

UMSL Prof. Rob Paul described the outputs of his 2008 UMSAEP partnership grant as follows:

“As a new investigator at Brown Medical School, I partnered with a global leader in infectious disease (Dr. Tim Flanigan) to investigate the neurovirulence of clade C HIV in Southern India. Our initial NIH grant (R21) was awarded in 2004 and within one year we produced clear evidence that HIV clade C produces a cognitive phenotype that mirrors the neurovirulence of clade B. Our grant proposed to delineate the neural substrates of this phenotype, but we were unable to secure IRB approval in India to complete the planned MRI acquisitions. As a result, my first programmatic line of research hit a stand-still in 2005.

I matriculated to UMSL in 2006 and soon thereafter received a \$10,000 pilot grant from the UM South African Partnership program. South Africa was (and still is) the home of the only research dedicated, high resolution MR system on the African continent. Further, clade C HIV was at the time, and still remains, the dominant viral subtype in the region. That pilot funding was successfully leveraged the following year to secure a >\$3M NIH multi-site R01 to determine the relevance of the Tat polymorphism on brain integrity in HIV. The grant included sophisticated neuroimaging techniques that had never been applied in a clinical setting, viral subtyping, and investigations of inflammatory markers that we believed were central to brain damage in the context of clade C disease.

Results from our R01 clearly documented profound brain abnormalities in clade C, with no variance by the Tat genotype. If anything, the signature of disease suggested enhanced neurovirulence when compared to clade B. These results were controversial, and prompted a vigorous debate between Prasad and myself at the International Symposium on Neurovirology in Miami that was moderated by NIMH. Since that time, the results of our work in South Africa have been replicated by independent teams working in Brazil, China, Africa, and even India. Our results have helped to establish the generalizability of multinational HIV studies, including ongoing cure trials that we co-lead. I am the designated specialist for the NeuroHIV Cure Consortium, and protocol neuropsychologist for approximately 10 treatment studies sponsored by AFRIMS and the US Military HIV Research Program.

In terms of impact, more than 50 peer-reviewed scientific publications are directly linked to the work in South Africa, with another 100 publications that were made possible through interdependent research programs. The pilot grant provided preliminary data for 4 separate 5-year, NIH R01 awards (each with total budgets over \$3M) and 15 NIH sub-awards as co-investigator. The total dollar value of the work generated from the pilot funding is in excess of \$30M. We continue to pursue the core components of neuropathogenesis in HIV with two newly awarded R01s, and we strive to evolve the scientific agenda by applying artificial intelligence algorithms and advanced immunophenotyping. Interestingly, Prasad’s team and my team now work together on a unified project in Mysore, India. Our first collaborative NIH R01 proposal was favorably reviewed and we hope to implement our integrative scientific agenda in the coming year. All of this work was made possible by the UM South African Partnership program.”