



**BIOMEDICAL
RESEARCH
VICTORIA**

INNOVATING FOR HEALTH



Victoria's HMR sector set to grow



We're excited to announce that Dr George Morstyn, Chairman of Biomedical Research Victoria, has been selected for a new panel established by the Victorian Government to advise on how to attract more investment and jobs to Victoria.

With the aim to drive leadership and excellence in Victorian health and medical research, the **Science, Medical Research and Technology Panel** will provide advice on attracting funding for medical research, protecting intellectual property, and the translation and commercialisation of research.

"We're getting on with growing Victoria's vibrant health and medical research sector by attracting more global investment to create more jobs and boost the economy," said Minister for Health Jill Hennessy.

The panel will consist of fourteen members and will be led by Ms Brigitte Smith, Co-founder and Managing Director of GBS Venture Partners as the inaugural Chair, with Professor Kathryn North AM, Director of Murdoch Children's Research Institute as the Deputy Chair.

The Victorian Government announced the panel selection in a [press release](#) yesterday.

MEMBER FEATURE

Scientists go with their gut

Monash Biomedicine Discovery Institute



Tiny 3D organs could help doctors tackle colorectal cancer more effectively than ever before. A biobank of “mini-gut” organoids, grown at the [Monash Biomedicine Discovery Institute](#) (BDI), is set to help scientists understand the evolution of cancer growth, test new drugs and, eventually, take the guesswork out of treating cancer.

With cancer claiming millions of lives each year, researchers are racing to find better treatments which are tougher on cancer and gentler on patients. Researchers at the Monash BDI have a fresh approach - to test new drugs on 3D models of colorectal cancers grown in a dish.

These organoids may not look anything like the real thing, but contain the same biological signatures which make them suitable for studying cancer behaviour.

So far, scientists at the Monash BDI biobank have grown over 30 organoids from tissue collected from colorectal cancer patients at the Cabrini Hospital in Melbourne. Surgeons extracted cancerous tissue from patients' bowels during surgery and cells from this tissue were cultured in a way to form 3D organoids a few millimetres in diameter.

Lead researcher Associate Professor Helen Abud aims to build this collection

to over 100 organoids to comprehensively study how different tumours grow and what can be done to stop their spread.

The eventual aim is that one day, instead of trialling different cancer drugs on a patient, doctors could grow an organoid from a patient's tumour biopsy. Testing the organoid first could allow doctors to determine the most effective drug for destroying a patient's cancer instead of administering a trial-and-error regiment.

“It is the ultimate in personalised medicine,” said Abud.



Associate Professor Helen Abud at the Monash BDI

And the scientists have their sights set beyond colorectal cancer.

“This is exciting research with real life implications for patients, and is also being extended to study patients with prostate and breast cancer,” the Institute's Director Professor John Carroll said.

“The organoid research exemplifies what the Monash Biomedicine Discovery Institute is about: taking early discovery research, utilising an array of scientists with different skill sets, and taking the research all the way through to the clinic and assisting in patient care.”

The Monash BDI was launched by Prime Minister Malcolm Turnbull on the 14th of November, 2016.

The Monash/Cabrini team are members of the Australian Living Organoid Alliance, a national network of scientists and clinicians who study tumour organoids.

For more information on the organoid biobank, see the [Monash BDI press release](#) or the news story in the [Herald Sun](#).

Committed to making the discoveries that will relieve the future burden of disease, the newly established [Monash Biomedicine Discovery Institute](#) brings together more than 120 internationally-renowned research teams, supported by world-class technology and infrastructure, who partner with industry, clinicians and researchers internationally to enhance lives through discovery.

A Warm Welcome to our Newest Member



BioMedVic warmly welcomes the **Australian Institute for Musculoskeletal Science (AIMSS)** to our membership. A collaborative research institute between The University of Melbourne, Victoria University and Western Health, AIMSS is predominantly interested in conditions related to chronic disease and ageing such as osteoporosis, sarcopenia, frailty and disability. Learn more about the institute [here](#).

Ian Gust Claims Peter Wills Medal for Lifesaving Research

An unsung hero of Australian biomedical research is recognised.



Few scientists on the planet could claim to have developed a vaccine that is

proven to prevent a disease, let alone more than one such vaccine.

Fewer still could say they worked to get that vaccine not only out of a lab and into the population, but available to people across the world, not just people on high incomes or in developed countries.

One such person is Professor Ian Gust AO, whose work has contributed to the saving of thousands of people.

Throughout his long, distinguished career Professor Gust developed the Hepatitis A vaccination, was a significant contributor to the team that developed the Hepatitis B vaccination and was instrumental in development of the world's first papilloma virus vaccine, Gardasil.

Professor Gust, former Chair of the Biomedical Research Victoria Board and a long-term friend, has been a global champion for health and medical research for more than half a century. Last night, he was announced as the 2016 recipient of the prestigious Peter Wills Medal, the highest of the Research Australia Health and Medical Research Awards, at a presentation ceremony at the Westin Hotel in Sydney.

See Ian Gust's story here:

<https://www.youtube.com/watch?v=HlzCbJib40U>

See his Peter Wills Medal acceptance speech here:

<https://www.youtube.com/watch?v=-3SqhkXfsO8>

As a medical graduate with a post-doc stint as a WHO Fellow at the Glasgow University Regional Virus Laboratory under his belt, Ian Gust had chosen virology as his passion and career.

In 1970 he returned to Melbourne to become the Medical Virologist at Fairfield Hospital, where he and his team became the first to grow the Hepatitis A virus in tissue culture. With the virus isolated, Gust and his team isolated antibodies against Hepatitis A. Gust continued his research in 1978 while at the National Institutes of Health in Maryland in the US where he and his colleagues isolated a vigorous strain of the Hepatitis A virus from a sample sent from Australia.

“Without a doubt the most exciting moment was that early Sunday morning at NIH when I looked down the microscope and recognised that we'd isolated Hepatitis A virus in cell culture and therefore had the potential to make a vaccine,” Gust said.

This isolated Hepatitis A virus became the source of both live and attenuated vaccines later used to develop the world's first licensed Hepatitis A vaccine. Since 1993, when this vaccine was first introduced, around 2 billion doses have

been sold and Hepatitis A has been effectively eliminated in the developed world.

But Ian Gust was only getting started.

In 1984, the Fairfield virology laboratory became one of the first in the world to establish assays for the detection of what became known as HIV. Later that year, when it became evident that HIV was also in the blood transfusion service, Gust designed a system to urgently evaluate the five commercial assays then under development for the detection of the virus. Assays were then introduced into the Australian blood bank system and into public health laboratories.

As a founding member of the National AIDS Taskforce and, later, the Federal Government's Chief Advisor on medical and scientific aspects of AIDS, Gust played a crucial role in controlling the spread of HIV/AIDS compared to other countries. His actions, amongst many others at the time, spared thousands of Australians from an early death from what was then a fatal illness.

In 1986 Gust became a member of the International Task Force on Hepatitis B Immunization, started because the then current vaccine was too costly for developing nations, where the disease was most destructive. The Taskforce lobbied to make a Hepatitis B vaccine the first new vaccine added to the WHO's Expanded Program for Immunization, thus facilitating its widespread availability in poorer nations.

Ian Gust also became the founder of the Burnet Institute, which recently celebrated its 30th birthday.

As head of Research and Development at CSL between 1991 and 2000, Gust was instrumental in acquiring the intellectual property rights to the research that was to form the basis for the collaborative development of the world's first Papilloma virus vaccine, Gardasil – which was approved in the US in 2006 and is now approved in over 120 countries.

From 1992 to 2006, Gust has directed the WHO International Reference Centre for Influenza and, with directors of centers in London, Tokyo and Atlanta, was responsible for recommending strains of the virus to be included in each year's vaccine formulation.

Research Australia's CEO, Nadia Levin, said Professor Gust is extraordinarily deserving of the peak award from her organisation, which represents 160 organisations in health and medical research.

"Prof Gust took a then-unconventional path into virology after his first degree, which shaped his career. It was a move that people across the world essentially owe their lives to," she said.

"The Professor's passion, drive and community work has led him to be one of Australia's foremost medical exports, and one of the world's most valued assets to global health. He is already internationally-renowned for his contributions in the health and medical research space, and this award is our sector recognising his position as a leader in our field."



Professor Gust has been a member, consultant or advisor to 28 WHO Committees and Taskforces.

He has also been a key member of the Children's Vaccine Initiative, the International Task Force on Hepatitis B Immunization, the Bill and Melinda Gates Children's Vaccine Program, the International AIDS Vaccine Initiative, the International Vaccine Institute, the Paediatric Dengue Vaccine Initiative and more.

Associate Professor Jan Tennent, Director of Biomedical Research Victoria, said that "Ian Gust is one of Australia's scientific unsung heroes. His research and advocacy for global public health has literally saves hundreds of thousands of lives. This award is fully deserved but, knowing Ian, he will just think it's all a bit of a fuss about nothing," she said.

"I'm glad that Ian and his remarkable career are getting the recognition and kudos he fully deserves," she added.

Looking back at his career, Gust said that he has had a "very fortunate life".

"I'm lucky to have joined a relatively uncluttered field just as it was about to be transformed by modern technology," he recalled. And "lucky to have lived long enough to see some of the diseases that I've worked on brought under control and, in the case of Hepatitis A, virtually eliminated."

Really, the world is lucky to have him.

When asked about any advice he has for young biomedical researchers interested in a career today, Gust said to treat it like surfing:

"Get out in front of the wave," he said, smiling. "When you see a decent wave coming towards you, swim like hell and try and catch it all the way to the shore."

Luke Thorburn | UROP@CSIRO

Not Just a “Phase” – UROP Designs Better Way to Visualise Chemical Space



We recently checked in at the CSIRO Parkville Science Club to hear what UROP scholar **Luke Thorburn** has been up to. Turns out, he's been busy!

Luke has just finished a Bachelor of Science at Melbourne Uni, majoring in Statistics & Stochastic Processes. As a UROP scholar at CSIRO, he has developed a new visualisation platform for chemical space that will help crystallographers design optimisation screens for protein crystallisation.

And yes – that's a mouthful – but it's also incredibly useful for scientists. Let us explain.

To visualise the structures of proteins – the sub-microscopic molecules that run the bustling activity in living cells – crystallographers manipulate these proteins to assemble into microscopic crystals. The researchers eventually have to bombard these delicate crystals with

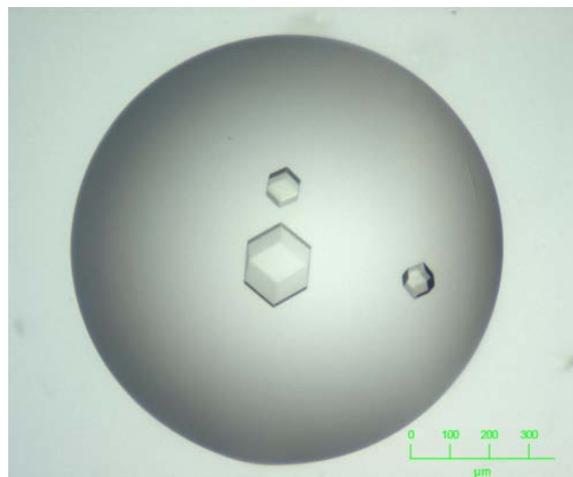
X-rays to collect their precious data, so getting good crystals is crucial.

The problem is, growing these crystals usually requires many round of tweaking an obscure cocktail of chemicals inside a drop of liquid – a process that can be somewhat hit and miss.

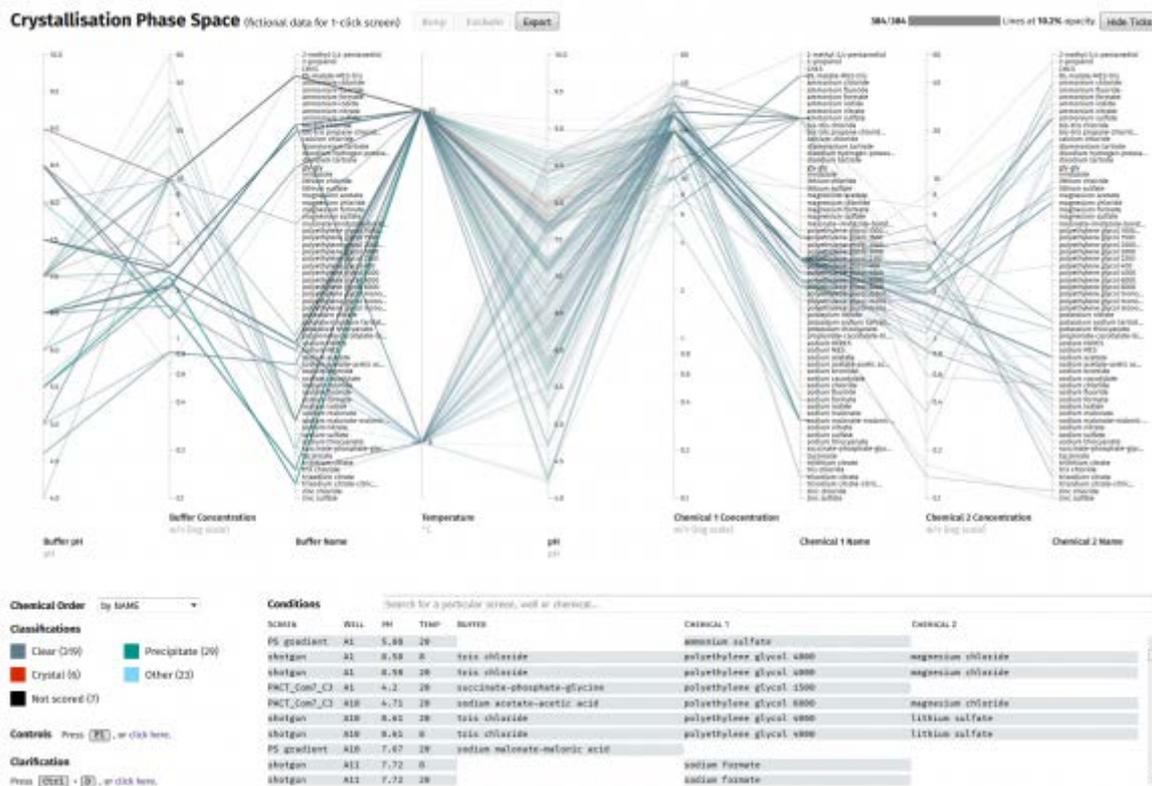
So for the crystallographers that have to trudge through spreadsheet after spreadsheet of data, reading chemical recipes and trying to find patterns to optimise the conditions, Luke has found an alternative.

Under Janet Newman's supervision at the **CSIRO Collaborative Crystallisation Centre (C3)**, he has developed an interactive platform involving a “parallel coordinates plot” which lets a user see the chemical conditions that have already given them a crystal through the prism of many different chemical parameters at once. This platform can let crystallographers very quickly see what worked and what didn't and to identify trends in the data that previously would have gone amiss – all in one interactive snapshot.

“Luke's insight into how to display high-order data is a revelation, and he has elegantly solved a longstanding problem in crystal growth optimisation,” said Janet Newman.



Here's a sneak peek at the "Visualise Phase Space" platform:



Or, for the full experience, head to the [CSIRO C6](#) guest account for an interactive browse.

Luke's platform was launched at CSIRO last week and he is currently helping draft a manuscript on this work. You can check out this Science Club presentation [here](#).



Design Thinking | STEM Central

The **STEMM Central Bootcamp Design Thinking masterclass** was held on Thursday 10th November at Swinburne University. The masterclass was designed to give participants their first foray into Design Thinking and take away some skills to apply to their current roles. Everyone threw themselves into the empathy exercise, gaining real insight into the needs and behaviours of their end users.

Click [here](#) to register for the next masterclass "**Market & Competitor Analysis**". If you are not already registered for STEMM Central contact info@stemmcentral.com to create an account.

2016 VCRN Awards & Networking Event



REGISTRATIONS CLOSE TODAY!

Come celebrate *VCRN Career Recognition Award* winner, **Prof Leonard Harrison** and the recipients of the *VCRN Early Career Clinician Researcher Awards*.

See the [Event Page](#) for more information and to register.

BioMedVic November Scorecard



Speaking to Government
8 Briefings

Listening to Members
9 Meetings



Connecting Academia &
Industry
4 Events & Workshops

Training for Innovation
3 Workshops &
Placements



Celebrating the Sector
4 Events

Promoting Victoria Globally
3 Conferences & Events



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