HHS STTR RFA-AT-16-004

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The official link for this solicitation is: http://grants.nih.gov/grants/guide/rfa-files/RFA-AT-16-004.html

Agency:
Department of Health and Human Services

Release Date:
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Application Due Date:
August 05, 2015

Solicitation Number:
RFA-AT-16-004

Close Date:
August 05, 2015

Available Funding Topics

- RFA-AT-16-004: HHS STTR RFA-AT-16-004 ×

HHS STTR RFA-AT-16-004

Background

Natural products are essential sources of medicines. The World Health Organization estimates that ~80% of the world's population relies on traditional medicines made from natural products. The modern pharmaceutical industry is also dependent on plant-based medicines, with as much as 50% of all drugs based on natural products or derived from a natural product origin. Clearly, plants and other natural products offer excellent sources of health-promoting medicines. Thus it is extremely important that we enhance our capacity to further examine these traditional modalities and achieve a solid scientific understanding of their potential health benefits.

Nonetheless, substantial problems exist in identifying and understanding natural products and their bioactivity. While the potential for natural products in health and wellbeing is clear, the challenges that hamper the full utilization of these resources are many, with the greatest hurdle simply being the enormous amount of time and effort required for structure identification and characterization of the mechanisms by which natural products exert their

pharmacological activity. Improvements in collection, bioassay, isolation, purification, de-replication, yield, and supply of natural products are possible. While advances have been made to help overcome these hurdles, there exist many new untapped technological resources that may improve natural products research methodologies.

Research Objectives

The purpose of NCCIH's Small Business Technology Transfer (STTR) Grant program is to stimulate technological innovation in the private sector, strengthen the role of small business in meeting Federal research or research and development needs, and improve the return on investment from Federally-funded research for economic and social benefits to the Nation.

Natural products offer a diverse reservoir of biologically active components. The single chemical entities, as well as their mixtures in natural product extracts, have a long history of use as drugs, drug precursors, and/or complementary health adjuvants. However, methodologies for the identification of bioactive natural products and their mechanism(s) of pharmacological action are often inadequate or too time consuming to be compatible with modern screening platforms. We believe that many existing biotechnologies could be adapted to improve natural products research. Innovative methods might utilize genomics, bio-products engineering, bioinformatics, synthetic and molecular biology, or nanotechnology. The purpose of this initiative is to improve upon the currently available natural products methodologies thereby increasing the efficiency of research in this field.

With this STTR initiative, NCCIH is proposing to focus on five areas that could significantly improve the progress in natural products research:

- Technologies aimed at improving field applications for characterizing natural product sources/species and their diverse bioactive constituents, (examples – DNA barcoding, gene chips, activity based profiling, biosensors, spectrometric equipment and techniques, etc.)
- Technologies aimed at the rapid removal of nuisance compounds in the crude extracts of natural products, (examples – innovative chromatographic technologies, resins, catch and release-type systems, etc.)
- Technologies aimed at the development of highly sensitive phenotypic/high content bioassays including capacity to identify potential synergistic mechanisms, (examples - image-based cellular assays, multiple-endpoint analysis based on phenotypic changes, bioengineering chemically sensitive strains, etc.)
- Technologies aimed at the creation and exploitation of model systems for the expression of natural product constituents in high product yielding hosts, (broad spectrum heterologous or homologous expression hosts, stimulation of biosynthetic pathways, mutation, etc.) and
- Technologies aimed at predicting and/or quantifying risks of natural product–drug interactions (examples – designed *in vitro* interaction assays or kits, *in silico* technologies, etc.)

This FOA is intended to help move useful technologies from non-commercial laboratories into the commercial marketplace by inviting STTR grant applications from successful small businesses for further development of such technologies that are relevant to the missions of the sponsoring NIH institutes and centers. The supported research and development will likely include making the tools more robust and easy to use, and will likely require close collaboration between the original developers of these technologies and SBCs. These partnerships may be accomplished in any of a number of ways, including the use of multiple Program Directors/Principal Investigators. NCCIH encourages new investigators as well as those investigators who are previous recipients and have shown significant progress in moving useful technologies from non-commercial laboratories into the commercial marketplace.

Topics that are not responsive to this FOA include:

- Approaches applicable to only one organism, biosynthetic pathway, and/or natural product or are of limited scope

- Approaches focused primarily on the production of analogs of natural products
- Optimization of large-scale production of natural products
- Chemical synthesis of natural products
- Characterization of biosynthetic enzymes of established or easily predictable function
- Approaches focused on spectral libraries of natural products
- Approaches based on collection or storage of natural products for screening

Close

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