Tribute to Prof. Frank Fenner an Eminent Virologist Who Contributed for Eradication of Small Pox (1914–2010)

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All most all virologists working in the field of animal virus across the world are familiar with the name of Prof. Frank Fenner. The demise of this great Australian virologist on 22nd November 2010 at his home town in Canberra is a great loss to the human society. He is the eminent animal virologist whose contribution made it possible to eradicate small pox from the earth. At the same time Frank Fenner is a popular name among medical and veterinary professionals for the highly referred virology text book “Medical Virology” and “The Biology of Animal Viruses”, written by him. Frank Fenner was born on 21st December 1914 in a small town at Ballart near Melbourne, Victoria. Fenner wanted to become a geologist. However, as desired by his father Charles Fenner, a school teacher, he studied medicine instead, graduating from the University of Adelaide in 1938. Subsequently he obtained MD in 1942 from the

University of Adelaide. Between 1942 and 1946 he served in Egypt and Papua New Guinea as an army officer in the Australian Army Medical Corps, where he worked on the malarial parasite. For his work in combating malaria in Papua New Guinea he was made a member of The Order of British Empire. While stationed at Queensland he came in contact with Captain Ellen (Bobbie) Roberts, an Australian army nurse who served as part time assistant in his Laboratory, to whom he married and the relationship lasted until her death in 1995.

Following war time service of Frank, Macfarlane Burnet offered him a job at the Walter and Eliza Hall Institute of Medical Research in Melbourne to follow up ectromelia which was subsequently named as mouse pox and turned really to be small pox of mice closely related to vaccinia. This fact about ectromelia remained unknown to scientific community till Topley, Wilson and Greenwood in Britain published some classic work on the experimental epidemiology of ectromelia. Frank continued work on pathogenesis of ectromelia and published his paper in Lancet in 1948. In 1949 Burnet and Fenner published a book “The production of antibody” the main theme of which described *self versus non self* theory of antibody synthesis and was the basis for Nobel Prize award to Burnet in 1960. This ground-breaking work led Frank to a fellowship in 1949 at the Rockefeller Institute for Medical Research (Now Rockefeller University) in New York, where Fenner worked on a unique strain of tubercle bacilli that did not cause any lesions on internal organ due to its temperature sensitive character but caused Buruli ulcer (skin lesions). Upon his return to Australia in 1949, he joined as Professor of Microbiology at the John Curtin School of Medical Research, a newly created post graduate research institute under Australian National University in Canberra, and continued his work on host resistance against myxoma virus that causes rabbit pox. He

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was Director of the School from 1967 to 1974. In early fifty while he was at the Medical School, rabbit pox appeared as an epidemic in Australia with devastating mortality. Unfortunately during the same period along with rabbit pox, several cases of human encephalitis were reported in Australia, which was thought to be due to the laboratory escaped of myxoma virus. To satisfy the public and Government that myxoma virus can not cause any human disease, Prof Frank along with two other colleagues Macfarlane Burnet and Ian Clunies Ross injected themselves with a mega dose of the myxoma virus with no ill effect. He was the pioneer to demonstrate that recombination can occur within an animal DNA virus, which led to the understanding of why the virus was not perfect in eliminating all rabbits, why there were some resistant ones that did not die, and why the future strains of the myxoma virus became less virulent. In 1967 WHO decided to eradicate the small pox from the globe with mass vaccination and the then Director Dr. Donald A Henderson handed over the responsibility to Prof. Fenner. In 1977 Fenner became the Chairman of Global Commission for the Certification of Small Pox Eradication. For him the most difficult task was to prove that monkey pox is a different virus from small pox. With his perpetuating effort he proved that monkey pox is another pox group of virus and is not so virulent like human pox; unlike human pox monkey pox does not spread to a great extent to human population. It was the year 1979 when Frank submitted his report to the Director General WHO that small pox has been eradicated from the earth. On 8th May 1980 he stood before the World Health Assembly in Geneva to announce *small pox free world* a great contribution to the human society for which he will be remembered as long as human population will exist in our earth. He has written all the details of pox virus in a book published by W.H.O. in 1988.

It is unimaginable how Professor Frank got time to devote for so many issues of human concern under the

earth, but the professor dedicated himself to be an active environmentalist and a peace campaigner. In 1970 he set up a Centre for Resource & Environmental Studies at the Australian National University. He wrote his first papers on environment in the early 1970s, when human impact was emerging as a big problem. He was also appointed as President of International Committee on Taxonomy of Viruses in 1970.

Frank was a prolific writer; long list of his publications include 300 journal papers and 22 books. The most popular text books written by him and highly circulated are *Biology of Animal Viruses* in 2 volumes, *Medical Virology* published in 1970, and a companion book *Veterinary Virology* in 1987.

The numerous prestigious awards conferred on him never put a scintilla of high-handedness on him rather they adorned his personality with the continuous renewal of commitment and vigor to work perpetually for the betterment of human society. He was bestowed with several prestigious awards including the Japan prize for preventive medicine, WHO medal in 1988, Albert Einstein World Award of Science 2000, Prime Minister's Prize for Science in Australia 2002 and the list is long. In one of his interview to media he expressed that he was temperamentally unable to do research without being personally involved hands-on at the bench, nor able to do it through research assistants and students, therefore he was not comfortable when he chaired the Director cum Dean position although for a temporary period in 1967 at the John Curtin School of Medical Research. Much more information about his work and life can be obtained from his book "Nature, Nurture and chance: The lives of Frank Fenner" published in the year 2006, as well as from the website <http://jcsmr.anu.edu.au/about/fenner>. He died peacefully as he had wished. With his demise, (22 November 2010), there remains an everlasting hiatus in the scientific community that pays tribute to him.