UMKC/UWC Data Analytics Training in Health Sciences Fellowship Program

UMSAEP 2022 REPORT

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Abstract from proposal:
Our partnership seeks to increase the capacity for data science research and innovation in the health and life sciences in Africa by supporting trainees from the University of the Western Cape (UWC) in a robust training environment within the University of Missouri-Kansas City (UMKC). As a capacity building proposal, the goal is to offer opportunities to UWC scholars to enable them to become the next generation of research leaders for collaborative work. By establishing a visiting scholar program between UWC and UMKC centering around our shared schools of Pharmacy, we will address deficiencies in a submitted ADSa training proposal which will allow us to be successful with a subsequent submission. There have been numerous examples of successful collaborations across the nearly 30 year history of this partnership at UMKC, some highly relevant examples include the UMKC Mathematics and Statistics department hosting UWC investigators, as well as teaching a numerical analysis course at UWC; Dentistry hosting several visiting scholars; and current joint grant development efforts between UMKC and UWC Pharmacy schools as well as engagement between the Bloch School. We seek to build a more formal exchange of scholars on a short-term, regular basis to address challenging problems in health data analytics.

Overall, the goal was to have four UWC scholars visit UMKC, and Dr. Wyckoff visit UWC, in order to develop new opportunities for fundable research.

Proposed outcomes:
1)   Each student will be expected to submit at least one paper on work that was produced, in whole or in part, during the collaborative period funded by this work.
2)   Each student will be expected to graduate within 12 to 14 months from participation in this program.
3)   At the conclusion of the program, a seminar will be held at UWC to highlight the work performed by the students during the collaboration.
4)   At least one faculty member who can champion a U2R submission focused on data analysis in health sciences at UWC will be identified at the end of this project. 5) Creation of the ^ s] •] š] v P   ^   Z } o   Œ • _   ‰ Œ } P Œ   u

Adjustments:

Due to some ongoing Visa delays, as well as match of scholars and projects, three out of four of the scholars supported were more senior and had already achieved their PhD. Therefore, the metric of graduation within 18 months was not applicable. However, these scholars were asked to develop new projects that could be fundable from their work at UMKC.

Travel Activities:

data analysis. Dr. Breytenbach produced a proposal for a pilot project which is now an ongoing collaboration between Drs. Breytenbach and Patterson — the abstract from the draft is attached as an appendix to the report.

Dr. Pearce and Dr. Wyckoff worked to determine the potential for performing pharmacogenomic analysis at UMKC, which would extend the reach of work that Dr. Mongi Benjeddou at UWC is currently performing. We were able to replicate the necessary resources for much of the project, but were unable to locate the appropriate radiation source either at UMKC or at UM Columbia for the project. We are still working to find this necessary tool. However, while at UMKC, Dr. Pearce, Mr. Sante, and Ms. Shivani Gargvanshi (a current UMKC Graduate student) worked to determine the feasibility of nanopore sequencing for pharmacogenomics projects both here and at UWC. The proposed platform is cost

utilized to enhance the amount of research, the number of grants applied for and received, and the relationship with UWC will enable potential more applications and a wider field of potential commercialization for such applications.

These opportunities are of course best pursued when there is mutual shared interest in the outcomes and potential grants available. Mutually beneficial projects will emerge which ultimately are funded and sustainable. Incorporation of these projects into the fabric of the Precision Medicine Institute will increase the reach of the institute, enable greater funding (enabling funding from sources such as the NIH DS program and others), and open access to more international partnerships and global commercialization opportunities.

An excellent opportunity for research funding was the new DS Africa grant cycle that launched at the NIH, and this allowed Dr. Wyckoff to discuss potential projects while at UWC given the deadline of an August 23rd LOI. That deadline was later adjusted.

RFA Link: https://grants.nih.gov/grants/guide/rfa-files/RFA-RM-22-023.html

Building on this grant opportunity and the likely commercialization and R01 grants that are being submitted will cement sustainable funding for future life and health sciences research focused on precision medicine within the UMSAEP collaborative framework.

By the end of this experience, a DS grant was submitted by the UWC group, with letters of support by Drs. Wyckoff and Uphoff, among others "Africa-specific variants of Disease targets: An interactive platform and protein database for precision drug discovery, drug repurposing and biomarker development"
Luke Zondagh, Samuel Egeyiah, Jacque Jouberts, and other UWC folks spearheaded the proposal and the UMSAEP supported experience was, I believe, crucial for the development of the grant.

Personal growth
I was very grateful to Dr. Rod Uphoff and his wife, Marsha, for their gracious effort to ensure my stay was productive and comfortable. As part of this, I was able to see a seminar by Albie Sachs (former South African Constitutional Court Justice), which was extremely interesting. I was also able to see some of the unique Fynbos flora in the western Cape, and see a troop of baboons up close; as close as anyone would safely want to get. As an evolutionary biologist, this was personally very meaningful for me. Having studied convergent and divergent evolution and having published on sexual selection in primates, I felt invigorated and privileged to see this. I also got to see two colonies of African penguins, which was quite special. I am now also able to μ• šZ Á}Œ ^o ll Œ š, servece, and managed to have a proper Gatsby sandwich. I have included several pictures from my travels.

Ongoing Activities:

Centered around drug screening

Bringing in Iman Roomaney, Haly Holmes, and CHS personnel

Multiple grant opportunities; implementation science and data analysis

Drs. Fisher, Joubert, Wyckoff

Our discussion noted that this would be an effective way to continue collaborations between the UWC and UMKC schools of Pharmacy, with an emphasis on shared infrastructure.

Appendix 1: paper abstract from Samson Otesi

Appendix 2: Draft proposabstractfrom Dr. Breytenbach

Appendix 3Flyer