



AUSTRALIAN ACADEMY OF SCIENCE

TRIBUTE

Frank Fenner

21 December 1914 – 22 November 2010



Photo: Robin Warren

Frank Fenner at the Australian Academy of Science Annual General Meeting 2010

Passionate inquiry – the legacy of a science super hero

The sudden death of science super hero, Professor Frank Fenner, a few weeks short of his 96th birthday caught colleagues and friends by surprise, in spite of his advanced years.

‘... just a few days ago at the John Curtin School Symposium on translational medicine ... his daughter mentioned that he had told her “this could be my last conference”. Nevertheless he was actively looking forward to his 96th birthday’, said the University of Melbourne’s Emeritus Professor of Pathology, Sir Gus Nossal.

His list of achievements is legendary, though perhaps not widely known outside the science community. They include his:

- pioneering investigations into mousepox and other pox viruses
- work on myxomatosis to control the rabbit plagues of the 50s and 60s
- election to the Australian Academy of Science by founding Fellows in 1954
- contribution to the Academy for over 50 years as Council member, Secretary for Biological Sciences, and in positions on a range of committees

- early recognition of the environmental threats that human activity posed
- long list of publications including over 300 scientific journal articles and 22 books
- numerous and distinguished awards.

Passionately inquisitive to the end, Frank was a visiting fellow at the Australian National University until, at age 92, he decided to slow down a little, give up his office on campus and become, ‘a visiting, visiting fellow’. He had devoted more than 70 years to science. In an interview with the *Canberra Times* he said, ‘One’s got to make

these decisions sometime. I find walking around difficult now ... I've fallen over a few times. I don't use a stick yet but I think I ought to.'

During his long career he was an inspired and inspiring scientist who never had time to do a PhD and was famously described by his mentor, Australian Nobel Laureate Sir Macfarlane Burnet as having the Midas Touch for science.

Frank's study of mousepox virus led to a lifetime's interest in the poxviruses and ultimately to his involvement in the smallpox eradication campaign of the World Health Organisation. With typical modesty he put his role in both down to good luck.

'The things I worked on just happened to be ready for exploitation', he told the *Good Weekend* in 1996. 'I don't think I'm

a top-rank imaginative scientist, though I saw the opportunities and picked good problems. I ascribe much of what happened to me to good luck.'

But if it was luck that guided his career then he certainly had it in good measure because his work on the myxoma virus as a means of controlling rabbit populations in Australia also proved fruitful. When the virus was erroneously linked to an outbreak of Murray Valley encephalitis, he and fellow researchers Macfarlane Burnet and Ian Clunies Ross injected each other with the virus to demonstrate that it did not infect humans.

Less well known is the fact that Frank realised that the release of myxoma virus provided an opportunity to study the co-evolution of a virus and its host, and the studies that he and his colleagues then made showed how infectious diseases evolve.

His work earned him worldwide recognition and many accolades. In 1995, he received one of science's highest honours – the Royal Society's Copley Medal. The Medal was first endowed in 1731 and previous winners included Captain James Cook, Benjamin Franklin, and Francis Crick

Photo: Frank Fenner



Fenner family. (Left-right) Thomas, Lyell, Charles, Winifred, Peggy, Frank and William, circa 1934

Professor Suzanne Cory AC, PresAA, FRS – President of the Australian Academy of Science 'The Academy is profoundly saddened by the death of Professor Frank Fenner. Frank was one of the first Fellows to be elected to the Academy in 1954 for his distinguished work on poxviruses, including his pioneering contributions to the eradication of smallpox worldwide and the control of rabbit populations in Australia. However, his influence extends well beyond virology. For over 50 years Frank has not only been a champion of science but also an instigator and major contributor to many Academy initiatives and activities, including the influential Fenner Conferences on the Environment series which reflected his deep commitment to environmental science. He will be well-remembered for his outstanding intellect and his generous spirit.'

Sir Gustav Nossal AC, CBE, FAA, FRS – Emeritus Professor, Department of Pathology at the University of Melbourne 'Australia mourns the passing of one of its greatest biological scientists, Frank Fenner. At a personal level, I mourn the loss of a friend and colleague who has influenced my career for 59 years, ever since I did my Bachelor of Science (Medical) course on an aspect

of his mousepox model. Also, we were both protégés of Mac Burnet's – I think Frank was really his most beloved student and I perhaps a distant second! We were also associated in a major commitment to the World Health Organisation, he in the field of smallpox eradication and I in overall immunisation efforts. What a life, what a career, what generosity of spirit with his many contributions to the Australian Academy of Science. We shall not see his like again!'

Professor Peter Doherty AC, FAA, FRS – Laureate Professor, Department of Microbiology and Immunology, University of Melbourne 'Frank Fenner lived a long life and, beginning with his role as a WW2 army Major in the field of malaria control, was a genuine Australian hero. Frank made major contributions to understanding the virology, pathogenesis and epidemiology of poxvirus infections and was recognised (receiving the prestigious Japan Prize with DA Henderson) as a leading figure in the successful, global, smallpox eradication campaign. The work that led to the Nobel Prize I shared with Rolf Zinkernagel was done in the Department of Microbiology that Frank established in Canberra though, by then, he had moved on to become Director of the John

Curtin School of Medial Research. We were delighted when he and his daughter Marilyn were able to attend the 1996 Nobel ceremony in Stockholm. Frank was also a passionate environmentalist who founded what was to become the Fenner School of Environment and Society at the ANU. A fitting tribute to him would be for the Australian Parliament to enact meaningful legislation in the area of carbon pricing and greenhouse gas emissions, and for the responsible media to support this vital action.'

Professor Fiona Stanley AC, FAA – Director, Telethon Institute for Child Health Research in Western Australia 'He was both an outstanding Australian and a personal friend to our family. Frank was an extraordinary intellectual, wonderful scientist and just a lovely person. His contribution to international virology with his work on smallpox and the rabbits will go down as one of the greatest contributions to world science and it reflects so well on Australia to have someone like that.'

Tributes posted on AusSMC Rapid Roundup on 22 November 2010



Frank Fenner, 1961

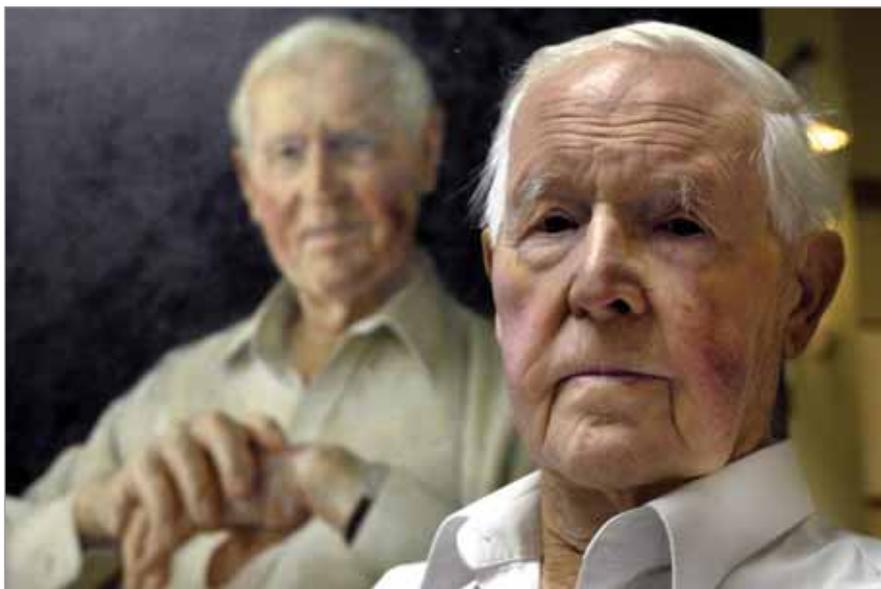
and James Watson who discovered the structure of DNA.

But it was the University of Melbourne's David Syme Research Prize, which he received in 1949, that he cherished most. It was a direct link with his father, Charles Albert Edward Fenner, who had won the same award 20 years earlier and to whom Frank attributed his early interest in science.

Charles Fenner, an educator, talented science communicator and distinguished scientist in his own right, cultivated and fed young Frank's early hunger for knowledge. In his autobiographical work, *Nature, Nurture and Chance: the lives of Frank and Charles Fenner*, Frank celebrates and remembers with warmth this defining relationship.

'... we had occasional wonderful motoring holidays. The one I remember best was during the summer holidays in 1930... This was a trip from Adelaide through the Coorong and around much of country Victoria, where our uncles, aunts and cousins lived. On this trip, and whenever we went into the country... Father would explain features of the countryside to us, geological, botanical, historical, in a fascinating way.'

'... I was attracted to geology from a very early age; my parents kept a drawing I had made of the section of a volcano at the age of four years. While I was still at secondary school, I accumulated quite a good collection of fossils during our trips around Victoria and South Australia and by exchange, including a Triassic fossil of *Ginkgo* leaves (I now have the best *Ginkgo* tree in Canberra in my garden). I am sure that this childhood experience played a large part in my later interest in environmental problems.'



Frank Fenner posing next to a portrait of himself at the National Portrait Gallery, Canberra

AWARDS

Among Frank's impressive list of awards are several government awards: MBE, military (1945), Companion of the Order of St Michael and St George, CMG (1976), Companion of the Order of Australia, AC (1989) and a Centenary Medal (2003). Other prizes include the David Syme Research Prize, University of Melbourne (1949), Fellowship of the Australian Academy of Science (1954) and of the Royal Society (1958), Flinders Medal, Australian Academy of Science (1967), ANZAC Peace Prize (1980), ANZAAS Medal (1980), Burnet Lecture, Australian Academy of Science (1985), Japan Prize and WHO Medal (1988), Copley Medal, Royal Society (1995), Senior Australian Achiever of the Year (1999), Albert Einstein World Award for Science (2000) and Clunies Ross Lifetime Contribution Award (2002).

After enrolling in science at the University of Adelaide, Frank chose to do medicine rather than his first love geology.

'My father advised me to go into medicine,' he told *Lumen*, the University of Adelaide's magazine in 2006. 'He said it would open up so many opportunities for me – physician, pathologist, surgeon, anaesthetist, psychiatrist, even research worker. The possibilities were endless.'

Shortly after he graduated in 1938, WWII intervened. Believing that the war would be fought in the tropics, Frank, with characteristic insight, went to Sydney to do a diploma of tropical medicine. He went on to serve in the Royal Australian Medical Corps from 1940–46 and was awarded an MBE in 1945 for his work on malaria control among Australian troops in Papua New Guinea.

While stationed in Queensland he met his future wife, Captain Bobbie Roberts, an Australian Army nurse who was also working on malaria. Thus began an enduring shared interest in medical research and a strong and supportive

relationship that lasted until her death from cancer in 1996.

'I think two things – besides nurture and nature – really contribute to a good life: the first is a happy marriage and the second is to pursue work that fulfils our expectations,' he told *Lumen* magazine. 'I have been incredibly lucky in both respects.'

In 1948, he was offered the opportunity of working in New York for a year with Dr René Dubos at the Rockefeller Institute and upon his return was appointed Professor of Microbiology at the new John Curtin School of Medical Research (JCSMR).

Frank was universally loved for his generosity, kindness and his approachable nature. Professor Chris Parish, who joined the JCSMR in 1969 while Professor Fenner was head of the school, told the ABC, 'He was not the sort of man that trumpeted his excellence anywhere. He was always the same personality, very friendly, willing to talk to anyone about science. The most junior technician or scientist could come up to him and ask him questions about

Tributes

Prime Minister Julia Gillard *Mr Speaker, on indulgence, I pay tribute to Emeritus Professor Frank Fenner who died yesterday at the age of 95. Professor Fenner was one of Australia's greatest scientists and a man of exceptional integrity, modesty and generosity of spirit. During World War II he helped lead the effort to control malaria in Papua New Guinea, which had been badly affected and which hampered Australia's war effort. After post war studies he became a foundation professor at the Australian National University and an original member of the Australian Academy of Science. His finest hour was in helping to oversee the eradication of smallpox, which killed and disfigured millions of people each year. Frank Fenner was a selfless benefactor to scientific causes and in retirement maintained a productive output of books and articles. Until recently he attended his office at the ANU, his red jumper a familiar sight around Canberra. Professor Fenner showed that Australians are capable of great things. Today we acknowledge his brilliance and his achievements but also the sense of public service that drove him to seek excellence in everything he did. I honour the memory*

of this remarkable Australian and offer my sincere condolence to his family, friends and colleagues, who today are mourning the passing of a giant.

Opposition Leader Tony Abbott *I rise to support the remarks of the Prime Minister and to lament the passing of a truly great Australian, in fact he was probably the finest Australian scientist not to have won a Nobel Prize. Many other prizes, though, were deservedly heaped upon him for his work overseeing the smallpox vaccination program – which, as the Prime Minister has just observed, did finally eliminate that dreadful scourge from our world – the development of myxomatosis to help control rabbits in this country and for his anti-malarial work in Papua New Guinea. It can be said of Professor Frank Fenner that he brought knowledge from the laboratory and magnificently applied it for the benefit of all mankind. We mourn his death but celebrate a truly great life.*

Condolence motions, Hansard, 23 November 2010

Fenner Conferences on the Environment and establish a new Fenner Medal for young biology and environmental scientists.

In 2007, the Australian National University honoured his work by creating the Fenner School of Environment and Society, bringing together the departments of Geography, Forestry and CRES into a single institution. Frank told the *Canberra Times*, 'We need to tackle the social aspects of the problem such as over-population and why people now are so smitten with the idea of becoming rich. Why do we now prefer wealth over wellbeing?

'Until we can persuade people that they are going to have to make some serious adjustments to their lifestyles, then we won't get near to solving climate change, even if we have the best scientists in the world working on the problems.'

In an interview with *The Australian* in June 2010, Frank again pointed to human population explosion and 'unbridled consumption,' warning, 'We'll undergo the same fate as the people on Easter Island.'

Whenever he was asked to nominate his proudest moment in a long lifetime of achievement, Fenner always replied that it was announcing one of the great moments in science as Chairman of the Global Commission for Certification of the Eradication of Smallpox. In a 2002 interview with ABC radio he said, 'The single one that stands out was the day I stood at the World Health Assembly on 8 May 1980 and gave a short address declaring that smallpox had been eradicated globally; meaning the transmission from human to human had been stopped.'

Frank died, as he had wished, of a short illness. 'I'd prefer if a rapidly lethal thing got me. I don't want to be senile,' he told *Good Weekend* in 1996.

In true super hero style, Frank Fenner saved lives, inspired future generations and worked for the greater good. His brilliance will continue to shine through the legacy of his research, his publications, his endowments and the many friends and colleagues that he gathered along the journey of his life.

But the last word should be Frank's. In an interview with the ABC in 2002 he said, 'I've had a wonderful life. I had a wonderful wife who supported me in everything that I wanted to do. And I've just been lucky in a lot of opportunities – the school I went to in Adelaide, its motto was *carpe diem*, seize the day. When a day has come up I've seized it. Most of the seizures have been happy ones, fortunate ones.' 🌟

Photo: AAP/Alan Porritt



Frank Fenner devoted more than 70 years of his life to science

science and he would treat them just the same as a Nobel Laureate.'

Frank was a prolific writer, co-author and editor and made an immense contribution to science education. *Medical Virology*, written with David White, and *Veterinary Virology* have both become standard textbooks worldwide. He was also lead author of the huge publication – *Smallpox and its eradication*. In later years he also worked on histories of the Australian Academy of Science.

Frank's interest and influence extended well beyond virology and immunology; he also championed environmental research and became the founding director of the Centre for Resource and Environmental Studies (CRES) in 1973.

From 1984, he and Bobbie made substantial donations to the Australian Academy of Science using proceeds from his many publications. The donations enabled the Academy to set up the annual