NON-COMPETITIVE
COMBINED SYNOPSIS / SOLICITATION
STREAMLINED SOLICITATION FOR COMMERCIAL ITEMS

Solicitation Number: HHS-NIH-NIDA-SSSA-CSS-2018-1

Title: Development of White Matter Atlases for the Baltimore Longitudinal Study of Aging

(i) This is a combined synopsis/solicitation for commercial items prepared in accordance with the format in Subpart 12.6 as supplemented with additional information included in this notice. This announcement constitutes the only solicitation; proposals are being requested and a written solicitation will not be issued.

(ii) The solicitation number is **HHS-NIH-NIDA-SSSA-CSS-2018-1** and the solicitation is issued as a request for quote.

(iii) This acquisition is for a commercial item or service and is conducted under the authority of the Federal Acquisition Regulation (FAR) Part 13—Simplified Acquisition Procedures; FAR Subpart 13.5—Simplified Procedures for Certain Commercial Items; and FAR Part 12—Acquisition of Commercial Items, and is not expected to exceed the simplified acquisition threshold.

THIS IS A NON-COMPETITIVE (NOTICE OF INTENT) COMBINED SYNOPSIS SOLICITATION TO AWARD A CONTRACT OR PURCHASE ORDER WITHOUT PROVIDING FOR FULL OR OPEN COMPETITION (INCLUDING BRAND-NAME).

The National Institute on Drug Abuse (NIDA), Station Support Contracts and Simplified Acquisitions Branch (SS/SA) on behalf of the National Institute of Neurological Disorders and Stroke (NINDS) intends to negotiate and award a purchase order without providing for full and open competition (Including brand-name) to ***The Vanderbilt University, 211 Kirkland Hall, Nashville, TN 37240-0001.***

This acquisition is conducted as non-competitive for a commercial item or service and is conducted under the authority of the FAR Subpart 13.5—Simplified Procedures for Certain Commercial Items and 13.501 Special documentation requirements and the authority of 41 U.S.C. 1901.

Pursuant to FAR Subpart 13.501 (a) (1) (iii) the justification (excluding brand name) will be made available within 14 days after contract award or in the case of unusual and compelling urgency within 30 days after contract award.

Pursuant to FAR Subpart 13.501 (a) (1) (iv) the rationale for the brand name justification is for continuity of research. The proposed contract principal investigator (Landman) has been the primary investigator charged with processing and analyzing the diffusion tensor (DTI) imaging data within the BLSA since 2010. As of June 2016, 2023 DTI MRI sessions (on 1042 subjects) have been pre-processed, analyzed with tensor models , and returned to the BLSA for analysis. The proposed Contractor is uniquely qualiied to develop and evaluate the new labeled atlases for application to BLSA MR images.

(iii) The solicitation document and incorporated provisions and clauses are those in effect through Federal Acquisition Circular (FAC) 2005-95-1, dated January 19, 2017.

(iv) The associated NAICS code 541711 – Research and Development in Biotechnology11 (except Nanobiotechnology) with a Size Standard of 1,00011 Employees. This requirement is single-sole sourced.

(v) The contractor will provide manually labeled data to enable generalization of its structural imaging technologies to diffusion tensor imaging by manually labeling the brain white matter of representative subjects.

(vi) Period of Performance: One year from data of award.

(vii) The provision at FAR clause 52.212-1, Instructions to Offerors – Commercial Items, applies to this acquisition.

(viii) The provision at FAR clause 52.212-2, Evaluation – Commercial Items, applies to this acquisition.

(a) The Government will award a contract resulting from this solicitation to the responsible offeror whose offer conforming to the solicitation will be most advantageous to the Government, price and other factors considered.

(b) Options. The Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. The Government may determine that an offer is unacceptable if the option prices are significantly unbalanced. Evaluation of options shall not obligate the Government to exercise the option(s).

(c) A written notice of award or acceptance of an offer, mailed or otherwise furnished to the successful offeror within the time for acceptance specified in the offer, shall result in a binding contract without further action by either party. Before the offer’s specified expiration time, the Government may accept an offer (or part of an offer), whether or not there are negotiations after its receipt, unless a written notice of withdrawal is received before award.

(ix) The Offerors to include a completed copy of the provision at FAR clause 52.212-3, Offeror Representations and Certifications—Commercial Items, with its offer.

(x) The FAR clause at 52.212-4, Contract Terms and Conditions – Commercial Items, applies to this acquisition.

(xi) FAR clause at 52.212-5, Contract Terms and Conditions Required to Implement Statutes or Executive Orders–Commercial Items, applies to this acquisition. FAR clauses at 52.209-10, 52.233-3, and 52.233-4, Prohibition on Contracting with Inverted domestic Corporations, Protest After Award, and Applicable Law for Breach of Contract Claim, respectively, appy to this acquisition.

(xii) There are no additional contract requirement(s) or tems and conditions applicable to this acquisition.

(xiii) The Defense Priorities and Allocations System (DPAS) are not applicable to this requirement.

(xiv) Responses to this solicitation must include sufficient information to establish the interested parties' bona-fide capabilities of providing the product or service. The price quote shall include: unit price, list price, shipping and handling costs, delivery days after contract award, delivery terms, prompt payment discount terms, F.O.B. Point (Destination or Origin), product or catalog number(s); product description; and any other information or factors that may be considered in the award decision. Such factors may include: past performance; special features required for effective program performance; trade-in considerations; probable life of the item selected as compared with that of a comparable item; warranty considerations; maintenance availability; and environmental and energy efficiency considerations.

Respondents that believe that they are manufacturers or authorized resellers of the brand-name product specified in this announcement must provide, as part of their response: (a) product, catalog, model, and/or part number(s); (b) product description; (c) all relevant information and documentation that the item(s) offered meets the salient physical, functional, or performance characteristics as specified in the purchase description; quantity; estimated price or cost; shipping, handling, and/or installation charges; and delivery date after receipt of order.

Responses to this solicitation must include clear and convincing evidence of the offeror's capability of fulfilling the requirement as it relates to the technical evaluation criteria. The price proposal must include the labor categories, an estimate of the number of hours required for each labor category, fully loaded fixed hourly rate or each labor category,

breakdown and rationale for other direct costs or materials, and the total amount.

In addition the Dun & Bradstreet Number (DUNS), the Taxpayer Identification Number (TIN), and the certification of business size must be included in the response. All offerors must have an active registration in the System for Award Management (SAM) www.sam.gov."

All responses must be received by **Friday, Occtober 6, 2017 at 12PM, Eastern Standard Time**, and reference number **HHS-NIH-NIDA-SSSA-CSS-2018-1.** Responses may be submitted electronically to Danielle R. Brown, Contract Specialist, at Danielle.brown2@nih.gov.

Fax responses will not be accepted.

(xv) Please contact Danielle R. Brown, Contract Specialist, at Danielle.brown2@nih.gov or (301) 594-1928 with any questions.

STATEMENT OF WORK (SERVICES)
(SOW)

GENERAL INFORMATION

Title of Project:

Development of White Matter Atlases for the Baltimore Longitudinal Study of Aging

Statement of Need and Purpose:

The purpose of the overall program of research in the Laboratory of Behavioral Neuroscience (LBN) is to enhance our understanding of age-associated physical and biological changes in health and disease. The Brain Aging and Behavior Section (BABS) investigates structural and functional brain changes and how they relate to age-associated changes in cognition, including the development of Alzheimer's disease (AD), and factors that modify cognitive and brain aging. Through BABS studies, the Baltimore Longitudinal Study of Aging (BLSA) Neuroimaging Cohort has a two decade record of structural, white matter, and functional (via positron emission tomography, PET) imaging data. Although age-related changes associated with brain function and white matter integrity have been relatively well-documented, investigations of the spatial co-localization and temporal sequences of such associations are just becoming feasible.

Over the last several years, new high resolution resting state functional magnetic resonance imaging (rs-fMRI) scans have been added to the BLSA MRI imaging protocol to accompany the ongoing collection of modern diffusion tensor imaging (DTI) sequences. Together, these imaging sequences provide new avenues for mapping human brain function, including investigation of the functional connectivity and white matter integrity to better understand how networks of brain activity underlying cognitive processing change with aging and disease.

In the BLSA's structural brain analysis, a computational method known as multi-atlas labeling has become the most effective and robust approach for estimating MRI changes over time. The multi-atlas method depends on having a set of representative subjects with detailed manual tracings. Our efforts at translating the multi-atlas approach to diffusion tensor imaging have been promising[(1)], but as yet only a single manually traced subject is available (known as "Eve") and overall performance is limited.

The purpose of this contract is to acquire manually labeled data to enable generalization of these multi-atlas structural imaging technologies to diffusion tensor imaging by manually labeling the brain white matter of representative subjects. This effort provides novel human labeling procedures that are not included in standard DTI pre-processing and are not available through archival imaging data.

(1) Plassard AJ, Hinton KE, Venkatraman V, Gonzalez C, Resnick SM, Landman BA. “Evaluation of Atlas-Based White Matter Segmentation with Eve.” Proc SPIE Int Soc Opt Eng. 2015 Mar 20;9413. pii: 94133E.

Background Information and Objective:

Multi-atlas labeling has come into widespread use for whole brain labeling on magnetic resonance imaging. Recent challenges have shown that leading techniques are near (or at) human expert reproducibility for cortical gray matter labels. These techniques have been successfully implemented within the BLSA. However, multi-atlas approaches tend to treat white matter tissue as essentially homogeneous (as white matter exhibits isointense signal on structural MRI). The state-of-the-art white matter atlas is the single-subject Johns Hopkins Eve atlas. Numerous approaches have attempted to use tractography and/or orientation information to identify homologous white matter structures across subjects. Despite success with large tracts, these approaches have been plagued by difficulties including subtle differences in course, low signal to noise, and complex structural relationships for smaller tracts. In preliminary collaborative work with investigators at Vanderbilt University(1), we investigated the use of atlas-based labeling to propagate the Eve atlas to unlabeled datasets. We evaluated both single atlas labeling and multi-atlas labeling using synthetic atlases derived from the single manually labeled atlas. On 5 representative tracts for 10 subjects, we demonstrated that (1) single atlas labeling generally provides segmentations within 2mm mean surface distance, and (2) morphologically constraining DTI labels within structural MRI white matter reduces variability. To pursue multi-atlas labeling and more fully characterize overall performance, more than the currently available single labeled dataset would be necessary.

This contract proposes to rectify the lack of manually available data. First, a written protocol will be developed to apply the Eve atlas protocol (written in 2008) using software tools compatible with currently available image analysis platforms. Second, 10 (ten) subjects from the BLSA 3T MRI cohort with DTI and structural MRI will be manually labeled with this protocol. Third, 10 (ten) subjects from the Human Connectome Project with DTI and structural MRI will be manually labeled to enable characterization the protocol on data with exceptionally high data quality and resolution. Finally, an electronic report will be prepared describing how to access and use each of the deliverables.

(1) Plassard AJ, Hinton KE, Venkatraman V, Gonzalez C, Resnick SM, Landman BA. “Evaluation of Atlas-Based White Matter Segmentation with Eve.” Proc SPIE Int Soc Opt Eng. 2015 Mar 20;9413. pii: 94133E.

Period of Performance:

October 15, 2017 – October 14, 2018

SCOPE OF WORK

General Requirements:

Independently and not as an agent of the Government, the Contractor shall furnish all the necessary services, qualified personnel, material, equipment, and facilities, not otherwise provided by the Government as needed to perform the Statement of Work below:

Specific Requirements:

LEVEL OF EFFORT:

Principal investigator (project director) – 2 weeks

Graduate student – 1 month

Undergraduate student – 3 months

MR Image Analysts -4 months

GOVERNMENT RESPONSIBILITIES

Provide diffusion tensor images and MRI images. Consult on subject selection for white matter labeling.

DELIVERY OR DELIVERABLES

1) A protocol document describing effective/feasible implementation of the “Eve” white matter labeling protocol using publicly available image processing tools.

2) Application of the white matter labeling protocol to 10 subjects from the BLSA with 3T diffusion tensor imaging (DTI) and structural MRI and delivery of labeled images to LBN/BABS.

3) Application of the white matter labeling protocol to 10 subjects from the Human Connectome Project (HCP: http://humanconnectome.org) and delivery of labeled images to LBN/BABS.

REPORTING REQUIREMENTS

12 months from the start of project:

a. Electronic document describing the labeling procedure in a protocol document.
b. Electronic imaging volumes consisting of the labeled white matter regions for 10 BLSA subject deliverables.
c. Electronic imaging volumes consisting of the labeled white matter regions for 10 HCP subject deliverables.
d. An electronic report describing the location and accessing each of the deliverables.

OTHER CONSIDERATIONS

Travel:

Not applicable.

Key Personnel:

Bennett Landman, Ph.D.

372 Jacobs Hall
VU Mailbox: PMB 351824

Nashville, TN 37235-1824

bennett.landman@vanderbilt.edu

615-322-2338

Information System Security Plan:

All data will be de-identified. Data transfer will follow BLSA procedures for data sharing.

Data Rights:

The National Institute on Aging shall have unlimited rights to and ownership of all deliverables provided under this contract including reports, recommendations, briefings, work plans and all other deliverables. This includes the deliverables provided under the basic contract and any optional task deliverables exercised by the contracting officer. In addition, it includes any additional deliverables required by contract change. The definition of “unlimited rights” is contained in Federal Acquisition Regulation (FAR) 27.401, “Definitions.” FAR clause 52.227-14, “Rights in Data-General, ” is hereby incorporated by reference and made a part of this contract/order.

Section 508—Electronic and Information Technology Standards:

Not applicable.

Publications and Publicity:

The contractor will work with the National Institute on Aging on publications relating to the development and evaluation of the white matter atlases.

Confidentiality of Information:

Data transfer will follow BLSA procedures for data sharing.

ATTACHMENTS

1. Independent Government's Cost Estimate
2. Evaluation / Selection Criteria