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Massive Australian research effort to beat coronavirus

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Sue Dunlevy, News Corp Australia Network
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Australian researchers are at the forefront of world efforts to find vaccines, treatments and new tests for coronavirus with more than 50 projects already under way.

The Australian Association of Medical Research Institutes has compiled a list of major COVID-19 research projects in every state.

Apart from the University of Queensland's project to develop a vaccine, there are trials under way that repurpose existing drugs to treat COVID-19 patients, teams of scientists are developing new antiviral drugs, others are working on monoclonal antibody treatments that harness the body's immune system to fight the virus.

VICTORIA

Burnet Institute in Victoria is screening ACE 2 inhibitor drugs for blood pressure to see if they can prevent or treat COVID-19 infection.

They plan to turn the best performing drugs into formulations that can be inhaled to deliver the drug directly to where the virus is in the lungs.

It is also developing monoclonal antibodies essential for profiling the immune response in humans infected with COVID-19 to help develop point of care tests.

Hudson Institute in Victoria, in collaboration with Biotech company Noxopharm, has found a cancer drug Veyonda could block pathways that causes a deadly inflammatory reaction in COVID-19 patients called a cytokine storm.

Noxopharm is seeking approval from the US FDA for a clinical trial in COVID-19 patients of Veyonda.

The Walter and Eliza Hall Institute in Melbourne is developing 'biologics' medicines for coronavirus infections.

These mimic antibodies to fight infection and are already in clinical use for diseases such as cancer and autoimmune conditions.

The Institute is also leading COVID-19 SHIELD, Australia's first clinical trial to assess whether the drug hydroxychloroquine is effective in preventing COVID-19 in frontline healthcare workers.

Doherty Institute Melbourne was the first group outside China to grow the COVID-19 virus, it is conducting the testing for COVID-19 in patients and validating commercial tests for the virus.

The institute's experts have been conducting pandemic modelling for the government on the spread of COVID-19.

It is helping Melbourne University run the ASCOT trial that will initially test two treatments for hospitalised COVID-19 patients, using drugs that are currently used to treat HIV (lopinavir/ritonavir) and malaria (hydroxychloroquine).

It is also developing a vaccine for COVID-19.

CSIRO is running animal trials of two potential COVID-19 vaccines, it has helped test the University Queensland vaccine on mice.

It is conducting research into genetic changes in the virus and doing computer modelling to understand how the virus behaves.

It is tracing where the virus came from and how it jumped from animals to humans and is working on how to spread so quickly.

The Monash Biomedicine Discovery Institute (BDI) and the Doherty Institute in Victoria have shown that head lice treatment ivermectin kills the COVID-19 in a test tube.

It is now checking whether it works at doses that are safe to use in humans and will then trial it on animals.

NEW SOUTH WALES

Garvan Institute in Sydney in collaboration with UNSW Sydney's Kirby Institute, is developing antibodies designed to target proteins the virus needs to infect human cells.

The potential antiviral therapy could help the elderly and chronically ill and be administered as a preventative therapy to health workers on the frontline.

Victor Chang Cardiac Research Institute Sydney in collaboration with St Vincent's Hospital Sydney and two hospitals in Victoria are planning a clinical trial of a stem cell to dampen down the hyperactivity of the immune system that causes severe heart and lung problems in patients with COVID-19.

The Kirby Institute at UNSW Sydney is researching hyperimmune globulin-based therapy based on the blood plasma of people who have recovered from the virus, it is engineering monoclonal antibodies for COVID-19 protection and therapy and is working on a treatment that could be delivered direct to the lungs via an inhaler or puffer.

QUEENSLAND

QMIR Berghofer is conducting a randomised controlled trial of anti-inflammatory drug tocilizumab on critically ill patients with COVID-19 in the hope it can prevent the cytokine storm that is killing some COVID-19 patients.

It is also testing existing, widely used, and safe drugs to reduce COVID-19's ability to infect cells and help the immune system fight the disease and it is adapting its patented liquid biopsy assay system that has been successfully used in cancer patients to predict disease progression in patients with COVID-19.

It is developing antiviral gene-based drugs, looking factors that make some people more susceptible to severe COVID-19 symptoms.

It is using its 'human-heart-muscle-in-a-dish' to examine how COVID-19 causes cardiotoxicity and screen for drugs to limit heart injury in COVID-19 patients.

It is collecting information on COVID-19 from 80,000 Australians for whom researchers already have detailed genetic data will enable them to rapidly and cheaply identify genetic risk factors that might fast-track targets for drug development.

It is researching the way people with blood cancers respond to COVID-19.

Blood cancer treatments target immune cells that make antibodies to fight viruses.

It is developing a test to detect who has immunity to the virus.

The Institute for Glycomics (QLD), building on many years of vaccine development in streptococcus and malaria, is trying to identify critical target points on the coronavirus that may be susceptible to immune attack and to use that information to develop a highly focused vaccine.

Griffith Institute for Drug Discovery's rapid response technologies that allow fast design and manufacture of vaccines to combat pandemic threats has found five COVID-19 vaccine candidates that have been designed and manufactured and are currently being evaluated in animal trials.

SOUTH AUSTRALIA

The South Australian Health and Medical Research Institute is studying the protein-making pathway that are activated by coronavirus in an attempt to slow the growth of the virus.

They already know how to inhibit this pathway using a drug that is already in phase 2 clinical trials and cleared for use in humans.

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