Minister's Approval for Australian Laureate Fellowships for Funding Commencing in 2020 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure ($)			Indicative Funding ($)		Total ($)
		2020-21	2021-22	2022-23	2023-24*	2024-25*	
(Columns 1 and 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)

Australian Capital Territory

The Australian National University

FL200100068 Kruuk, Prof Loeske E	This project aims to determine the effects of changing environments on wild animal populations across Australia. By combining recent advances in genomic technology with a consortium of fourteen long-term studies of mammals, birds and reptiles, it aims to quantify the genetic basis of life-history variation and the potential for evolutionary adaptation in the wild. The project will generate a comprehensive understanding of the genetic consequences of environmental change, population decline, inbreeding and disease in natural environments. The expected benefits include a coordinated network for long-term wild animal studies in Australia, advanced quantitative skills training, and knowledge transfer for wildlife management and conservation.	712,642.00	699,322.00	698,052.00	697,648.00	521,310.00	3,328,974.00

National Interest Test Statement

Australia is famous for its unique wildlife. This project will analyse the effects of environmental change on wild animal populations across Australia, and determine their potential for evolutionary adaptation. The national benefits of the project will be to: (i) inform management and conservation of iconic native wildlife, including effects of population decline and disease. This will have environmental, cultural and ecotourism benefits, enhancing the national and international profile of Australia's fauna. (ii) provide quantitative training for biologists in basic and applied research, significantly increasing national capacity in analytical skills and leveraging maximum information from big data; (iii) contribute to our international profile for cutting-edge science. Education is Australia's third largest source of foreign income, and its ongoing success depends on high international rankings maintained through world-class academic research. Australia is already a world-leader in human and agricultural quantitative genetics. This project would add the quantitative genetics of wildlife to that achievement.

FL200100176 Williamson, Prof Robert C	The project will develop a systematic theory of ethical machine learning. Machine learning is a powerful and pervasive technology that is already having a huge impact on Australia. When applied to data about people there are a range of ethical harms that can arise (fairness, and privacy are two of them). The project will develop a rigorously grounded foundation for managing such ethical harms. For example it will allow the quantification of the inevitable trade-offs between fairness and utility. The benefits of the project will include the best possible ways of managing these trade-offs, competitive advantage for Australian firms developing the technology, and will ensure that the country retains a social license to use the technology.	619,451.00	619,451.00	652,132.00	652,132.00	584,914.00	3,128,080.00

National Interest Test Statement

Machine learning is a general purpose technology that is already having an enormous impact on Australia. It stands to have greater impact still in the future. The Commonwealth government has already commissioned an AI ethics framework, but there remain fundamental unanswered questions regarding how best to incorporate ethical concerns into machine learning. Doing so is essential to maintain the social license to operate the technology of machine learning which offers enormous economic and social benefits. The specific national benefits will include: lifting Australia's international reputation in the hottest and most contentious aspect of the hottest technology of the present time; providing government and business with the best possible tools to manage the ethical concerns arising from the use of machine learning; providing a competitve advantage to Australian commercial developers of machine learning algorithms and aid

	The Australian National University	1,332,093.00	1,318,773.00	1,350,184.00	1,349,780.00	1,106,224.00	6,457,054.00
	Australian Capital Territory	1,332,093.00	1,318,773.00	1,350,184.00	1,349,780.00	1,106,224.00	6,457,054.00

* Note - Indicative funding for approved projects will be made available through a funding variation under section 54 of the ARC Act

Page 1 of 8

Minister's Approval for Australian Laureate Fellowships for Funding Commencing in 2020 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure ($)			Indicative Funding ($)		Total ($)
		2020-21 (Column 4)	2021-22 (Column 5)	2022-23 (Column 6)	2023-24* (Column 7)	2024-25* (Column 8)	
(Columns 1 and 2)	(Column 3)						(Column 9)

New South Wales

The University of New South Wales

FL200100004 Del Favero, Prof Dennis G	The Project aims to transform the traditional artistic paradigm of visualisation as the human-centred depiction of predictable events by harnessing revolutionary advances in art and technology. Through application of an advanced artistic framework, this Laureate project expects to demonstrate how globally distributed users and digital systems can collaboratively depict unpredictable scenarios such as wildfire landscapes in real time and at real scale. Anticipated outcomes include a cutting-edge platform that provides life-like experiences to understand their spatial dynamics and the increasing uncertainties they pose, for dissemination through creative industry applications to optimise engagement and impact.	670,178.00	725,442.00	725,442.00	725,442.00	725,442.00	3,571,946.00

National Interest Test Statement

The Laureate project will deliver transformative developments in how we visually understand, explore and respond to unforeseen and multi-located events such as wildfires. Previous successful applications have saved lives and lowered injuries in Australian and Chinese industrial environments. The Project maximises artistic and technological insight into the unanticipated experiences involved by enabling users to safely navigate a range of risk-laden situations in experientially compelling settings, using an advanced digital platform. Its unprecedented assembly of global expertise and infrastructure creates a framework that eliminates previous hurdles by facilitating users to share and explore these environments across multiple locations, enhancing collaborative deliberation, contextual awareness and group training. The end-result is a portable artistic technology offering a suite of innovative capabilities that facilitate industry uptake and commercialisation, while engaging with a range of stakeholders to establish Australia's leadership in the cutting-edge visualisation of unpredictable scenarios.

FL200100007 Buckley, Prof Ross P	We are at the beginning of a data revolution. This project aims to make Australia's legal and regulatory systems fit to deal with the utterly transformative rise of data and its algorithmic analysis. The project will identify reforms to laws and regulatory approaches to reap the benefits and limit the major risks of this transformation. The project's findings will inform law reforms and changes in regulatory approaches and theoretical understandings here and abroad. Findings will underpin reforms which, being largely bipartisan, should enjoy high prospects of implementation. Expected benefits include a substantial lift in economic growth, enhanced cybersecurity, and enhanced protections of consumer and individual rights.	525,200.00	540,900.00	533,700.00	535,500.00	499,600.00	2,634,900.00

National Interest Test Statement

The rise of abundant data and its algorithmic analysis offers Australia sizeable growth opportunities and yet brings massive systemic and consumer risks. All sectors of our society and economy are challenged by this data revolution but none more so than our legal and regulatory systems. This research will enable these systems to rise to this challenge so as to maximise the opportunities and limit the risks. Australia is exceptionally well placed to benefit from this data-driven transformation. The government-mandated Consumer Data Right is a world-leading transformative regime and our commercial sector is exceptionally innovative in this field. But the law, by its very nature, struggles with this pace of change. This project will bring our laws and regulatory approaches into the 21st century so as to benefit (i) innovators within commerce; and (ii) consumers who are currently being rendered increasingly vulnerable by this transformation.

FL200100124 Stenzel, Prof Martina	The administration of therapeutic drugs is often unsuccessful as the drug is quickly cleared from the body. Nanoparticles have been shown to enhance the efficiency of the drug administration, as evidenced by the increasing number of nanoformulations on the market, although commercially available products have currently a range of shortcomings, some of them related to their size. This research program aims to develop a toolset that allows the design of very small nanoparticles that display enhanced biological activity. The outcome will be an in-depth understanding of the relationship between polymer structure and properties, which is not only important for nanomedicine, but other areas such as catalysis and sensors.	659,846.00	673,253.00	696,656.00	698,244.00	644,618.00	3,372,617.00

* Note - Indicative funding for approved projects will be made available through a funding variation under section 54 of the ARC Act

Page 2 of 8

Minister's Approval for Australian Laureate Fellowships for Funding Commencing in 2020 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure ($)			Indicative Funding ($)		Total ($)
		2020-21 (Column 4)	2021-22 (Column 5)	2022-23 (Column 6)	2023-24* (Column 7)	2024-25* (Column 8)	(Column 9)
(Columns 1 and 2)	(Column 3)						

National Interest Test Statement

The Nanomedicine market size is supposed to be worth $350.8 Billion by 2025 highlighting its importance to a range of medical fields. This includes regenerative medicine, sensors that can detect diseases earlier, and nanoparticles that can enhance the delivery of drugs and increase the efficacy of the treatment. The success of nanomedicine relies on the design of well-defined nanoparticles with tailored surface functionality. Currently most commercial organic nanoparticles are above 50 nm in size, but it is proposed that smaller nanoparticles are more advantageous for various applications including drug delivery. Here, the design of a simple and robust platform that can generate polymer nanoparticles below 10 nm to enhance the treatment of diseases such as brain disease or cancer is proposed. Polymers will be folded in dense and very small nanoparticles that will not only enhance the treatment of disease, but these materials could also be of interest for other areas such as catalysis and other industrial processes and therefore bring significant social and economic benefit to Australia.

FL200100144 Bashford, Prof Alison C	As the planet approaches 8 billion, international debate on population will be ignited again. This project aims to capitalise on Australia's place in the global South, to lead a distinctively regional perspective on how population policies emerged, and what their present legacies are. Comparing Australia, Japan, India and China, the project intends to analyse highly diverse polities, challenging Europe-outward theses on modernisation and development. This promises a much-improved historical model with which we might better assess the enduring population-environment-economy nexus well into the 21st century. The project should energise a new form of world history writing, boosting Australia's reputation as a leader in big-idea histories.	491,744.00	576,498.00	578,088.00	580,526.00	574,617.00	2,801,473.00

National Interest Test Statement

Population is an urgent and sensitive global concern in a climate-crisis era, from net population growth, to ageing, to low fertility. This Laureate Project aims to ensure that Australian historical and political thought is at the forefront of international commentary that will emerge as the planet approaches 8 billion. Designed to deepen Australian understanding of complex and longstanding population questions in the Asia Pacific region, it intends to deliver information on how past ideas and policies on population, food security, and immigration, continue to frame present debates. This should provide policymakers with calm and evidence-based accounts to inform the parameters of sustainable growth proposals. The project should assist Australian responses to UN Sustainable Development Goals. By engaging with key Asia Pacific centres, it is anticipated that inter-cultural awareness will be enhanced. This project should energise a new generation of Australian historians with world-wide ambition, by connecting early career researchers to a top-level senior team with gender equity at its core.

FL200100204 Walsh, Prof Toby	This project aims to understand how to build AI systems that humans can trust. It does so by studying how to make such systems fair, explainable, auditable, preserving of privacy and verifiable. Outputs will include tools to build trustworthy AI systems, as well as policy recommendations to complement the technical tools. This should provide significant economic and societal benefits as decisions in both the public and private sector are increasingly being handed over to computers.	560,051.00	665,096.00	665,096.00	665,096.00	582,269.00	3,137,608.00

National Interest Test Statement

The project responds to the recent Horizon Scanning report of the Australian Council of Learned Academies, ad-dressing the public's lack of trust in Artificial Intelligence based decision making tools, and at the same time improving their fairness and efficiency. The project will bring economic, environmental and societal benefits to Australia. The resource allocation methods developed during the course of the project will, for instance, improve the competitiveness of Australian businesses, enabling them to operate more efficiently. They will also help improve Australia's health by delivering services more fairly and efficiently. Environmental benefits will flow from using resources such as water more fairly and efficiently. Finally, there will be societal benefits from increasing the trust of the public in AI decision making tools.

	The University of New South Wales	2,907,019.00	3,181,189.00	3,198,982.00	3,204,808.00	3,026,546.00	15,518,544.00

Minister's Approval for Australian Laureate Fellowships for Funding Commencing in 2020 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure ($)			Indicative Funding ($)		Total ($)
		2020-21 (Column 4)	2021-22 (Column 5)	2022-23 (Column 6)	2023-24* (Column 7)	2024-25* (Column 8)	
(Columns 1 and 2)	(Column 3)						(Column 9)

The University of Sydney

FL200100096 James, Prof David E	This project aims to dissect how genes interact with the environment to control healthy ageing using a multidisciplinary approach combining state-of-the-art omics technologies, metabolic and ageing phenotyping and genetic analysis and a highly diverse model system. The project is expected to establish fundamental new understanding of the ageing process by identifying genes that regulate ageing either alone or in response to diet; by defining the mechanism by which such genes control ageing and by identifying biomarkers that predict different ageing outcomes. This knowledge will contribute to future strategies based on genetic testing and biomarkers to optimise healthy ageing in humans.	670,224.00	725,442.00	725,442.00	623,416.00	623,416.00	3,367,940.00

National Interest Test Statement

In 1927, 5% of the Australian population was over the age of 65. This proportion has tripled to 15% and by 2057 it is projected to reach 22%. The extra financial burden of this expansion in the ageing population, according to a report on ageing by the Commonwealth of Australia, will be in the order of $2.2 trillion. Strikingly, some individuals remain healthy during the latter period of life while others live for an extended period in poor health. The two major factors that likely cause this disparity in ageing are an individual's genetic makeup and their lifestyle. This project endeavours to understand this diversity and how healthy ageing is influenced by lifestyle factors such as diet. The project will discover genes that contribute to healthy ageing, how such genes might be influenced by different lifestyles and the mechanisms by which these genes regulate ageing. This knowledge could lay the foundation for personalised health strategies based on genetic screening and biomarker analysis for early prediction and intervention to achieve healthy ageing.

	The University of Sydney	670,224.00	725,442.00	725,442.00	623,416.00	623,416.00	3,367,940.00
	New South Wales	3,577,243.00	3,906,631.00	3,924,424.00	3,828,224.00	3,649,962.00	18,886,484.00

Minister's Approval for Australian Laureate Fellowships for Funding Commencing in 2020 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure ($)			Indicative Funding ($)		Total ($)
		2020-21 (Column 4)	2021-22 (Column 5)	2022-23 (Column 6)	2023-24* (Column 7)	2024-25* (Column 8)	
(Columns 1 and 2)	(Column 3)						(Column 9)

Queensland

The University of Queensland

FL200100028 Mueller, Prof Jochen F	Despite many benefits associated with the use of chemicals, there is consensus that their accelerated production and use is increasingly affecting environmental health. Effective tools to understand spatiotemporal trends and factors that drive chemical exposure are urgently needed. This project aims to develop these tools by combining established programs in systematic sampling and archiving with advanced informatics and analytical techniques. The project expects to identify emerging chemicals of concern, assess factors that affect exposure and model exposure based on chemical production, use and fate. Outcomes will support evidence-based regulation and management of chemicals to minimise adverse impacts of chemical exposure in Australia.	594,580.00	597,580.00	572,580.00	572,580.00	517,362.00	2,854,682.00

National Interest Test Statement

The management and regulation of chemicals remains a significant challenge for all levels of Australian government. Failure to manage the use and release of chemicals potentially has enormous economic, commercial, environmental and social consequences for Australian society. This Fellowship aims to enhance understanding of the factors that affect how chemical exposure changes over time and space. The project is expected to deliver new knowledge and predictive tools to inform a more reliable regulatory framework and, crucially, effective, evidence-based intervention strategies. Identifying problems and responding to them in a timely manner not only prevents harm to humans and the environment, but can reduce the costs of environmental remediation, government support services and legal action to establish culpability. With chemical regulation and management based on the best available science and monitoring practice, the Australian public can have greater confidence in the efficient and effective management of chemical exposure across their lifetime.

FL200100133 Lovelock, Prof Catherine L	Coastal blue carbon describes the carbon stored in soils and biomass of coastal wetlands which has an important function in regulating greenhouse gases. They also provide coastal protection, habitat for biodiversity, fisheries and amelioration of land-based pollution. Coastal wetlands have been degraded globally, reducing their capacity to store carbon and to support coastal communities and their economies. This Fellowship aims to assess how restoration of coastal wetlands influences carbon storage and greenhouse gas fluxes, develop new methodologies and to generate new research capacity to inform coastal wetland management globally. The proposed research is expected to enhance coastal sustainability to the benefit of coastal communities.	685,337.00	745,401.00	725,161.00	708,582.00	494,013.00	3,358,494.00

National Interest Test Statement

Coastal wetlands are vital as carbon sinks, for improving water quality, sustaining fish populations and providing defense against sea level rise and wave energy. Coastal wetland have been degraded across Australia and internationally which has reduced coastal resilience. This Fellowship aims to understand 1) the benefits of restoring coastal wetlands for carbon sequestration, 2) the financial opportunities for coastal landholders for carbon farming on the coast and 3) the role of blue carbon in meeting our national greenhouse gas emission targets. The outcomes will contribute knowledge to enhance carbon storage and reduce greenhouse gas emissions in the coastal zone nationally and globally. The Proposal will benefit Australia and international communities by building capacity for coastal wetland restoration which has positive impacts on the fishery sector, biodiversity, water quality and coastal protection, thereby enhancing coastal community sustainability.

	The University of Queensland	1,279,917.00	1,342,981.00	1,297,741.00	1,281,162.00	1,011,375.00	6,213,176.00
	Queensland	1,279,917.00	1,342,981.00	1,297,741.00	1,281,162.00	1,011,375.00	6,213,176.00

* Note - Indicative funding for approved projects will be made available through a funding variation under section 54 of the ARC Act

Page 5 of 8

Minister's Approval for Australian Laureate Fellowships for Funding Commencing in 2020 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure ($)			Indicative Funding ($)		Total ($)
		2020-21 (Column 4)	2021-22 (Column 5)	2022-23 (Column 6)	2023-24* (Column 7)	2024-25* (Column 8)	
(Columns 1 and 2)	(Column 3)						(Column 9)

South Australia

University of South Australia

| FL200100025

Dollard, Prof Maureen D | The project will assist Australia meet its UN Sustainable Development Goal to promote decent and safe work by producing new knowledge to support radical reform to Australia's corporate climate. Only 52% of Australian workers report that their workplace is psychologically healthy. Bullying rates are high, work pressure is increasing. The Fellowship will establish the world's first Psychosocial Safety Climate Observatory, a research platform to gather, analyse, and synthesise, national and international data. By inspiring world-class researchers to build state of the art knowledge and tools for work climate change, Australia will be an authoritative leader in human-centred, more psychologically healthy, innovative and productive workplaces. | 600,025.00 | 626,382.00 | 627,881.00 | 628,381.00 | 629,381.00 | 3,112,050.00 |

National Interest Test Statement

This innovative research is designed to discover the drivers of a corporate climate that values and protects worker psychological health and safety in order to radically improve Australian industry. New knowledge will help business and society implement a human-centred agenda that can revolutionise conditions in the workplace. The Fellowship is of national interest as policy makers seek leading indicators (such as corporate climate) for the parlous state of the nation's mental health. It is important for the economy, society and governments to reduce human damage in work systems, that may manifest in lost productivity, and workers compensation costs. The research will explore how the corporate climate can be used to address new risks associated with Industry 4.0 to ensure innovation, sustainability and long term benefits for corporations and employees. The project, focused in the context of work systems, addresses the national research and innovation agenda by developing compelling evidence to improve efficiency, health and social policy, and will provide new ideas to create safer, better quality workplaces.

University of South Australia		600,025.00	626,382.00	627,881.00	628,381.00	629,381.00	3,112,050.00
South Australia		600,025.00	626,382.00	627,881.00	628,381.00	629,381.00	3,112,050.00

* Note - Indicative funding for approved projects will be made available through a funding variation under section 54 of the ARC Act

Page 6 of 8

Minister's Approval for Australian Laureate Fellowships for Funding Commencing in 2020 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure ($)			Indicative Funding ($)		Total ($)
		2020-21 (Column 4)	2021-22 (Column 5)	2022-23 (Column 6)	2023-24* (Column 7)	2024-25* (Column 8)	
(Columns 1 and 2)	(Column 3)						(Column 9)

Victoria

Monash University

FL200100049 Wang, Prof Huanting	This project aims to create a novel class of advanced membranes by making fundamental breakthroughs in nanofluidics, and harnessing this for developing new renewable energy and low-energy separation technologies. This project addresses the key challenges in understanding selective mass transport at the angstrom scale, thereby allowing the development of innovative materials design strategies to realise the ultrafast molecular and ionic permeation, and the ultrahigh selectivities observed in biological cell membranes. This new cross-disciplinary research will benefit Australia by the development of new materials for accelerating renewable hydrogen and biofuel futures, and enabling sustainable production of energy materials.	636,833.00	574,442.00	574,442.00	574,442.00	546,833.00	2,906,992.00

National Interest Test Statement

This project will develop world-first membrane technologies to efficiently produce and use energy whilst reducing environmental impact. The project will develop a new class of advanced membranes for application in three different parts of the energy economy. These new membranes will allow: 1) the efficient production and use of hydrogen energy; 2) the sustainable manufacture and recycling of lithium-ion batteries and; 3) highly efficient biofuel production. The intended benefit and impact of the project includes the creation of new intellectual property to underpin the transformation and establishment of new manufacturing industries for a sustainable future. Commercialisation and technology transfer opportunities will be leveraged through a network of longstanding local and international industry partners.

	Monash University	636,833.00	574,442.00	574,442.00	574,442.00	546,833.00	2,906,992.00

The University of Melbourne

FL200100141 Vilonen, Prof Kari	This program aims to address deep longstanding questions about real groups, algebraic objects which describe the basic symmetries occurring in nature. The study of these basic symmetries is central in all areas of mathematics and they come up in many applications. The expected outcomes include solving a central 50 year old problem of unitarity as well as making major progress in the Langlands program, a grand unification scheme of mathematics. The benefits include raising Australia's international research profile, building a large network of international collaboration with top institutions in the world, and increasing capacity in number theory and algebraic geometry, which are playing an ever more important role in technology.	580,849.00	625,019.00	635,547.00	626,591.00	609,541.00	3,077,547.00

National Interest Test Statement

"This Laureate project will make a fundamental contribution to a grand unification scheme of mathematics known as the Langlands program, creating a blueprint for future research in advanced mathematics. National capacity in deep mathematics will play a growing role in modern technologies. These include secure communications and lie algebras that underpin modern quantum field theory used to understand electronic transport and semiconductor technology. Hence this project is well aligned with the national interest. The Langlands program has attracted brilliant minds in mathematics, including top Australian researchers working overseas. The Laureate program will raise our international reputation, establishing Australia as a major centre for this field of research. It will attract and retain future leaders who might otherwise be lost to the US or Europe. It will ensure Australia's future position in the region as the undisputed leader in mathematics, and a desirable destination for international students in technology disciplines."

	The University of Melbourne	580,849.00	625,019.00	635,547.00	626,591.00	609,541.00	3,077,547.00
	Victoria	1,217,682.00	1,199,461.00	1,209,989.00	1,201,033.00	1,156,374.00	5,984,539.00

* Note - Indicative funding for approved projects will be made available through a funding variation under section 54 of the ARC Act

Page 7 of 8

Minister's Approval for Australian Laureate Fellowships for Funding Commencing in 2020 Schedule

Approved Organisation, Leader of Approved Research Program	Approved Research Program	Estimated and Approved Expenditure ($)			Indicative Funding ($)		Total ($)
		2020-21 (Column 4)	2021-22 (Column 5)	2022-23 (Column 6)	2023-24* (Column 7)	2024-25* (Column 8)	(Column 9)
(Columns 1 and 2)	(Column 3)						

Western Australia

Murdoch University

| FL200100220 Holmes, Prof Elaine | Ageing is an inevitable biological phenomenon and is characterised by alterations in multiple biochemical, immunological and mechanical processes, which are influenced by the gut bacteria. Poor ageing exerts a heavy socioeconomic burden both nationally and globally. The aim of this proposal is to deepen understanding of host-microbiome signalling in ageing by bringing together next generation sequencing technologies to characterise age-associated change in gut bacterial composition, metabolic profiling to identify changes in functionality of the ageing microbiome and a combination of in vitro and in vivo screening approaches to establish molecular mechanisms. The new knowledge will facilitate development of improved models of health care. | 682,942.00 | 685,442.00 | 685,442.00 | 682,942.00 | 627,724.00 | 3,364,492.00 |

National Interest Test Statement

In Australia, as in many other developed countries, we are living longer than ever, but it is important to maintain good health throughout that longer life. Unhealthy ageing places a significant socioeconomic burden on an individual, their families and the wider community. We now know that our gut bacteria (gut microbiome) play a crucial role in maintaining the effectiveness of our immune system and that the microbiome changes with age. The microbiome influences how our gut, muscles, liver, brain and other organs function. This research program seeks to attain a deeper understanding of exactly how and why the microbiome function changes, and how that contributes to our overall health and immune systems efficiency. Through this deep understanding, preventative measures and novel, individually targeted diets and therapies will be developed that will make a significant impact in improving our quality of life for the whole of our lives.

	Murdoch University	682,942.00	685,442.00	685,442.00	682,942.00	627,724.00	3,364,492.00

The University of Western Australia

FL200100057 Millar, Prof Andrew H	This project aims to understand the processes and genes that regulate synthesis and degradation of proteins in wheat and barley plants. This project will develop methodologies and a new field of research for optimising protein stability in crops. Its significance lies in defining new ways to control protein abundance to increase crop performance and quality and increase the value of recombinant proteins for biotech industries. Expected outcomes will enable the protein abundance in plant cells to be designed and control selective protein degradation in plants for the first time. Benefits will include building biotechnology capacity in WA, brokering new collaborations and providing an ideal training environment for students and postdocs.	613,424.00	682,642.00	682,141.00	668,642.00	664,642.00	3,311,491.00

National Interest Test Statement

The advances made in this project will contribute to boosting Australia's $60bn p.a. plant food, fuel and fabrication materials sector, by gaining fundamental understanding of plant protein maintenance to help plants grow and to protect them from damage. It addresses the pressing world need to increase plant-based protein for sustainable human nutrition and the Australian industry need to improve grain protein content to maintain demand for exports. The project will discover ways to change protein synthesis and degradation to improve leaf growth and seed quality, and to stabilise proteins for biotechnology applications. The outcomes will also benefit Australia through building the expertise we need to develop these new approaches and establishing the industry collaborations that will improve wheat quality breeding, barley malting and recombinant protein production in cereals.

	The University of Western Australia	613,424.00	682,642.00	682,141.00	668,642.00	664,642.00	3,311,491.00
	Western Australia	1,296,366.00	1,368,084.00	1,367,583.00	1,351,584.00	1,292,366.00	6,675,983.00
		9,303,326.00	**9,762,312.00**	**9,777,802.00**	**9,640,164.00**	**8,845,682.00**	**47,329,286.00**