

# Annual Report 2019-2020

## William H. Cooke

### PHF Endowed Professor of Preventative and Community Health

It has been my pleasure over the past three years to represent the Portage Health Foundation as an Endowed Professor at Michigan Technological University. The generous endowment afforded has supported initiatives that promise to fulfill the goals of health education, research, community outreach and leadership. Plans for direct community outreach activities were cancelled in March at the beginning of the shutdown and have not resumed. Below I outline progress made during the past year, and then highlight problems, and the potential for continued growth and collaboration.

#### Research

My research focus is human integrative physiology. Human integrative physiology research is not as expensive as basic science research, but the costs associated are not trivial. The money provided by the PHF has been used, to date, to support four new research projects, two doctoral students, and a number of active and potential undergraduate researchers. One of the benefits of a research endowment is the freedom to propose and execute novel projects that might not seem at the outset to be highly fundable from external sources. Pilot data are critical.

#### New and Ongoing Research Projects:

All studies were initially supported by PHF funds, but the goal is to transition to externally-funded sources.

Smoking cessation is a primary focus of my laboratory research. Due in large part to funds provided by the PHF, I was able to focus over the last two years on a grant to NIH (R15 mechanism) entitled, "Smoking cessation and vaporized nicotine: influences on cardiovascular and cerebrovascular control." This grant from the Heart Lung and Blood Institute has been awarded in the amount of \$438,484.

- 1) **Vaporized nicotine and autonomic control:** Smoking cigarettes continues to kill people: this is true despite the Surgeon General's warning of the dangers of tobacco revealed in the mid '60s. Combustible tobacco is the number one modifiable risk factor for cardiovascular disease. The trend today is to transition to electronic cigarettes. Electronic cigarettes are viewed by the public as being a safer alternative to traditional cigarettes, but research in this area is sparse. **This study has been completed** and the manuscript is currently in revision at the American Journal of Physiology.
- 2) **Fasting and its influence on autonomic regulation:** There are myriad examples of instances of voluntary fasting – these could be related to religious beliefs, athletic preparation, body composition goals, or austere environments such as microgravity. **Two studies** investigating the cardiovascular consequences of fasting are currently underway, and are being conducted by my two doctoral students, Joshua Gonzolez and Steven Stelly.

- 3) **Smoking cessation and vaporized nicotine: influences on cardiovascular and cerebrovascular control:** This NIH-funded study is currently on hold until clearance from the local IRB due, in part to concerns associated with Covid-19.

The goal is always to look for external funding so that the endowed funds might be used elsewhere. Joshua Gonzalez has finished work on a research project (\$3,000) grant from Blue Cross Blue Shield and has submitted his final report to the agency. Mr. Gonzalez and I were successful in obtaining a \$5,000 grant from the Michigan Space Grant Consortium to support his dissertation research (bullet 2 above). This project is currently ongoing. In addition, my other Graduate Student also received a \$5,000 grant from the Michigan Space Grant Consortium to support his ongoing dissertation project (also bullet 2 above).

Once again, I stress that funds supplied by the PHF have led directly to both small, and potentially large grants from external sources.

### **Community Outreach and Leadership**

#### **Outreach Plans that were Canceled due to Covid-19 but are planned for 2020-2021**

- PHF scholarship recipient Cory Miller and I had planned to visit the Houghton Middle School and perhaps High School to speak to several classes about the health consequences of electronic cigarettes.
- I had planned to visit several senior living communities to deliver mini-seminars on health-related topics
- In collaboration with the nursing program at Finlandia, we were planning to conduct simple health screenings (blood pressure, A1C, BMI) at large-traffic areas such as Econo Foods and WalMart.

#### **Future Plans**

In addition to the projects listed above, I plan to work closely with junior faculty in our department. PHF money would fund a study tentatively titled, "Physical Activity and Frailty in Older Adults." The idea behind this project is to use simple activity monitors (such as a Fit Bit) to encourage older adults to increase their activity (primarily walking). Frailty includes (among other factors) physical fitness, body composition including bone density, balance, and cognition. I will work with the following collaborators:

- Kevin Trewartha (Assistant Professor): Kevin works closely with older adults as human subjects, and has accumulated a large database of potential subjects. He will be responsible for assessing potential changes in cognitive function
- Kelly Kamm (Assistant Professor): Kelly is a public health researcher and nutritionist. Kelly will serve as a one-on-one consultant during bi-weekly meetings with our subjects to assess their perceived progress and address any health-related questions that might arise.
- Carolyn Duncan (Assistant Professor): Carolyn studies the biomechanics of falling, and her laboratory is fully equipped to assess various aspects of balance.
- Steven Elmer (Associate Professor): Steven will assess submaximal cardiovascular fitness and will make the DEXA measurements for muscle and bone composition