NOTE: The Solicitations and topics listed on this site are copies from the various SBIR agency solicitations and are not necessarily the latest and most up-to-date. For this reason, you should use the agency link listed below which will take you directly to the appropriate agency server where you can read the official version of this solicitation and download the appropriate forms and rules.

The official link for this solicitation is: http://grants.nih.gov/grants/guide/rfa-files/RFA-AT-14-002.html

Agency:
Department of Health and Human Services

Release Date:
April 10, 2013
Branch:
n/a

Open Date:
April 10, 2013
Program / Phase / Year:
STTR / Phase I / 2013

Application Due Date:
August 02, 2013

Solicitation:
RFA-AT-14-002

Close Date:
August 02, 2013
Topic Number:
001

Description:
Purpose

The purpose of NCCAM'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. 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 proposed initiative is to improve upon the currently available natural products methodologies thereby increasing the efficiency of research in this field.
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.

Objectives

This FOA is intended to help move useful technologies from non-commercial laboratories into the commercial marketplace by inviting STTR grant applications from 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 principal investigators.

Areas of interest include, but are not limited to the following:

- 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 de-replication and 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.)

Applications proposing any of the following research topics will be considered non-responsive and will not be reviewed:

- 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