

SUMMER 2020 – SC EPSCOR / INBRE RET PROJECT DESCRIPTION FORM

Mentor's Name	Bryan Wakefield
Institution	Coastal Carolina University
Department	Chemistry
Mailing Address	Science Annex II 107 Chanticleer Drive East Conway, SC 29526
Telephone	8433494088
Email	bwakefiel@coastal.edu
Research Subject Area	Organic Chemistry/Medicinal Chemistry

A. Briefly describe overall research program at your laboratory.

The long-term goal of this project is to develop new small molecules to aid in the study and treatment of human disease based on the marine natural products phidianidine A and B. These molecules possess a unique structure, a 1,2,4-oxadiazole ring, which has not been previously reported in other natural products. More importantly, the phidianidines possess interesting neurological activity. These molecules have also shown selectivity for the μ -opioid receptor, which could be important in the development of pain relievers. Additionally, analogues of the phidianidines have been reported to display neuroprotective properties against reactive oxygen species that are implemented in the progress of Alzheimer's disease. Developing new synthetic approaches to the phidianidines that give access to compounds containing varied the structural elements will lead to the identification of compounds that possess improved biological activity and will provide a better understanding of the mechanism of action

B. Briefly describe specific project(s) for your teacher:

I would envision having the teacher working on the synthesis of one of these phidianidine analogues. They would learn techniques for setting up, monitoring and working-up organic reactions. They will also learn how to purify and characterize organic compounds as well. The project could be tailored, in consultation with the teacher, to help bring techniques into the classroom. Some procedures, like liquid-liquid extraction, filtration and thin-layer chromatography, could be used in relatively low cost in class experiments.

C. Will any other people (post docs, grad students, undergraduate students, colleagues, etc.) be involved directly with your teacher?

The teacher will work directly with the other group members, so there will be interaction with undergraduate and high school students. While my lab is a collaborative place, each person will have their own project that they will be responsible for the progress on.

D. Will you require any advanced reading/preparation for the teacher? If yes, please briefly describe.

Some background reading could be useful, it is not required. The papers providing the background on the project can be read once the program has started. If the participant would like to get these material earlier that could be arranged.