PROFESSOR LYNN MORRIS

REFLECTIONS ON THE IMPACT OF RECEIVING THE JAMES GEAR FELLOWSHIP IN 1996

ONE YEAR'S RESEARCH AT THE AARON DIAMOND RESEARCH CENTRE, NEW YORK, DEC 1996 TO DEC 1997

The James Gear Fellowship in Medical Virology enabled me to spend a sabbatical year at the Aaron Diamond AIDS Research Centre (ADARC) in New York City. It was 1997, the year after the Director of ADARC, Dr David Ho was named TIME person of the year for having successfully used combination anti-retroviral therapy. Until then, an HIV diagnosis meant certain death and so this was a time of incredibly heart-warming Lazarus-like stories. Further significant advances in drug development and drug access have turned HIV into a chronic manageable illness, although a cure remains elusive, as does a vaccine.

When I joined Dr John Moore's lab at ADARC, I worked closely with Dr James Binley and Dr Alexandra Trkola to investigate the impact of anti-retroviral therapy on B cells and antibodies. We showed how treatment reversed much of the dysfunction caused by HIV to the B cell compartment. The study was published in the *Journal of Experimental Medicine* in 1998 and is one of my most highly cited papers. This experience also introduced me to the world of viral entry, cellular receptors and neutralising antibodies which led me to focus on HIV vaccine development for the next 25 years. Both Binley and Trkola became long-term collaborators in charge of their own laboratories in the USA and Switzerland respectively.

When I returned to South Africa, I went about setting up the various assays to isolate and characterise HIV and to measure HIV neutralizing antibodies in the blood of infected people. It was an exciting time of learning about HIV-1 subtype C viruses that were circulating in South Africa and how they differed from viruses in the USA and Europe. Several early papers described the differences in coreceptor use and neutralizing antibody epitopes and we became a resource for the rest of the world, sharing viruses, sequences, and other know-how.

A major strategic advantage was the establishment by Prof Salim Abdool Karim of the long-term CAPRISA cohort in Durban, South Africa. This group of women who were enrolled shortly after they became infected, provided a valuable source of samples that allowed us to describe the evolving antibody response to HIV infection. Through this we identified a handful of rare individuals whose antibodies were able to neutralise many other HIV isolates. The next 15 years was an intense and

highly productive period of mapping and isolating these broadly neutralising antibody specificities and understanding how HIV is able to evade them. Due to its exceptional potency, one of these isolated antibodies is now in clinical development. The hope is that it will be used to curb infection rates in the region where it was first discovered and is much needed.

Through CAPRISA, we built a strong laboratory network within South Africa, with Prof Penny Moore a senior scientist in the laboratory working closely with Prof Carolyn Williamson at UCT on the virological aspects. We also joined large international networks focussed on vaccine development and became the designated laboratory for performing neutralising antibody assays for HIV vaccine clinical trials. This opened many funding and other opportunities including for our students to spend time in international laboratories. Part of student training was to apply for PRF bursaries, grants, and travel awards and four of our PhD students went on to receive their own James Gear Fellowships.

My own career has shifted from scientific leadership to institutional leadership, first as the interim Executive Director of the NICD and then as the Deputy Vice-Chancellor of Research and Innovation at the University of the Witwatersrand. My long and rewarding relationship with the PRF which started when I joined the Scientific Advisory Panel (SAP), endures and I continue to serve on the Board of the PRF, now as the Vice-Chair. My career has benefitted enormously from the generosity of the PRF, not only as a James Gear Fellow but through the many grants, including a Major Impact Project, that I have been awarded during my scientific career. The NICD Virology laboratory, now headed by Prof Penny Moore, continues to rely on the PRF to support and promote excellence in virology research. The compounding effect of the PRF on building the field of virology in South Africa has been immense and I have no doubt has made a major contribution to helping our country tackle public health problems caused by pathogenic viruses.