Statement of the aims and objectives of the project

I am requesting funds to travel to Cleveland, Ohio (March 26-31, 2018) to attend the 88th annual meeting of my primary professional society, the American Association of Physical Anthropologists (AAPA). Information on the event may be found here: http://physanth.org/annual-meetings/88th-annual-meeting-2019/.

My primary goal in attending this meeting is to disseminate the results of scientific research on a previously undescribed fossil hominin[1] arm bone (designated KNM-ER 45510) from Africa. The presentation is entitled "Another massive distal humerus of *Paranthropus boisei* from Koobi Fora, Kenya" (see attached abstract). I am the sole author of this research. The format of this presentation (podium or poster) has not yet been determined, since the meeting organizers do not make this decision until January or February.

Background work already accomplished

One of my major research goals is to assess the extent to which extinct hominin species can be identified based on postcranial[2] anatomy. To this end, much of my research has involved the humerus (arm bone), since this particular skeletal element tends to be relatively common in the hominin fossil record. KNM-ER 45510, in particular, was recovered during excavations in 2004 from the Koobi Fora Formation in Kenya. At 1.9 million years old, the fossil dates to a critical time period in human evolution when multiple contemporaneous hominin species existed in Africa. KNM-ER 45510 has not been previously identified to species or even described in the scientific literature.

For this project, I assessed the morphology of KNM-ER 45510 to determine whether the fossil can be confidently attributed to (or excluded from) any particular hominin species that is known to have been present in eastern Africa 1.9 million years ago. (Possible species include *Paranthropus boisei*, *Homo habilis*, *Homo rudolfensis*, and *Homo erectus*). Dr. Meave Leakey (Turkana Basin Institute, Kenya) kindly provided a 3D virtual surface scan of the original specimen (stored in Kenya) that I used to take measurements and to create a high-quality 3D printout; the physical printout is now housed at Stockton University as part of the biology teaching/research collection. My comparisons with other fossils indicate that KNM-ER 45510 has a high probability of belonging to *Paranthropus boisei*, an extinct species that existed in Africa alongside early members of our own genus *Homo*. KNM-ER 45510 is larger than the humeri of most chimpanzees and modern humans and is similar in size to an average female gorilla humerus. It therefore represents one of the largest arm bones in the hominin fossil record.

All of the necessary data collection and analysis for this project has already been conducted. In addition, the abstract for the presentation was submitted in October for approval (see attached). The timeline for the PFOF application requires that I request funding prior to the official acceptance of my abstract (which typically does not happen until January or February). Nevertheless, I have never had a presentation abstract rejected in my entire professional career. Moreover, presentations regarding previously undescribed fossils have a high probability of being accepted. In the unlikely event that the abstract is rejected, I will notify the Grants Office

[1] The term "hominin" applies to modern humans and all extinct species that are more closely related to modern humans than to chimpanzees.

[2] The term "postcranial" is used to refer to all bones that are not part of the skull.

as required by the conditions outlined in the policies and procedures related to internal awards (since this would constitute a 'change' in the approved project).

Importance or value

Presentation at professional conferences has the benefit of disseminating research to the wider community and offers a means of enhancing the reputation of Stockton University. The annual AAPA meeting, in particular, is the most important and well-attended conference in my discipline (i.e., paleoanthropology). It provides an invaluable opportunity to confer with colleagues from other institutions and to create new professional relationships that can potentially produce future research opportunities for me and my students. Given my research interests, it is critical to maintain a strong presence at professional meetings to facilitate continued access to fossil specimens. All of the fossils that I use in my research are African specimens, many of which are under the control of the researchers who originally discovered them. Promoting my research at professional meetings increases the probability of forging new and/or stronger collaborations with biological anthropologists who are actively engaged in fieldwork and constantly making new fossil discoveries.

Attendance at professional meetings is also crucial for staying up-to-date on the latest developments in my field. Staying informed enhances both my research and my teaching, particularly in BIOL 3240 (*Human Evolution*), an upper level course for biology majors that I teach every Fall. Moreover, the excitement of attending highly anticipated talks about new fossil discoveries and connecting professionally with scientists from around the world carries over into my classroom, where my own enthusiasm promotes greater engagement with my students.

Project outcomes

One of the stated outcomes of my sabbatical (AY 2015-16) was to present all resulting research at future professional meetings. Since the KNM-ER 45510 project described above grew directly out of my larger sabbatical project, presentation at the upcoming AAPA conference will help fulfill one of my explicit sabbatical goals. My AAPA presentation will also undoubtedly generate feedback from my professional colleagues that will be helpful in moving forward with my work, especially with respect to publication. It is my intention to incorporate KNM-ER 45510 into a book chapter that I am currently writing. The book (to be published by Springer) is entitled "The Forgotten Lineage(s): Paleobiology of *Paranthropus*" and will be a collection of scientific review papers related to *Paranthropus*. My second author on the paper is Carol Ward (University of Missouri), a highly respected and renowned paleoanthropologist who is also an expert on the evolution of the hominin skeleton. Since our contribution to the book will review everything we know (and don't know) about the postcranial skeleton of *Paranthropus*, it is essential that KNM-ER 45510 be included among the specimens we discuss. Inclusion of KNM-ER 45510 in the paper necessitates that the results of my research on the specimen have already been communicated to the scientific community. The AAPA presentation discussed above will therefore allow Dr. Ward and myself to write a more complete review of the existing *Paranthropus* fossil material.