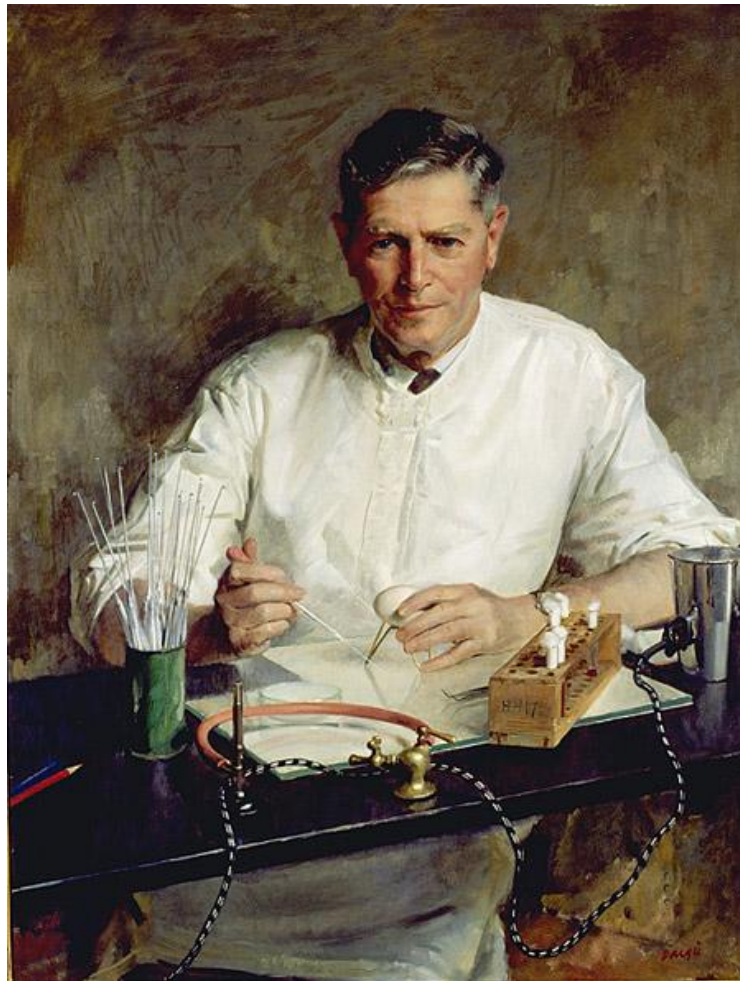


Sir Frank Macfarlane Burnet

A leader of the Australian scientific community.

A man of imagination, discipline and enquiring interest in many fields, his legacy includes breakthroughs made in understanding the immune system, infectious disease and disease prevention He won the Nobel Prize in 1960 for his work in immunology.



*Portrait by Sir William DARGIE, 1960-61
Collection: National Portrait Gallery,*

William Macfarlane Burnet was born in Traralgon, Victoria. His father, Frank Burnet, a Scottish emigrant to Australia, was the manager of the Traralgon branch of the Colonial Bank. Frank Macfarlane Burnet was the second of seven children and from childhood

was known as "Mac". He had an older sister, two younger sisters and three younger brothers He was the second of seven children and from childhood was known as "Mac".



MacFarlane Burnet as a child. He is on the left with his older and one of his younger sisters.

The Burnets moved to Terang in 1909. Burnet was interested in the wildlife around the nearby lake; he joined the Scouts in 1910 and enjoyed all outdoor activities. While living in Terang, he began to collect beetles and study biology. Biology articles in the *Chambers's Encyclopaedia* introduced him to the work of Charles Darwin. He was educated at Victorian state schools and later won a full scholarship to board and study at Geelong College, one of Australia's most exclusive private schools.



Honour group at Ormond College University of Melbourne, 1918. Macfarlane Burnett is second from the left in the back row.

From 1917, Burnet attended the University of Melbourne, where he lived in Ormond College on a residential scholarship and studied medicine. There, he read more of Darwin's work and was influenced by the ideas of science and society in the writings of H.G. Wells. While at university, he became an agnostic; being sceptical of religious faith, which he regarded as "an effort to believe what common sense tells you isn't true." The length of time required to study medicine had been reduced to train doctors faster following the outbreak of World War I, and Burnet graduated with a Bachelor of Medicine and a Bachelor of Surgery in 1922, and as a Doctor of Medicine late in 1924. In 1924 he was appointed resident pathologist at the Melbourne Hospital; the laboratories of which being a part of the Walter and Eliza Hall Institute. Working in these laboratories he conducted research into typhoid fever, leading to his first scientific publications.

As the director of the Institute, Charles Kellaway, thought that Burnet would need experience working in a laboratory in England before he could lead his own research group in Australia, Burnet left Australia for England in 1925, serving as ship's surgeon during the journey. On arrival, he took a paid position assisting the curator of the National Collection of Type Cultures at the Lister Institute in London. He was awarded

the Beit memorial fellowship by the Lister Institute in 1926 and began full-time research on bacteriophages. (Bacteriophages are viruses that infect bacteria. They are among the most common organisms on earth. Scientists are finding that they could possibly be used as therapy against multi drug resistant strains of many bacteria.) For this work he received a PhD from the University of London in 1928 and was invited to write a chapter on bacteriophages for the Medical Research Council's *System of Bacteriology*.



Sir Macfarlane and Lady Burnet, daughter-in-law Gwen, grandsons Michael and Campbell.

While in London, Burnet became engaged to fellow Australian Edith Linda Druce. They married in 1928 after returning to Australia. They had a son and two daughters.

On his return to Australia, Burnet went back to the Walter and Eliza Hall Institute, where he was appointed assistant director. His first assignment was to investigate the "Bundaberg disaster", in which 12 children had died after receiving a contaminated diphtheria vaccine. He continued to study bacteriophages.

Between 1932 and 1933, Burnet took leave of absence to undertake a fellowship at the National Institute for Medical Research in London. Significant breakthroughs in virology were made while he was there, including the isolation and first demonstration of the transmission of the influenza virus. He also worked on Q fever (a highly infectious

disease that is carried by animals and passed to humans) with Australian scientist E.H. Derrick,

During World War II, Burnet's research centred on influenza and scrub typhus. He was made a Fellow of the Royal Society and in 1944 travelled to Harvard University to deliver the Dunham Lectures. There he was offered a chair, but he refused and returned to Australia. In 1944, he was appointed director of the **Walter and Eliza Hall Institute of Medical Research*. (*See Appendix) Under Burnet's direction, scientists at the Institute made significant contributions to infectious disease research during a period that has been called the "golden age of virology".



working in the laboratory, 1945

In the mid-1950s, Burnet decided that research at the Institute should focus on immunology. Many virologists left the Institute and settled the Australian National University's John Curtin School of Medical Research. After 1957 all new staff and students at the Institute worked on immunological problems. The research carried on during this period marks the move from the study of immunology as a chemical endeavour to a biological one.

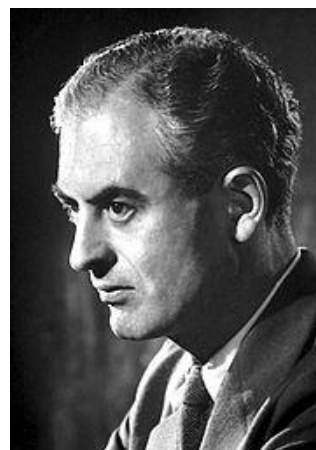


The Nobel Prize in Physiology or Medicine 1960

Sir Frank Macfarlane Burnet, Peter Medawar



Sir Frank MacFarlane-Burnet



Sir Peter Brian Medawar

Burnet and fellow scientist Peter Brian Medawar a British/Brazilian/ biologist, whose work on graft rejection and the discovery of acquired immune tolerance was fundamental

to the practice of tissue and organ transplants, were co-recipients of the 1960 Nobel Prize in Physiology and Medicine for their work on immune tolerance which allowed major advances in the diagnosis, prevention and treatment of a broad range of human diseases involving the immune system.

He was awarded the inaugural Australian of the Year (1960) on his return from the Nobel Prize ceremony in Sweden. When told of his honour he commented “It does indicate that the community thinks that science is important, which pleases me.”

Burnet was very proud of being an Australian, and was determined to show that first-class science could be carried out in Australia by Australians. The majority of his research papers were published in Australian journals, notably the *Australian Journal of experimental Biology and Medical Science*, and for papers with a medical flavour, *The Medical Journal of Australia*. It was very fitting that he was selected as 'Australian of the Year' in 1961.

He continued to be active in the laboratory until his retirement in 1965. Gustav Nossal became the next director of the Walter and Eliza Hall Institute which had, under Burnet's leadership, become what many claimed to be the world's best known research centre devoted to the study of immunology.

His first wife died from lymphoid leukaemia in 1973 after a four-year struggle. During her final years, Burnet refused all offers of lectures overseas to spend more time nursing her. After her death he became very lethargic and reclusive and moved into Ormond College for company. Gradually he regained his enthusiasm and in 1975, he travelled to California to deliver a series of lectures. In 1976 he married Hazel Jenkins a widow in her 70s who was working in the microbiology department as a librarian, and moved out of Ormond College.

Burnet was an innately shy person and until 1937 he had never served on a committee that dealt with matters of public policy. In that year he was deputed to act as spokesman for the Advisory Council set up by the Victorian Government to advise it on measures to

be taken in the face of a large outbreak of poliomyelitis. In the existing state of ignorance, there was little of value that could be done, but he got a sense of the difference between model infections in the laboratory and a worrying human situation. In 1944, when he was appointed Director of the Walter and Eliza Hall Institute he was already a greatly respected authority on infectious diseases, and as Director of what was then the major medical research centre in Australia, he now became a public figure. In order to fulfill his obligations he schooled himself to overcome his shyness, and in time became a lucid public speaker. In the late 1960s and 1970s, for example, he was vocal in the anti-smoking movement, one of the first high-profile figures in Australia to educate the public on the dangers of tobacco, even appearing in an advertisement criticising the ethics of tobacco advertising.

Burnet continued to travel and speak, but in the early 1980s, he and his second wife became increasingly hampered by illness. In November 1984 he underwent surgery for colorectal cancer. He then made plans to resume scientific meetings, but secondary lesions were found in June 1985 and declared to be inoperable and terminal. A supporter of euthanasia, Burnet was unfazed by his imminent death and he died on 31st August at his son's home at Port Fairy. He was given a state funeral and buried near his paternal grandparents at Tower Hill cemetery, near Port Fairy. Following his death he was honoured by the House of Representatives when Prime Minister Bob Hawke took the highly unusual step of moving a condolence motion, an honour typically reserved for parliamentarians.

Burnet received extensive honours – too many to mention here - for his contributions to science and public life during his lifetime. One suspects that those he would have appreciated most (after the Nobel Prize) would have been the naming of the Burnet Institute, Australia's leading medical research and public health Institute, and the Burnet Clinical Research Unit of the Walter and Eliza Hall Institute in his honour.



***Opening of Biological Sciences Building, University of Newcastle, 1 March, 1974 :
Professor J.J. Auchmuty, Professor B. Boettcher, Sir MacFarlane Burnet, Sir Alister
McMullin.***

Burnet's biographer, Christopher Sexton, suggests that Burnet's legacy is fourfold:

- (1) the scope and quality of his research;
- (2) his nationalistic attitude which led him to stay in Australia, leading to the development of science in Australia and inspiring future generations of Australian scientists;
- (3) his success establishing the reputation of Australian medical research worldwide;
- (4) his books, essays and other writings.

Fellow researcher in the field of medicine. Peter Doherty writes that "Burnet's reputation is secure in his achievements as an experimentalist, a theoretician and a leader of the Australian scientific community."

APPENDIX.

The Walter & Eliza Hall Institute of Medical Research



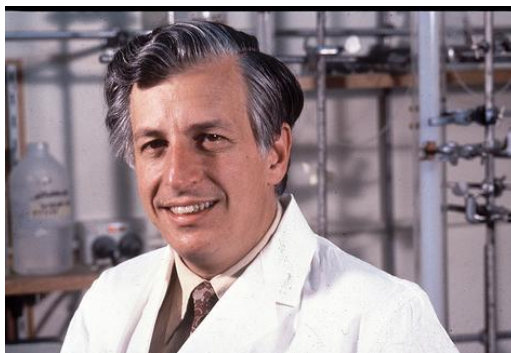
**Walter and Eliza Hall Institute of Medical Research
1G Royal Parade
Parkville Victoria 3052**

The Institute was founded in 1915 using funds from a trust established by Eliza Hall following the death of her husband Walter Russell Hall. The Institute owes its origin to the inspiration of Harry Brookes Allen, who encouraged the use of a small portion of the charitable trust to found a medical research institute. The vision was for an Institute that “will be the birthplace of discoveries rendering signal service to mankind in the prevention and removal of disease and the mitigation of suffering.”

In April 1915 the new Melbourne Hospital agreed to provide a home for the Walter and Eliza Hall Institute of Research in Pathology and Medicine, as it was then known. A few weeks later, the new institute's Director-designate, Gordon Mathison, suffered fatal wounds in the ANZAC Battle of Gallipoli. The floors set aside for the institute in the grounds of the old Melbourne Hospital were given over to the Commonwealth Serum Laboratories in 1918 until a new Director could be secured at the end of WW I. Sydney Patterson was appointed the first Director and took up his post in 1919.

Patterson resigned and returned to England in 1923. He was followed by Charles Kellaway for the critical years 1923-44. Kellaway formalised research streams, supported aspiring local researchers, built up public benefactions and secured the first Commonwealth grants for the Institute's researches. He also oversaw the plans and construction of the first separate Institute building adjacent to the new Royal Melbourne Hospital, which opened in 1942. Under Kellaway's Directorship, the Institute came to achieve international recognition as a centre for excellence in medical research by the outbreak of World War II.

Sir Frank Macfarlane Burnet was the institute director between 1944 and 1965, and he brought the institute to international prominence for virological research, especially influenza, and then for immunology. Such was the nature of Burnet's achievement that he was awarded the Nobel Prize for Medicine in 1960 with Sir Peter Medawar for the discovery of immunological tolerance



Sir Gustav Nossal (above) succeeded Burnet as Director in 1965, aged 35. Under his stewardship, the Institute grew in size and scope, with its scientists making important discoveries in the control of immune system responses, cell cycle regulation and malaria. During this time, the group, led by Professor Donald Metcalf, discovered and characterised the colony-stimulating factors (CSFs), which have benefited more than 10 million cancer patients worldwide.

Between 1996 and 2009, it was led by Professor Suzanne Cory.



In 2011 Professor Doug Hilton was appointed the Director of WEHI.



The Governor-General meets researchers at the Institute, 20 December, 2010

The institute forms the Department of Medical Biology at the University of Melbourne. Graduate students enrolled at the University who undertake research at the institute can obtain a Bachelor of Science (Honours) or Doctor of Philosophy degree; medical students can also study for Advanced Medical Science. Undergraduate students can also be part of the Undergraduate Research Opportunities Program (UROP). During the 2005–2006 financial year 17 students obtained a PhD at the WEHI, while 17 obtained a Bachelor of Science (Honours). As of June 2006, the Institute hosts 60 PhD students.

The Institute is also part of the Gene Technology Access Centre, located next to the Institute building at University High School, which provides education programmes in molecular and cell biology for secondary students in Victoria.

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