NHMRC: IMPACT CASE STUDY

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Australian Government
National Health and Medical Research Council

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Discovering Ross River virus

Australia is home to many viruses - called 'arboviruses' - that can or could infect humans. Some arboviruses cause seasonal illness, others cause epidemics and some can even cause death. During the second half of the 20th century, NHMRC-funded researchers at the Queensland Institute of Medical Research (now QIMR Berghofer) made major contributions to our understanding of arboviruses, enabling clinicians to quickly identify infections in patients, and public health authorities to better manage the threats that the viruses pose to health.

Origin

Four large dengue epidemics swept through Queensland (QLD) and New South Wales (NSW) between 1897 and 1926. They were responsible for hundreds of deaths and affected up to 90% of the urban population in each outbreak. Later, epidemic illnesses of a disease causing polyarthritis occurred in NSW, QLD and the Northern Territory. To better understand and respond to these known and unknown diseases, the QLD Government established QIMR in 1947.

Investment

During the period 1952 to 1992, and through a range of grants, NHMRC supported QIMR research into arboviruses.

Arboviruses exist within wild vertebrate animal 'reservoirs' such as marsupials and birds and then enter into the human population through infected bites from blood feeding insects, ticks and mites.

QIMR researchers examined arboviral genetics, epidemiology, immunity and pathogenesis, as well as surveillance and control of disease vectors such as mosquitos.

Research

In 1959, QIMR researchers isolated a virus from mosquitoes that had been collected beside the Ross River in Townsville, North Queensland and named it Ross River virus (RRV).

They identified rises in the levels of antibodies against this virus in patients who had recently developed polyarthritis, and also recovered RRV from the blood of polyarthritis patients. These results confirmed that RRV caused the disease.

The researchers developed antibody tests that increased the speed of detection of RRV in blood samples.

Translation

In 1991, using purified and inactivated RRV provided by QIMR, Australian biotechnology company Panbio Ltd produced a commercial kit to detect RRV antibodies. Panbio also developed kits to diagnose other mosquito borne diseases, based on research undertaken by QIMR.

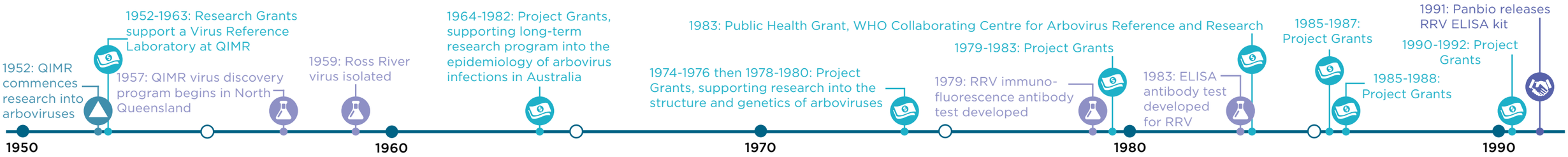
The widespread availability of the RRV kit led to significant increases in the number of RRV cases diagnosed in Australia each year. This in turn led to new knowledge about the epidemiology of RRV infection and guided mosquito and virus control programs.

Impact

The new knowledge developed by QIMR researchers has helped to enable comprehensive and reliable diagnosis of human arboviral diseases, promote appropriate care of patients and reduce treatment costs.

All Australian state and territory governments run programs that reduce the risk of mosquito borne infections. These can include mosquito management strategies involving mosquito surveillance, bite prevention, chemical control and elimination of mosquito breeding sites.

"The widespread availability of the Panbio kit had a profound effect on the number of cases of epidemic polyarthritis diagnosed in Australia each year, increasing from less than 50 in the 1970s to several thousand annually after 1992."



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