FOR IMMEDIATE RELEASE **MAY 2018**

The 2018 FameLab National Final is back! Bigger and better, join us on the 10th May.

The British Council in Australia has been scouring the nation searching for bright up-and-coming researchers. After four competitions in four states, the judges have uncovered some truly inspiring new talent. Now it is time to narrow the field even further and to find our National winner.

The Australian National winner will compete at the FameLab international finals at the Times Cheltenham Science Festival in the UK in June – this is the largest science communication competition in the world.

Join us at the Octagon Theatre, University of Western Australia in Perth on the 10th of May as these bright young minds tell their stories to a panel of amazing judges including the ABC's *The Science Show* host Robyn Williams, Former Chief Scientist of Western Australia, Lyn Beazley AO, and Director of the British Council in Australia, Helen Salmon. Astrophysicist, Associate Professor Alan Duffy, will MC the event once again.

Come along and hear Science, Technology, Engineering and Maths (STEM) researchers explain complex concepts while the clocks ticks - armed with only their wits and a few props! Jargon and PowerPoint are strictly banned.

Helen Salmon, Director of the British Council in Australia, says, "Research tells us that the opportunities of the future will be for people that combine creative and STEM skills, while Education Ministers seek to break down silos between science and arts in schools. FameLab celebrates creativity in science - the imaginative act of wondering what might be, the testing of ideas, the narrative skill in sharing complex concepts, the innovation that will shape our future. We are proud to work with our partners to bring these inspiring semi-finalists to a national stage."

Once again, and for the final time in 2018, presentations will be judged according to FameLab's 3Cs: **content, clarity and charisma!**

The FameLab 2018 National Finalists are:

1. **Taryn Laubenstein** – James Cook University / ARC Centre of Excellence for Coral Reef Studies: Reef fish kryptonite: Tradeoffs limit adaptation to climate change
2. **Zane Stromberga** – Bond University: Role of histamine as a potential mediator of overactive bladder
3. **Toby Hendy** - Australian National University: Poking plants
4. **Richard Charlesworth** - University of New England: Coeliac disease diagnosis can be a pain in the posterior
5. **Pegah Maasoumi** – ARC Centre of Excellence in Exciton Science: Solar windows
6. **Mortaza Rezae** – Curtin University / Autism CRC: Enabling independent community mobility for individuals with autism spectrum
7. **Muthu Vignesh Vellayappan** – Monash University: Heart saving sandwiches
8. **Vanessa Pirotta** – Macquarie University: Using drones to collect whale snot
9. **James Wong** – University of Western Australia: Breathing while you hop: How do kangaroos do it?
10. **Khandis Blake** – University of New South Wales: What's the deal with sexy selfies?

11. **Ben McAllister** – ARC Centre of Excellence for Engineered Quantum Systems: The organ experiment: Shining a light on a dark matter
12. **Anisa Rowhani-Farid** – Queensland University of Technology: Towards a culture of open science and data sharing in health and medical research

Date: Thursday 10th May 2018

Time: 6.30 - 8.30pm. Doors open at 6.00pm for a 6.15pm start

Location: Octagon Theatre, University of Western Australia

Registration essential: **Eventbrite Registration link**

MORE ON OUR FINALISTS FOR MEDIA:

Taryn Laubenstein - James Cook University / ARC Centre of Excellence for Coral Reef Studies
Reef fish kryptonite: Tradeoffs limit adaptation to climate change
The world's oceans are becoming warmer and more acidic due to the burning of fossil fuels. This creates an environment that is harmful to fish, affecting both their behaviour and physical condition. We know that fish, like other animals, have the potential to adapt to new environmental conditions. However, the climate is changing very quickly, so the question arises- will fish be able to keep up with climate change? My research investigates how trade-offs between behavioural and physical performance might slow or constrain adaptation. I tested how fish perform both behaviourally and physically under current-day conditions, and under future climate change conditions. What I found was a trade-off in future climate conditions, fish either perform well behaviourally and suffer physically, or vice versa. This means that when reef fish populations are undergoing adaptation if their behavioural performance gets better on average, their physical performance gets worse- it's like two steps forward, one step back. We cannot rely on adaptation to save fish from climate change. Instead, if we want to protect fish and the resources they provide to us, we need to reduce carbon emissions to slow climate change.

Zane Stromberga - Bond University
Role of histamine as a potential mediator of overactive bladder
Around 17% of the world population suffers from overactive bladder, and yet the underlying causes of this disease are poorly understood. Overactive bladder has a significant effect on sufferers' quality of life, including having a direct social, physical and psychological effect. Many of the sufferers feel too embarrassed to seek out treatment options. Without treatment, symptoms of this disease make it hard to get through the day without many trips to the bathroom. This can prevent people from engaging in their normal every-day activities. This leads to feelings of isolation and loneliness. The current pharmaceutical treatments present many side effects, meaning that most people on these medications stop their treatment regimes. My research aims to find novel pharmaceutical treatments for bladder dysfunction that would enhance the quality of life for people suffering from this debilitating condition. In particular, my research focuses on the role of histamine, and the potential for antihistamines to reduce its effect.

Toby Hendy - Australian National University
Poking plants
I poke plants with tiny needles in order to understand how plants defend themselves from disease. Hopefully we can use this knowledge to create more resistant crops and decrease world food shortages. My needles mimic the way that a pathogen would pierce through a plant cell to spread disease. So far I have helped to find a new minimum pressure that can trigger a defence response in the plant, such as stiffening

of the cell wall. As a physicist I never expected to end up working on an inherently biological problem, but looking at the mechanical aspects of infection is a fresh approach. I think a problem as broad as plant disease needs fresh approaches to break new ground. The coffee crop is one species at risk of disease infection, so I hope anyone who has had a cup of it to drink today can appreciate the importance of this work.

Richard Charlesworth - University of New England
Coeliac disease diagnosis can be a pain in the posterior
The major focus of my research has been to improve the diagnosis of coeliac disease (CD). Currently the most conclusive form of testing for CD is based on an examination of tissue through a microscope. This form of testing is reliant solely on the skill of the observing pathologist however and there is the potential for subtle changes to be missed or misinterpreted. My current research involves the development and implementation of a novel genetic test for CD, an 87-gene qPCR array that can look at the expression of many different genes simultaneously in tissue. Using mathematical modelling of the data from this array, I have developed predictive equations, which can diagnose CD with 96% accuracy and no observer bias. I believe that this research could form the basis of a novel companion test for CD to improve diagnostic accuracy. It would also be useful in patients requiring rapid diagnosis/differential diagnosis or as a front-line tool in areas without access to specialised services. For the patients undergoing treatment for CD, these equations could be applied to follow-up biopsies to monitor their progress more closely.

Pegah Maasoumi - ARC Centre of Excellence in Exciton Science
Solar windows
In the last decade, energy has been stated as the single most important crisis in the world. The leading economies rely mainly on burning fossil fuels, which is not only a limited resource, but in the shorter term is causing global warming. Solar energy is a promising solution to meet this energy challenge as well as providing sustainability to our planet. It seems pretty easy to install couple of solar cells on the roof to access cheap energy, however, not everyone has their own private roof. In large cities like Melbourne, the majority of people live in tall towers with large windows from bottom to the top. Even on the side way of highways more often there are many glass slides as road guards. My work will help everyone even in tiny apartments to get access to cheap energy. Every window or glass slides would act as solar cell by harvesting the sun light during the day, store in batteries to be utilized at night time. My research is unique not only to provide cheap energy but also sustainable and would be beneficial toward global warming.

Mortaza Rezae - Curtin University / Autism CRC
Enabling independent community mobility for individuals with autism spectrum
Transportation is a critical obstacle for individuals with autism spectrum. These persons are characterised by difficulties in communication and social abilities, repetitive behaviour, and the inability to self-regulate. It is a common problem for people with autism spectrum to be trapped at home, unable to engage in community activities including employment and education, due to restricted transportation accessibility. My research leverages the ubiquity of smartphones and the well-established public transport infrastructures to promote independent public transport use. In my thesis, I design, implement, and test a mobile app that enables independent public transport use for persons with autism spectrum by catering to their individual needs and requirements. The app delivers curated trip management, step- by-step assistance, evidence-based anxiety and sensory tips and strategies, and an array of other assistance options to produce and allow a seamless and easy public transport experience. Most importantly, this research heavily emphasises and engages the target users, individuals with autism spectrum, throughout the project. This project aims to enable people with autism spectrum to freely participate in community activities such as education, employment, and social to lead fruitful and productive lives.

Muthu Vignesh Vellayappan - Monash University
Heart saving sandwiches

Heart disease is the leading cause of death in Australia killing one Australian every 12 minutes. After a heart attack, 2 to 3 million heart cells are dead. During the recovery process, the skin cells will grow more quickly than the heart cells at the damaged location leading to scar formation, which further limits the contractility activity of the heart. Scientists have tried injecting heart cells to the damaged location, but they don't stay there. Different cardiac patches have also been tested yet the heart cells were not happy with the material. Hence, sandwich theory was used in this research to solve the problem. 3D printing was utilized to print layer by layer of 2 different materials. Later, one material was removed using salt water just like taking a part of a cheese from the sandwich. This results in a groove in the material. The heart cells are in elongated shape and they do the wringing movement synchronously to result in a single heartbeat. Thus, the fabricated material with tracks will help the heart cells to stretch and elongate during each heart beat resulting in effective and happy colony of heart cells.

Vanessa Pirotta - Macquarie University
Using drones to collect whale snot
My research project investigated the use of emerging technologies such as drones to collect health information from free swimming whales. This involved the collection of whale blow/snot (the visible plume of spray) via a custom-built drone. Whale snot is a juicy organic mixture of DNA, hormones, lipids and microbiota. We wanted to collect baseline information via this method to assess its potential as a new standard for health assessments from whales. This project will benefit both whales and researchers. Previous methods to collect health information from whales came from those that stranded (in which case their health was compromised) or from those that were deliberately killed. Current methods involve being on boat and using a pole to collect whale snot, which can be dangerous for both the whale and researchers. My collaboration with industry to design and build our custom-built drones with remotely operated flip-lid (to minimise sample contamination) makes this project unique. We compared our findings with other studies and found an overlap in bacteria communities with other whales, dolphins and some non-marine mammals. This research method will completely revolutionise the way scientists collect health information from whales around the world.

James Wong - University of Western Australia
Breathing while you hop: How do kangaroos do it?
My research project aims to understand how the lungs and airways work in kangaroos that have a hopping-mediated breathing mechanism. This unique breathing mechanism in macropods was previously studied in wallabies (small kangaroos), but not kangaroos. A key question in my research is to investigate if the large body mass of kangaroos (up to 90kg) will adversely affect their breathing. We want to understand how the structure of the lungs and airways can accommodate the potentially large expansive and compressive pressures that occur during hopping. I am taking on a comparative physiology approach to address these questions, which is an approach that has been successful in understanding the mechanisms in different systems, such as how nerves send their electrical signals, a study that was done on the axons of giant squid. My project will combine real breathing data from kangaroos measured when they are hopping, and MRI 3D modelling data to image the structure of the airway tree to tie this unique respiratory structure and function together.

Khandis Blake - University of New South Wales
What's the deal with sexy selfies?
Worldwide, Google reports we upload 24 billion selfies a year, a phenomenal shift in the way women and men present themselves online. For women more so than men, these selfies often intend to present an alluring version of the self, leading scholars to see sexy selfies as just another manifestation of sexual objectification and gender oppression. Yet is it the case that women posting sexy selfies are succumbing to the patriarchy? Using big social media data, I tracked >400K sexy selfies from 113 nations online, to see which societies post more sexy selfies. I've found that indicators of gender oppression are poor predictors of

sexy selfies, but that sexy selfies are strongly predicted by a society's level of income inequality. Using evolutionary theory, I argue that these patterns show that sexy selfies are most prevalent in environments characterized by high levels of female-female and male-male competition. When competition is fierce, one way women try to out-do each other and maximize their lot in life is to increase their attractiveness. Detailed experimental work in the lab also supports this conclusion. Overall, this work provides a fundamentally new way of understanding sexualisation online and what it means for societies.

Ben McAllister - ARC Centre of Excellence for Engineered Quantum Systems
The organ experiment: Shining a light on dark matter
What is the nature of the dark matter that surrounds us? Is it composed of axions, a theoretical particle? How might we detect it, and what can it be used for? We have known for decades that the regular matter that we understand composes less than 1/6th of all matter in the universe, and that we are surrounded at all time by mysterious “dark” matter of unknown composition. Many believe it is composed of a particle known as the “axion”, although this particle is yet to be conclusively observed. I am building an experiment to detect dark matter axions. Detection however, is only the first step. Think of what humanity has accomplished using only the small proportion of matter we understand. The potential benefits and impacts to society of a new type of matter that is five times as abundant are staggering, and difficult to overstate. A deeper understanding of our universe invariably leads to progress in science, technology and wider society. We must always push at the boundaries of our knowledge. The nature of dark matter is one of the greatest unknowns facing the scientific world today, and as such it presents a significant opportunity for discovery and progress.

Anisa Rowhani-Farid - Queensland University of Technology
Towards a culture of open science and data sharing in health and medical research
Scientists collect data and they don’t have a habit of sharing it. Science is a body of knowledge that allows humanity to understand the laws of the universe and to surpass them. Science is fundamentally open in its nature. Practicing open science commits researchers to revealing and sharing the entirety of their results, methodologies, code, and data. Data is the foundation of health and medical research, the basic building block of knowledge. Data sharing promotes the verification of research findings and the evidence for the published body of scientific knowledge. Transparency and reproducibility are elements central to strengthening the scientific method, and data provides the key to scientific truth. If data is undermined, then the foundation of health and medical research is lacking. We are living in the midst of a reproducibility crisis. In 2012 it was found that 47/53 cancer papers published in Nature were irreproducible. So, how can we improve research practices to free hidden data? My research looked at this, with a particular focus on the role journals play through their data sharing policies and incentives for researchers to share data.

END

Keep up with the action by following British Council Australia on Facebook and @auBritish on Twitter and Instagram, and join the conversation using #FameLabAus. For further information, visit famelab.org.au

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FameLab International has been running annually since 2007.
So far, more than 9,000 researchers from 31 countries have brought their science to live audiences on the FameLab stage.

FameLab 2018 is presented by the British Council and Cheltenham Festivals | Founding partners: Western Australian Museum and The McCusker Charitable Foundation | Major partner: Woodside Energy Ltd | University partners: Curtin University, Edith Cowan University, Murdoch University, University of Technology Sydney and University of Western Australia | Venue partners: Museum of Applied Arts & Sciences, Queensland Museum, Museums Victoria, Western Australian Museum and Western Australian Museum Foundation | QLD presenting partner: World Science Festival, Brisbane | WA presenting partner: the Department of Jobs, Tourism, Science & Innovation | UK Government partner: British High Commission | Media partner: Australia's Science Channel | Training and advocacy partner: Inspiring Australia

Notes to editors:

FameLab® is a competition owned and created by Cheltenham Festivals in the UK. The British Council has license to deliver the competition in over 30 countries overseas. Since its birth at the Festival in 2005, FameLab has grown into the world's leading science communication competition. A partnership with the British Council since 2007 has seen the competition go global with more than 9000 young scientists and engineers participating to date.

About the British Council

The British Council is the UK's international organisation for cultural relations and educational opportunities. We work with over 100 countries in the fields of arts and culture, English language, education and civil society. Last year we reached over 65 million people directly and 731 million people overall including online, broadcasts and publications. We make a positive contribution to the countries we work with – changing lives by creating opportunities, building connections and engendering trust. Founded in 1934 we are a UK charity governed by Royal Charter and a UK public body. We receive 15 per cent core funding grant from the UK government. www.britishcouncil.org

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