

2016 Willock Library Research Award Application Supplement Form

Name (s) - including group-mates if applicable:

Kevin A. Scott

Category (college, department and major):

College of Pharmacy, Pharmacology and Toxicology, Drug Discovery and Development

Division: Undergraduate or Graduate

Graduate

Project Title:

Boron-containing Unnatural Amino Acid Toward Aspartimide Prevention

Essay (500 words maximum):

Neurodegenerative diseases, such as Alzheimer's and Parkinson's diseases, have devastating health effects and are a major cause of death in the United States and Europe. One type of promising treatment for these diseases involves the administration of small protein-like compounds called peptides that have shown to have neuroprotective effects in mice. A major hurdle standing in the way of the synthesis of these peptides is an unwanted by-product, called aspartimide. My research, being conducted under the direction of Professors Jon Njardarson and Robin Polt, is designed to address this problem. The services provided by the University of Arizona (UA) Libraries have been a pivotal resource for this project.

To define the problem that we set out to solve, and to understand which proposed solutions have failed in the past, a thorough literature search was necessary. Quick and easy access to relevant scientific journals made this possible. In a departure from previous attempts, we proposed a new approach in which a synthetic amino acid would circumvent the problem of by-products. This new approach required access to journals and databases, which the UA Libraries provided. In addition, the search functions within databases like Embase, SciFinder, Reaxys, PubMed, and PubChem allowed search results to be ranked using criteria such as author, journal, publication date, and keywords, and allowed for results to be filtered based on specific criteria like chemical reagents used and reaction conditions. With searches often resulting in thousands of results it was important to assess the quality of the information; database functions that provide the number of citations of a publication and the journal impact factor made this possible. Once I found relevant publications, I then organized and saved them for later access via my database accounts. These techniques not only gave me the power to design a chemical synthesis, they did so in an efficient manner. Personal instruction from Jennifer Martin gave me the skills that I needed to use these tools, important not only for this project, but also for graduate school and beyond. After developing the underpinnings of this project I applied for the Research and

Project (ReaP) grant through the Graduate and Professional Student Council (GPSC), which was subsequently awarded. Funding allowed me to purchase required chemicals and supplies, with which I synthesized the proposed amino acid, completing the first phase of the project. As part of the GPSC funding I will have the opportunity to present my work at the GPSC showcase, bridging the gap between the laboratory and the public.

This project speaks to the importance of the services provided by the UA Libraries. It is an example of how important such resources are for fostering contributions to the scientific body of knowledge, for the generation of intellectual property on behalf of the university, and for the development of desperately needed therapeutics. Too often these resources are taken for granted, and I want to take this opportunity to express my sincere gratitude to the UA Libraries.