has an Open solicitation (DARPA-BAA-16-33) for which responses are being collected through 28 Apr 2017.

Q: Is Dr. Gallivan available for a call to discuss our proposed approach?

A: The best way to receive feedback on an approach is through the submission of a proposal abstract prior to the deadline specified in the BAA. The BAA describes the program, including metrics, in detail. If you have specific questions, please submit them by email to DARPA-BAA-16-50@darpa.mil. Please be aware that your question and its answer may be published on this FAQ page, after the question has been revised to remove proprietary information.

Q: Are Federal Laboratories and International Universities eligible to participate as collaborators in response to the BAA?

A: Per the BAA, "All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA." Federally Funded Research and Development Centers must adhere to the guidelines listed in Section 3.1.1 of the BAA, found on page 21. Information about Non-U.S. Organizations can be found in the following Section (3.1.2), though there are no funding restrictions applicable to any organizations responding (per Section 4.5, page 34).

Q: Will DARPA act as a "matchmaker" to introduce potential team members?

A: No, we are not allowed to suggest teaming arrangements.

Q: Is there a typo on page 22 with reference to a classified addendum?

A: Yes, there is no classified addendum to the BAA.

PROPOSALS

Q: Why wasn't there an abstract phase for Track 1?

A: Track 1 deliverables are more well-defined than those of Track 2, and DARPA anticipates that proposers will be able to accurately interpret the goals and scope without advance feedback.

Q: Will a proposal covering a shorter term be considered more competitive?

A: No.

COST/FUNDING

Q: Are multiple awards anticipated for both tracks?

A: Yes.

Q: What would be the budget range and team size?

A: Budget and team size should be commensurate with the scope of work and proposed level of effort.

Q: Is there a funding cap or limit to each proposal?

A: No.

TECHNICAL – DEFINITIONS

Q: What do you mean by a “stable” system- genetically or structurally stable?

A: Both.

Q: Is “Quantitative” tenability sufficient (e.g., spatial frequency, number of elements)?

A: Yes.

Q: Track 2 – Could you explain “autonomous”?

A: Development of the shape or pattern must proceed without external intervention.

Q: On page 11 of the BAA, “must be stable and irreversible for at least one week”, please define “irreversible”.

A: Once differentiated, the cells cannot switch between two (or more) states.

Q: What defines a “cell type”? Are they determined by task? Transcriptional activity? Shape? Protein expression pattern?

A: Cell types can be defined as two genetically identical cells that are different in any way that is obviously and persistently discernable. As described in the BAA, the difference can be as simple as the expression of two reporter proteins.

TECHNICAL

Q: Do genetic tools already need to exist for the starting organisms?

A: No.

Q: Is DARPA interested in living systems that can convert bioenergy into other forms of energy?

A: It is not apparent that such a project would conform to the requirements of the ELM program. Please see the ELM BAA for details.

Q: Is there a limit on the number of living organisms that we can use?

A: No.

Q: Are eukaryote systems, specifically stem cells, excluded?

A: No.

TECHNICAL – TRACK 1

Q: What target applications are of interest?

A: DARPA is not targeting any applications in particular; however as stated in the BAA, materials that can be used as part of a shelter or barrier are particularly encouraged.

Q: For Task Area A, is the goal of 500 cm³ for a fully dense material? Is it the volume of a solid or could it be the volume of a porous material?

A: Any density is acceptable, but the density should make sense for the intended application of the final product.

Q: For Task Area A, does “doubling time” refer to the number of cells? Volume of material? Something else?

A: Volume of material.

Q: Following from the answer above, does that mean that it would be acceptable for the cells in a proposed material to double in size, rather than in number, in order to increase the volume of the material?

A: Yes.

Q: Do you envision the living component will produce both living and inert material in response to some stimuli, such as damage?

A: This is not specified in the BAA. Either approach is acceptable provided the resulting product conforms to the requirements listed in the BAA.

Q: Are there any limitations to the organism types used for cell-cell communication in the hybrid ELM system? Would a single cell-type system be suggested, or would a multicellular, differentiating organism be required?

A: Any type of living system, whether single cellular or multicellular, or combination of cellular systems is acceptable provided that the result is a hybrid engineered living material that meets the requirements outlined in the BAA for Track 1.

TECHNICAL – TRACK 2

Q: Are the cells allowed to respond to environmental changes that they themselves create (e.g., the depletion of a carbon source)?

A: Yes.

Q: For Task A, do proposers need to make arbitrary patterns? Or is it okay to make specified, defined patterns?

A: Defined or arbitrary patterns are acceptable, at the proposers' discretion.

Q: Are there length scale requirements/ goals? Are microns and mm both okay?

A: Yes, all practical length scales are acceptable.

Q: By pattern, do you mean we have to propose to deliver 3D “origami” or are you also interested in physiological/ chemical pre-patterned self-organization as a first step, and then genetic engineering on top of that?

A: Acceptable approaches to programmable patterning must conform to the requirements outlined in the BAA.

Q: How much of a cell's native developmental pathways can proposers use?

A: As much as one likes; however DARPA is not interested in approaches that simply trigger the natural development of an undifferentiated cell.

Q: How much screening is allowed to identify appropriate genetic parts?

A: The experimental approach is left to the proposer's discretion.

Q: Assuming we don't attempt platonic solids, can you be more specific in what you are looking for (e.g., distinguishable faces)?

A: Consistent, predictable shapes that arise through the clonal expansion and differentiation of a progenitor cell line; the various faces, or surfaces of the final shape must be distinct from each other (e.g., analogous to the dots that distinguish the otherwise identical faces of gaming dice).

Q: Are you interested in stem cells and progenitor cells and tissues derived from self-organization of stem cells for this BAA?

A: DARPA is not interested in funding biomedical applications through the ELM program. Proposals that address stem cell biology for the purposes of tissue engineering are specifically discouraged.

Q: While external stimuli cannot be provided by the experimenter, can a scaffolding system be designed to inform patterning?

A: The structural features must occur as the result of the expression of the cell(s) genotype. Scaffolds are considered external stimuli.

Q: To address the ability to grow living structural materials to design specs from a single progenitor cell – would a lawn of isogenic cells spread on a surface be acceptable?

A: No.

Q: Any guidance on how large the result should be? Volume? Hanging drop? Visible with microscope or visible without microscope?

A: For Track 2, the size of the final demonstration is at the discretion of the proposer.

Q: To what extent should the guidelines of Track 2 be realized in an autonomous living system by the end of Phase 2?

A: One should plan to meet all the criteria listed in the BAA for the given task area.