SCHOLARS' "ANARCHIN" GENE RESEARCH LEADS TO AUSTRALIA

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Andy Johnson's project utilized the collaborative nature of the program to include a third location, the Australian National University in Canberra, in addition to his NIH and Oxford University labs. Scientifically, this collaboration yields a powerful synergy not possible within the confines of a single-location project. Andy has been empowered to become more flexible, independent, and capable of implementing novel ideas and experimental techniques. He believes he has "picked up the skills of a postdoc as a graduate student."

Andy continues to communicate at least once each month with researchers at each location regardless of where he is currently stationed. He has been exposed to far more methods of running a lab and thinking about science than most graduate students (4 labs on 3 continents). As he said recently, "This is extremely helpful because I have a large pool of colleagues who know my face and are willing to invest in me and my research. The exchange goes both ways because I have opened up resources available at NIH to the other labs. My mentors now commonly share information and advice beyond the scope of my current project." For the long term, these experiences have allowed Andy to establish how he wants to run a lab and establish collaborations in the future.

When it was decided Andy would work in Australia, his primary aim was to access mice. At NIH he had developed multiple high-throughput screens to test lymphocyte function. Andy then traveled to Australia and used these screens to identify a mutant mouse strain. Other labs in the world are conducting mouse mutagenesis and screening programs, but the Australian program was enticing because it was well-established, geared mainly toward immunology and provided Andy access to content experts and techniques that enabled him to effectively address any experimental question he might raise. He benefited from a pre-established collaboration between his UK advisor, Dr. Richard Cornall and an Australian investigator, Dr. Christopher Goodnow.

Andy and his team are working to characterize the structural nature of the first member of a five gene family. The Anarchin family—named after the Anarchy mouse strain—functions in one branch of the immune system, the T cells. The two closest homologs (genes with a similar makeup) are expressed in

other immune system cells (B cells, dendritic cells, macrophages). The remaining two family members are expressed in the brain. This family reveals that the genome still holds many mysteries to be unraveled. Specifically, the research is currently aimed at the basic roles of Anarchin, and by comparison the entire gene family, in cellular development and function. The application of this information could be vital for expanding our understanding of the nervous and immune systems with implications for future treatments related to these systems being inherent to the investigation. From a more basic point of view, understanding Anarchin and its related genes may help close important gaps in our basic understanding of how immune system and brain cells develop and function by explaining previously confusing observations.