



Securing Funding: Non-traditional Funding Opportunities Available for Small Undergraduate Teaching Institutions

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Received Date: January 01, 2021

Published Date: February 22, 2022

Keyword: Department of Defense; Undergraduate Institutions; Grants; Funding Opportunities

Introduction

Department of Defense (DoD) grants are offered regularly for public, private and military academic institutions to serve the military mission in society [1,2] as well as enhancing the research efforts of faculty and the training of all students registered for any academically accredited institution [1,2]. The nature of these grants differs in some aspects from other national, state and other federal sources which fund basic and applied research within the scientific community. Securing these prestigious grants, however, requires a clear vision and a solid plan of work, in addition to needs and goals to connect the DoD mission with that of the warfighter and the university requesting the funds. These grants usually require long term plans and acceptable assessment methods.

Many faculty members in undergraduate teaching institutions are usually hired without a research start up package that will enhance their ability to grow their research in spite of the fact that they are required to secure grants and publish scholarly work to advance through the ranks for promotion and tenure. With heavy teaching loads and the lack of research support personnel and facilities, many faculty members are not aware of unconventional funding opportunities that may be available to them, thinking they are out of reach and depend only on the scarce funding opportunities that the university provides to them irregularly at best. This was the authors' opinion as researchers in a small institution and that

from observing colleagues and the rate of DoD grants awarded to the institution as well.

The authors' research and experience notes that DoD will support solid applications regardless of the size and rank of the institution [2,3]. Knowing this fallacy, the authors took on the preparation of such a large undertaking well in advance of the due date for the response for proposal (RFP) to a recent DoD solicitation. From their combined experiences in applying and securing national grants, the authors advise that faculty applicants should start reading and preparing as soon as the RFP is released carefully examining the guidelines for funding including whether or not military personnel involvement or other clearly specified criteria is required for submission. The authors advise the strict adherence to a timeline to ensure on time submission of the proposal. Applicants must seek assistance and advice from their Office of Sponsored Programs with trained personnel if they exist in their institutes to assist with grant writing. If this service is not available, the authors advise collaboration with other colleagues from other institutions which may have this type of support.

Historically DoD grants were established and offered to support small institutions in their research efforts by supplying funding as a means to enhance research capacity at qualifying universities [1] and created the Basic Research Office (BRO) to

oversee and manage implementation of its basic research programs and initiatives [4]. This Office aims to ensure new and innovative cutting-edge technologies for inquiry and investigation are at the forefront of basic and applied research at the nation's universities. BRO manages programs including: the Vannevar Bush Faculty Fellowship, the Minerva Research Initiative, Historically Black Colleges & Universities/Minority Institutions (HBCU/MI) Program, as well as a number of pilot programs and workshops including the multidisciplinary university research initiative, future directions workshops, and laboratory university research initiative - all created to support, invest and manage basic research initiatives [4]. These funding streams are important to small teaching institutions as well as HBCUs and play a significant role in how these universities are able to connect their institutional priorities for teaching and learning as governed by their institutional accrediting agencies with that of the DoD mission and current Biden Administration who has strategically earmarked a percentage of money directly targeting HBCUs.

In the authors' case, the relevance and purpose of the HBCU/MI Program to their work is to increase the research and educational capacity of HBCUs/MIs, and to increase the entry of underrepresented minorities into science, technology, engineering, and mathematics (STEM) disciplines which are of great importance to diversifying the workforce in national defense and security. In this last 5 years, the authors' institution reported receiving eight (8) grants across the board from the National Science Foundation (NSF) compared to three (3) for this type of DoD grant (one of which was awarded to the authors). These facts suggested to the authors of this grant that there was greater than a 20% chance of award and necessitating the urgency to establish a robust plan of work. In earnest, the authors' planned, prepared, and collaborated with necessary organizational units in order to execute the proposal response on time.

The authors pride themselves on the annual achievements of their chemistry program, specifically the placement of students and their acceptance into graduate and other professional programs. They were fortunate their institution houses a Reserves Officers' Training Corps (ROTC) program with several students co-enrolled/co-graduates as majors in the academic department as well as military science. As a result, the authors successfully built a relationship with the institutional ROTC and DoD institutional offices of higher education in the areas that both PIs have previous interaction and collaboration with to solicit their support, which is an important component in securing the grant and sustaining future efforts [5]. Those providing letters of support are in branches of military fortifying the authors' research and workforce development of highly trained officers graduating with degrees in STEM areas. Collectively, the author's leveraged existing research initiatives with collaborating institutions and DoD programs to support the DoD mission with their instructional mission, vision and goals thereby enhancing their research and teaching and the learning of the students enrolled in their programs.

The authors advise strongly the need to read the pertinent DoD RFT to connect the its objectives with the proposed plan of work. Faculty need to tailor their proposal objectives to fit perfectly

within the requirements and guidelines as stipulated in the RFT. The authors tackled this process by strategically bulletizing the preparatory stage of the writing process. In the budget section, the allocation of the funding thoroughly and adequately was defined to justify the work proposed. Allowable expenses according to the RFT were justified by presenting recent quotes, plus or minus 10% to accommodate changes in cost between the proposal submission and award dates. In case of limited space or internal physical spaces needing renovation the budget included facilities costs and/or any institutional support provided. Overall, the authors pose that strong proposals benefit the faculty, the student and the university, and these mutual benefits must be highlighted throughout the proposal.

Additionally, from the authors' perspective, the award of a DoD instrumentation grant was considered capacity building for securing additional grants in the future to impact subsequent sustainable research to be reported and provided to the DoD as achievable outcomes. The PIs are continually looking for additional grants related to faculty development and advancement/sabbatical and in support of the research and teaching and learning curriculum initiatives for which they are passionate. Even small grants that support the same mission give a clearer vision and demonstrate the pathway toward next steps in the plan of work.

Conclusion

These types of grants are attainable, even for small institutions, if the initiators prepare well for them. These authors advise not to shy away from this funding source as a viable option. These types of awards provide faculty freedom to pursue interests without constraints from various internal sources that change abruptly. And at a greater than 20% odds, there is a significant chance that submitters may be rewarded for their diligent efforts.

Acknowledgement

The authors acknowledge their collaborative effort in Analytical Chemistry and that their work is supported by the Department of Defense-Research and Education Program for Historically Black Colleges and Universities and Minority-Serving Institutions Equipment/Instrumentation Funding Opportunity Announcement W911NF-20-S-0010 for Fiscal Year 2021: Award Number W911NF-21-1-0144 (78074-RT- REP) Central State University. The authors note that the opinions, findings, conclusions and/or recommendations expressed in this editorial are theirs and do not necessarily reflect the views of the Department of Defense.

Conflict of Interest

The authors declare no financial interest or existing conflict of interest with the publication of this editorial.

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