Schedule of Documents – FOI 2339 – IC MR21/00551

Doc no	Date	Pages	Description	Decision on access	Exemption	Page no
1	6 April 2020	3	Letter from Research Translation Branch (NHMRC) to Dr Somi CEO of the Health and Medical Research Office (Health) requesting a decision on the successful applicants for the MRFF Novel Coronavirus Vaccine Development grant opportunity	R		1-3
Applicant agreed to exclude Documents 2 – 28 from IC Review						
Doc no	Date	Pages	Description	Decision on access	Exemption	Page no
29	6 April 2020	41	NHMRC report on UQ grant application - 'Molecular Clamp Stabilized Spike Vaccine for Rapid Response'	RE	Section 45 – Part Section 47F – Part	4-44
30	6 April 2020	41	NHMRC report on UQ grant application personnel published papers - 'Molecular Clamp Stabilized Spike Vaccine for Rapid Response'	R		47-85
31	6 April 2020	14	UQ grant application - 'Molecular Clamp Stabilized Spike Vaccine for Rapid Response'	RE	Section 45 – Part	86-99
Applicant agreed to exclude Documents 32 – 34 from IC Review						

E: Exempt in full; R: Release in full; RE: Release in part.

Doc no	Date	Pages	Description	Decision on access	Exemption	Page no
35	29 May 2020	2	Letter from Research Translation Branch NHMRC to Dr Somi CEO of the Health and Medical Research Office enclosing an assessment report for the UQ grant application - 'Rapid Acceleration of the UQ COVID-19 Vaccine Program'	R		100-101
36	29 May 2020	4	NHMRC 2020 COVID-19 Vaccine Research Grant Opportunity Assessment Report into UQ grant application for 'Rapid Acceleration of the UQ COVID-19 Vaccine Program'	RE	Section 22 – Part Section 47E(d) - Part Section 47F - Part	102-105
37	29 May 2020	4	NHMRC 2020 COVID-19 Vaccine Research Grant Opportunity Assessment Report – Proposed Budget for the Rapid Acceleration of the UQ COVID-19 Vaccine Program	E	Section 45 – whole document	106-109
38	25 May 2020	8	UQ grant application - 'Rapid Acceleration of the UQ COVID-19 Vaccine Program'	RE	Section 45 – Part	110-117
39	25 May 2020	22	Completed Application form by UQ for closed 2020 COVID-19 Vaccine Research Grant Opportunity – 'Rapid Acceleration of the UQ COVID-19 Vaccine Program'	RE	Section 47F – Part	118-139

E: Exempt in full; R: Release in full; RE: Release in part.

Doc no	Date	Pages	Description	Decision on access	Exemption	Page no
40	22 May 2020	1	Letter of Support which is an Attachment to the UQ grant application - 'Rapid Acceleration of the UQ COVID-19 Vaccine Program'	RE	Section 47F – Part	140
41	15 June 2020	1	E-mail from Research Translation Branch (NHMRC) to the Health and Medical Research Office (Health) enclosing additional information from UQ and confirming that the NHMRC committee maintains its original assessment in respect of the 'Rapid Acceleration of the UQ COVID-19 Vaccine Program'	RE	Section 22 – Part	141
42	15 June 2020	4	Additional information from UQ in respect of its 'Rapid Acceleration of the UQ COVID-19 Vaccine Program' grant application	RE	Section 45 – Part	142-148

E: Exempt in full; R: Release in full; RE: Release in part.

Dr Masha Somi
Chief Executive Officer
Health and Medical Research Office
Australian Government Department of Health

Dear Dr Somi

I am writing to you in your capacity as delegate under sections 15A, 26 and 27 of the *Medical Research Future Fund Act 2015* (the Act) with authority to debit amounts from the MRFF Special Account and set out and enter into written agreements with grant recipients.

A Grant Assessment Committee (GACs) for applications submitted to the MRFF Novel Coronavirus Vaccine Development grant opportunity met on 1 April 2020. By way of background, a total of 16 eligible applications were received by the closing date and were assessed by a committee of experts in accordance with the program guidelines. Ten applications progressed to full committee assessment. A ranked list of meritorious applications is enclosed along with an indicative funding recommendation.

The top ranked application comes to a total of $1,965,398. Funding the top two highest ranked applications would come to a combined total of $2,256,263.

A research integrity check has been undertaken on all of the Australian-based Chief and Associate Investigators named on applications in the attached list. We can confirm that these individuals have not, to NHMRC's knowledge, been the subject of recent findings of research misconduct or breaches of the *Australian Code for the Responsible Conduct of Research,* or recent unresolved formal notifications to NHMRC on research misconduct matters. Once the successful grants have been identified you may wish to ask NHMRC to undertake this check again to ensure any recent findings or notifications can be identified prior to any announcement being made.

You are now requested to advise us of the successful applicants for the MRFF Novel Coronavirus Vaccine Development grant opportunity. NHMRC proposes to notify all applicants and Administering Institutions of their outcomes, under embargo, prior to public announcement.

Consistent with the agreement between our organisations on Postaward management of MRFF grants, the Department will manage the public announcement and media activities. NHMRC will make the formal offer of funding under the MRFF Head Agreement. To enable schedules to be prepared for the successful grants, we also await the Department's advice on:

- the payment schedule, and
- whether there is any specific grant reporting or reporting detail required that is not covered in the Head Agreement or Grant Guidelines.

I would also like to provide you with feedback from the assessment process.

The MRFF Novel Coronavirus Vaccine Development grant opportunity was an urgent response for research, which placed considerable time pressure on applicants and expert assessors. The expedited timeline impacted the operation of the GACs with two international assessors resigning from the committee due to competing priorities.

Government restrictions in place due to the COVID-19 outbreak, including working from home policies, likely contributed to the instability of the videoconferencing technology at the GAC meeting. To maintain the connection of all GAC members the meeting reverted to an audio format, which was the planned fallback.

Applications that did not meet the objectives of the grant opportunity were scored accordingly, particularly for Assessment Criterion 1: *Project Impact*. GAC members recommended that the Chief Investigators for such applications could be encouraged to apply for other relevant COVID-19 MRFF grant opportunities.

GAC members were briefed on the application of the non-weighted Assessment Criterion 4: *Overall Value and Risk*. Members were very deliberate and decisive in their assessment against this criterion and the Assistant Chair recorded the committee's reasons for an assessment of an application as 'marginal'.

We will continue to monitor the application of this criterion across MRFF GACs and provide feedback where required to assist in your ongoing evaluation of the MRFF Programs.

The Consumer Advisor commented that there was limited consumer engagement evident in the applications submitted, but that this was not unsurprising given the objectives and urgent nature of this grant opportunity.

The potential for conflicts of interest for GAC members who have commercial interests and/or are employed by companies that are working in the Coronavirus vaccine area was discussed. Members were assured that all GAC members had disclosed interests and declared conflicts of interest against each application. Members with high conflicts of interest declared against an application, identified prior to or at the meeting, did not participate in the discussion or scoring of those applications at the meeting.

Thank you again for the opportunity to assist the Department with this grant opportunity.

Yours sincerely

[authorised for electronic transmission]

Alan Singh
Executive Director
Research Translation Branch

3 April 2020

Enc.:

1. MRFF Novel Coronavirus Vaccine Development grant opportunity outcomes.
2. Full application documentation for applications considered by the grant assessment committee.

Australian Government
National Health and Medical Research Council

MRFF - Research Grants - Assessor Snapshot Report

APP1202445

Application ID:	APP1202445	**Application Year:**	2020
Grant Type:	MRFF - Research Grants	**Grant Duration:**	1 years
Round:	2020_MRFF_Novel_Coronavirus_Vaccine_Development_2020		
Application Title:	Molecular Clamp Stabilized Spike Vaccine for Rapid Response		

Administering Institution:	The University of Queensland

Participating Institutions:	Department
CSIRO Australian Animal Health Laboratory	
The University of Queensland	SCMB
University of Melbourne	Doherty Institute

Research Team:

CI Role	CI Title & Name	Institution	Will CI be based in Australia?	Is this CI claiming a Career Disruption?
CIA	Doctor Keith Chappell	The University of Queensland	Yes	No
CIB	Professor Paul Young	The University of Queensland	Yes	No
CIC	Doctor Daniel Watterson	The University of Queensland	Yes	No
CID	Professor Trent Munro	The University of Queensland	Yes	No
CIE	Professor Damian Purcell	University of Melbourne	Yes	Yes
CIF	Professor Katherine Kedzierska	University of Melbourne	Yes	No
CIG	Doctor Amy Chung	University of Melbourne	Yes	No
CIH	Professor Trevor Drew	Commonwealth Scientific and Industrial Research	Yes	No

		Organisation		
CII	Professor Seshadri Vasan	Commonwealth Scientific and Industrial Research Organisation	Yes	No

Associate Investigators:

Name	Position
Adam Wheatley	Associate Investigator
Allen Cheng	Associate Investigator
Danushka Wijesundara	Associate Investigator
Irani Thevarajan	Associate Investigator
Kanta Subbarao	Associate Investigator
Naphak Modhiran	Associate Investigator
Patrick Reading	Associate Investigator
Phillip Hogarth	Associate Investigator

Additional Personnel:

Number of Professional Research Person(s)	11
Number of Technical Support Staff	18

Guide to Peer-Review Areas:	Immunology Virology Molecular Biology

Does this research proposal include an Aboriginal and/or Torres Strait Islander health research or capacity building component? No

Synopsis:

The Molecular Clamp platform is Australia's most advanced COVID-19 vaccine and is one of only four programs globally supported by CEPI for a rapid response to the outbreak. The strategic partners driving this application, The University of Queensland (UQ), The Doherty Institute (Doherty), and The Commonwealth Science Industrial Research Organisation (CSIRO), aim to complete pre-clinical evaluation of safety and protective efficacy in Q2 and Phase I human trials in Q3 2020. This will run in parallel with a separately proposed plan to expedite manufacturing at-scale. This ambitious approach has the potential to enable an Australian vaccine at an unprecedented pace, and have significant numbers of product in vial by the end of 2020 for further clinical and potential emergency distribution. If public health measures sufficiently slow infection rates, this increased speed has potential to have a major impact, especially for those at most risk, people with pre-existing medical conditions and the elderly.
Given our recent progress, including identification of a candidate vaccine molecule, the funds requested in this proposal will be critical for studies designed to measure correlates of immune protection in COVID-19 patients during recovery and any immune responses associated with poor outcomes. Importantly, this work is also not covered by existing CEPI funding and fills a critical gap for vaccine development. Assays for these immune responses will be developed and

used in animal vaccination studies and the human Phase I clinical trial. By directly comparing correlates of protection in natural infection with immune responses in the Phase I trial we will be able to optimise the vaccine dose and type of adjuvant to (i) ensure safety, (ii) elicit protection, and (iii) decrease antigen dose to inform future clinical or emergency use.

Contents

Research Team (A-RT)

Chief Investigator(s)

Role, Title and Name	Qualifications and Skills
CIA Doctor Keith Chappell	Qualifications and skills: BSc, PhD (Microbiology). Dr Chappell is a co-creator of the molecular clamp platform and a project leader for the CEPI funded rapid response vaccine program at UQ. He has expertise within the fields of virology, immunology and molecular biology and, for the past decade, his research has centred on the design of subunit vaccines based on the fusion proteins of enveloped viruses.He has a growing track record with regard to the delivery of research outcomes, student supervision, and quality research publications. Dr Chappell was part of a team that was responsible for the first stabilisation of RSV fusion protein in its 'pre-fusion' form and characterised a new class of highly neutralisng antibodies specific for this form. Dr Chappell has published 31 peer reviewed journal articles (9 in the last 5 years). In total, his publications have been cited 765 times (Scopus Feb 2020).
CIB Professor Paul Young	Qualifications: BSc, PhD (London), FASM, FAHMS Skills: CI Young is an internationally recognized virologist with over 40 years of experience in the molecular biology, structure, function, biochemistry and immunology of viruses and their encoded proteins. Dengue viruses have been the major focus of his group's interests over the last 30 years and he has made major contributions to the field in the areas of early dengue diagnostics, vaccine and antiviral development and understanding the molecular basis of severe disease progression. He was the first to recognize the potential of the dengue virus NS1 protein as a diagnostic biomarker for early dengue detection and translated this early work to commercial release of a dengue diagnostic assay. His group also investigates therapeutic and recombinant vaccine approaches to the control of a range of viruses including dengue, influenza, RSV and others. Expertise gained through the design of candidate subunit vaccines is highly relevant to the current proposal. His group (including CIA and CIC) holds intellectual property over the 'molecular clamp' and was responsible for the generation of preliminary data for this COVID-19 investigation. His laboratory has expertise in recombinant protein expression systems as well as the assessment of immunogenicity and protective efficacy of viral antigens in in vivo disease models. CI Young has a long and successful history of mentorship of both students and staff. He will share with the other CIs, responsibility for supervising the personnel nominated in this proposal and in directing, supporting and interpreting their research as well as coordinating with other CIs to meet the overall project objectives.
CIC Doctor Daniel Watterson	Qualifications: BSc, PhD (Microbiology), University of Queensland (Dec, 2012) Skills: CIC Watterson is an early career researcher with eight years post-doctoral experience, and a rapidly growing track record and significant independent funding in the form of two NHRMC project grants as CIA. He completed a PhD under the mentorship of CIB at the University of Queensland

	(UQ). As a senior researcher within CIB Young's group, he has demonstrated a strong capacity to develop and implement research projects with independence, and the ability to coordinate staff, manage teams and supervise students and attract external funding. His work has had recognized translational applications, he is the author on three patents related to new approaches for viral treatments and vaccines. He is accomplished in cryo-EM, and spent 3 months on a funded early career travel scheme to Purdue University, USA, where he developed skills in virus purification and cryo-electron microscopy analysis of virus-antibody complexes. He has also developed several new methods in the investigation of virus binding and virus-host membrane fusion. He had extensive expertise in molecular and protein biology including targeted mutagenesis, antibody engineering and expression, protein design, expression and purification. He has extensive experience in animal models of disease and the generation of monoclonal antibodies through targeted immunization strategies and display approaches. Relevant for the current application, he is a lead scientist in the UQ CEPI program and led the antigen design and selection phase of the COVID-19 vaccine program.
CID Professor Trent Munro	CI Munro is an internationally recognized expert in the Biotechnology sector, particularly in the areas of cell line engineering for therapeutic protein production as well as novel approaches to better understand molecular attributes for successful drug development. He is a world-leading biologics expert at UQ and Director of both the NCRIS National Biologics Facility and the CEPI funded rapid response vaccine pipeline. CI Munro has a PhD in Protein Biochemistry from the University of Queensland and completed postdoctoral studies at both Harvard and Cambridge Universities. Until August 2019 he was Executive Director of Process Development at Amgen driving translation of molecules from research into clinical use. He has led a number of successful industry/academic collaborations, which are not in the public domain due to confidentiality constraints, including with key groups at MIT/Whitehead Institute, Harvard University and California Institute of Technology (Caltech). His experience in pre-clinical/clinical development is critical to advancing this vaccine program. CI Munro has also worked extensively in the CMC regulatory space to drive policy change and modernization across the FDA and EMA through participation in several regulatory/industry organizations such as CASSS, ICH, IQ and BPOG. CI Munro has published extensively on aspects related to production of therapeutic proteins including development of novel approaches shorten timelines, from lead candidate identification through to clinical evaluation, using novel technology approaches for genetic engineering and mammalian cell culture production.
CIE Professor Damian Purcell	Prof. Damian Purcell’s research mostly focuses on basic molecular virology of HIV and HTLV-1, but also includes many other viruses. His studies since his CJ Martin fellowship at the NIAID of the NIH have examined the biology of HIV infected cells have provided valuable insights into the intrinsic, innate and adaptive immune response to viral infection. By understanding the molecular events in the interplay between virus and host he has developed new therapeutic approaches and vaccine candidates for HIV and HTLV-1. Prof Purcell has developed and deployed assays for rigorous examination of mechanisms of viral pathogenesis that have critically supported clinical development of

	chemotherapeutic or vaccine candidates. Research into the role of RNA processing in regulating HIV protein expression and viral replication led to the discovery and recent patenting of the Amidothiazol family of compounds for HIV latency reversal. Purcell was first to test HIV Env gp140 trimer vaccines in many animals including cows that uniquely made antibodies (Ab) with remarkable virus-neutralising potency. He patented the approach of using "Bovine colostrum derived neutralising antibodies (nAb) To HIV Env gp140" as a large-scale passive nAb HIV microbicide and was partner in a European AIDS Vaccine Initiative (EAVI 2020) consortium testing a new generation of HIV gp140 stabilized trimer vaccines for their efficacy as a vaccines stimulating nAb. Over the past 5 years Purcell has pursued an interest in HTLV-1 and has worked alongside the UQ CI team on HTLV-1 clamp trimer vaccine candidates develop treatments for the prevention of HTLV-1 transmission and unravel the complex association of HTLV-1 infection with pathogenesis. In this proposal, he will test antibodies from COVID-19 patients and Clamp-spike trimer vaccine recipients for nAb against SARS-CoV-2 and will map the epitopes of effective nAb, but also any detrimental Ab epitopes using pseudotyped reporter viruses with mutant spike.
CIF Professor Katherine Kedzierska	Prof Kedzierska has 24 years of experience in viral immunology. She has a strong international profile in human systems and a main focus on universal cross-strain protective T cell immunity to influenza viruses. Her research is centered on understanding immunity to viral infections, especially pandemic, seasonal and newly emerged respiratory viruses. Her work, recognised by a number of prestigious awards, spans basic research from mice to humans, through to clinical settings. Her studies on immunity in healthy individuals and high-risk groups (children, elderly, individuals hospitalised with influenza, Indigenous Australians) is unique in Australia and internationally. CI Kedzierska uses multi-disciplinary innovative approaches to viral immunology and collaborative links with immunologists, virologists, clinicians, epidemiologists, Indigenous academics and WHO Influenza Centre to improve vaccine and therapeutic designs to protect against severe and fatal viral disease. Her research on immunity to newly-emerging viruses is internationally competitive as exemplified by her first-in-the-world senior-author publications on the breadth of immune responses in COVID-19 (Nat Med, in press), across all influenza A, B & C viruses (Nat Immunol 2019), to novel avian H7N9 virus (Nat Comms 2015&2018, PNAS (x2) 2014), pandemic H1N1-2009 (PNAS 2010). Her unique research program makes her essential for this project, leading the immunological aspects and working closely with the team of CIs & AIs to understand human correlates of protective immunity driving recovery from COVID-19, persistence into immunological memory and evaluation of such immune responses following vaccination. She will be responsible for driving the human immunity work, liaising with clinicians (AI Theravajan and Cheng) for COVID-19 patient recruitment. She will supervise research personnel at UoM and prepare data for meetings and manuscripts. She is supported by the NHMRC Investigator Grant and SRF-2.

CIG Doctor Amy Chung	Dr Chung co-developed a new integrative research pipeline termed “Systems Serology” and is an emerging leader in the functional antibody field against infectious diseases. Her quality research and productivity is reflected by her publications (total of 48, including 15 first/co-first and 10 senior/co-senior, Overall FWCI 4.68) including 2x Cell, Science Trans Med, PNAS. Notably Scival identifies 42.9% of her first/senior authored original research articles in the top 1% of World cited papers, 87.5% in top 5% of Journals (SJR) FWCI: 7.70. Dr Chung’s entire research career has continuously been funded by Fellowships, she has received several prestigious awards and she is currently supported by an NHMRC CDF. Dr Chung has the leadership skills and expert technical knowledge required to drive the systems serology components of this project, which including extensive suites of antibody assays and advanced computational analysis. She personally developed several of these antibody assays, some which are now used in labs worldwide and contributed to the establishment of the Harvard Center for AIDS Immunology Core Service, a high throughput service that characterizes functional antibody responses, that was based off Systems Serology. She has successfully transferred these technologies to identify antibody correlates of protection/risk in multiple diseases including HIV, TB, Influenza, Malaria and ARF. Dr Chung has a proven history of working well with collaborative teams and the majority of her studies include interdisciplinary and multi-institute collaborations. She has the supervision and leadership experience required to ensure the successful completion of this project. She will also transfer her leadership and organizational skills acquired from her multiple professional activities such as being Chair of mHIVE that organizes influential World AIDS Day events, Co-Chair of the Australasian HIV & AIDS Conference 2020 and Associate Editor of Virology Journal
CIH Professor Trevor Drew	Prof Drew is an expert in the field of viral diseases of animals. He has international profile with OIE and FAO and is also a member of the Australian Animal Health Committee. He was previously Head of Virology and Lead Scientist at the UK Animal & Plant Health Agency and led the UKs laboratory response to many outbreaks of exotic disease including classical swine fever, foot and mouth disease and avian influenza. He is an immunologist and molecular virologist with more than 40 years of experience of research in the field of animal and zoonotic viruses. He is a specialist in RNA viruses, who focussed for many years on coronaviruses of pigs. He also has a track record in studies of the innate, cell mediated and humoral response to pathogens and vaccines, with early work on the development of rinderpest vaccine in Africa, which ultimately led to its global eradication. He has published extensively on host responses, course of disease and correlates of

	pathogenicity exhibited by pestiviruses and coronaviruses.
CII Professor Seshadri Vasan	Qualifications and skills: MSc (IISc Bangalore), DPhil(Oxon), FRES, FRSPH Professor S.S. Vasan leads the CSIRO Dangerous Pathogens Team which performs research, development and preclinical evaluation of vaccines and countermeasures for dangerous pathogens requiring physical containment at levels 3 and 4 (PC3 and PC4). He has 11 direct reports (9 of them PC4 trained), plus a post-doc and three students. He currently leads Australia's preclinical response to COVID-19, acting as Principal Investigator for CSIRO's Disease X and COVID-19 projects funded by the Coalition for Epidemic Preparedness Innovations (CEPI). His team is the first in the world to establish the ferret model for COVID-19, and he has worked collaboratively with bioinformaticians to decipher how the SARS-CoV-2 virus is mutating and how that could impact on the development and preclinical evaluation of vaccines and countermeasures. He is an invited member of WHO Ad hoc Expert Groups on Preclinical Models, and on SARS-CoV-2 Reagents and Cross-Reactivity. Vasan represents Australia (and previously the UK) in the Virus Task Group of the Four Eyes Medical Countermeasures Consortium, BSL4ZNet, etc. He was previously with the UK equivalent facility in Porton Down (Public Health England / Health Protection Agency), including as the senior business lead for Ebola and Zika response, leading his team to RCUK Impact Award 2015 (Contribution to Society) and BritishExpertise International Award 2018. Prior to that at Oxford and Oxitec, he enabled several world's first studies on transgenic mosquitoes such as semi-field trials (2007-08), open field trials (2010-11), bionomics and relative susceptibility to key viruses (2006-11). He was Co-Principal Investigator for the WHO/TDR Asian Biosafety Training Network (2009-12); Wellcome Trust grant for rapid in vitro and in vivo (guinea pig) down-selection of Ebola therapies (2014-16); and DfID/THET Ebola biosafety project (2015-17).

Associate Investigator(s)	Professor Allen Cheng Professor Phillip Hogarth Doctor Naphak Modhiran Professor Patrick Reading Professor Kanta Subbarao Doctor Irani Thevarajan Doctor Adam Wheatley Doctor Danushka Wijesundara

Professional Research Person(s)	CSIRO Histopathologist - Senior CSIRO Study director - animals CSIRO Virologist Doherty - Junior Postdoc to work at UoM Systems Serology Studies

	Doherty CIE - Senior postdoctoral researcher Senior postdoctoral researcher to work at University of Melbourne (CI-KK) UQ - Experienced scientist (vaccine product development and characterisation) UQ - Post doctoral research fellow (immunology) UQ - Post-doctoral research fellow (Structural biology) UQ - Project manager UQ - Senior Research Assistant (Molecular biology)

Technical Support Staff	CSIRO Animal welfare project office CSIRO Histopathologist - Junior CSIRO Lab technician - Junior CSIRO PC4 Animal Handling - Junior CSIRO PC4 Animal Handling - Senior CSIRO PC4 Lab technician - Junior CSIRO PC4 Lab technician - Junior CSIRO Project Office QA CSIRO Site manager - study team CSIRO Study director - animals CSIRO Study director - vitro/ in vivo CSIRO vet Doherty CIE Senior research Assistant Senior Research Assistant at Burnet (AI Hogarth) Senior research assistant (Wheatley lab) Senior research nurse at Alfred Hospital Senior research nurse at Royal Melbourne Hospital UQ - Research assistant (product development)

Relative to Opportunity (CV-RO) (last 5 years only)

Team Member	Circumstances	Impact	Duration
(CIB) Paul Young	1. T&R academic with associated teaching and student supervisory role to end 2013. 2. Head of School, School of Chemistry & Molecular Biosciences, UQ, March 2014 to present.	1. Jan 2012 - Feb 2014: Prior to becoming Head of School, I had a full teaching and student supervisory load, typical of a T&R academic. This involved ~50 lectures per year, >40 contact hours for practicals and workshops and unspecified but substantial preparation time. Estimate ~40-50% of my time engaged in these academic and associated administrative responsibilities. 2. Mar 2014 - Feb 2022: Head of School: The School of Chemistry & Molecular Biosciences is the largest School at the University of Queensland with >450 staff and RHD students. The administrative responsibilities involved in overseeing the School's operating budget (>$40M), teaching (>7,000 students taught by our School each year) and personnel as well as active involvement in associated committees and university responsibilities beyond the School are considerable. Nevertheless, effective oversight of my laboratory's research program is maintained with the support of excellent senior post-docs - HOS position is supported with an allocation for a funded post-doc. T&R responsibilities prior to March 2014 and the duties associated with the HOS position should be taken into account when assessing track record. Nevertheless, since becoming HOS in early 2014 I have helped secure 6 NHMRC Project grants, 2 NHMRC Development grants, 3 ARC DP, 3 ARC LIEF and a B&M Gates Explorations grant. Over the same period I have published 60 papers and reviews and secured 2 patents (60 publications in the last 5 years).	January 2012 - February 2019
(CIE) Damian Purcell	I am a teaching and research academic with a significant Virology teaching commitment at the University of Melbourne. I deliver around 50 lectures, run prac class and co-ordinate the Honours program	My undergraduate teaching commitment makes a significant call upon my time. In particular my role as coordinator for the large 3rd year Virology class (120 students) and the 4th year Honours Program (32). I teach into large classes such as Doctor of Medicine (~400) and 2nd year Microbiology and Immunology (450) which calls for a large marking load at exam time. These duties lead to time fragmentation impacting on tasks that require large blocks of uninterupted time.	January 2010 - December 2020

(CIH) Trevor Drew	Contribution to field of research:	Professor Drew is a co-investigator on Australia's preclinical response to COVID-19, also for CSIRO's Disease X and COVID-19 projects funded by the Coalition for Epidemic Preparedness Innovations (CEPI). He has contributed to the design and execution of the animal challenge model work on SARS CoV-2 and phylogenetic analyses.	November 2019 - March 2020

Career Disruption (CV-CD) (last 5 years only)

s47F

[redacted]	[redacted]
[redacted]	[redacted]
Additional Research Outputs:	

NHMRC Research Funding (CV-RF) (last 5 years only)

Team Member & AppID	Title	Funding Type & Grant Type	Your Role	First Year Funded	No of Years	Total Amount ($AUD)	% P/W
(CIA) Keith Chappell APP1156063	Clamp stabilized vaccines to provide broad spectrum protection against influenza	Research Support, Development Grants	CIC	2019	3	$949,516.00	20
APP1144025	Virus vaccines that ensure preparedness against future public health emergencies	Research Support, Project	CIC	2018	3	$862,061.00	20
(CIB) Paul Young APP1178896	Chimeric insect-specific viruses as novel vaccines for mosquito-borne diseases	Research Support, Development Grants	CIF	2020	3	$1,017,285.00	0
APP1156063	Clamp stabilized vaccines to provide broad spectrum protection against influenza	Research Support, Development Grants	CIA	2019	3	$949,516.00	0
APP1164216	High resolution structural determination of pathogenic flaviviruses by cryo-EM using a chimeric platform	Research Support, Project	CIE	2019	3	$548,990.00	0
APP1162507	Structural insights into the function and antigenicity of the flavivirus NS1 protein.	Research Support, Project	CIB	2019	3	$624,920.00	0
APP1139754	Needle free delivery of dengue and Zika vaccines to the skin	Research Support, Development Grants	CIA	2018	3	$642,792.40	0
APP1144025	Virus vaccines that ensure preparedness against future public health emergencies	Research Support, Project	CIA	2018	3	$862,061.00	0
APP1103804	The genetic basis of pathogen blocking: elucidating the contributions of the Wolbachia, dengue virus and mosquito genomes	Research Support, Project	CIB	2016	4	$736,338.80	0

APP1109738	Dengue virus NS1 protein as a mediator of pathology	Research Support, Project	CIB	2016	3	$621,979.00	0
APP1081786	Host metabolism and responses contributing to flavivirus replication and pathogenesis	Research Support, Project Grant	CIB	2015	3	$574,492.00	10
APP1067226	Understanding the basis of disease caused by dengue viruses	Research Support, Project Grant	CIA	2014	3	$611,226.00	40
APP1075739	Skin patch technology for fast and simple monitoring of disease	Research Support, Development Grants	CIB	2014	3	$796,599.00	20
APP1074296	Dengue fever vaccine: Towards low cost production and delivery	Research Support, Development Grants	CIB	2014	3	$591,894.00	20
APP1047635	Nanoparticles to treat respiratory viral infections	Research Support, Project Grant	CIB	2013	3	$509,374.00	5
(CIC) Daniel Watterson APP1164216	High resolution structural determination of pathogenic flaviviruses by cryo-EM using a chimeric platform	Research Support, Project	CIA	2019	3	$548,990.00	0
APP1162507	Structural insights into the function and antigenicity of the flavivirus NS1 protein.	Research Support, Project	CIA	2019	3	$624,920.00	0
APP1156063	Clamp stabilized vaccines to provide broad spectrum protection against influenza	Research Support, Development Grants	CID	2019	3	$949,516.00	20
APP1144025	Virus vaccines that ensure preparedness against future public health emergencies	Research Support, Project	CID	2018	3	$862,061.00	20

APP1109738	Dengue virus NS1 protein as a mediator of pathology	Research Support, Project	CID	2016	3	$621,979.00	40
(CIE) Damian Purcell APP1136351	Mucosal human immunodeficiency virus vaccine late pre-clinical evaluation	Research Support, Development Grants	CID	2018	2	$575,315.10	0
APP1129320	RNA processing mechanisms controlling HIV latency	Research Support, Project	CIA	2017	3	$605,077.50	0
APP1115828	European AIDS Vaccine Initiative 2020	Research Support, NHMRC - European Union	CIB	2016	5	$500,000.00	0
APP1113712	Novel drugs to drive HIV into remission	Research Support, Development Grants	CIA	2016	3	$1,001,191.60	0
1052979	HIV latency, pathogenesis and immunity	Research Support, Program Grant	CIG	2014	5	$12,612,250.00	80
(CIF) Katherine Kedzierska APP1173871	Harnessing universal immunity to influenza	Research Support, Investigator Grants	CIA	2020	5	$2,482,424.00	32
APP1122524	Generation of protective immunity against severe influenza disease in Indigenous Australians	Research Support, Project	CIA	2017	4	$1,630,900.00	0
APP1102792	Understanding universal immunity to influenza viruses	People Support, Research Fellowship	CIA	2015	5	$687,975.00	
APP1071916	Limiting the Impact of Influenza	Research Support, Program	Chief Investigator	2015	5	$13,617,890.00	0

APP1042662	Understanding T cell immunity in the Indigenous population	Research Support, Project Grant	CIA	2013	4	$833,522.00	20
(CIG) Amy Chung APP1163790	Identification of functional antibodies that control Mycobacterium Tuberculosis	Research Support, Project	CIA	2019	4	$737,192.00	0
APP1140509	Importance of functional antibodies against infectious diseases	People Support, Career Development Fellowship	CIA	2018	4	$431,000.00	0
APP1143946	A novel approach to identify the specific antibody characteristics important for protection from malaria in pregnant women	Research Support, Project	CIC	2018	4	$1,011,222.80	0
APP1125164	Systemic and mucosal functional antibodies in protection against HIV Outcome to date : 5 publications including 2 last author publications	Research Support, Project	CIA	2017	3	$559,501.00	36.8
APP1036470	Comparison of Antibodies from HIV-1 Human Vaccine Trials Output: 14 publications during this fellowship period	People Support, Early Career Fellowships	CIA	2012	4	$318,204.00	40

Other Research Funding (CV-ORF) (last 5 years only)

Team Member & App ID	Funding Organisation	Domestic/ International	Funding Source	Peer Reviewed	Your Role	First Year Funded	No of Years	Total Amount ($AUD)	% P/W
(CIA) Keith Chappell UQ-Clamp VC	Venture Capital - Development of a pre-fusion stabilized RSV F vaccine				Chief Investigator	2019	2	$1,500,000.00	0
UQSWIF-CHAP	Development of a clamp stabilised subunit vaccine for protection against HTLV-1	Domestic	University	Yes	CIA	2019	2	$20,000.00	0
UQ-CEPI	Coalition for Epidemic Preparedness Innovations (CEPI)	International	NGO's (non-profit)	Yes	Co-lead investigator	2019	3	$14,900,000.00	0
DP180103362	ARC	Domestic	Government	Yes	CIB	2018	3	$468,605.00	0
(CIB) Paul Young 181214	Coalition for Epidemic Preparedness Innovations - CEPI	International	NGO's (non-profit)	Yes	CIA	2019	3	$14,700,000.00	0
DP180103362	Australian Research Council	Domestic	Government		CIA	2018	3	$159,000.00	0
LE150100149	Australian Research Council	Domestic	Government	Yes	CIE	2016	1	$598,000.00	0
BMGF:01065001096	Bill & Melinda Gates Foundation	International	Philanthropic	Yes	CIA	2016	1	$147,000.00	0
DP160100588	Australian Research Council	Domestic	Government	Yes	CIB	2016	3	$359,000.00	0

(CIC) Daniel Watterson NA	Australian Infectious Disease Research Centre	Domestic	Research Institution	Yes	Project management, experimental design	2017	1	$50,000.00	0
NA	reViral and Sussex University consultancies	International	Commercial	No	Project managment	2013	4	$52,000.00	0
NA	Australian Red Cross Blood Service consultancies	Domestic	Commercial	No	Project managment	2013	3	$92,000.00	0
(CID) Trent Munro 2014001497	NCRIS (administered by Therapeutic Innovation Australia (TIA))	Domestic	Government	Yes	Chief Investigator	2014	4	$14,219,158.80	0
SRI Stem Cells	ARC	Domestic	Government	Yes	AI	2012	7	$21,000,000.00	10
(CIE) Damian Purcell HTLV-1c preventions	Australian Centre for HIV and Hepatitis Virology	Domestic	Government	Yes	HTLV-1c antibody and DNA assays to monitor prevention and disease prognosis	2020	1	$87,000.00	0
SCIENCE WITH IMPACT	University of Queensland: K. Chappell, P. Young and D. Watterson, and D. Purcell “Development of a clamp stabilised subunit vaccine for protection against HTLV-1	Domestic	University	Yes	Testing neutralising antibodies to HTLV-1c from patients and vaccinated mice	2019	1	$10,000.00	0

1106054	University of Melbourne Research Fund	Domestic	University	Yes	CIB	2016	1	$40,000.00	0
#400302	Victorian Infection and Immunity Network (VIIN) Industry Alliance Project Grant	Domestic	Research Institution		CIA	2015	1	$15,000.00	0
NA	Victorian Technology Voucher Program Development Grant	Domestic	Government	Yes	CIA	2015	1	$54,000.00	0
N/A	Australian Centre for HIV and Hepatitis Research (ACH2)	Domestic	Government	Yes	Sole CI	2014	2	$160,000.00	0
(CIF) Katherine Kedzierska T11-712/19-N	Hong Kong Grant Research Council Theme Based Research Grant	International	Government	Yes	Chief Investigator	2020	5	$11,000,000.00	0
DP190103282	ARC Discovery project	Domestic	Government	Yes	CIA	2019	3	$575,000.00	0
DP190103282	ARC Discovery project	Domestic	Government	Yes	CIA	2019	3	$361,000.00	0
1U01AI144616-01	NIH	International	Government	Yes	Chief Investigator	2019	7	$49,000,000.00	0
HHS-NIH-NIAID-BAA201	NIH	International	Government	Yes	Chief Investigator	2019	7	$158,999,827.00	0
N/A	Melbourne Technology Accelerator Fund	Domestic	University	Yes	CIA	2018	1	$14,000.00	0

N/A	CEIRS Option Grant	International	Other	Yes	CIB	2018	2	$578,000.00	0
N/A	Endeavour Grant Proposals.	International	University	Yes	CIB	2018	1	$6,000.00	0
N/A	Clifford Craig Research Trust	Domestic		Yes	CIB	2018	2	$40,000.00	0
N/A	Doherty Internal Collaborative Grants Scheme	Domestic	University	Yes	CIA	2016	2	$20,000.00	0
N/A	Clifford Craig Research Trust	Domestic	Philanthropic	Yes	CIC	2016	2	$177,204.00	0
13-IRRTF	International Research and Research Training Fund (IRRTF) Grant University of Melbourne	Domestic	University	Yes	CIA	2014	3	$150,000.00	0
(CIG) Amy Chung Mathilde Krim II	American Foundation for AIDS Research (amfAR)	International	Philanthropic	Yes	PI	2019	1	$75,000.00	0
Equipment Grant	University of Melbourne	Domestic	University	Yes	CIA	2018	1	$240,000.00	0
Establishment grant	University of Melbourne	Domestic	University	Yes	CIA	2018	1	$35,000.00	0
mHIVE grant	Melbourne HIV Exchange Collaborative Grant	Domestic	NGO's (non-profit)	Yes	CIA	2018	1	$5,000.00	0

ACH2-2017	Australian Centre for HIV and Hepatitis Virology Research (ACH2)	Domestic	Government	Yes	CIC	2017	1	$95,000.00	0
amfAR Mathilde Krim	American Foundation for AIDS Research (amfAR)	International	Philanthropic	Yes	PI	2017	2	$200,000.00	0
D'Esterre Taylor	Henry and Robert D'Esterre Taylor Charitable Fund	Domestic	Philanthropic	Yes	CIA	2017	1	$50,000.00	0
Uni Melb ECR Grant	University of Melbourne	Domestic	University	Yes	CIA	2016	1	$40,000.00	0

Salary Budget Summary (A-RT)

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Total Proposed Salary: $1,155,398.20

Reasons For Salary Requests

Type/Role, Name	Reason
(CIH) Professor Trevor Drew	CI - Senior Leader - Chief vet required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(CII) Professor Seshadri Vasan	CI - Project Leader
(PRP) CSIRO Histopathologist - Senior	Histopathology - Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(PRP) CSIRO Study director - animals	Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(PRP) CSIRO Virologist	Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(PRP) Doherty - Junior Postdoc to work at UoM Systems Serology Studies	A (PSP3) junior postdoc supervised by CI Chung is essential for the timely completion of the systems serology antibody profiling described. Excellent organisational skills, experience in cell culture, leukocyte isolation techniques, cell-based functional assays, multiparameter flow cytometry, multiplex assays, capillary electrophoresis, glycan profiling and protein expression are all critical for the timely and successful completion of this project.

(PRP) Doherty CIE - Senior postdoctoral researcher	An experienced senior postdoc PSP5 at 1FTE is requested to work with CIE-DP in the PC3 containment laboratory at UoM/Doherty on micro-neutralisation assays for SAR-CoV-2 and in making pseudotyped reporter viruses for high throughput neutralisation assays used to assess B-cell derived nAbs obtained in PC3 cell sorting. Abs made from genomics approaches from labs of other CIs and AIs will also be tested for antiviral potency.
(PRP) Senior postdoctoral researcher to work at University of Melbourne (CI-KK)	An experienced senior postdoc PSP5 at 1FTE is requested to work with CI-KK at UoM/Doherty on immunological studies to perform carefully designed experiments that use limited COVID-19 patient samples and use highly innovative cellular and molecular techniques (in-depth FACS whole blood assays, functional assays in PC3, operate the Fortessa FACS in PC2/PC3, sort in PC3, multiplex single-cell PCR, work safely under PC2/PC3 conditions), ensure productivity, rapid collection and analysis of data.
(PRP) UQ - Experienced scientist (vaccine product development and characterisation)	An expert in biologic manufacture and process development and biologic characterisation will be seconded from CSL, Patheon or equivalent for six months to work with the team to translate the research into a product manufacturing process compatible with biopharma industry.
(PRP) UQ - Post doctoral research fellow (immunology)	An experienced post-doctoral research fellow is required to undertake research activities at the University of Queensland, including production of vaccine antigen and monoclonal antibodies, to assist with animal immunisations and to conduct analysis of humoral and CD4/CD8 tcell immune responses
(PRP) UQ - Post-doctoral research fellow (Structural biology)	An experienced post doctoral research fellow will be required to undertake structural resolution of COVID Sclamp and associated monoclonal antibodies.
(PRP) UQ - Project manager	An experience project manager is required to coordinate research activities between the three sites
(PRP) UQ - Senior Research Assistant (Molecular biology)	A senior research assistant is required to undertake assist with day to day research activities at the University of Queensland, including primarily focused on production of vaccine antigen and monoclonal antibodies, and in vitro characterisation.
(TSS) CSIRO Animal welfare project office	Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(TSS) CSIRO Histopathologist - Junior	Histopathology - Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(TSS) CSIRO Lab technician - Junior	Cleaning and decontamination - Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(TSS) CSIRO PC4 Animal Handling - Junior	Holding animal facility manager - Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(TSS) CSIRO PC4 Animal Handling - Senior	Senior Project Office - Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(TSS) CSIRO PC4 Lab technician - Junior	Biosecurity and decontamination - Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(TSS) CSIRO PC4 Lab technician - Junior	Project Office - Facility role required by animal ethics, research methodology and / or legislation for pre-

	clinical animal study
(TSS) CSIRO Project Office QA	Quality assurance - Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(TSS) CSIRO Site manager - study team	Study team test site manager - Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(TSS) CSIRO Study director - vitro/ in vivo	Facility role required by legislation for pre-clinical animal study
(TSS) CSIRO vet	Animal handling, and immunisation vet - Facility role required by animal ethics, research methodology and / or legislation for pre-clinical animal study
(TSS) Doherty CIE Senior research Assistant	An experienced research assistant at PSP4 is needed to manage PC3 lab facilities and assist with workflow for ELISA and nAb assays. The RA will also prepare protein reagents for ELISA assays and assist with plasmid cloning, large scale plasmids preparation, and cell transfections to produce reporter pseudoviruses, and their subsequent purification. This person will also manage transgenic mice in the PC3 lab as these become available.
(TSS) Senior Research Assistant at Burnet (AI Hogarth)	A (PSP3) senior research assistant supervised by AI Hogarth at Burnet Institute is required to generate both human and animal dimeric FcgR proteins reagents and novel FcγR dependent chemiluminescent reporter cells for high throughput immune profiling assays. These are specialised reagents that are designed, generated and validated by the Hogarth Lab and requires expertise to rapidly optimize for other animal model immunogenicity studies
(TSS) Senior research nurse at Alfred Hospital	This proposal requires an experienced research nurse (PSP3 at 0.4FTE) positioned at the Alfred Hospital who will identify, consent, recruit COVID-19 patients, collect the specimens and liaise with CI Kedzierska with respect to patient recruitment and sample collection.
(TSS) Senior research nurse at Royal Melbourne Hospital	This proposal requires an experienced research nurse (PSP3 at 0.4FTE) positioned at the Royal Melbourne Hospital who will identify, consent, recruit COVID-19 patients, collect the specimens and liaise with CI Kedzierska with respect to patient recruitment and sample collection.
(TSS) UQ - Research assistant (product development)	An experienced research assistant is required to assist with process development and product characterisation

Proposed Budget: Direct Research Costs and Equipment (B-PB)

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Australian Government
National Health and Medical Research Council

MRFF - Research Grants - Publications Snapshot Report: APP1202445

2020_MRFF_Novel_Coronavirus_Vaccine_Development_2020

Application Title	Molecular Clamp Stabilized Spike Vaccine for Rapid Response

Administering Institution	The University of Queensland

Indigenous	No
Guide to Peer-Review Areas	Immunology, Virology, Molecular Biology

Chief Investigator	Pro-A: Primary Institution	Pro-A: Affiliated Institution(s)
(CIA) Keith Chappell	The University of Queensland	
(CIB) Paul Young	The University of Queensland	Institute for Molecular BioSciences
(CIC) Daniel Watterson	The University of Queensland	
(CID) Trent Munro	The University of Queensland	Australian Institute for Bioengineering and Nanotechnology (AIBN)
(CIE) Damian Purcell	University of Melbourne	University of Melbourne
(CIF) Katherine Kedzierska	University of Melbourne	University of Melbourne
(CIG) Amy Chung	University of Melbourne	
(CIH) Trevor Drew	Commonwealth Scientific and Industrial Research Organisation	
(CII) Seshadri Vasan	Commonwealth Scientific and Industrial Research Organisation	University of York, UK

Contents

CV-Pub: Publications

CIA (K. Chappell) - Journal Articles (Original Research)

1 Brealey, J. C.; Sly, P. D.; Young, P. R.; Chappell, K. J. *Analysis of phylogenetic diversity and in vitro adherence characteristics of respiratory syncytial virus and Streptococcus pneumoniae clinical isolates obtained during pediatric respiratory co-infections* **Microbiology** (2020) 166 1 63-72 P15088551 **Grants -**
Deposited in an open access institutional repository - No

2 Do, L. A. H.; Tse, R.; Nathanielsz, J.; Anderson, J.; Ong, D. S.; Chappell, K.; Mulholland, K.; Licciardi, P. V. *An Improved and High Throughput Respiratory Syncytial Virus (RSV) Micro-neutralization Assay* **J Vis Exp** (2019) 143 - P15088553 **Grants -**
Deposited in an open access institutional repository - No

3 Yu, T.; Koppetsch, B. S.; Pagliarani, S.; Johnston, S.; Silverstein, N. J.; Luban, J.; Chappell, K.; Weng, Z.; Theurkauf, W. E. *The piRNA Response to Retroviral Invasion of the Koala Genome* **Cell** (2019) 179 3 632-643 e12 P15088552 **Grants -**
Deposited in an open access institutional repository - No

4 Bermingham, I. M.; Chappell, K. J.; Watterson, D.; Young, P. R. *The Heptad Repeat C Domain of the Respiratory Syncytial Virus Fusion Protein Plays a Key Role in Membrane Fusion* **J Virol** (2018) 92 4 - P14153602 **Grants -**
Deposited in an open access institutional repository - No

5 Jaberolansar, N.; Chappell, K. J.; Watterson, D.; Bermingham, I. M.; Toth, I.; Young, P. R.; Skwarczynski, M. *Induction of high titred, non-neutralising antibodies by self-adjuvanting peptide epitopes derived from the respiratory syncytial virus fusion protein* **Sci Rep** (2017) 7 1 11130 P14154774 **Grants -**
Deposited in an open access institutional repository - No

6 Watterson, D.; Robinson, J.; Chappell, K. J.; Butler, M. S.; Edwards, D. J.; Fry, S. R.; Bermingham, I. M.; Cooper, M. A.; Young, P. R. *A generic screening platform for inhibitors of virus induced cell fusion using cellular electrical impedance* **Sci Rep** (2016) 6 22791 P13684491 **Grants -**
Deposited in an open access institutional repository - No

7 Vitak, N.; Hume, D. A.; Chappell, K. J.; Sester, D. P.; Stacey, K. J. *Induction of interferon and cell death in response to cytosolic DNA in chicken macrophages* **Dev Comp Immunol** (2016) 59 145-152 P13339304 **Grants -**
Deposited in an open access institutional repository - No

3

8 Chappell, K. J.; Brealey, J. C.; Amarilla, A. A.; Watterson, D.; Hulse, L.; Palmieri, C.; Johnston, S. D.; Holmes, E. C.; Meers, J.; Young, P. R. *Phylogenetic diversity of Koala Retrovirus within a Wild Koala Population* **J Virol** (2016) - P13636775 **Grants -**
Deposited in an open access institutional repository - No

9 Shannon, A. E.; Pedroso, M. M.; Chappell, K. J.; Watterson, D.; Liebscher, S.; Kok, W. M.; Fairlie, D. P.; Schenk, G.; Young, P. R. *Product release is rate-limiting for catalytic processing by the Dengue virus protease* **Sci Rep** (2016) 6 37539 P13636777 **Grants -**
Deposited in an open access institutional repository - No

10 Norris, E. L.; Headlam, M. J.; Dave, K. A.; Smith, D. D.; Bukreyev, A.; Singh, T.; Jayakody, B. A.; Chappell, K. J.; Collins, P. L.; Gorman, J. J. *Proteoform-Specific Insights into Cellular Proteome Regulation* **Molecular & Cellular Proteomics** (2016) 15 10 3297-3320 P13636778 **Grants -**
Deposited in an open access institutional repository - No

11 Shannon, A. E.; Chappell, K. J.; Stoermer, M. J.; Chow, S. Y.; Kok, W. M.; Fairlie, D. P.; Young, P. R. *Simultaneous uncoupled expression and purification of the Dengue virus NS3 protease and NS2B co-factor domain* **Protein Expr Purif** (2016) 119 124-9 P13339303 **Grants -**
Deposited in an open access institutional repository - No

CIA (K. Chappell) - Accepted for Publication

12 Pyankov, O.; Setoh, Y.; Bodnev, S.; Edmonds, J.; Pyankova, O.; Pyankov, S.; Pali, G.; Belford, S.; Lu, L.; La, M.; Lovrecz, G.; Volchkova, V.; Chappell, K.; Watterson, D.; Marsh, G.; Young, P.; Agafonov, A.; Farmer, J.; Volchkov, V.; Suhrbier, A.; Khromykh, A. *Successful post-exposure prophylaxis of Ebola infected non-human primates using Ebola glycoprotein-specific equine IgG* **Scientific Reports** (2017) - P13659362 **Grants -**
Deposited in an open access institutional repository - No

CIA (K. Chappell) - Journal Articles (Review)

13 Chappell, K. J.; Watterson, D. *Fighting Ebola: A Window for Vaccine Re-evaluation?* **PLoS Pathog** (2017) 13 1 e1006037 P13636776 **Grants -**
Deposited in an open access institutional repository - No

14 Brealey, J. C.; Sly, P. D.; Young, P. R.; Chappell, K. J. *Viral bacterial co-infection of the respiratory tract during early childhood* **FEMS Microbiol Lett** (2015) 362 10 - P13339302 **Grants -**
Deposited in an open access institutional repository - No

CIB (P. Young) - Journal Articles (Original Research)

1 Brealey JC, Sly PD, Young PR, Chappell KJ. *Analysis of phylogenetic diversity and in vitro adherence characteristics of respiratory syncytial virus and Streptococcus pneumoniae clinical isolates obtained during pediatric respiratory co-infections.* **Microbiology** (2020) 166 1 63 - 72 P03459622 **Grants -** GNT1067226;
Deposited in an open access institutional repository - No

2 KC, S, Ranzoni, A, Hung, J, Blaskovich, MA, Watterson, D, Young, PR and Cooper, MA. *Flow-cytometry detection of fluorescent magnetic nanoparticle clusters increases sensitivity of dengue immunoassay.* **Analytica Chimica Acta** (2020) - P03459624 **Grants -**
Deposited in an open access institutional repository - No

3 Schanoski, AS, Le, TT, Kaiserman, D, Rowe, C, Prow, NA, Barboza, DD, Santos, CA, Zanotto, PM, Magalhaes, KG, Aurelio, L, Muller, DA, Young, PR, Zhao, P, Bird, P and Suhrbier A *Granzyme A in chikungunya and other arboviral infections.* **Frontiers in Immunology** (2020) 10 3083 - P03459623 **Grants -**
Deposited in an open access institutional repository - No

4 Tan Y.P., Houston S.D., Modhiran N., Savchenko A.I., Boyle G.M., Young P.R., Watterson D., Williams C.M. *A Dengue Virus Inhibitor from Basilicum polystachyon* **Chemistry European Journal** (2019) 25 5664 - 5667 P03459594 **Grants -**
Deposited in an open access institutional repository - No

5 Hobson-Peters J, Harrison JJ, Watterson D, Hazlewood JE, Vet LV, Newton ND, Warrilow D, Colmant AMG, TaylorC, Huang B, Piyasena TBH, Chow WK, Setoh YX, Tang B, Nakayama E, Yan K, Amarilla AA, Wheatley S, Moore PR, Finger M, Kurucz N, Modhiran N, Young PR, Khromykh AA, Bielefeldt-Ohmann H, Suhrbier A, Hall RH. *A rapid recombinant platform for flavivirus vaccines and diagnostics using chimeras of a new insect-specific virus* **Science Translational Medicine** (2019) 11 522 - P03459607 **Grants -**
Deposited in an open access institutional repository - No

6 Setoh Y.X., Amarilla A.A., Peng N.Y.G., Griffiths R.E., Carrera J, Freney M.E., Nakayama E., Ogawa S., Watterson D., Modhiran N., Nanyonga F.E., Torres F.J., Slonchak A., Periasamy P., Prow N.A., Tang B., Harrison J., Hobson-Peters J., Cuddihy T., Cooper-White J., Hall R.A., Young P.R., Mackenzie J.M., Wolvetang E., Bloom J.D., Suhrbier A., Khromykh A.A. *Determinants of Zika virus host tropism uncovered by deep mutational scanning* **Nature Microbiology** (2019) 4 5 876 - 887 P03459602 **Grants -**
Deposited in an open access institutional repository - No

7 Modhiran, N., Gandhi, N.S., Wimmer, N., Cheung S., Stacey K., Young, P.R., Ferro, V. Watterson, D. *Dual targeting of dengue virus virions and NS1 protein with the heparan sulfate mimic PG545.* **Antiviral Research** (2019) 168 121 - 127 P03459606 **Grants -**
Deposited in an open access institutional repository - No

8 Muller D, Depelsenaire A, Shannon A, Watterson D, Corrie S, Owens N, Agyei-Yeboah C, Cheung S, Zhang J, Fernando G, Kendall M, Young P. *Efficient delivery of dengue virus subunit vaccines to the skin by microprojection arrays* **Vaccines** (2019) 7 189 - P03459614 **Grants -** GNT1139754;
Deposited in an open access institutional repository - No

9 Faddy, H.M., Fryk, J.J., Hall, R.A., Young, P.R., Reichenberg, S., Tolksdorf, F., Sumian, C., Gravemann, U., Seltsam, A. and Marks, D.C. *Inactivation of yellow fever virus in plasma after treatment with methylene blue and visible light and in platelet concentrates following treatment with ultraviolet C light.* **Transfusion** (2019) 59 7 2223 - 2227 P03459593 **Grants -**
Deposited in an open access institutional repository - No

10 Canto MN, Hall MD, Pak D, Young PR, Holmes EC, McGraw EA. *Intra-host growth kinetics of dengue virus in the mosquito Aedes aegypti.* **PLoS Pathogens** (2019) 15 12 - P03459617 **Grants -** GNT1103804;
Deposited in an open access institutional repository - No

11 Koh, C., Audsley, M.D., Di Giallonardo, F., Kerton E.J., Young, P.R., Holmes, E.C., McGraw, E.A. *Sustained Wolbachia-mediated blocking of dengue virus isolates following serial passage in Aedes aegypti cell culture. Virus Evolution* **Virus Evolution** (2019) 5 1 - P03459603 **Grants -** GNT1103804;
Deposited in an open access institutional repository - No

12 Walker, J.A., Robinson, K.J., Munro, C., Genganbach, T., Muller, D.A., Young, P.R., Lua, L.H.L and Corrie S.R. *Antibody-binding, antifouling surface coatings based on recombinant expression of zwitterionic EK peptides.* **Langmuir** (2018) - P03043971 **Grants -**
Deposited in an open access institutional repository - No

13 Wang, J.T.H., Power, C.J, Kahler, C.M., Lyras, D., Young, P.R., Iredell, J., Robins-Browne, R. *Communication Ambassadors – an Australian social media initiative to develop communication skills in early career scientists.* **Journal of Microbiology and Biology Education** (2018) 19 - P02862918 **Grants -**
Deposited in an open access institutional repository - Yes

14 Di Giallonardo F., Audsley M., Shi M., Young P., McGraw E., Holmes E. *Complete genome of Aedes aegypti anphevirus in the Aag2 mosquito cell line* **Journal of General Virology** (2018) 99 6 832 - 836 P03459592 **Grants -** GNT1103804;
Deposited in an open access institutional repository - No

15 Löber, U., Hobbs, M., Dayaram, A., Tsangaras, K., Jones, K. Alquezar-Planas, D.E., Ishida, Y., Meers, J., Mayer, J., Quedenau, C., Chen, W., Johnson, R.N., Timms, P., Young, P.R., Roca, A.L., Greenwood, A.D. *Degradation and remobilization of endogenous retroviruses by recombination during the earliest stages of a germ-line invasion.* **Proceedings of the National Academy of Sciences** (2018) 115 34 8609 - 8614 P03459590 **Grants -**
Deposited in an open access institutional repository - No

16 Chan, K.F, Carolan, L.A., Druce, J., Chappell, K., Watterson, D., Young, P., Korenkov, D., Subbarao, K., Barr, I.G., Laurie, K.L., and Reading, P.C. *Pathogenesis, humoral immune responses and transmission between co-housed animals in a ferret model of human RSV infection.* **Journal of Virology** (2018) 92 4 - P02862893 **Grants -**
Deposited in an open access institutional repository - No

17 Li J, Watterson D, Chang CW, Che XY, Li XQ, Ericsson DJ, Qiu LW, Cai JP, Chen J, Fry SR, Cheung STM, Cooper MA, Young PR, Kobe B. *Structural and Functional Characterization of a Cross-Reactive Dengue Virus Neutralizing Antibody that Recognizes a Cryptic Epitope.* **Structure** (2018) 26 51 - 59 P02862898 **Grants -** GNT1067226;
Deposited in an open access institutional repository - No

18 Bermingham, I.M., Chappell, K.J., Watterson, D. and Young, P.R. *The heptad repeat C domain of the respiratory syncytial virus fusion protein plays a key role in membrane fusion.* **Journal of Virology** (2018) 92 4 - P02862897 **Grants -**
Deposited in an open access institutional repository - No

19 Modhiran, N., Watterson, D., Blumenthal, A., Alan G. Baxter, A.G., Young, P.R., Stacey, K.J. *Dengue virus NS1 protein activates immune cells via TLR4 but not TLR2 or 6* **Immunology and Cell Biology** (2017) - P02548988 **Grants -** GNT1067226;
Deposited in an open access institutional repository - No

20 Muller D.A., Fernando G.J.P., Owens N.S., Agyei-Yeboah C, Wei J.C.J., Depelsenaire A.C.I., Forster A., Fahey P., Weldon W.C., Oberste M.S., Young P.R., Kendall M.A.F. *High-density microprojection array delivery to rat skin of low doses of trivalent inactivated poliovirus vaccine elicits potent neutralising antibody responses.* **Scientific Reports** (2017) - P02862900 **Grants -** GNT1075739;
Deposited in an open access institutional repository - No

21 Jaberolansar, N., Chappell, K., Watterson, D., Bermingham, I., Toth, I., Young, P., and Skwarczynski, M. *Induction of high titred, non-neutralising antibodies by self-adjuvanting peptide epitopes derived from the respiratory syncytial virus fusion protein.* **Scientific Reports** (2017) 7 1 - P02757836 **Grants -**
Deposited in an open access institutional repository - No

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Deposited in an open access institutional repository - Yes

CIC (D. Watterson) - Accepted for Publication

37 Natalie A. Prow; Marcus G. Mah; Joshua Deerain; David Warrilow; Agathe Colmant; Caitlin O'Brien; Jessica Harrison; Breeanna McLean; Elise Hewlett; Thisun Piyasena; Sonja Hall-Mendelin; Andrew van den Hurk; Bixing Huang; Daniel Watterson; Benjamin Schulz; Cameron Webb; Cheryl Johansen; Weng Chow; Jody Hobson-Peters; Chris Cazier; Lark Coffey; Helen Faddy; Andreas Suhrbier; Helle Bielefeldt-Ohmann; Roy Hall *New genotypes of Liao ning virus (LNV) in Australia exhibit an insect-specific phenotype* **Journal of General Virology** (2018) - P03030947 **Grants -**
Deposited in an open access institutional repository - No

CIC (D. Watterson) - Journal Articles (Review)

38 Watterson, D.; Modhiran, N.; Young, P. R. *The many faces of the flavivirus NS1 protein offer a multitude of options for inhibitor design* **Antiviral Res** (2016) - P13497919 **Grants -**
Deposited in an open access institutional repository - No

CIC (D. Watterson) - Books/Chapters

39 Daniel Watterson, Naphak Modhiran,
David A. Muller, Katryn J. Stacey,
and Paul R. Young *Plugging the Leak: Is Dengue a Case of Aseptic Shock?* **Dengue and Zika: Control and Antiviral Treatment Strategies** (2018) - P03030948 **Grants -**
Deposited in an open access institutional repository - No

CIC (D. Watterson) - Letters to the Editor

40 Stacey, K. J.; Watterson, D.; Modhiran, N.; Young, P. R. *Response to comment on "Dengue virus NS1 protein activates cells via Toll-like receptor 4 and disrupts endothelial cell monolayer integrity" and "Dengue virus NS1 triggers endothelial permeability and vascular leak that is prevented by NS1 vaccination"* **Sci Transl Med** (2015) 7 318 318lr4 P13497916 **Grants -**
Deposited in an open access institutional repository - No

CID (T. Munro) - Journal Articles (Original Research)

1 Playford, Elliott.; Munro, Trent.; Mahler, Stephen M.; Elliott, Suzanne.; Gerometta, Michael. ; Hoger, Kym L. ; Jones, Martina L.; Griffin, Paul.; Lynch, Kathleen D.; Carroll, Heidi.; El Saadi, Debra.; Gilmour, Margaret E.; Hughes, Benjamin.; Hughes, Karen.; Huang, Edwin.; de Bakker, Christopher.; Klein, Reuben.; Scher, Mark G.; Smith, Ina L.; Wang, Lin-Fa.; Lambert, Stephen B.; Dimitrov, Dimiter S.; Gray, Peter P.; Broder, Christopher C. *Safety, Tolerability, Pharmacokinetics, and Immunogenicity of a Human Monoclonal Antibody Targeting the G Glycoprotein of Henipaviruses in Healthy Adults: A Randomised, First-in-Human Phase 1 Study* **Lancet Infectious Diseases** (2020) - P15022922 **Grants -**
Deposited in an open access institutional repository - Yes

2 Jorgolli, M.; Nevill, T.; Winters, A.; Chen, I.; Chong, S.; Lin, F. F.; Mock, M.; Chen, C.; Le, K.; Tan, C.; Jess, P.; Xu, H.; Hamburger, A.; Stevens, J.; Munro, T.; Wu, M.; Tagari, P.; Miranda, L. P. *Nanoscale integration of single cell biologics discovery processes using optofluidic manipulation and monitoring* **Biotechnol Bioeng** (2019) 116 9 2393-2411 P15022923 **Grants -**
Deposited in an open access institutional repository - No

3 Le, K.; Tan, C.; Gupta, S.; Guhan, T.; Barkhordarian, H.; Lull, J.; Stevens, J.; Munro, T. *A novel mammalian cell line development platform utilizing nanofluidics and optoelectro positioning technology* **Biotechnol Prog** (2018) 34 6 1438-1446 P15022926 **Grants -**
Deposited in an open access institutional repository - Yes

4 Tharmalingam, T.; Barkhordarian, H.; Tejeda, N.; Daris, K.; Yaghmour, S.; Yam, P.; Lu, F.; Goudar, C.; Munro, T.; Stevens, J. *Characterization of phenotypic and genotypic diversity in subclones derived from a clonal cell line* **Biotechnol Prog** (2018) 34 3 613-623 P15022924 **Grants -**
Deposited in an open access institutional repository - Yes

5 Orellana, C. A.; Marcellin, E.; Palfreyman, R. W.; Munro, T. P.; Gray, P. P.; Nielsen, L. K. *RNA-Seq Highlights High Clonal Variation in Monoclonal Antibody Producing CHO Cells* **Biotechnology Journal** (2018) 13 3 - P15022925 **Grants -**
Deposited in an open access institutional repository - Yes

6 Munro, T. P.; Le, K.; Le, H.; Zhang, L.; Stevens, J.; Soice, N.; Benchaar, S. A.; Hong, R. W.; Goudar, C. T. *Accelerating patient access to novel biologics using stable pool-derived product for non-clinical studies and single clone-derived product for clinical studies* **Biotechnol Prog** (2017) 33 6 1476-1482 P15022927 **Grants -**
Deposited in an open access institutional repository - Yes

7 Seldon, T. A.; Pryor, R.; Palkova, A.; Jones, M. L.; Verma, N. D.; Findova, M.; Braet, K.; Sheng, Y.; Fan, Y.; Zhou, E. Y.; Marks, J. D.; Munro, T.; Mahler, S. M.; Barnard, R. T.; Fromm, P. D.; Silveira, P. A.; Elgundi, Z.; Ju, X.; Clark, G. J.; Bradstock, K. F.; Munster, D. J.; Hart, D. N. *Immunosuppressive human anti-CD83 monoclonal antibody depletion of activated dendritic cells in transplantation* **Leukemia** (2016) 30 3 692-700 P15022930 **Grants -**
Deposited in an open access institutional repository - Yes

8 Frye, C.; Deshpande, R.; Estes, S.; Francissen, K.; Joly, J.; Lubiniecki, A.; Munro, T.; Russell, R.; Wang, T.; Anderson, K. *Industry view on the relative importance of "clonality" of biopharmaceutical-producing cell lines* **Biologicals** (2016) 44 2 117-22 P15022931 **Grants -**
Deposited in an open access institutional repository - No

9 Hart, D. N. J.; Elgundi, Z.; Ju, X. S.; Verma, N. D.; Silveira, P. A.; Fromm, P. D.; Alingcastre, R.; Munster, D. J.; Seldon, T. A.; Sheng, Y.; Jones, M. L.; Munro, T. P.; Mahler, S.; Barnard, R. T.; Vu, P. A.; Lo, K.; Shahin, K.; Larsen, S.; Bradstock, K.; Clark, G. J. *Cd83 Expression on Human Immune Cells as a Target for Immunosuppression* **Immunology and Cell Biology** (2015) 93 9 A8-A8 P15022933 **Grants -**
Deposited in an open access institutional repository - Yes

10 Taylor, K.; Howard, C. B.; Jones, M. L.; Sedliarou, I.; MacDiarmid, J.; Brahmbhatt, H.; Munro, T. P.; Mahler, S. M. *Nanocell targeting using engineered bispecific antibodies* **Mabs** (2015) 7 1 53-65 P15022932 **Grants -**
Deposited in an open access institutional repository - Yes

CIE (D. Purcell) - Journal Articles (Original Research)

1 Taiaroa, George; Rawlinson, Daniel; Featherstone, Leo; Pitt, Miranda; Caly, Leon; Druce, Julian; Purcell, Damian; Harty, Leigh; Tran, Thomas; Roberts, Jason; Catton, Mike; Williamson, Deborah; Coin, Lachlan; Duchene, Sebastian *Direct RNA sequencing and early evolution of SARS-CoV-2* **BioRxiv** (2020) - P15088537 **Grants -**
Deposited in an open access institutional repository - Yes

2 Khoury, G.; Mackenzie, C.; Ayadi, L.; Lewin, S. R.; Branlant, C.; Purcell, D. F. J. *Tat IRES modulator of tat mRNA (TIM-TAM): a conserved RNA structure that controls Tat expression and acts as a switch for HIV productive and latent infection* **Nucleic Acids Res** (2020) 48 5 2643-2660 P15088504 **Grants -** GNT1129320;
Deposited in an open access institutional repository - Yes

3 King, H. A. D.; Gonelli, C. A.; Tullett, K. M.; Lahoud, M. H.; Purcell, D. F. J.; Drummer, H. E.; Poumbourios, P.; Center, R. J. *Conjugation of an scFab domain to the oligomeric HIV envelope protein for use in immune targeting* **PLoS One** (2019) 14 8 e0220986 P15088506 **Grants -** GNT1129320;
Deposited in an open access institutional repository - Yes

4 Li, S.; Morita, H.; Sokolowska, M.; Tan, G.; Boonpiyathad, T.; Opitz, L.; Orimo, K.; Archer, S. K.; Jansen, K.; Tang, M. L. K.; Purcell, D.; Plebanski, M.; Akdis, C. A. *Gene expression signatures of circulating human type 1, 2, and 3 innate lymphoid cells* **J Allergy Clin Immunol** (2019) - P14813318 **Grants -** GNT1052979; GNT1129320;
Deposited in an open access institutional repository - Yes

5 Khoury, G.; Purcell, D. F. J. *High Throughput In Vitro Assessment of Latency Reversing Agents on HIV Transcription and Splicing* **J Vis Exp** (2019) 143 - P14813317 **Grants -** GNT1129320;
Deposited in an open access institutional repository - Yes

6 Moso, M. A.; Anderson, J. L.; Adikari, S.; Gray, L. R.; Khoury, G.; Chang, J. J.; Jacobson, J. C.; Ellett, A. M.; Cheng, W. J.; Saleh, S.; Zaunders, J. J.; Purcell, D. F. J.; Cameron, P. U.; Churchill, M. J.; Lewin, S. R.; Lu, H. K. *HIV latency can be established in proliferating and nonproliferating resting CD4+ T cells in vitro: implications for latency reversal* **AIDS** (2019) 33 2 199-209 P14813319 **Grants -** GNT1052979; GNT1129320;
Deposited in an open access institutional repository - Yes

7 Gonelli, C. A.; Khoury, G.; Center, R. J.; Purcell, D. F. J. *HIV-1-based Virus-like Particles that Morphologically Resemble Mature, Infectious HIV-1 Virions* **Viruses** (2019) 11 6 - P15088503 **Grants -** GNT1129320;
Deposited in an open access institutional repository - Yes

8 Nguyen, W.; Jacobson, J.; Jarman, K. E.; Jousset Sabroux, H.; Harty, L.; McMahon, J.; Lewin, S. R.; Purcell, D. F.; Sleebs, B. E. *Identification of 5-Substituted 2-Acylaminothiazoles That Activate Tat-Mediated Transcription in HIV-1 Latency Models* **J Med Chem** (2019) - P14813320 **Grants -** GNT1113712;
Deposited in an open access institutional repository - Yes

9 Turpin, J.; Yurick, D.; Khoury, G.; Pham, H.; Locarnini, S.; Melamed, A.; Witkover, A.; Wilson, K.; Purcell, D.; Bangham, C. R. M.; Einsiedel, L. *Impact of Hepatitis B Virus Coinfection on Human T-Lymphotropic Virus Type 1 Clonality in an Indigenous Population of Central Australia* **J Infect Dis** (2019) 219 4 562-567 P14813322 **Grants -** GNT1052979;
Deposited in an open access institutional repository - Yes

10 Yurick, D.; Khoury, G.; Clemens, B.; Loh, L.; Pham, H.; Kedzierska, K.; Einsiedel, L.; Purcell, D. *Multiplex Droplet Digital PCR Assay for Quantification of Human T-Cell Leukemia Virus Type 1 Subtype c DNA Proviral Load and T Cells from Blood and Respiratory Exudates Sampled in a Remote Setting* **J Clin Microbiol** (2019) 57 2 - P14813323 **Grants -** GNT1052979; GNT1129320;
Deposited in an open access institutional repository - Yes

11 Moles, R.; Sarkis, S.; Galli, V.; Omsland, M.; Purcell, D. F. J.; Yurick, D.; Khoury, G.; Pise-Masison, C. A.; Franchini, G. *p30 protein: a critical regulator of HTLV-1 viral latency and host immunity* **Retrovirology** (2019) 16 1 42 P15088508 **Grants -** GNT1129320;
Deposited in an open access institutional repository - Yes

12 Sarkis, S.; Galli, V.; Moles, R.; Yurick, D.; Khoury, G.; Purcell, D. F. J.; Franchini, G.; Pise-Masison, C. A. *Role of HTLV-1 orf-I encoded proteins in viral transmission and persistence* **Retrovirology** (2019) 16 1 43 P15088511 **Grants -** GNT1129320;
Deposited in an open access institutional repository - Yes

13 Khoury, G.; Mota, T. M.; Li, S.; Tumpach, C.; Lee, M. Y.; Jacobson, J.; Harty, L.; Anderson, J. L.; Lewin, S. R.; Purcell, D. F. J. *HIV latency reversing agents act through Tat post translational modifications* **Retrovirology** (2018) 15 1 36 P14813316 **Grants -** GNT1052979; GNT1113712; GNT1129320;
Deposited in an open access institutional repository - Yes

14 Ramarathinam, S. H.; Gras, S.; Alcantara, S.; Yeung, A. W. S.; Mifsud, N. A.; Sonza, S.; Illing, P. T.; Glaros, E. N.; Center, R. J.; Thomas, S.; Kent, S. J.; Ternette, N.; Purcell, D. F. J.; Rossjohn, J.; Purcell, A. W. *Identification of Native and Post-Translationally Modified HLA-B*57:01-Restricted HIV Envelope Derived Epitopes Using Immunoproteomics* **Proteomics** (2018) 18 - P14282132 **Grants -** GNT1052979;
Deposited in an open access institutional repository - Yes

15 Murray, J. M.; Maher, S.; Mota, T.; Suzuki, K.; Kelleher, A. D.; Center, R. J.; Purcell, D. *Differentiating founder and chronic HIV envelope sequences* **PLoS One** (2017) 12 2 e0171572 P14049073 **Grants -** GNT1052979; GNT1129320;
Deposited in an open access institutional repository - No

16 Mota, T. M.; Rasmussen, T. A.; Rhodes, A.; Tennakoon, S.; Dantanarayana, A.; Wightman, F.; Hagenauer, M.; Roney, J.; Spelman, T.; Purcell, D. F. J.; McMahon, J.; Hoy, J. F.; Prince, H. M.; Elliott, J. H.; Lewin, S. R. *No adverse safety or virological changes 2 years following vorinostat in HIV-infected individuals on antiretroviral therapy* **AIDS** (2017) 31 8 1137-1141 P14049072 **Grants -** GNT1052979; GNT1113712; GNT1129320;
Deposited in an open access institutional repository - No

17 Russ BE, Olshansky M, Li J, Nguyen MLT, Gearing J, Nguyen THO, Olson MR, Croom HA, Nüssing S, Khoury G, Purcell DF, Hertzog PJ, Rao S, Turner SJ. *Regulation of H3K4me3 at lineage specific transcriptional enhancers characterizes acquisition of virus-specific CD8+ T cell function* **Cell Reports** (2017) 21 3624 - 3636 P02801348 **Grants -** GNT1129320;
Deposited in an open access institutional repository - No

18 Heydarchi, B.; Center, R. J.; Gonelli, C.; Muller, B.; Mackenzie, C.; Khoury, G.; Lichtfuss, M.; Rawlin, G.; Purcell, D. F. *Repeated Vaccination of Cows with HIV Env gp140 during Subsequent Pregnancies Elicits and Sustains an Enduring Strong Env-Binding and Neutralising Antibody Response* **PLoS One** (2016) 11 6 e0157353 P13679508 **Grants -** GNT1052979;
Deposited in an open access institutional repository - Yes

19 Gray, L. R., On, H., Roberts, E., Lu, H. K., Moso, M. A., Raison, J. A., Papaioannou, C., Cheng, W. J., Ellett, A. M., Jacobson, J. C., Purcell, D. F., Wesselingh, S. L., Gorry, P. R., Lewin, S. R., Churchill, M. J. *Toxicity and in vitro activity of HIV-1 latency-reversing agents in primary CNS cells* **J Neurovirol** (2016) - P02434005 **Grants -** GNT1052979;
Deposited in an open access institutional repository - Yes

20 Heydarchi, B.; Center, R. J.; Bebbington, J.; Cuthbertson, J.; Gonelli, C.; Khoury, G.; Mackenzie, C.; Lichtfuss, M.; Rawlin, G.; Muller, B.; Purcell, D. *Trimeric gp120-specific bovine monoclonal antibodies require cysteine and aromatic residues in CDRH3 for high affinity binding to HIV Env* **MAbs** (2016) 0 P13679507 **Grants -** GNT1052979;
Deposited in an open access institutional repository - Yes

21 Londrigan, S. L., Tate, M. D., Job, E. R., Moffat, J. M., Wakim, L. M., Gonelli, C. A., Purcell, D. F., Brooks, A. G., Villadangos, J. A., Reading, P. C., Mintern, J. D. *Endogenous Murine BST-2/Tetherin Is Not a Major Restriction Factor of Influenza A Virus Infection* **PLoS One** (2015) 10 11 e0142925 P02433949 **Grants -** GNT1011043; GNT1105962;
Deposited in an open access institutional repository - Yes

22 Pereira LA, Hugo HJ, Malaterre J, Huiling X, Sonza S, Cures A, Purcell DF, Ramsland PA, Gerondakis S, Gonda TJ, Ramsay RG. *MYB Elongation Is Regulated by the Nucleic Acid Binding of NFkappaB p50 to the Intronic Stem-Loop Region.* **PLoS One** (2015) 10 4 e0122919 P02159037 **Grants -** GNT1011043;
Deposited in an open access institutional repository - Yes

23 Islam, M. M., Toohey, B., Purcell, D. F., Kannourakis, G. *Suppression subtractive hybridization method for the identification of a new strain of murine hepatitis virus from xenografted SCID mice.* **Arch Virol** (2015) 160 12 2945 - 2955 P02433980 **Grants -** GNT0510448;
Deposited in an open access institutional repository - Yes

CIE (D. Purcell) - Journal Articles (Review)

24 Einsiedel, L.; Purcell, D.; Schinke, S.; Haynes, K.; Taylor, G. P.; Martin, F. *Highlights from the HTLV-1 symposium at the 2017 Australasian HIV and AIDS Conference held jointly with the 2017 Australasian Sexual Health Conference, November 2017, Canberra, Australia* **J Virus Erad** (2018) 4 1 48-50 P14813314 **Grants -** GNT1052979; GNT1115828; GNT1129320;
Deposited in an open access institutional repository - Yes

25 Heydarchi B, Salazar-Quiroz NA, Purcell DF *Broad Neutralizing Antibodies to HIV Env and Other Complex Viral Antigens from Vaccinated Cows* **J Vaccines Vaccin** (2016) 7 6 1 - 7 P02801375 **Grants -**
Deposited in an open access institutional repository - Yes

CIE (D. Purcell) - Books/Chapters

26 Khoury, G.; Darcis, G.; Lee, M. Y.; Bouchat, S.; Van Driessche, B.; Purcell, D. F. J.; Van Lint, C. *The Molecular Biology of HIV Latency* **Adv Exp Med Biol** (2018) 1075 187-212 P14813315 **Grants -** GNT1113712; GNT1129320;
Deposited in an open access institutional repository - Yes

CIF (K. Kedzierska) - Journal Articles (Original Research)

1 Thevarajan I, Nguyen THO, Koutsakos M, Druce J, Caly L, Van de Sandt CE, Jia X, Nicholson S, Catton M, Cowie B, Tong S, Lewin SR and KEDZIERSKA K. *Breadth of concomitant immune responses prior to patient recovery: a case report of a non-severe COVID-19.* **Nature Medicine** (2020) in press (accepted 6 March 2020) - P03459434 **Grants -** GNT1173871;
Deposited in an open access institutional repository - No

2 Loh L, Gherardin NA, Sant S, Grzelak L, Crawford JC, Bird NL, Koay HF, van de Sandt CE, Lappas M, Allen EK, Crowe J, Loudovaris T, Flanagan KL, Quinn KM, Rossjohn J, Thomas PG, Eckle S, McCluskey J, Godfrey DI and KEDZIERSKA K. *Human mucosal-associated invariant T cells in older individuals display expanded TCRαβ clonotypes with potent anti-microbial responses.* **J Immunol** (2020) 204 1119-1133 - P03459435 **Grants -** GNT1102792;
Deposited in an open access institutional repository - No

3 Poh CM, Zheng J, Channappanavar R, Chang ZW, Nguyen THO, Rénia L, KEDZIERSKA K, Perlman S, Poon L. *Multiplex screening assay for identifying cytotoxic CD8+ T cell epitopes.* **Frontiers in Immunology** (2020) in press - P03459450 **Grants -** GNT1102792;
Deposited in an open access institutional repository - Yes

4 Mangas K, Buultjens A, Porter J, Baines S, Marion E, Marsollier L, Tobias N, Pidot S, Quinn K, Price D, KEDZIERSKA K, Zeng W, Jackson D, Chua B and Stinear T. *Vaccine-specific immune responses against Mycobacterium ulcerans infection in a low-dose murine challenge model. Infection and Immunity* **Infect Immun** (2020) 88. pii: e00753-19. doi: 10.1128/IAI.00753-19 - P03459451 **Grants -** GNT1102792;
Deposited in an open access institutional repository - No

5 Koay H-F, Su S, Zalcenstein D, Daley SR,, Comerford I, Miosge L, Gregor C, Konstantinov IE, d'Udekem Y, Hickey P, Berzins SP, Mak J, Sontani Y, Roots CM, Sidwell T, Kallies A, Chen Z, Nüssing S, Kedzierska K, Mackay LK, Uldrich AP, McColl S, Deenick E, Fairlie DP, McCluskey J, Goodnow C, Ritchie ME, Belz G, Naik SH, Pellicci DG, Godfrey DI *A divergent transcriptional landscape underpins the development and functional branching of MAIT cells* **Science Immunology** (2019) 4(41). pii: eaay6039. doi: 10.1126/sciimmunol.aay6 - P03364816 **Grants -** GNT1102792;
Deposited in an open access institutional repository - No

6 van de Sandt CE, Clemens EB, Grant EJ, Rowntree LC, Sant S, Halim H, Crowe J, Cheng AC, Kotsimbos TC, Richards M, Miller A, Tong SY, Rossjohn J, Nguyen THO, Gras S, Chen WZ, KEDZIERSKA K. *Challenging immunodominance of influenza-specific CD8+ T cell responses directed against the risk-associated HLA*68:01 allomorph.* **Nature Communications** (2019) 10(1):5579. doi: 10.1038/s41467-019-13346-4. - P03364817 **Grants -** GNT1071916; GNT1102792;
Deposited in an open access institutional repository - Yes

7 Liu Y, Tan HX, Koutsakos M, Jegaskanda S, Esterbauer R, Tilmanis D, Alban M, KEDZIERSKA K, Hurt AC, Kent SJ and Wheatley AK *Cross-reactive recognition of influenza B hemagglutinin by human antibody.* **Nature Communications** (2019) 10 doi: 10.1038/s41467- 324. - P03101729 **Grants -** GNT1102792;
Deposited in an open access institutional repository - Yes

8 Auladell M, Nguyen THO, Garcillán B, Mackay F, KEDZIERSKA K and FoxA. *Distinguishing naive- from memory-derived human B cells during acute responses* **Clin Transl Immunol** (2019) 8(11):e01090. doi: 10.1002/cti2.1090 - P03364798 **Grants -**
Deposited in an open access institutional repository - No

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Deposited in an open access institutional repository - No

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Deposited in an open access institutional repository - No

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Deposited in an open access institutional repository - No

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Deposited in an open access institutional repository - No

13 Komadina N, Sullivan SG, KEDZIERSKA K, Quiñones-Parra SM, Leder K, McVernon J. *Prior exposure to immunogenic peptides found in human influenza A viruses may influence the age distribution of cases with avian influenza H5N1 and H7N9 virus infections* **Epidemiol Infect** (2019) - P03364757 **Grants -** GNT1102792;
Deposited in an open access institutional repository - No

14 Auladell M, Jia X, Hensen L, Chua B, Fox A, Nguyen THO, Doherty PC, KEDZIERSKA K. *Recalling the Future: Immunological Memory Toward Unpredictable Influenza Viruses.* **Front Immunol** (2019) 10 - P03364807 **Grants -** GNT1102792;
Deposited in an open access institutional repository - No

15 Hayman TJ, Hsu AC, Kolesnik TB, Dagley LF, Willemsen J, Tate MD, Baker PJ, Kershaw NJ, Kedzierski L, Webb AI, Wark PA, KEDZIERSKA K, Masters SL, Belz GT, Binder M, Hansbro PM, Nicola NA, Nicholson SE. *RIPLET, and not TRIM25, is required for endogenous RIG-I-dependent antiviral responses* **Immunol Cell Biol.** (2019) 97 9 840 - 852 P03364751 **Grants -**
Deposited in an open access institutional repository - No

16 Mielke L, Liao Y, Clemens EB, Firth MA, Duckworth B, Huang Q, Almeida FF, Chopin MM, Koay HF, Bell CA, Hediyeh-zadeh S, Park SL, Raghu D, Choi J, Putoczki TL, Hodgkin PD, Franks AE, Mackay LK, Godfrey DI, Davis MJ1, Xue HH, Bryant VL, KEDZIERSKA K, Shi W and Belz GT. *TCF-1 limits the formation of Tc17 cells via repression of the MAF-RORgt Axis.* **J Exp Med** (2019) accepted 18 Apr 2019 - P03253787 **Grants -** GNT1023294;
Deposited in an open access institutional repository - No

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CIF (K. Kedzierska) - Journal Articles (Review)

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CIF (K. Kedzierska) - Books/Chapters

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CIG (A. Chung) - Journal Articles (Original Research)

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6 Cheeseman HM, Day S, McFarlane LR, Fleck S, Miller A, Cole T, Sousa-Santos N, Cope A, Cizmeci D, Tolazzi M, Hwekwete E, Hannaman D, Kratochvil S, McKay PF, Chung AW, Kent SJ, Cook A, Scarlatti G, Abraham S, Combadiere B, McCormack S, Lewis DJ, Shattock RJ. *Combined Skin and Muscle DNA Priming Provides Enhanced Humoral Responses to a Human Immunodeficency Virus Type 1 Clade C Envelope Vaccine.* **Hum Gene Ther** (2018) 29 9 1011-1028 P03248788 **Grants -** GNT1115828; GNT1140509;
Deposited in an open access institutional repository - Yes

7 Richardson SI, Chung AW, Natarajan H, Mabvakure B, Mkhize NN, Garrett N, Abdool Karim S, Moore PL, Ackerman ME, Alter G, Morris L *HIV-specific Fc effector function early in infection predicts the development of broadly neutralizing antibodies.* **PLoS Pathog** (2018) 14 4 e1006987 - P03248795 **Grants -**
Deposited in an open access institutional repository - Yes

8 Worley MJ, Fei K, Lopez-Denman AJ, Kelleher AD, Kent SJ, Chung AW *Neutrophils mediate HIV-specific antibody-dependent phagocytosis and ADCC.* **J Immunol Methods** (2018) 457 41-52 P03248792 **Grants -** GNT1125164; GNT1140509;
Deposited in an open access institutional repository - No

9 Sadanand S.*, Das J.*, Chung A. W.*, Schoen M. K., Lane S., Suscovich T. J., Streeck H., Smith D., Little S., Lauffenburger D. A., Richman D., Alter G.
* Equally contributed *Temporal variation in HIV-specific IgG subclass antibodies during acute infection differentiates spontaneous controllers from chronic progressors* **AIDS** (2018) 32 4 443-450 P02883528 **Grants -** GNT1036470;
Deposited in an open access institutional repository - No

10 Chung AW, Mabuka JM, Ndlovu B, Licht A, Robinson H, Ramlakhan Y, Ghebremichael M, Reddy T, Goulder PJR, Walker BD, Ndung'u T, Alter G. *Viral control in chronic HIV-1 subtype C infection is associated with enrichment of p24 IgG1 with Fc effector activity.* **AIDS** (2018) 32 10 1207-1217 P03248790 **Grants -** GNT1036470;
Deposited in an open access institutional repository - No

11 Kratochvil S, McKay P, Kopycinski JT, Bishop C, Hayes P, Muir L, Pinder CL, Cizmeci D, King D, Aldon Y, Wines BD, Hogarth PM, Chung AW, Kent SJ, Held K, Geldmacher C, Dally L, Sousa N, Cole T, Gilmour J, Fidler S & Shattock RJ *A Phase 1 HIV vaccine trial for cross-profiling the kinetics of serum and mucosal antibody responses to CN54gp140 modulated by two homologous prime-boost vaccine regimens* **Frontiers of Immunology** (2017) 8 595 - P02881058 **Grants -** GNT1115828;
Deposited in an open access institutional repository - Yes

12 Vanderven H. A., Jegaskanda S., Wines B. D., Hogarth P. M., Carmuglia S., Rockman S., Chung A. W., Kent S. J. *Antibody-Dependent Cellular Cytotoxicity Responses to Seasonal Influenza Vaccination in Older Adults* **Journal of Infectious Diseases** (2017) 217 1 12-23 P02883531 **Grants -**
Deposited in an open access institutional repository - No

13 McLean M. R., Madhavi V., Wines B. D., Hogarth P. M., Chung A. W.*, Kent S. J*.
* Equally contributed and co-corresponding authors *Dimeric Fcgamma Receptor Enzyme-Linked Immunosorbent Assay To Study HIV-Specific Antibodies: A New Look into Breadth of Fcgamma Receptor Antibodies Induced by the RV144 Vaccine Trial* **Journal of Immunology** (2017) 199 2 816-826 P02883523 **Grants -** GNT1125164;
Deposited in an open access institutional repository - No

14 Madhavi V., Wines B. D., Amin J., Emery S., Encore Study Group, Lopez E. Kelleher A., Sydney, Ltnp Study Group, Center R. J., Hogarth P. M., Chung A. W.*, Kent S. J.*, Stratov I*.
* Equally contributed and co-corresponding authors *HIV-1 Env- and Vpu-Specific Antibody-Dependent Cellular Cytotoxicity Responses Associated with Elite Control of HIV* **Journal of Virology** (2017) 91 18 pii: e00700-17 P02883514 **Grants -** GNT1125164;
Deposited in an open access institutional repository - No

15 Kratochvil S., McKay, P. F., Chung A. W., Kent S. J., Gilmore J., Shattock R. J. *Immunoglobulin G1 Allotype Influences Antibody Subclass Distribution in Response to HIV gp140 Vaccination* **Frontiers of Immunology** (2017) 8 1883 - P02883503 **Grants -** GNT1115828;
Deposited in an open access institutional repository - No

16 Lu LL*, Chung AW*, Rosebrock T*, Ghebremichael M, Yu WH, Grace PS, Schoen MK, Tafesse F, Martin C, Leung V, Mahan AE, Sips M, Kumar M, Tedesco J, Robinson H, Tkachenko E, Draghi M, Freedburg KJ, Streeck H, Suscovich TJ, Lauffenburger D, Restrepo BI, Day C, Fortune S, Alter G.
*Equally contributed *A functional role for antibodies in tuberculosis* **Cell** (2016) 167 2 433-443 P02487312 **Grants -** GNT1036470;
Deposited in an open access institutional repository - No

17 Vaccari M, Gordon SN, Fourati S, Schifanella L, Liyanage NP, Cameron M, Keele BF, Shen X, Tomaras GD, Billings E, Rao M, Chung AW, Dowell KG, Bailey-Kellogg C, Brown EP, Ackerman ME, Vargas-Inchaustegui DA, Whitney S, Doster MN, Binello N, Pegu P, Montefiori DC, Foulds K, Quinn DS, Donaldson M, Liang F, Loré K, Roederer M, Koup RA, McDermott A, Ma ZM, Miller CJ, Phan TB, Forthal DN, Blackburn M, Caccuri F, Bissa M, Ferrari G, Kalyanaraman V, Ferrari MG, Thompson D, Robert-Guroff M, Ratto-Kim S, Kim JH, Michael NL, Phogat S, Barnett SW, Tartaglia J, Venzon D, Stablein DM, Alter G, Sekaly RP, Franchini G. *Adjuvant-dependent innate and adaptive immune signatures of risk of SIVmac251 acquisition* **Nature Medicine** (2016) 22 7 762-7 P02487307 **Grants -**
Deposited in an open access institutional repository - No

18 Madeleine Farber Jennewein; Alison E Mahan; Todd Suscovitch; Kendall Dione; Jacquelynne Tedesco; Amy W Chung; Hendrik Streeck; Maria Grazia Pau; Hanneke Schuitemaker; Don Francis; Patricia Fast; Dagna Laufer; Lindsey Baden; Dan H. Barouch; Galit Alter *Antigen-specific antibody glycosylation is regulated via vaccination* **PLoS Pathogens** (2016) 12 3 e1005456 P02295272 **Grants -**
Deposited in an open access institutional repository - Yes

19 Garcia-Beltran WF, Hölzemer A, Martrus G, Chung AW, Pacheco Y, Simoneau CR, Rucevic M, Lamothe-Molina PA, Pertel T, Kim T-E, Dugan H, Alter G, Dechanet-Merville J, Jost S, Carrington M, Altfeld M *Open conformers of HLA-F are high-affinity ligands of the activating NK-cell receptor KIR3DS1.* **Nature Immunology** (2016) 17 9 1067-74. P02487310 **Grants -**
Deposited in an open access institutional repository - No

20 Chung AW*, Kumar M*, Arnold K*, Schoen MK, Dunphy LJ, Mahan AE, Suscovich TJ, Hoffner M, Linde C, Dionne K, Frahm N, Streeck H, DeSouza P, Ackerman, ME, McElrath J, Schuitemaker H, Pau MG, Baden L, Kim JH, Michael NL, Barouch,D, Lauffenburger DA, Alter G. *Equally contributed *Dissecting Polyclonal Vaccine-Induced Humoral Immunity against HIV Using Systems Serology* **Cell** (2015) 163 4 988 - 998 P02218226 **Grants -** GNT1036470;
Deposited in an open access institutional repository - Yes

21 Choi I, Chung AW, Rerks-Ngarm S, Nitayaphan S, de Souza MS, Michael NL, Kim JH, Alter G, Ackerman AE, Bailey-Kellog C *Machine learning methods predict the functional activity of antibodies by the RV144 HIV vaccine* **PLoS Comput Biol** (2015) 11 4 e100418518 P02218225 **Grants -**
Deposited in an open access institutional repository - Yes

22 Hölzemer A, Thobakgale C. Jimenez Cruz CA, Garcia-Beltran WF, Carlson JM, van Teijlingen N, Mann J, Jaggernath M, Kang S, Körner C, Chung AW, Schafer JL, Evans DT, Alter G, Walker BD, Goulder PJ, Carrington M, Hartmann P, Pertel T, Zhou R, Ndung'u T, Altfeld M *Selection of an HLA-C*03:04-restricted HIV-1 p24 Gag Sequence Variant is Associated with Viral Escape from KIR2DL3pos NK Cells* **PLoS Medicine** (2015) 12 11 e1001900 - P02218227 **Grants -**
Deposited in an open access institutional repository - Yes

CIG (A. Chung) - Journal Articles (Review)

23 McLean MR, Lu LL, Kent SJ, Chung AW *An Inflammatory Story: Antibodies in Tuberculosis Comorbidities* **Front Immunol** (2019) 10:2846 - P03459710 **Grants -**
Deposited in an open access institutional repository - Yes

24 Damelang T, Rogerson SJ, Kent SJ, Chung AW. *Role of IgG3 in Infectious Diseases.* **Trends Immunol** (2019) 40 3 197-211 P03248783 **Grants -** GNT1140509;
Deposited in an open access institutional repository - No

25 Davis SK, Selva KJ, Kent SJ, Chung AW. *Serum IgA Fc effector functions in infectious disease and cancer.* **Immunol Cell Biol.** (2019) - P03459713 **Grants -**
Deposited in an open access institutional repository - No

26 Parsons MS, Chung AW, Kent SJ *Importance of Fc-mediated functions of anti-HIV-1 broadly neutralizing antibodies.* **Retrovirology** (2018) 15 1 58 - P03248789 **Grants -**
Deposited in an open access institutional repository - Yes

27 Arnold, K. B., Chung, A. W. *Prospects from systems serology research* **Immunology** (2018) 153 3 279 - 289 P02882245 **Grants -** GNT1125164;
Deposited in an open access institutional repository - Yes

28 Lopez E, Shattock RJ, Kent SJ, Chung AW *The Multifaceted Nature of Immunoglobulin A and Its Complex Role in HIV.* **AIDS Res Hum Retroviruses** (2018) 34 9 727-738 P03248786 **Grants -** GNT1140509;
Deposited in an open access institutional repository - No

29 Chung A. W.*, Alter G.*
*Equally contributed and co-corresponding authors *Systems serology: profiling vaccine induced humoral immunity against HIV* **Retrovirology** (2017) 14 1 57 - P02883494 **Grants -** GNT1125164;
Deposited in an open access institutional repository - Yes

CIG (A. Chung) - Research Report - Commissioned by Government, Industry or Other

30 Lazuardi E, Houghton R, Carter A, Chung AW *Understanding and identifying HIV and related infections* **Key Findings report Australasian HIV&AIDS Conference** (2018) 26 6-12 P03248798 **Grants -**
Deposited in an open access institutional repository - Yes

CIG (A. Chung) - Editorials

31 Kent, S. J., Chung, A. W. *A Role for Fc-Mediated Humoral Immunity in Reducing HIV Transmission Rates between HIV Serodiscordant Heterosexual Couples* **EBioMedicine** (2017) 26 2-3 P02883499 **Grants -** GNT1125164;
Deposited in an open access institutional repository - No

CIH (T. Drew) - Journal Articles (Original Research)

1 Drew, T.W., Mueller-Doblies, U.U., **Dual use issues in research - A subject of increasing concern?** (2017) - P03459636 **Grants -**
Deposited in an open access institutional repository - Yes

2 Amarilla, S.P., Gomez-Laguna, J., Carrasco, L., Rodriguez-Gomez, I.M., Caridad, Y.O.J.M., Morgan, S.B., Graham, S.P., Frossard, J.P., Drew, T.W., Salguero, F.J., **A comparative study of the local cytokine response in the lungs of pigs experimentally infected with different PRRSV-1 strains: upregulation of IL-1alpha in highly pathogenic strain induced lesions.** (2015) 164 137 - 147 P03459633 **Grants -**
Deposited in an open access institutional repository - Yes

3 Cowan, L., Haines, F.J., Everett, H.E., Crudgington, B., Johns, H.L., Clifford, D., Drew, T.W., Crooke, H.R. **Factors affecting the infectivity of tissues from pigs with classical swine fever: thermal inactivation rates and oral infectious dose.** (2015) 176 1 - 9 P03459635 **Grants -**
Deposited in an open access institutional repository - Yes

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D2: Chief Investigator capability and capacity (maximum ½ A4 page per CI)

CIA: Chappell Keith, J

Career summary: Chappell obtained his PhD in 2007 at the University of Queensland. He subsequently travelled to Madrid, Spain where he was employed as a post-doctoral research fellow between 2007 and 2010 at one of Spain's premier research institutes, Instituto de Salud Carlos III (Carlos the 3rd Institute of Health). Since returning to Australia in 2011, Chappell has been employed as a team leader within the laboratory headed by Professor Paul Young.

Contribution to field of research: CI Chappell is a co-creator of the molecular clamp platform technology and is the co-lead of the CEPI funded research program to establish a rapid response vaccine pipeline based on this technology. CI Chappell has expertise within the fields of virology, immunology and molecular biology and, for the past decade, his research has centred on the design of subunit vaccines based on the fusion proteins of enveloped viruses. CI Chappell is a co-lead author on a seminal publication in PNAS *(Magro et al., 2012)* that describes for the first time the importance of pre-fusion forms of the viral F protein for the correct display of epitopes recognized by potent neutralizing antibodies found in human responses. This discovery is responsible for initiating a push to develop pre-fusion stabilized vaccines against RSV, as well as for other viruses, some of which are in late stage clinical trials. To date this publication has been sited 131 times, including in the journals; Science, STM, Nature Communications and PLOS Pathogens.

Track Record: CI Chappell has published 31 peer reviewed journal articles (9 in the last 5 years). In total, his publications have been cited 765 times (Scopus Feb 2020).

Supervision and mentoring: CI Chappell currently leads a team of 11, which includes six postdocs, two project managers and three RAs. He has supervised six PhD students who have completed degrees and is currently supervising three additional PhD students.

CIB: Young Paul, R

Career summary: CI Young obtained his PhD in 1986 from the University of London where he established his laboratory investigating intervention strategies, including vaccine approaches for the dengue viruses. He returned to Australia in 1989, joining the University of Queensland as a group leader within the Microbiology Department. He is currently Head of School and Chair of the Virology Division, IUMS. He is a FASM and FAHMS and past President of ASM, AVS and APSMV.

Contribution to field of research: CI Young is a co-inventor of the molecular clamp platform technology and is the co-lead of the CEPI funded research program to establish a rapid response vaccine pipeline based on this technology. CI Young has more than 40 years of experience investigating the molecular biology, structure, function, biochemistry and immunology of viruses and their encoded proteins. His group has made major contributions in the areas of diagnostics, vaccine and antiviral development as well as in developing a greater understanding of the basis of severe viral disease. His laboratory is focused on translational outcomes as exemplified by the development of a dengue diagnostic assay that was taken to commercial release in 2006 and is now recognized as the global gold standard in early dengue detection. He has been actively engaged in securing support for clinical trials that will build on findings (PCT/AU2014/050403) that sepsis drugs could be repurposed for therapeutic intervention in dengue and in securing support for the vaccine platform technology that forms the foundation of this application (AU2016/901145).

Track Record: CI Young has published more than 160 papers (52 over the last 5 years), that have been cited >8600 times (4,156 in the last 5 years) with a *h*-index of 51. He holds 3 active patents.

Supervision and mentoring: CI Young has supervised more than 40 post-doctoral staff and research assistants throughout his career. His wider group currently comprises 12 postdoctoral scientists, 2 Project Mangers, 3 RAs and 6 PhD students. He has supervised 35 PhD students through to completion since appointment at UQ in 1991 (7 in last 5 years) and 47 Honours students since 1991 with >85% being awarded 1st Class.

CIC: Watterson, Daniel

Career summary: CI Watterson obtained his PhD in 2012 at the University of Queensland (UQ). At PhD submission he was awarded a competitive early-career travel grant which enabled him to lead a project in the globally recognised structural virology labs at Purdue University, USA. Since 2015 CI Watterson has been employed as a team leader within the laboratory headed by Prof Paul Young, and after obtaining funding as CIA for two NHMRC project grants in 2019 he now leads an independent research team investigating virus structure to inform new virus vaccine and therapies.

Contribution to field of research: CI Watterson is an early career scientist with a research agenda that brings together recombinant protein design with strong cryo-EM capability to deliver high-impact contributions in the field of virology and vaccine development. He is a lead scientist in the UQ CEPI program and led the antigen design and selection phase of the COVID-19 vaccine program. He has first authored articles in high impact journals such as Science Translational Medicine (2 research articles, both as journal covers) and the Cell press journal Structure as well as corresponding author publications in Plos Pathogens and Immunology and Cell Biology. He is recognized nationally and internationally as evidenced by speaker invitations, conference presentations, grant review panel service at the national level, and a highly-productive collaborative network.

Track Record: CI Watterson has published 43 peer reviewed journal articles (39 in the last 5 years). CI Watterson is also a named inventor on three independent patent families, including two broad-spectrum viral vaccine platforms, one of which is describes the molecular clamp technology that is used to generate the COVID-19 Spike antigen used in this application (US20200040042A1).

Supervision and mentoring: CI Watterson currently leads a team of 10, including 4 postdoctoral researchers, one RA and five PhD students and has supervised five PhD candidates to completion.

CID: Munro, Trent P.

Career summary: CI Munro has a PhD in Biochemistry from the University of Queensland and has extensive academic and industry experience in the development of therapeutics with a focus on drug design and manufacturing. He is currently a Professor and Senior Group Leader at the Australian Institute for Bioengineering and Nanotechnology (AIBN), University of Queensland. He is also the Director of the NCRIS funded National Biologics Facility (NBF) and Program Director for the Coalition for Epidemic Preparedness and Innovation (CEPI) funded Rapid Response Vaccine Pipeline. Prior to his current role, he spent six years at Amgen Inc., based in California, where he was an Executive Director of Process Development.

Contribution to field of research: CI Munro has driven the translation of >40 molecules from research, through clinical trials and all stages of development across multiple regulatory jurisdictions. In addition, CI Munro led teams whose work enabled significant firsts in the biotechnology sector, including, the first EMA and FDA approved antibody therapeutics for cardiovascular disease, Repatha (evolocumab) and neurology Aimovig (erenumab). CI Munro's work enabled the manufacturing of the anti-Hendra virus antibody m102.4, which has been used to treat a number of people with a high-risk exposure to the virus and a recently completed first in human clinical trial.

Track Record: Over the last 5 years CI Munro's research and outputs have been industry focussed, overseeing a drug development portfolio of >40 molecules and an operating budget of >$65M/year. CI Munro took >20 molecules into clinical testing, participated in ~9 commercial product approvals across multiple global jurisdictions. CI Munro also continued publishing and currently has 9 patent applications, >50 publications; >1900 citations and a *h*-index of 24.

Supervision and mentoring: CI Munro previously supervised 8 graduated UQ PhD students. At Amgen CI Munro was a co-supervisor of 2 industry-based PhD students as well as 4 Industry based postdocs. CI Munro had 3 mentees from the Scientist Mentoring & Diversity Program which pairs ethnically diverse students with industry mentors.

CIE: Purcell, Damian, F.J.

Career summary: CI Purcell is Professor in Virology and theme leader for Viral Infectious Diseases at the Peter Doherty Institute, University of Melbourne (UoM). After receiving a PhD from the UoM in 1987 he was a CJ Martin traveling NHMRC fellow researching molecular biology of HIV, HTLV and other viral pathogens at the Lab of Molecular Microbiology of the NIAID, NIH in Bethesda, MD, USA. He returned to the Burnet Institute in 1995 before moved to UoM in 2001. He is Past President of the AVS, GVN co-Director, and Exec of ACH2, ASHM, IRVA, and the HTLV-1 Taskforce.

Contribution to field of research: CI Purcell studies of the biology of HIV, HTLV, HCV, and other viral infections for insights into the intrinsic, innate and adaptive immune response to viral infection. He has developed new therapeutic approaches and vaccine candidates for HIV and for HTLV-1 and assays for mechanisims of viral pathogenesis that have critically supported clinical development of chemotherapeutic or vaccine candidates. Purcell has tested HIV Env trimer vaccines, finding that cows make remarkable virus-neutralising antibodies and patented "Bovine colostrum derived neutralising antibodies to HIV Env gp140" as a commercialised approach for HIV prevention. Research into the role of RNA processing in regulating HIV protein expression and viral replication led to the discovery and patenting of the Amidothiazol family of compounds for HIV latency reversal

Track Record: CI Purcell has published 136 peer-reviewed journal articles that are cited 4,318 times. Purcell's recent publications were in top-ranking Virology or Immunology journals including publications in *Nucleic Acids Res*, *AIDS*, *Retrovirology*, *J Clinical Microbiology*, *Cell Reports*, *Antimicrobial Agents and Chemotherapy*, *MAbs*, and *J. Med Chem.* CI Purcell is a named inventor on 20 patents with 14 of these filed in the last five years and 15 full patents granted during his career

Supervision and mentoring: CI Purcell teaches undergraduate biomedical, science and medical doctor, PhD and MSc students in the Dept of Microbiology and Immunology, Uni of Melbourne. He has supervised 29 PhD completions and 23 B.Sc.(Hons) students. He currently directs 10 researchers.

CIF: Kedzierska, Katherine

Career summary: CI Kedzierska is Professor in Immunology at University of Melbourne, Doherty Institute. She is an internationally-recognised research leader in human immunity, with a focus on defining universal immunity to seasonal, pandemic and newly-emerged influenza viruses. Her unique work spans immunity in the young, elderly, pregnant women, Indigenous Australians and individuals hospitalised with severe influenza. Her standing and vision are based on a body of research over the last decade that has led to paradigm-shifting discoveries in anti-viral immunity. She has been continuously supported by NHMRC fellowships (2002 Peter Doherty, 2006 RD Wright, 2011 CDF2, 2015 SRFB, 2020 Investigator). In 2019, she was elected as a Fellow of the Australian Academy of Health and Medical Science. She is a recipient of 2015 Australian Academy of Science Jacque Miller Medal, 2011 NHMRC Excellence Award and 2011 Scopus Young Researcher of the Year.

Contribution to field of research: Prof Kedzierska is at the forefront of research on immunity to newly-emerging respiratory infections. Her 2020 Nat Med (in press) reports, for the first time, kinetics and breadth of immune responses associated with COVID-19 recovery. Her 2019 Nat Immunol shows the broadest ever reported immunity towards influenza A, B & C viruses. During a 2013 outbreak of the novel avian H7N9 virus in China (mortality rate 40%), she was the only T cell researcher granted access to unique longitudinal H7N9 patient samples and provided the first data on 1) why patients succumb to fatal H7N9 disease (PNAS 2014); 2) early T cells driving recovery from severe disease (Nat Comms 2015 & 2018); 3) Indigenous Australians & Alaskans being at the greatest risk of severe disease (PNAS 2014). She was at the forefront of research during 2009 flu pandemic (PNAS 2010).

Track Record: CI Kedzierska published 151 peer-reviewed journal articles (72 in 5 yers), ~60% as first/senior author, cited 5294 (Scopus Mar 2020), including seminal studies in high profile journals (Nature, Nat Med, Nat Immunol (x3), Sc Transl Med, Nat Commun (x7), PNAS (x15), JCI (x2).

Supervision and mentoring: Kedzierska leads a 16-member team, including six postdocs. She has supervised/mentored 17 PhD students, eleven to completion and 10 Hons students (all received H1).

CIG: Chung, Amy W

Career summary: Dr Chung completed her PhD in 2011 from the UoM, after which, she was awarded an American Australian Association Fellowship, NHMRC CJ Martin and MGH Medical Discovery Fellowship to conduct a postdoc at the Ragon Institute of MGH, MIT and Harvard, USA. She returned to the UoM, Doherty Institute in 2015 and was awarded an American Foundation for AIDS Research (amfAR) Mathilde Krim Phase II fellowship (only Australian recipient) to establish her own laboratory (2019) focused on identifying protective functional antibodies against infectious diseases. She currently holds an NHMRC CDF and Dame Kate Campbell Fellowship.

Contribution to field of research: Dr Chung co-pioneered a new analytical pipeline "Systems Serology" to assess protective antibody functions and she has since applied this technology to a range of infectious diseases including HIV (Chung Cell 2015, Vaccari Nat Med 2016), Mycobacterium Tuberculosis (Lu* ,Chung* Cell 2015), Influenza (Vandervan JID 2017) and acute rheumatic fever (Chung ICB 2020). Her research identified protective antibody profiles from a human Phase III HIV vaccine, which is now being used to as "go:no-go" immunogenicity criteria for current HIV vaccines trials. Her research has also identified unique antibody profiles that distinguish latent from active tuberculosis disease states, which is currently being developed as an antibody diagnostic for which she is co-inventor (WO2016064955A1).

Track Record: Dr Chung has published 48 papers (36 over the last 5 years), that have been cited >2400 times (~1950 in the last 5 years). She was selected by Vaccine Journal as their Young Investigator 2016 and by Bill & Melinda Gates: Collaboration for AIDS Vaccine Discovery (CAVD) Early Career Investigator 2013.

Supervision and mentoring: Dr Chung currently supervises 2 postdocs, 3 PhD students, co-supervises 2 PhD students and 1 full time research assistant. She has supervised 1 PhD student to completion (now a lecturer at James Cook University) and 1 master student (now completing his medical degree at Tsinghua University).

CIH Trevor Drew

Career summary: Professor Drew is Director of CSIRO Australian Animal Health Laboratory (AAHL), which is an Australian National Facility and National Reference Laboratory for all notifiable diseases of animals. AAHL is also an OIE and FAO Reference Laboratory for a number of diseases and a member of the WHO SARS Laboratory Network. He was previously Head of Virology and Lead Scientist for Animal & Zoonotic Viral Diseases at the UK Animal & Plant Health Agency. An immunologist and molecular virologist, he has a long history of work on viruses of the Coronavirus superfamily, as well as on viral evolution, host-pathogen responses, new and emerging viruses and vaccine development.

Contribution to field of research: He is a co-investigator on Australia's preclinical response to COVID-19, also for CSIRO's Disease X and COVID-19 projects funded by the Coalition for Epidemic Preparedness Innovations (CEPI). He has contributed to the design and execution of the animal challenge model work on SARS CoV-2 and phylogenetic analyses.

Track Record: Professor Drew represents Australia in international biosafety laboratory networks, he is a member of Australia's Animal Health Committee and chairs the Sub-Committee on Animal Health Laboratory Standards. He is also a member of the FAO Standing Group of Experts for African swine fever and is a Fellow of the Royal Society for Biology. He has served on a number of international specialist groups for OIE and FAO on different disease subjects.

Supervision and mentoring: Professor Drew is responsible for the running of the facility, as well as all the diagnostic, investigative and research work on animal diseases and zoonoses where disease is also seen in animals. He is also responsible for the safety of all staff and visitors working in the facility, the ethical standards with regard to the science and use of animals, compliance with Australian legislation and maintaining the quality standards held by AAHL.

CII Seshadri Vasan

Career summary: Professor S.S. Vasan leads the CSIRO Dangerous Pathogens Team which performs R&D and preclinical evaluation of vaccines and countermeasures for pathogens requiring physical containment at levels 3 and 4 (PC3 and PC4). He was previously with the UK equivalent facility in Porton Down (Public Health England / Health Protection Agency), including as the senior business lead for Ebola and Zika response, leading his team to RCUK Impact Award 2015 (Contribution to Society) and BritishExpertise International Award 2018. As Head of Public Health for Oxford University's spin-out Oxitec (2005-11), he helped advance transgenic technologies from laboratory to field to combat viral illnesses such as Chikungunya, Dengue Fever and Zika. He has been elected a fellow of several professional bodies, and obtained his doctorate from Trinity College, Oxford, on a Rhodes Scholarship.

Contribution to field of research: He leads Australia's preclinical response to COVID-19, as Principal Investigator for CSIRO's Disease X and COVID-19 projects funded by the Coalition for Epidemic Preparedness Innovations (CEPI). His team is the first in the world to establish the ferret model for COVID-19, and he has worked with bioinformaticians to decipher how the SARS-CoV-2 virus is mutating and how that could impact on the development and preclinical evaluation of vaccines and countermeasures. He is an invited member of WHO Ad hoc Expert Groups on Preclinical Models, and on SARS-CoV-2 Reagents and Cross-Reactivity.

Track Record: CI Vasan represents Australia (and previously the UK) in the Virus Task Group of the Four Eyes Medical Countermeasures Consortium, BSL4ZNet, etc. At Oxford and Oxitec, he enabled several world's first studies on transgenic mosquitoes such as semi-field trials (2007-08), open field trials (2010-11), bionomics and relative susceptibility to key viruses (2006-11). He was Co-Principal Investigator for the WHO/TDR Asian Biosafety Training Network (2009-12); Wellcome Trust grant for rapid *in vitro* and *in vivo* (guinea pig) down-selection of Ebola therapies (2014-16); and DfID/THET Ebola biosafety project (2015-17).

Supervision and mentoring: At the CSIRO, Professor Vasan currently has 11 direct reports (9 of them PC4 trained), plus a post-doc and three students.

E. Indigenous Research Excellence Criteria (if applicable) (maximum one A4 page)

N/A

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Dr Masha Somi
Chief Executive Officer
Health and Medical Research Office
Australian Government Department of Health

Dear Dr Somi

I am writing to you in your capacity as delegate under sections 15A, 26 and 27 of the *Medical Research Future Fund Act 2015* (the Act) with authority to debit amounts from the MRFF Special Account and set out and enter into written agreements with grant recipients.

In line with the Department's advice, an internal Grant Assessment Committee (GAC) was formed to assess the application submitted by The University of Queensland under the closed, non-competitive MRFF Coronavirus Research Response 2020 COVID-19 Vaccine Research Grant Opportunity. It met on 28 May 2020. Prior to assessment, NHMRC determined that the application had met eligibility requirements to progress to full committee assessment.

An assessment report is enclosed that contains the assessment process undertaken and the assessment outcome. The application assessed was for funding of $2,999,990.

A research integrity check has been undertaken on all of the Australian-based Chief and Associate Investigators named in the application. We can confirm that these individuals have not, to NHMRC's knowledge, been the subject of recent findings of research misconduct or breaches of the *Australian Code for the Responsible Conduct of Research,* or recent unresolved formal notifications to NHMRC on research misconduct matters.

You are now requested to advise if The University of Queensland has been successful in its application for funding under the closed, non-competitive MRFF 2020 COVID-19 Vaccine Research Grant Opportunity. Upon your advice, NHMRC proposes to notify the applicant and Administering Institution of the outcome, under embargo, prior to announcement. Please note, the outcome of the Grant Opportunity will be made publicly available on GrantConnect.

Consistent with the agreement between our organisations on post-award management of MRFF grants, the Department will manage any public announcement and media activities. NHMRC will make the formal offer of funding under the MRFF Head Agreement. A draft schedule will be provided to the Department and we will await its advice about this draft, in particular to confirm the payment schedule.

Thank you again for the opportunity to assist the Department with this grant opportunity.

Yours sincerely

[authorised for electronic transmission]

Alan Singh
Executive Director
Research Translation Branch

29 May 2020

Enc.:

1. MRFF 2020 COVID-19 Vaccine Research Grant Opportunity Assessment Report
2. Full application documentation for applications considered by the grant assessment committee

MRFF Coronavirus Research Response
2020 COVID-19 Vaccine Research Grant Opportunity
Assessment Report

Purpose

This report summarises the assessment of the application received from The University of Queensland for funding under the Medical Research Future Fund (MRFF) Coronavirus Research Response 2020 COVID-19 Vaccine Research Grant Opportunity Guidelines.

Background

The MRFF 2020 COVID-19 Vaccine Research Grant Opportunity is an urgent, closed, non-competitive grant opportunity funded from the MRFF Coronavirus Research Response and is being administered by NHMRC on behalf of the Australian Government Department of Health. The Department advised that this grant opportunity is restricted to a grant application from The University of Queensland.

NHMRC, as secretariat for this grant opportunity, invited The University of Queensland on 12 May 2020 to apply for up to $3.0 million (ex GST), in accordance with requirements set out in the Grant Opportunity Guidelines, to accelerate research into development of a prophylactic vaccine for SARS-CoV-2, the virus that causes COVID-19.

An application from The University of Queensland was received within the closing date (26 May 2020) for this grant opportunity.

Assessment

An internal Assessment Committee was convened to review the applications against the assessment criteria for this non-competitive grant opportunity application. It was comprised of three officers of the NHMRC:

- s47E(d), 47F
- s47E(d), 47F
- s47E(d), 47F

Declarations of interests

Members provided declarations before the meeting. No further declarations were made at the Assessment Committee meeting and it was agreed that there were no declared interests that would prevent the participation of members in the assessment of the grant application.

Process

Prior to the Assessment Committee meeting, the secretariat completed an eligibility check of the application and determined that the application met the eligibility requirements specified in the grant guidelines and was eligible for assessment by the Assessment Committee.

A research integrity check was undertaken on all of the Australian-based Chief and Associate Investigators named in the application.

Committee members considered the application individually, using the assessment criteria and rating scales provided with the grant guidelines. The committee met on 28 May 2020 to discuss and determine, as a committee, the assessment of the application.

Secretariat support for the committee was provided by s22 , Director, and s22 Project Officer, Translation Initiatives, NHMRC.

Assessment Outcomes

Eligibility outcomes

As above (see 'Process'), the secretariat determined that the application met the eligibility requirements specified in the grant guidelines.

Based on research integrity checks, there were no Australian-based Chief and Associate Investigators named in the application that, to NHMRC's knowledge, have been the subject of recent findings of research misconduct or breaches of the Australian Code for the Responsible Conduct of Research, or recent unresolved formal notifications to NHMRC on research misconduct matters.

Outcomes against the assessment criteria

The committee found that the grant application met all three technical assessment criteria (Criteria 1–3) and represented good overall value, as follows:

- Criterion 1: Project Impact – Strongly met
- Criterion 2: Project Methodology – Met
- Criterion 3: Capacity, capability and resources to deliver the project – Strongly met
- Criterion 4: Overall value and risk – Good

The Committee provided the following comments for each criteria in addition to providing an agreed rating:

Criterion 1: Project Impact	• This application addresses the objectives and expected outcomes of this grant opportunity. It is focused on an important gap in knowledge, with the impact of this project potentially highly significant in addressing the COVID-19 pandemic. • The proposal has ambitious timelines and allows for the consideration of a significantly shortened vaccine development pipeline, but is appropriately resourced and maintains a level of quality assurance with appropriate checks and balances, particularly for safety concerns. Existing collaborations and partnerships are already in place. • Justification is given about the differences between this proposal and funding and commitments from other funders. • The proposal does not describe the specific scientific literature that has been reviewed, however, other relevant research has

	been noted. This is an urgent grant opportunity in this emerging area and the proposal was drawing on relevant knowledge. • It was noted that this proposal relates to vaccine development at the pre-clinical stage and that there are a number of approaches worldwide that have commenced phase 1 clinical trials. However, this is in the context of multiple programs urgently seeking to address the COVID-19 pandemic.
Criterion 2: Project Methodology	• The application met this assessment criterion. • The methodology is appropriate to delivering of the project goals. • While the methodology is only outlined in brief (e.g. the statistical methods, the mouse model), it is described to an acceptable standard. The research team has the appropriate intellectual property (IP) to utilise this innovative approach for vaccine development and has demonstrated proof-of-concept for other similar viruses. • The timeframes are ambitious, however, it was noted that the project is appropriately resourced. • It was noted that a significant amount of the work will be conducted outside of UQ and that the relevant working relationships are in place. • The risk management plan outlines performance indicators and deliverables. The committee considered that they would have benefited from further detail and clarity.
Criterion 3: Capacity, capability and resources to deliver the project	• The proposal demonstrates that the Chief Investigator (CI) team has a strong track record in relevant fields of research. • The CI team has the experience, expertise and resources to undertake this research, including experience in managing large grants. The team has the appropriate mix of skills. • The CI team also includes experience with industry in the relevant areas of vaccine/drug development and has the IP for the molecular clamp approach to be used in this project. • The proposal demonstrates that existing collaborative and commercial relationships are in place and that funding has been obtained from others (including the Queensland Government, MRFF and CEPI) for the broader program of work.
Criterion 4: Overall value and risk of the project	• The budget costs appear reasonable, with resourcing costs (e.g. staff and consumables) appropriate for the fast pace of this project due to the pandemic. • The budget provided was adequate in this context. However, the committee noted that the budget would have benefited from further detail, particularly in relation to the $1.9 million for,

	'access to specialist biosecurity facilities to conduct pre-clinical animal challenge studies to demonstrate vaccine efficacy that are not available in Australia'. A letter of support from the clinic in the Netherlands provides brief information of the service to be provided. • The committee noted that the proposal explains the need for significant expenditure overseas due to lack of available capacity in Australia because of prior commitments by potential partners to other programs of work. • The risk management plan outlines key risks and mitigation strategies at a broad level. This plan would have benefited from further detail, e.g., risks related to data management, ethics and governance. • The proposal describes the project management team who will monitor the risks. It was noted that this team consists of the CIs. However, the project is being reviewed by an independent subject matter expert to ensure the risks identified do not have significant negative impact on the project.

Summary of outcome

Chief Investigator A	Associate Professor Keith Chappell
Title	Rapid Acceleration of the UQ COVID-19 Vaccine Program
Criterion 1 rating	Strongly met
Criterion 2 rating	Met
Criterion 3 rating	Strongly met
Criterion 4 rating	Good
Administering Institution	The University of Queensland
Budget	$2,999,990

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Investigators

CIA: Chappell Keith, J

Career summary: Chappell obtained his PhD in 2007 at the University of Queensland. He subsequently travelled to Madrid, Spain where he was employed as a post-doctoral research fellow between 2007 and 2010 at one of Spain's premier research institutes, Instituto de Salud Carlos III (Carlos the 3rd Institute of Health). Since returning to Australia in 2011, Chappell has been employed as a team leader within the laboratory headed by Professor Paul Young.

Contribution to field of research: CI Chappell is a co-creator of the molecular clamp platform technology and is the co-lead of the CEPI funded research program to establish a rapid response vaccine pipeline based on this technology. CI Chappell has expertise within the fields of virology, immunology and molecular biology and, for the past decade, his research has centred on the design of subunit vaccines based on the fusion proteins of enveloped viruses. CI Chappell is a co-lead author on a seminal publication in PNAS *(Magro et al., 2012)* that describes for the first time the importance of pre-fusion forms of the viral F protein for the correct display of epitopes recognized by potent neutralizing antibodies found in human responses. This discovery is responsible for initiating a push to develop pre-fusion stabilized vaccines against RSV, as well as for other viruses, some of which are in late stage clinical trials. To date this publication has been sited 131 times, including in the journals; Science, STM, Nature Communications and PLOS Pathogens.

Track Record: CI Chappell has published 31 peer reviewed journal articles (9 in the last 5 years). In total, his publications have been cited 765 times (Scopus Feb 2020).

Supervision and mentoring: CI Chappell currently leads a team of 11, which includes six postdocs, two project managers and three RAs. He has supervised six PhD students who have completed degrees and is currently supervising three additional PhD students.

CIB: Munro, Trent P.

Career summary: CI Munro has a PhD in Biochemistry from the University of Queensland and has extensive academic and industry experience in the development of therapeutics with a focus on drug design and manufacturing. He is currently a Professor and Senior Group Leader at the Australian Institute for Bioengineering and Nanotechnology (AIBN), University of Queensland. He is also the Director of the NCRIS funded National Biologics Facility (NBF) and Program Director for the

Coalition for Epidemic Preparedness and Innovation (CEPI) funded Rapid Response Vaccine Pipeline. Prior to his current role, he spent six years at Amgen Inc., based in California, where he was an Executive Director of Process Development.

Contribution to field of research: CI Munro has driven the translation of >40 molecules from research, through clinical trials and all stages of development across multiple regulatory jurisdictions. In addition, CI Munro led teams whose work enabled significant firsts in the biotechnology sector, including, the first EMA and FDA approved antibody therapeutics for cardiovascular disease, Repatha (evolocumab) and neurology Aimovig (erenumab). CI Munro's work enabled the manufacturing of the anti-Hendra virus antibody m102.4, which has been used to treat a number of people with a high-risk exposure to the virus and a recently completed first in human clinical trial.

Track Record: Over the last 5 years CI Munro's research and outputs have been industry focussed, overseeing a drug development portfolio of >40 molecules and an operating budget of >$65M/year. CI Munro took >20 molecules into clinical testing, participated in ~9 commercial product approvals across multiple global jurisdictions. CI Munro also continued publishing and currently has 9 patent applications, >50 publications; >1900 citations and a *h*-index of 24.

Supervision and mentoring: CI Munro previously supervised 8 graduated UQ PhD students. At Amgen CI Munro was a co-supervisor of 2 industry-based PhD students as well as 4 Industry based postdocs. CI Munro had 3 mentees from the Scientist Mentoring & Diversity Program which pairs ethnically diverse students with industry mentors.

CIC: Young Paul, R

Career summary: CI Young obtained his PhD in 1986 from the University of London where he established his laboratory investigating intervention strategies, including vaccine approaches for the dengue viruses. He returned to Australia in 1989, joining the University of Queensland as a group leader within the Microbiology Department. He is currently Head of School and Chair of the Virology Division, IUMS. He is a FASM and FAHMS and past President of ASM, AVS and APSMV.

Contribution to field of research: CI Young is a co-inventor of the molecular clamp platform technology and is the co-lead of the CEPI funded research program to establish a rapid response vaccine pipeline based on this technology. CI Young has more than 40 years of experience investigating the molecular biology, structure, function, biochemistry and immunology of viruses and their encoded proteins. His group has made major contributions in the areas of diagnostics, vaccine and antiviral development as well as in developing a greater understanding of the basis of severe viral disease. His laboratory is focused on translational outcomes as exemplified by the development of a dengue diagnostic assay that was taken to commercial release in 2006 and is now recognized as the global gold standard in early dengue detection. He has been actively engaged in securing support for clinical trials that will build on findings (PCT/AU2014/050403) that sepsis drugs could be repurposed for therapeutic intervention in dengue and in securing support for the vaccine platform technology that forms the foundation of this application (AU2016/901145).

Track Record: CI Young has published more than 160 papers (52 over the last 5 years), that have been cited >8600 times (4,156 in the last 5 years) with a *h*-index of 51. He holds 3 active patents.

Supervision and mentoring: CI Young has supervised more than 40 post-doctoral staff and research assistants throughout his career. His wider group currently comprises 12 postdoctoral scientists, 2 Project Mangers, 3 RAs and 6 PhD students. He has supervised 35 PhD students through to completion since appointment at UQ in 1991 (7 in last 5 years) and 47 Honours students since 1991 with >85% being awarded 1st Class.

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Medical Research Future Fund (MRFF) – Coronavirus Research Response:

2020 COVID-19 Vaccine Research Grant Opportunity

APPLICATION FORM

Application title:	Rapid Acceleration of the UQ COVID-19 Vaccine Program
Chief Investigator A:	Keith Chappell
Administering Institution:	The University of Queensland
Preferred contact name:	Trent Munro
Preferred contact email and phone number:	t.munro@uq.edu.au s47F

CLOSING DATE

Applications should be submitted by **5pm ACT local time, Tuesday 26 May 2020.**

HOW TO SUBMIT AN APPLICATION

By email to: mrff@nhmrc.gov.au

Application documents are to be submitted in line with specified format and size limits. Documents in addition to those listed below will not be accepted. Do not include macros or password protected files.

Application document	Format accepted	Size limit
Application form	.doc .docx .pdf	
Grant proposal	.doc .docx .pdf	2 MB
Budget	.xls	
Letters from third party facilities (if applicable)	.doc .docx .pdf	2 MB

The applicant is responsible for ensuring that the application is complete and accurate.

If there is an error in a submitted application, you should inform the National Health and Medical Research Council (NHMRC) immediately in writing by email to mrff@nhmrc.gov.au. NHMRC may, at its discretion, choose to seek information to clarify any aspect of the application.

RECEIPT OF APPLICATIONS

Your preferred contact will receive an email from NHMRC to confirm the receipt of your application. If you do not receive an email acknowledging the receipt of your application please call NHMRC's Help Centre on 1800 500 983.

Requests for an extension must be submitted by email to mrff@nhmrc.gov.au on or before the closing date/time of this grant opportunity.

CONDITIONS OF FUNDING

This application form does not constitute an offer of funding.

Eligible applications will be assessed against the assessment criteria and funding will be awarded at the discretion of the decision-maker as defined in the Grant Guidelines. Only successful applicants will be offered a grant agreement.

Successful applicants must also agree to participate in any reporting, consultation and/or evaluation requirements set out in the grant agreement.

PREPARING YOUR SUBMISSION

Before you begin preparing your application:

- Read the Grant Opportunity documentation including:
  - the Grant Guidelines
  - Rating Scale for Technical Assessment Criteria
  - Rating scale for assessment criterion: Overall value and risk
  - this Application Form, including the Grant Proposal Template and Budget Template, and
  - Sample Commonwealth Standard Grant Agreement.
- Ensure that you understand your eligibility to apply for and receive a grant as set out in the Grant Guidelines.

PRIVACY AND CONSENT

NHMRC, as an agency under the *Privacy Act 1988* (Cth), is required to notify you about our collection, use and disclosure of your personal information. We do so by referring you to the NHMRC Privacy Policy (https://www.nhmrc.gov.au/privacy). Please ensure that you have carefully read and understood the Privacy Policy prior to completing the application. If you have not understood the Privacy Policy or require further clarification, please contact the NHMRC Privacy Contact Officer via email (nhmrc.privacy@nhmrc.gov.au) or letter (NHMRC, GPO Box 1421, Canberra, ACT, 2601).

NHMRC may use the expertise of some assessors who reside overseas. While we take every effort to protect your personal information, assessors outside Australia are bound by their own country's laws and consequently, we cannot provide assurance that your information will be handled in accordance with the same standards as required by the Privacy Act 1988 or that you would have similar remedies should your personal information be released in breach of local privacy laws.

Have you read and understood the NHMRC Privacy Policy?	Yes
I acknowledge that NHMRC may send personal information contained in this application, including the Grant Proposal, overseas for the purposes of assessment of this application.	Yes
Should you consent, your personal information may be disclosed to universities, private medical research bodies, Australian Commonwealth, state/territory or local government agencies for the purposes of establishing expert advisory panels or working groups.	Yes

NB. These questions and acknowledgement apply to all named investigators in this application

SECTION 1 – APPLICATION INFORMATION

Application title:	**Rapid Acceleration of the UQ COVID-19 Vaccine Program**
Name of Chief Investigator A (CIA):	Keith Chappell
Administering Institution (AI):	The University of Queensland

SYNOPSIS OF PROPOSAL

Speed to a vaccine for the COVID-19 pandemic is a global health priority, but making a safe and effective vaccine against a new human pathogen is a complex task that requires the best equipped partners to rapidly work together. The University of Queensland (UQ), The Doherty Institute along with other national and international collaborators are racing to deliver a COVID-19 vaccine. We are requesting $3M in funding from the Federal Government to achieve our ambitious goal to accelerate and advance this vaccine for the Australian and global population, building on support from CEPI (Coalition for Epidemic Preparedness Innovations) and the Queensland Government.

Our Molecular Clamp COVID-19 vaccine is Australia's most advanced; we aim to complete pre-clinical studies and protective efficacy in Q2 and Phase I human trials in Q3 2020. This runs in parallel with a plan to expedite manufacturing at-scale and have significant numbers of product in vial by the end of 2020 for further clinical use and potential emergency distribution. If public health measures sufficiently slow infection rates, this increased speed has potential to have a major impact, especially for those at most risk, people with pre-existing medical conditions and the elderly.

Given our recent progress, including identification of a candidate vaccine, these funds will be critical for studies to advance animal protection studies as we move into clinical testing. It will also support additional animal models to be created and accessed and additional development funding for the vaccine program.

MEDIA SUMMARY

UQ is currently developing a vaccine for the COVID-19 outbreak based on its proprietary technology, the Molecular Clamp. We are requesting $3M in funding from the Federal Government, in part support of achieving our ambitious goal to accelerate and advance this vaccine for the Australian and global population building on existing support from CEPI (Coalition for Epidemic Preparedness Innovations) and the Queensland Government.

PARTICIPATING INSTITUTIONS

In some cases, the institution that will administer your application may differ from the institution in which you will actually conduct the proposed research. For example, many universities administer research which will be conducted in an affiliated teaching hospital. In this section you will need to list the Participating Institution and department where the proposed research will be conducted. This information is required by NHMRC to enable assessors to identify potential institutional conflicts with your application.

Please provide the information listed in the table below for any participating institutions. The total percentage of all listed institutions should be 100%.

Participating institution	Department	Research effort (%)

The University of Queensland	School of Chemistry and Molecular Biosciences	80%
The University of Melbourne	The Doherty Institute	20%

THIRD PARTY RESEARCH FACILITIES

Applicants often need to receive services from third parties to enable their research to be successfully undertaken. Such research facilities include biospecimens and associated data from biobanks or pathology services, and from organisations such as nonhuman primate colonies, the Australian Twin Registry, Cell Bank Australia, the Trans-Tasman Radio Oncology Group and from organisations that provide clinical trials services. This list is illustrative, not exhaustive. Applicants will need to consult with research facilities to ensure that the services they require can be provided and that the charges included in the budget are accurately reflected. Letters from research facilities confirming their collaboration must be submitted with the application and must not exceed 2MB.

Is this application using services provided by a third party research facility? *If yes, please attach evidence of collaboration to your submission, as requested above.*	Yes

RESEARCH CLASSIFICATION

Please classify your research below using the following information: https://www.nhmrc.gov.au/about-us/resources/australian-standard-research-classifications-and-research-keywords.

Broad research area

What is the broad research area for your application?	*Choose one:* ○ Clinical medicine and science

Fields of research

Please nominate the field(s) of research for your proposal. (NB. You may nominate a maximum of three fields of research.)

1. 110804 Medical Virology

Research keywords

Please nominate up to five research keywords.

1. Vaccine
2. Biotechnology
3. Immunology

Burden of disease

Please indicate the burden of disease that best describes the area of research of the application. You can select up to three burden or disease types and you must allocate a percentage of time against each.

100% Coronavirus

ETHICS

If you answer 'yes' to any of these questions, you will need to obtain ethics approvals and supply evidence of these to your Research Office in the event your application is funded. For further information see Ethics and Integrity on the NHMRC website: https://www.nhmrc.gov.au/research-policy/ethics-and-integrity

Does this research proposal require submission to a human research ethics committee or other ethics review process for human research?	No
Will this research involve the use of human stem cells?	No
Does this research proposal require submission to an animal ethics committee? *NB. If not, this means that no animal stem cells will be used.*	Yes
Does this research involve organisms being genetically manipulated such that they fall under current guidelines issues by the Office of the Gene Technology Regulator?	Yes
Does this research require submission to an institutional biosafety committee?	Yes

SECTION 2 – RESEARCH TEAM

Information about the research team is requested below. In addition to this, you are required to address the capacity, capability and resources of the research team to deliver the proposed project (Assessment Criterion 3) in your Grant Proposal.

Please list the Chief Investigator team and any Associate Investigators in the tables below.

Notes:

- *The Chief Investigator A (CIA) is responsible for completion and lodgement of the application. CIA is the project leader who is responsible for the successful completion of the research proposal. Other Chief Investigators (CIs) are to read the application and must agree to its contents before it is submitted. A maximum of ten CIs (including the CIA) may be included in your application. CIs may request a salary; however, the level and proportion requested must be fully justified. Refer to the grant guideline to understand researcher obligations.*
- *An Associate Investigator is defined as an investigator who provides some intellectual and/or practical input into the research and whose participation warrants inclusion of their name on publications. Associate Investigators are not able to draw a salary from the grant. Associate Investigators named on the application will be invited by the CIA. Accepting an invitation to participate on an application constitutes an agreement to be named on an application, as per the relevant Grant Guidelines. Associate Investigators are not required to endorse the final application. A maximum of ten Associate Investigators may be assigned to this grant.*

Chief Investigator (CI) team

Role	Chief Investigator name	Primary institution and position	Email address	Will the CI be based in Australia? (Y/N)

CIA	Keith Chappell	Associate Professor, The University of Queensland	k.chappell@uq.edu.au	Y
CIB	Trent Munro	Professor, The University of Queensland	t.munro@uq.edu.au	Y
CIC	Paul Young	Professor, The University of Queensland	p.young@uq.edu.au	Y

Associate Investigators (AI)

Associate Investigator name	Primary institution	Position

Will the CIA be based in Australia for the duration of this grant as per the requirements of this grant opportunity?	Yes
Is the CIA an Australian citizen?	Yes
Is the CIA a permanent resident of Australia?	Yes

DECLARATION OF INTERESTS

Is any team member making a declaration of interest? *If yes, please provide the declaration(s) below.*	No

CHIEF INVESTIGATOR EMPLOYMENT, PUBLICATIONS AND FUNDING

Please provide the information requested below about each CI's NHMRC and MRFF grants, other funding, employment history and publications.

NHMRC and MRFF Grants

Please list below any NHMRC or MRFF grants held (current or previous) by each member of the CI team, including the title, funding source (NHMRC or MRFF), grant date and duration (e.g. 2019-2022), and the funding amount. *Repeat the example format provided below for each NHMRC and/or MRFF grant for all other named CIs, e.g. CIB-CIJ; insert as many rows as appropriate).*

CIA	Keith Chappell
Grant title	**Clamp stabilized vaccines to provide broad spectrum**

	protection against influenza		
Funding source	NHMRC	**Budget**	$949,516
Grant start/end date	2019	**Grant duration**	3
Grant type	Development Grant	**Grant code**	APP1156063
Grant title	**Virus vaccines that ensure preparedness against future public health emergencies**		
Funding source	NHMRC	**Budget**	$862,061
Grant start/end date	2018	**Grant duration**	3
Grant type	Project	**Grant code**	APP1144025

CIB	Trent Munro		
Grant title	**A new radio-imaging agent to guide targeted therapy for epithelial ovarian cancer**		
Funding source	MRFF	**Budget**	$1.9M
Grant start/end date	2020	**Grant duration**	4
Grant type	Research Grant	**Grant code**	APP1199422

CIC	Paul Young		
Grant title	**Chimeric insect-specific viruses as novel vaccines for mosquito-borne diseases**		
Funding source	NHMRC	**Budget**	$1,017,285
Grant start/end date	2020	**Grant duration**	3
Grant type	Development	**Grant code**	APP1178896
Grant title	**Clamp stabilized vaccines to provide broad spectrum protection against influenza**		
Funding source	NHMCR	**Budget**	$949,516
Grant start/end date	2019	**Grant duration**	3
Grant type	Development	**Grant code**	APP1156063
Grant title	**High resolution structural determination of pathogenic flaviviruses by cryo-EM using a chimeric platform**		
Funding source	NHMRC	**Funding source**	NHMRC
Grant start/end date	2019	**Grant start/end date**	2019
Grant type	Project	**Grant type**	Project

Grant title	**Structural insights into the function and antigenicity of the flavivirus NS1 protein.**		
Funding source	NHMRC	**Budget**	$624,920
Grant start/end date	2019	**Grant duration**	3
Grant type	Project	**Grant code**	APP1162507
Grant title	**Needle free delivery of dengue and Zika vaccines to the skin**		
Funding source	NHMRC	**Budget**	$642,792
Grant start/end date	2018	**Grant duration**	3
Grant type	Development	**Grant code**	APP1139754
Grant title	**Virus vaccines that ensure preparedness against future public health emergencies**		
Funding source	NHMRC	**Budget**	$862,061
Grant start/end date	2018	**Grant duration**	3
Grant type	Project	**Grant code**	APP1144025
Grant title	**The genetic basis of pathogen blocking: elucidating the contributions of the Wolbachia, dengue virus and mosquito genomes**		
Funding source	NHMRC	**Budget**	$736,338
Grant start/end date	2016	**Grant duration**	3
Grant type	Project	**Grant code**	APP1103804
Grant title	**Dengue virus NS1 protein as a mediator of pathology**		
Funding source	NHMRC	**Budget**	$621,979
Grant start/end date	2016	**Grant duration**	3
Grant type	Project	**Grant code**	APP1109738
Grant title	**Host metabolism and responses contributing to flavivirus replication and pathogenesis**		
Funding source	NHMRC	**Budget**	$574,492
Grant start/end date	2015	**Grant duration**	3
Grant type	Project	**Grant code**	APP1081786
Grant title	**Understanding the basis of disease caused by dengue viruses**		
Funding source	NHMRC	**Budget**	$611,226
Grant start/end date	2014	**Grant duration**	3

Grant type	Project	**Grant code**	APP1067226
Grant title	**Skin patch technology for fast and simple monitoring of disease**		
Funding source	NHMRC	**Budget**	$796,599
Grant start/end date	2014	**Grant duration**	3
Grant type	Development	**Grant code**	APP1075739
Grant title	**Dengue fever vaccine: Towards low cost production and delivery**		
Funding source	NHMRC	**Budget**	$548,990
Grant start/end date	2014	**Grant duration**	3
Grant type	Development	**Grant code**	APP1074296
Grant title	**Nanoparticles to treat respiratory viral infections**		
Funding source	NHMRC	**Budget**	$509,374
Grant start/end date	2013	**Grant duration**	3
Grant type	Project	**Grant code**	APP1047635
Grant title			
Funding source	NHMRC	**Budget**	$548,990
Grant start/end date	2019	**Grant duration**	3
Grant type	Project	**Grant code**	APP1164216

Other research funding

Please list below any other research funding that any members of the CI team have received during the last five years, including the CI name, funding source (e.g. organisation/funder), date and duration of the funding, and the funding amount. Please include offers received for future funding. *Repeat the example format provided below for other research funding, for all other named CIs, e.g. CIB-CIJ; insert as many rows as appropriate).*

CIA	**Keith Chappell**		
Funding Organisation	Venture Capital	**Budget**	$1,500,000
Funding source	Private Venture Capital		
Grant start/end date	2019	**Grant duration**	2

Funding Organisation	University of Queensland	**Budget**	$20,000
Funding source	University		

Grant start/end date	2019	**Grant duration**	2

Funding Organisation	CEPI	**Budget**	$14,900,000
Funding source	NGO, non-profit		
Grant start/end date	2019	**Grant duration**	3

Funding Organisation	ARC	**Budget**	$468,605
Funding source	Government		
Grant start/end date	2018	**Grant duration**	3

CIB	**Trent Munro**		
Funding Organisation	NCRIS (administered by Therapeutic Innovation Australia (TIA)	**Budget**	$14,219,158
Funding source	Government		
Grant start/end date	2019	**Grant duration**	4

Funding Organisation	ARC	**Budget**	$21,000,000
Funding source	Government		
Grant start/end date	2012	**Grant duration**	7

CIC	**Paul Young**		
Funding Organisation	CEPI	**Budget**	$14,900,000
Funding source	NGO, non-profit		
Grant start/end date	2019	**Grant duration**	3

Funding Organisation	ARC	**Budget**	$159,000
Funding source	Government		
Grant start/end date	2018	**Grant duration**	3

Funding Organisation	ARC	**Budget**	$598,000
Funding source	Government		

Grant start/end date	2016	**Grant duration**	1

Funding Organisation	CEPI	**Budget**	$14,900,000
Funding source	NGO, non-profit		
Grant start/end date	2019	**Grant duration**	3

Funding Organisation	Bill & Melinda Gates Foundation	**Budget**	$147,000
Funding source	International		
Grant start/end date	2016	**Grant duration**	1

`Organisation	ARC	**Budget**	$359,000
Funding source	Government		
Grant start/end date	2016	**Grant duration**	3

Employment history

Please briefly list the employment history of each CI, including employer, employment type (part-time, full-time) and start/end date of each employment. *Repeat the example format provided below for the CIA – for all other named CIs, e.g. CIB-CIJ; insert as many rows as appropriate.*

CIA	**Keith Chappell**		
Employer	**Job Title**	**Employment type**	**Start/end date (mm/yyyy – mm/yyyy)**
University of Queensland	Associate Professor and Group Leader	Full time	May/2020 - present
University of Queensland	Senior Research Fellow	Full time	March/2011 - May 2020
Insitituto Salud Carlos III Madrid	Research Fellow	Full time	Sep/2007 - Sep/2010

CIB	**Trent Munro**		
	Job Title	**Employment type**	**Start/end date (mm/yyyy – mm/yyyy)**
Harvard Medical School	Postdoctoral Research Fellow	Full time	July/2000 – August/2001
University of Cambridge	Senior Postdoctoral Research Fellow	Full time	August/2001 – May/2006

University of Queensland	Associate Group Leader	Full time	May/2006 – May/2013
Amgen Inc	Executive Director	Full time	May/2013 – July/2019
University of Queensland	Professor and Senior Group Leader	Full time	August/2019 - present

CIC	**Paul Young**		
Employer	**Job Title**	**Employment type**	**Start/end date (mm/yyyy – mm/yyyy)**
London School of Hygiene & Tropical Medicine	Lecturer	Full time	Jan/1986 - Apr/1989
Sir Albert Sakzewski Virus Research Centre	Senior Research Fellow	Full time	Apr/1989 - Sep/2000
University of Queensland	Senior Lecturer	Full time	Jul1991 – Dec/2005
University of Queensland	Associate Professor	Full time	Jan/2006 - Dec/2007
University of Queensland	Professor	Full time	Jan/2008 - Feb/2014
University of Queensland	Professor and Head of School	Full time	March/2014 - present

Publications (during the last five years)

Please briefly list the publications of each CI during the last five years, including journals, books, reports, and editorials. *Repeat the example format provided below for the CIA – for all other named CIs, e.g. CIB-CIJ.*

CIA	Keith Chappell

Journal Articles (Original Research)

1. Brealey, Jaelle C., Young, Paul R., Sloots, Theo P., Ware, Robert S., Lambert, Stephen B., Sly, Peter D., Grimwood, Keith and **Chappell**, Keith J. (2020) Bacterial colonization dynamics associated with respiratory syncytial virus during early childhood. Pediatric Pulmonology, . doi:10.1002/ppul.24715
2. Pedrera, Miriam, Macchi, Francesca, McLean, Rebecca K., Franceschi, Valentina, Thakur, Nazia, Russo, Luca, Medfai, Lobna, Todd, Shawn, Tchilian, Elma Z., Audonnet, Jean-Christophe, **Chappell**, Keith, Isaacs, Ariel, Watterson, Daniel, Young, Paul R., Marsh, Glenn A., Bailey, Dalan, Graham, Simon P. and Donofrio, Gaetano (2020) Bovine herpesvirus-4-vectored delivery of nipah virus glycoproteins enhances T cell immunogenicity in pigs. Vaccines, 8 1: 115. doi:10.3390/vaccines8010115

3. Do, Lien Anh Ha, Tse, Reuben, Nathanielsz, Jordan, Anderson, Jeremy, Ong, Darren Suryawijaya, **Chappell**, Keith, Mulholland, Kim and Licciardi, Paul V. (2019) An Improved and High Throughput Respiratory Syncytial Virus (RSV) Micro-neutralization Assay. Journal of Visualized Experiments : JoVE, 2019 143: . doi:10.3791/59025
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5. Brealey, Jaelle C., Sly, Peter D., Young, Paul R. and **Chappell**, Keith J. (2019) Analysis of phylogenetic diversity and in vitro adherence characteristics of respiratory syncytial virus and Streptococcus pneumoniae clinical isolates obtained during pediatric respiratory co-infections. Microbiology, . Do
6. Brealey, Jaelle C., **Chappell**, Keith J., Galbraith, Sally, Fantino, Emmanuelle, Gaydon, Jane, Tozer, Sarah, Young, Paul R., Holt, Patrick G. and Sly, Peter D. (2018) Streptococcus pneumoniae colonization of the nasopharynx is associated with increased severity during respiratory syncytial virus infection in young children. Respirology, 23 2: 220-227. doi:10.1111/resp.13179
7. Bermingham, Imogen M., **Chappell**, Keith J., Watterson, Daniel and Young, Paul R. (2018) The heptad repeat C domain of the respiratory syncytial virus fusion protein plays a key role in membrane fusion. Journal of Virology, 92 4: 1-14. doi:10.1128/JVI.01323-17
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9. Jaberolansar, Noushin, **Chappell**, Keith J., Watterson, Daniel, Bermingham, Imogen M., Toth, Istvan, Young, Paul R. and Skwarczynski, Mariusz (2017) Induction of high titred, non-neutralising antibodies by self-adjuvanting peptide epitopes derived from the respiratory syncytial virus fusion protein. Scientific Reports, 7 1: 11130. doi:10.1038/s41598-017-10415-w
10. **Chappell**, Keith J. and Watterson, Daniel (2017) Fighting Ebola: a window for vaccine re-evaluation?. PLoS Pathogens, 13 1: e1006037. doi:10.1371/journal.ppat.1006037
11. Pyankov, Oleg V., Setoh, Yin Xiang, Bodnev, Sergey A., Edmonds, Judith H., Pyankova, Olga G., Pyankov, Stepan A., Pali, Gabor, Belford, Shane, Lu, Louis, La, Mylinh, Lovrecz, George, Volchkova, Valentina A., **Chappell**, Keith J., Watterson, Daniel, Marsh, Glenn, Young, Paul R., Agafonov, Alexander A., Farmer, Jillann F., Volchkov, Victor E., Suhrbier, Andreas and Khromykh, Alexander A. (2017) Successful post-exposure prophylaxis of Ebola infected non-human primates using Ebola glycoprotein-specific equine IgG. Scientific Reports, 7 1: 41537. doi:10.1038/srep41537
12. Vitak, Nazarii, Hume, David A., **Chappell**, Keith J., Sester, David P. and Stacey, Katryn J. (2016) Induction of interferon and cell death in response to cytosolic DNA in chicken macrophages. Developmental and Comparative Immunology, 59 145-152. doi:10.1016/j.dci.2016.01.023
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14. Watterson, Daniel, Robinson, Jodie, **Chappell**, Keith J., Butler, Mark S., Edwards, David J., Fry, Scott R., Bermingham, Imogen M., Cooper, Matthew A. and Young, Paul R. (2016) A generic

screening platform for inhibitors of virus induced cell fusion using cellular electrical impedance. Scientific Reports, 6 22791: 1-9. doi:10.1038/srep22791

15. **Chappell**, K. J., Brealey, J. C., Amarilla, A. A., Watterson, D., Hulse, L., Palmieri, C., Johnston, S. D., Holmes, E. C., Meers, J. and Young, P. (2016) Phylogenetic diversity of koala retrovirus within a wild koala population. Journal of Virology, 91 3: 363-374. doi:10.1128/JVI.01820-16
16. Shannon, A. E., Pedroso, M. M., **Chappell**, K. J., Watterson, D., Liebscher, S., Kok, W. M., Fairlie, D. P., Schenk, G. and Young, P. R. (2016) Product release is rate-limiting for catalytic processing by the Dengue virus protease. Scientific Reports, 6 1: 37539. doi:10.1038/srep37539
17. Young, Paul, **Chappell**, Keith and Watterson, Dan (2016) Viral pathogen vaccines. Australasian Biotechnology, 26 3: 35.i:10.1099/mic.0.000870

CIB	Trent Munro

Journal Articles (Original Research)

1. *Safety, Tolerability, Pharmacokinetics, and Immunogenicity of a Human Monoclonal Antibody Targeting the G Glycoprotein of Henipaviruses in Healthy Adults: A Randomised, First-in-Human Phase 1 Study*. Playford E, **Munro T**, Mahler S, M. Elliott, Suzanne Gerometta M, Hoger K, Jones M, Griffin P, Lynch K, Carroll H, El Saadi D, Gilmour M, Hughes B, Hughes K, Huang E, de Bakker C, Klein R, Scher M, Smith I, Wang L, Lambert S, Dimitrov D, Gray P, Broder C. Lancet Infectious Disease Volume 20, Issue 4, April 2020, Pages 445-454
2. *Nanoscale integration of single cell biologics discovery processes using optofluidic manipulation and monitoring*. Jorgolli, M., Nevill, T., Winters, A., Chen, I., Chong, S., Lin, F.-F., Mock, M., Chen, C., Le, K., Tan, C., Jess, P., Xu, H., Hamburger, A., Stevens, J., **Munro, T**., Wu, M., Tagari, P., Miranda, L.P.. Biotech&Bioeng 2019 116(9), pp. 2393-2411
3. *A Novel Mammalian Cell Line Development Platform Utilizing Nanofluidics and OptoElectro Positioning Technology.* Le K, Tan C, Gupta S, Guhan T, Barkhordarian H, Lull J, Stevens J, **Munro T**. Biotechnol Prog. 2018 Jul 16.
4. *Characterization of phenotypic and genotypic diversity in subclones derived from a clonal cell line.* Tharmalingam T, Barkhordarian H, Tejeda N, Daris K, Yaghmour S, Yam P, Lu F, Goudar C, **Munro T**, Stevens J. Biotechnol Prog. 2018 May;34(3):613-623.
5. *RNA-Seq highlights high clonal variation in monoclonal antibody producing CHO cells.* Orellana CA, Marcellin E, Palfreyman RW, **Munro TP**, Gray PP, Nielsen LK. Biotechnol J. 2018 Mar;13(3):e1700231.
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8. *An EGFR targeting nanoparticle self assembled from a thermoresponsive polymer.* Goodall S., Howard C.B., Jones M.L., **Munro T.,** Jia Z., Monteiro M.J., Mahler S. (2015) J. Chem Tech and Biotech, 90 (7), pp. 1222-1229.

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1. *Introduction to special section on using pools to generate Good Laboratory Practice tox or other non-clinical material to accelerate development timelines.* DeMaria C, **Munro T**. Biotechnol Prog. 2017 Nov;33(6):1435.

2. *Accelerating patient access to novel biologics using stable pool-derived product for non-clinical studies and single clone-derived product for clinical studies.* **Munro TP**, Le K, Le H, Zhang L, Stevens J, Soice N, Benchaar SA, Hong RW, Goudar CT. Biotechnol Prog. 2017 Nov;33(6):1476-1482.
3. *Industry view on the relative importance of "clonality" of biopharmaceutical-producing cell lines.* Frye C, Deshpande R, Estes S, Francissen K, Joly J, Lubiniecki A, **Munro T**, Russell R, Wang T, Anderson K. Biologicals. 2016 Mar;44(2):117-22.

Research Report – Commissioned by Government, Industry or Other

1. UNLOCKING ADVANCED BIOMANUFACTURING IN QUEENSLAND, Stategic Pathway. **Munro, TP** 2019 (https://www.lsq.com.au/wp-content/uploads/2019/11/Unlocking-Advanced-Biomanufacturing-in-QLD_Web.pdf)

CIC	Paul Young

Journal Articles (Original Research)

1. Nguyen, W., Nakayama, E., Yan, K., Tang, B., Le, T.T., Liu, L., Cooper, T.H., Hayball, J.D., Faddy, H.M., Warrilow, D., Allcock, R.J.N., Hobson-Peters, J., Hall, R.A., Rawle, D.J., Lutzky, V.P., **Young, P.**, Oliveira, N.M., Hartel, G., Howley, P.M., Prow, N.A., Suhrbier, A. (2020) Arthritogenic Alphavirus Vaccines: Serogrouping Versus Cross-Protection in Mouse Models. *Vaccines 8*, 209. doi:10.3390/vaccines8020209
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9. Hobson-Peters J, Harrison JJ, Watterson D, Hazlewood JE, Vet LV, Newton ND, Warrilow D, Colmant AMG, TaylorC, Huang B, Piyasena TBH, Chow WK, Setoh YX, Tang B, Nakayama E, Yan K, Amarilla AA, Wheatley S, Moore PR, Finger M, Kurucz N, Modhiran N, **Young PR**, Khromykh

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12. Setoh Y.X., Amarilla A.A., Peng N.Y.G., Griffiths R.E., Carrera J, Freney M.E., Nakayama E., Ogawa S., Watterson D., Modhiran N., Nanyonga F.E., Torres F.J., Slonchak A., Periasamy P., Prow N.A., Tang B., Harrison J., Hobson-Peters J., Cuddihy T., Cooper-White J., Hall R.A., **Young P.R.**, Mackenzie J.M., Wolvetang E., Bloom J.D., Suhrbier A., Khromykh A.A. (2019) Determinants of Zika virus host tropism uncovered by deep mutational scanning. Nature Microbiology 4(5):876-887. doi: 10.1038/s41564-019-0399-4
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SECTION 3 – GRANT PROPOSAL

Please attach to this application your completed Grant Proposal, using the Grant Proposal Template provided.

SECTION 4 – BUDGET

Please attach to this application a budget using the Budget Template provided. This template requires that you outline details about the proposed budget including:

- Salary for all members of the Research Team
    - indicate the PSP level based on the level of work to be undertaken by the team member and the % of a full PSP package that the candidate is to be paid for each year of the grant (in whole numbers only). Applicants must apply for the exact proportion of a PSP that is required for the research being proposed.
    - Please also provide a brief justification for the salary.
- Other research costs – please provide details on:

    - the name/description of the item
    - total value of the item requested for each year
    - a justification for the particular item requested
- Equipment – please provide details on:
    - the name/description of the item
    - the total value of the item requested for each year
    - a justification for the particular item requested

The justifications for each item can be included in the spreadsheet. Alternatively, you can list all of them below. Either way, they should be **no more than 100 words for each item.**

Notes:
Refer to the grant guidelines for information about what MRFF funds can be used for.

- *This information must be aligned with the proposed aims of the study, be detailed on a yearly basis and be fully justified.*
- *The MRFF funds the direct costs of research based on advice from assessment. Applicants should provide justification of budgets requested. Poorly justified budgets may negatively impact the overall assessment of your application.*

SECTION 5 – CERTIFICATION

By submitting this application **the CIA** provides the assurance, acknowledgements and undertakings as set out in the Grant Guidelines, including that:

- All required information has been provided and is complete, current and correct.
- All eligibility and other application requirements have been met.
- All personnel contributing to a research activity have familiarised themselves with the *Australian Code for the Responsible Conduct of Research, the National Statement of the Ethical Conduct of Human Research*, the *Australian Code for the Care and Use of Animals for Scientific Purposes* and other relevant NHMRC policies concerning the conduct of research, and agree to conduct themselves in accordance with those policies.
- All personnel named in the application have provided written agreement to be named, to participate in the manner described in the application and to the use of their personal information as described in the *NHMRC Privacy Policy*.
- The appropriate facilities and salary support will be available for the funding period.
- All personnel named in the application have provided written agreement to be names, to participate in the manner described in the application and to the use of their personal information as described in the *NHMRC Privacy Policy*.
- All Chief Investigators have provided written agreement for the final application to be certified.
- That the application may be excluded from consideration if found to be in breach of any requirements.

and if funded:

- The grant activity will be carried out in strict accordance with the **grant guidelines** and the grant agreement.

- The grant activity may be used to inform evaluations of the grant opportunity and the grant program.

By submitting this application **the Administering Institution** provides the assurance, acknowledgements and undertakings as set out in the Grant Guidelines, including that:

- reasonable efforts have been made to ensure the application is complete and correct and complies with all eligibility and other application requirements detailed in the Grant Guidelines
- where the CIA is not an Australian citizen or permanent resident, they will have the requisite work visa in place at the time of accepting the successful grant and will be based in Australia for the duration of the funding period
- the appropriate facilities and salary support will be available for the funding period.
- approval of the Research Activity by relevant institutional committees and approval bodies, particularly in relation to ethics and biosafety, will be sought and obtained prior to the commencement of the research, or the parts of the research that require their approval
- arrangements for the management of the grant have been agreed between all institutions associated with the application
- the application is being submitted with the full authority of, and on behalf of, the Administering Institution, noting that under section 136.1 of the Commonwealth Criminal Code Act 1995, it is an offence to provide false or misleading information to a Commonwealth body in an application for a benefit. This includes submission of an application by those not authorised by the Institution to submit applications for funding to NHMRC
- written evidence of consent has been obtained from all Chief Investigators and Associate Investigators and provided to the RAO.

Application title:	Rapid Acceleration of the UQ COVID-19 Vaccine Program
Name of Chief Investigator A (CIA):	Keith Chappell
CIA phone number(s):	07 3443 2597
CIA email address:	k.chappell@uq.edu.au
Signature – CIA *Electronic/typed signature will be accepted*	s47F
Administering Institution (AI):	The University of Queensland
Research Administration Officer(RAO) name: *Electronic/typed signature will be accepted*	Dr Jodi Clyde-Smith
RAO email:	grants-manager@research.uq.edu.au
Signature – RAO:	s47F

Date:	25/5/2020

ATTACHMENTS

Please remember to attach the following files when submitting your application:

- Grant proposal (using the template provided)
- Proposed budget (using the template provided)
- If applicable, letter(s) from third party research facilities confirming their collaboration.

Viroclinics Xplore

Dr Keith Chappell
School of Chemistry and Molecular Bioscience,
The University of Queensland,
Australia

LETTER OF SUPPORT
for the
In vivo validation of COVID-19 vaccine candidates of the University of Queensland

Dear Dr Chappell,

I, Koert Stittelaar, in my capacity of General Manager Viroclinics Xplore at Viroclinics Biosciences B.V. hereby confirm that Viroclinics Biosciences B.V. intends to contribute to the validation of your COVID-19 vaccine candidates in SARS-CoV-2 hamster, ferret and rabbit challenge models.

The validation involves demonstration of vaccine-induced antibody responses, and protection against virus replication and histopathological changes in the respiratory tract

Yours sincerely,

s47F

Name:Dr. Koert J. Stittelaar
Position:General Manager, Xplore
Date: 22 May 2020

Viroclinics Xplore
Landerd Campus
Nistelrooise Baan 3
5374 RE Schaijk
The Netherlands

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www.viroclinics.com
info@viroclinics.com

s22

From: s22
Sent: Monday, 15 June 2020 2:54 PM
To: s22 ; s22
Cc: s22 ; Singh, Alan; Somi, Masha; s22
Subject: 2020 COVID-19 Vaccine Research Grant Opportunity Application - assessment of further information from the applicant [SEC=OFFICIAL]
Attachments: CHAPPELL_MRFF COVID-19 Vaccine Research Grant_Grant Responses.pdf

s22

As requested, the assessment committee has considered the additional information (attached) from the applicant. The committee considered that the response from the applicant addresses comments made in the grant assessment committee report. It provides additional information on the University of Queensland data management policies, ethics approvals that are in place or planned to support the research and a broad overview of the Chief Investigator-led governance structure. Additional detail about the project deliverables and timeframes is provided to assist in monitoring of milestones and performance indicators. The additional context has been useful in confirming that the applicants appear to have the elements in place that have appropriate planning and timelines to address them. There is no change to the committee's ratings.

Regards,

s22
Director, Translation Initiatives | Manager, Melbourne Office
Research Translation Branch
National Health and Medical Research Council

s22 | s22 s22 | nhmrc.gov.au

Additional Clarification as Requested by the MRFF Regarding Consideration in the Risk Management Plan of Risks Related to:

Data management: how data will be managed, stored securely, and transferred

A. Research Data:

The University of Queensland has policies and procedures, soft and hard infrastructure and staff training and development to ensure a rigours approach to data management. These are currently used and will continue to be used to support the research work conducted under this grant.

UQ has a Research Data Management Policy (PPL 4.20.06), which sets out the requirements for UQ researchers to ensure their research data is managed under legal, statutory, and ethical requirements and in accordance with the *Australian Code for the Responsible Conduct of Research (2018)*. UQ researchers need to be familiar with this Policy, and with the provisions of The *Code*.

The UQ Research Data Manager (UQRDM) system provides the University research community with a collaborative, safe and secure large-scale storage facility to practice good stewardship of research data. UQRDM is an integrated data management system covering the entire research data lifecycle including seamless provisioning of easily accessible, secure and sharable data storage in real-time from one location. It facilitates collaboration across the whole of UQ, with other research institutions and industry partners. UQRDM will also enable publication records to be linked to datasets and provide a mechanism for the storage and retrieval of archived data. Researchers can also complete a Data Management Plan for their project and export it as a pdf. More information is available on the UQRDM Library Guide.

In addition, UQ provides resources to assist in developing research data management plans, be it for MRFF or other research funding proposals. This includes the Checklist – Research Data Management Plan. UQ coordinates the course 'Research Data Management Best Practice' which provides guidance on good stewardship of research data in accordance with The *Code*, which involves: planning how data will be created, stored, used and protected from loss, damage or theft – describing data so it can potentially be re-used by others – documenting compliance with the relevant policies, legislation and funding body requirements. UQ Library also offers regular training on Managing and Sharing Sensitive Data and Publishing Data in UQ eSpace. These processes are in use and will be used throughout the project.

B. Third Party Data:

Element of this project will be conducted with third parties or supporting broader evaluation of this vaccine including pre-clinical and clinical studies. All parties involved have been assessed based on their required level of compliance and data management strategies. This has involved virtual audits and previous experience.

Communications between these parties will use appropriate channels including"

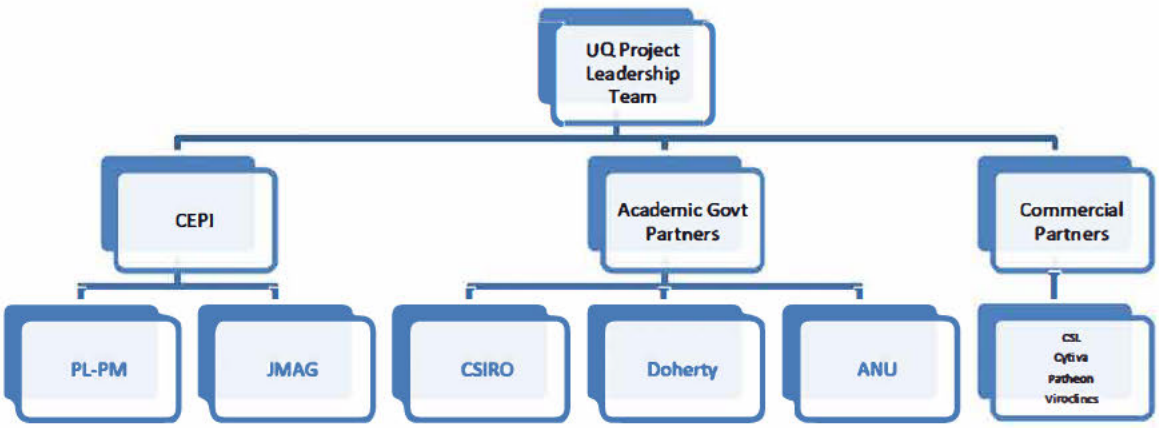
- Sending of password protected documents over email
- Appropriately deidentified information use
- Use of cloud based secure information systems such as RDM, OneDrive or similar. These also create and ability to see edit audit trails etc

Ethics: strategies relating to ethics approval (e.g. not obtaining, or delays in obtaining, approval)

s45

Governance: explanation of the 'strong management structure', who has the decision-making power, and the nature of CEPI's oversight of the project

- The UQ project team has decision rights for all aspects of the program, an example of the consortium is shown below
- This is managed by the leadership team and a consultative process of this team:
  - Project Leads: Professor Paul Young and Associate Professor Keith Chappell
  - Project Director: Professor Trent Munro
  - Project Manager: Christina Henderson
- Decisions and strategy are mapped out by the UQ project team in weekly meetings and meeting minutes and materials are managed by the project manager
- We also have a formal governance relationship with CEPI relating to aspects of the project that are relevant to the CEPI agreement or that are funded by CEPI. The formal meeting structure for this is:
  - Monthly Project Leadership Project Management Meetings
  - Quarterly Joint Management Advisory Group Meetings
  - These meetings are also minuted and a formal decision log is maintained



Where possible, a more granular breakdown of the milestones/performance indicators into discrete or step-wise items with associated time frames.

- An updated and expanded version of the Deliverables/Indicators is Provided below:

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