



Charles Sturt  
University

# Renewal

Research for a world worth living in

Issue 1 2023



## Contents

Renewal has been designed to tell Charles Sturt's research story	3
Global impact ranking	5
Our grand regional and global challenges	6
Climate Neutral Agriculture, Food and Wine Production	7
Climate-Proof Rural and Regional Areas	11
Prosperous, Circular and Digital Societies	23
Health, Safe and Sustainable Communities	34
A Knowledgeable and Active Citizenry	39
Call to action	47



## Renewal tells Charles Sturt's research story

Charles Sturt University's vision for research is founded on a tradition of generating world class applied research to help foster prosperous communities across regional New South Wales.

Our strategic goal is to be a sustainable world class, research-driven university in the study and practice of cyber, food and water security, social justice and regional wellbeing.

Our research and education programs are therefore aligned with meeting the five grand challenges in our region in a **living with COVID-19 world**:

1. Agri-innovation to enable prosperous, circular and digital societies
2. Climate neutral agriculture, food and wine production
3. Climate proof regional areas
4. Healthy, safe and sustainable communities and a
5. knowledgeable and active citizenry prepared for the future.

Simply put we aim to deliver research outcomes that improve the lives of regional Australians but of course each challenge is global in reach and significance.

For example, the Gulbali Institute's climate adaptation research is helping regional communities adjust to the challenges of coping with extreme climate events and helping producers to develop more resilient crops and reduce the carbon footprint. Biosecurity research is helping to protect regional economies, ecologies and communities by stopping the spread of infectious diseases through safeguarding animal, human and plant health. And our biodiversity program is helping to preserve the functionality of freshwater, terrestrial and marine ecosystems.

The Global Digital Farm initiative is providing digital solutions to help optimise farming practices and increase productivity through automated farming, sensor technology, and big data analytics. And our food and beverage research is increasing the global profitability of the food bowl of Australia by enhancing supply chains through adding value to food quality, manufacturing and supply and meeting new consumer needs.

And our applied education, health and social research programs are helping to foster knowledgeable and inclusive regional communities and improve community wellbeing.

Charles Sturt's commitment to delivering high quality research for the regions is driven by our Yindymarra values.

As Stan Grant Jnr eloquently observes:

**“Yindymarra is more than a word, it is a way of being. A philosophy. It means to understand country, but it calls on us to find ourselves in our country. Country holds us, it contains us, it resonates within us. Country remembers us. What country gives to us, it asks of us. To understand country is to understand ourselves.”**

Yindymarra brings western knowledge and Indigenous wisdom together in a voyage of discovery. From Gulbali values we embrace caring and stewardship for country and being good ancestors and the importance of discovery. As Stan notes, “Healing on country. Finding justice through country. Telling truth on country. This is where we are, not who we are.”

From Western knowledge we take the importance of evidence and experimentation – “try, test and learn” – as central to applied social and scientific enquiry.

As Stan puts it: “Together we can build a new future. Whatever future we have here, we have together. Whatever separates us we know we can only live on one land.”

Charles Sturt is also a committed collaborator in research and commercialisation excellence. At our Wagga Wagga campus we are currently building the Gulbali AgriPark modelled on international best practices and committed to circular and digital agriculture.

This historic investment in demonstration facilities and research and commercial capability has been purposively co-designed with industry, government and community partners to generate innovative products and services that support regional development goals.

The Gulbali AgriPark provides a living and virtual dashboard of what works in agri-innovation and will be a beacon of best practice emulated across Australia. It will also provide a source of inspiration for industry and community collaboration through high quality precinct initiatives on our other campuses.

Thinking time is the dream time of a contemporary university. At Charles Sturt we are uniquely placed to curate time to think with our industry partners through placements, collaborative problem-solving workshops, engagement in collaborative action research projects, and/or the co-design of curriculum to build the workforce of the future.

As our research stories illustrate, we are responding proactively to this appetite for exchange.

So I end with a clarion call to prospective industry, government and community partners to work with us in reimagining, building and delivering a prosperous regional future for New South Wales.

**Professor Mark Evans**

Deputy Vice Chancellor Research  
Charles Sturt University

# Global Impact Rankings show Charles Sturt continues to be a leader in sustainable practices

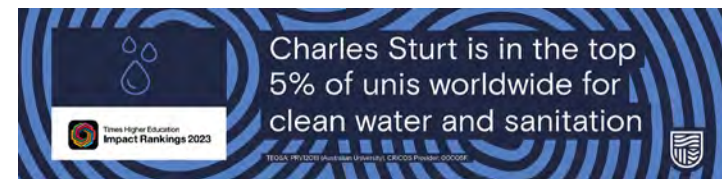
Charles Sturt has once again performed among the best in the world for sustainable practices according to the latest figures in the 2023 Times Higher Education (THE) Impact Rankings. The 2023 rankings, which involved more than 1,500 universities from across 112 countries, evaluates progressive research, stewardship, outreach and teaching impacts on the United Nations' 17 Sustainable Development Goals. Charles Sturt is ranked 79th out of 1591 universities.

The University achieved impressive results within individual SDGs, including ranking:

- **in the top 1 per cent for SDG 17 Global Partnerships towards the Goals**
- **in the top 3 per cent for SDG 5 Gender Equality**
- **in the top 5 per cent for SDG 6 Clean Water and Sanitation**
- **in the top 7 per cent for SDG 15 Life on Land**

These results consistently reflect the impact of our university research and our commitment to the core Social Responsibility pillar of Charles Sturt's 2030 Strategy.

In addition, Charles Sturt has received a QS 5 star rating for the quality of its teaching and research, facilities and the employment of its graduates.



# Our grand regional and global challenges

Research is, and will always be, vital to what we do at Charles Sturt. We aim to be the leading regional university known for solving real-world challenges in our targeted strategic investment areas by bringing together Western knowledge and Indigenous wisdom.

Through strong and enduring partnerships with industry, government, local communities, and international networks, we will meet the research needs of our communities.



## **Prosperous, Circular & Digital Societies**

Agri-innovation research to generate new thinking on the farm of the future; precision and circular farming; and building digitally connected and inclusive regional communities



## **Climate Neutral Agriculture, Food & Wine Production**

Research focusing on emission reduction via carbon sequestration; renewable energy production; and use of biomass



## **Climate Proof Rural & Regional Areas**

Research enabling sustainable water management; adaptive agriculture and horticulture systems; biosecurity and disaster management



## **Healthy, Safe & Sustainable Communities**

Research focusing on reducing health inequalities; delivering high-quality education from the cradle to the grave; supporting healthy food as an easy choice; and building safe and secure communities



## **Knowledgeable & Active Citizenry**

Research aimed at building community capability, social and economic innovation, critical citizens and participatory governance



## 1. Climate Neutral Agriculture, Food and Wine Production

Research focusing on emissions reduction via carbon sequestration, renewable energy production, and use of biomass.



## 2022 Australian Society of Viticulture and Oenology Paper of the Year award

Associate Professor Sandra Savocchia and Dr Regina Billones-Baaijens are co-authors on a manuscript that received the 2022 Australian Society of Viticulture and Oenology Paper of the Year award. Grapevine trunk diseases are a serious threat to the sustainability of the wine industry and this research has provided improved flexibility for viticulturists to manage these diseases. See: Ayres MR, Billones-Baaijens R, Savocchia S, Scott ES, Sosnowski MR (2022). Critical timing of fungicide applications for pruning wound protection to control grapevine trunk diseases. Australian Journal of Grape and Wine Research 28, 70-74.



## Grant awarded in partnership with Wine Australia and the South Australian Research and Development Institute

Associate Professor Sandra Savocchia and Dr Regina Billones-Baaijens are co-investigators on a recently awarded grant in partnership with Wine Australia and the South Australian Research and Development Institute. Over the next five years, they will work with researchers and industry across Australia to provide improved diagnostic capabilities and solutions for managing grapevine trunk disease pathogens in Australian vineyards.





## Australian wine grape growers survey to address challenges with climate change and biodiversity loss

A Charles Sturt University postgraduate researcher has collaborated with Wine Australia to investigate Australian wine grape growers' decisions, including their effects on climate change and biodiversity loss.

A new survey has been designed by postgraduate researcher Mrs Anne Johnson in the Charles Sturt [School of Agricultural, Environmental and Veterinary Sciences](#), as part of her doctoral study to enhance the understanding of growers' decision-making processes.

The survey is [open](#) and Australian wine grape growers can contribute their perspectives until it closes on Friday 7 July.

Mrs Johnson said the survey focuses on grapevine management, varieties, vineyard biodiversity, and individual adaptability.

**“This survey gives wine grape growers an opportunity to contribute their perspectives of what is driving or constraining change in their vineyard,” Mrs Johnson said.**

The survey takes a novel approach to understanding why people make changes, using insights provided by motivational research in health and education.

Mrs Johnson emphasised the importance of growers having their say to be a part of the study.



The study will be overseen through the Charles Sturt [Gulbali Institute of Agriculture, Water and Environment](#), which is driving integrated research to optimise farming systems, enhance freshwater ecosystems and improve environmental management, to deliver benefits across Australia and globally.

“Understanding the motivations behind the decisions made by Australian wine grape growers is crucial for developing future research and extension programs,” she said.

The findings will contribute to the design of future research and policy needed to address the challenges of climate change and biodiversity loss.

All survey responses are anonymous. More information and a link to the survey can be [found online](#).



## Researcher Spotlight



Professor Leslie Weston

### Charles Sturt's Professor Leslie Weston is Awarded Fellowship of the Australian Academy of Science

Professor Leslie Weston is among 20 new Fellows welcomed to the Australian Academy of Science.

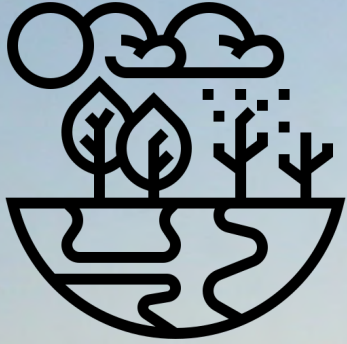
President of the Australian Academy of Science Professor Chennupati Jagadish AC congratulated the new Fellows on their contributions to science.

"Fellows of the Australian Academy of Science are among the nation's most distinguished scientists, elected by their peers for ground-breaking research and contributions that have had clear impact," Professor Jagadish said.

Leslie has made an outstanding contribution to science as a Plant Biologist and Biochemist. Her research focuses on invasion ecology and genetics, chemical ecology and signalling, and the use of biocontrol organisms for pest management. Leslie has an international reputation for her ground-breaking research techniques employing analytical chemistry, metabolomics, separation science, genomics and population and field ecology. Her research has advanced our understanding of how plants employ secondary products as chemical signalling agents, in defence strategies against pests including weeds and grazing herbivores.

We are enormously proud of her achievements here at Charles Sturt University. She is an inspiration to us all!





## 2. Climate-Proof Rural and Regional Areas

Research enabling sustainable water management, adaptive agriculture and horticulture systems, biosecurity, and disaster management.



## Incorporating clay as a natural and enviro-friendly partial replacement for cement to reduce carbon emissions in peat stabilisation: An experimental investigation

Dr Miao Li was part of a world-leading research team that has identified a way to replace carbon-intensive cement using clay as a lower-carbon replacement in construction. The research is published in the journal *Construction and Building Materials*. Wang, Z., Li, M., Shen, L., & Wang, J. (2022). Incorporating clay as a natural and enviro-friendly partial replacement for cement to reduce carbon emissions in peat stabilisation: An experimental investigation. *Construction and Building Materials*, 353, 128901. [doi.org/10.1016/j.conbuildmat.2022.128901](https://doi.org/10.1016/j.conbuildmat.2022.128901) [Read more...](#)



## Dangerous parasites found in Australia's freshwater fish

Another invasive parasite has been found in Australian native animals which can infect humans.

Charles Sturt University researchers in collaboration with the NSW Department of Primary Industries and the Narrandera Fisheries Centre have discovered the parasite species *Eustrongylides excisus* within native fish including Murray cod, galaxiids, a hybrid of Murray cod and Trout cod.

The parasite was also found in various native birds such as cormorants.

Charles Sturt Professor in Veterinary Parasitology within the Charles Sturt [School of Agricultural, Environmental and Veterinary Sciences Shokoofeh Shamsi](#) led the research, which unearthed a high degree of infection within the fish from the parasites that were deeply embedded in their flesh.

"These parasites were checked both genetically and morphologically and found to be an introduced and invasive species called *Eustrongylides excisus*," Professor Shamsi said.

**"Unfortunately, this parasite can also infect humans if they eat undercooked and infected fish."**

The fish were collected from Cataract Dam south of Sydney and other locations within NSW and submitted to a Charles Sturt University parasitology lab for testing.

Professor Shamsi said the team also found native birds, such as various native cormorants that were infected with this parasite.

**"The worm burrowed into the stomach of these birds, creating a hole, which resulted in death," Professor Shamsi said.**

**"This is similar to what happens inside humans when we get infected from this parasite – the worm burrows into our gut and tissue."**

The research commenced in 2021 and ran until March 2023 with a focus on environmental health and food safety.

"Our team is passionate about environmental health and food safety to influence strengthened biosecurity regulations," Professor Shamsi said.

"This is not the first time that our team has provided evidence of the presence of an invasive species in Australia which suggests biosecurity gaps in current biosecurity protocols.

"It heightens the need for risk assessment studies to include parasitologists," she said.

**Professor Shamsi said Australia's expertise of parasites in humans, aquatic animals and wildlife had been diminishing at a rapid rate leading to misdiagnosis and underdiagnosis of parasite infections in humans and animals.**

"We are urgently calling for investment into research and capacity building in the field of parasitology which is an increasingly fast-changing environment," Professor Shamsi said.

"This parasite is usually found in areas that are high in agricultural fertilizers."

Professor Shamsi said there was scope for increased resources to invest more into the containment of this invasive parasite.

"For example, we need to find out what the source of infection is for fish, and what the distribution of this parasite is in Australia," Professor Shamsi said.

"Resources such as fact sheets on this parasite could be created for recreational fisher people, fish farmers, and environmental activists who relocate fish from one location to another and could also be used by medical doctors."

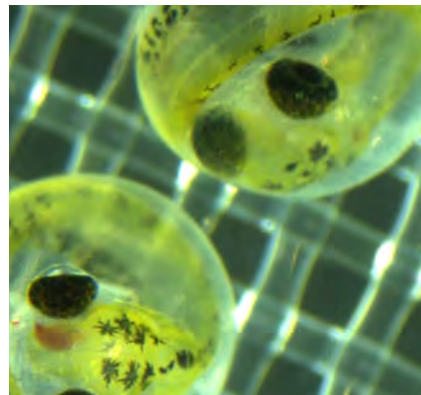


## Charles Sturt University team breeds critically-endangered stocky galaxias fish

A small team at Charles Sturt University's Thurgoona campus in Albury has successfully bred the critically-endangered stocky galaxias fish. University staff member and project leader of the captive breeding project, Dr Amina Price, said the breakthrough was the first time anyone had seen newly hatched larvae for the species. "It's really exciting what we are doing here." Anna said stocky galaxias, a small freshwater fish, were only discovered in Australia in 2014. "At this time, it was a single population in Tantangara Creek discovered in the Snowy Mountains in Mount Kosciuszko National Park," she said. She said a second population was also found at another location in the Kosciuszko National Park in late 2020. "Trout are the biggest predator to these fish and we find the only places these fish can persist are places like the very top of Tantangara Creek where there is a waterfall which restricts trout from getting up into that top section," she said. [Read more...](#)



Photos: Amina Price and Zac Rolfe check the fish and larvae four or five times a day. (ABC Goulburn Murray: Allison Jess)



## Leading to the release of endangered stocky galaxias fish into the natural habitat

This world-first innovative breeding program by Charles Sturt University has brought the stocky galaxias fish population back from the brink of extinction, allowing them to be released back into their natural habitat.

Charles Sturt and the Department of Primary Industries (DPI) worked together on a [world-first program in Albury-Wodonga](#) to ensure the longevity of the stocky galaxias fish.

Bushfires in 2019 and significant rainfall that followed threatened to create a potential fish kill event. The fish were taken to the aquatic research facility at Charles Sturt in Albury-Wodonga and DPI Hatchery at Jindabyne NSW.

More than 130 stocky galaxias were released into a new location at Eucumbene Borrows in the NSW Snowy Mountains on Thursday 27 April.

Charles Sturt University Vice-Chancellor Professor Renée Leon said the project illustrates the importance of collaboration to help protect threatened species.

*“By stocking fish - the majority of which were successfully bred by Charles Sturt University - into the new habitat, we are supporting the recovery of the species long-term,” Professor Leon said. [Read more...](#)*



## eDNA research aims to protect Manning River Turtle

A Charles Sturt University early career environmental researcher aims to help save endangered turtle species by developing environmental DNA (eDNA) sampling methods that can be used by citizen scientists, not just trained researchers. Dr Jessica Tout-Lyon (pictured on the left) Lecturer and early career researcher in the Charles Sturt School of Agricultural, Environmental and Veterinary Sciences in Port Macquarie and the Charles Sturt Gulbali Institute of Agriculture, Water and

Environment said anything that has DNA or leaves DNA in the environment can be studied. Her previous research has focused on using eDNA to study the ecology of coral reefs and potential pathogenic bacteria during coral bleaching events. Jessica said over 50 per cent of turtle species are at risk of extinction, making them one of the most threatened vertebrate groups globally. [Read more...](#)





## Recordings of endangered bittern bird calls give scientists insight into impacts of floods

Recordings of the deep growls or booming calls of male Australasian bitterns in wetlands in southern New South Wales have sparked hope for the recovery of the endangered bird.

It's estimated there are only 1,300 bitterns left in the wild. The high volume of calls recorded last spring in the bird's prime habitat of the reedy wetlands of the Barmah-Millewa Forest show near-record numbers.

Charles Sturt University scientist Elizabeth Znidersic said the bittern was so well-camouflaged that tracking its call gave the best insight into breeding activity.

"[It's] a very low-frequency boom. It's the males going, 'Here I am. I've got a good call. I'm very fit. I'm very good looking, come and get me,'" she said. [Read more...](#)



## CLOWD – Australian weather data analysis at the click of a map

Analysing weather data is an increasingly important part of crop management and while weather data is readily available, it often comes in a form not easy to manage. CLOWD (Combined Location Online Weather Data) is a new web-based framework for PCs and smartphones enabling comparative analysis of recent and historical weather variables for any location in Australia at the click of a map. CLOWD incorporates technologies including natural language generation (NLG) for chart conversion into plain-English text and can automatically generate PDF reports. Users can also select the ‘Year Start’ date to initialise seasonal analysis. CLOWD is highly customisable and while designed for agriculture, has scope for any industry affected by the weather.

CLOWD is available now, at [cloud.csu.edu.au](http://cloud.csu.edu.au) for PCs; [clouds.csu.edu.au](http://clouds.csu.edu.au) for smartphones.

For more information, contact Dr Darren Yates at [cloud@csu.edu.au](mailto:cloud@csu.edu.au).

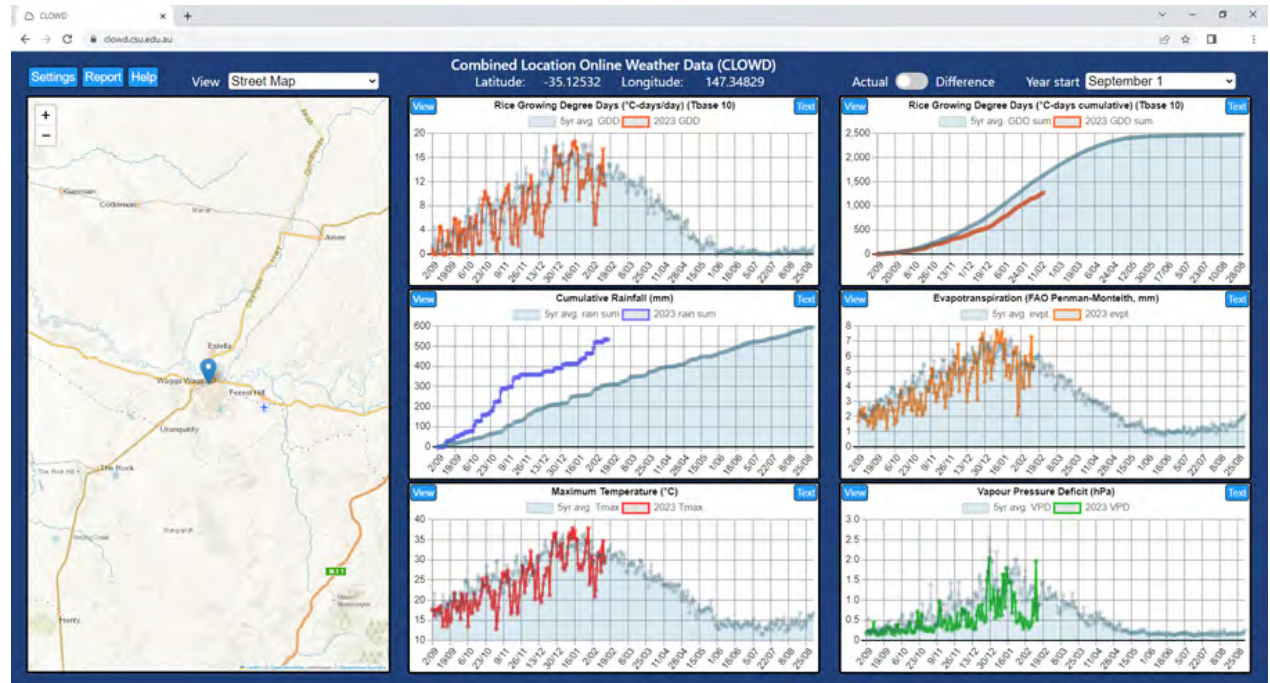


Photo: CLOWD (PC version)

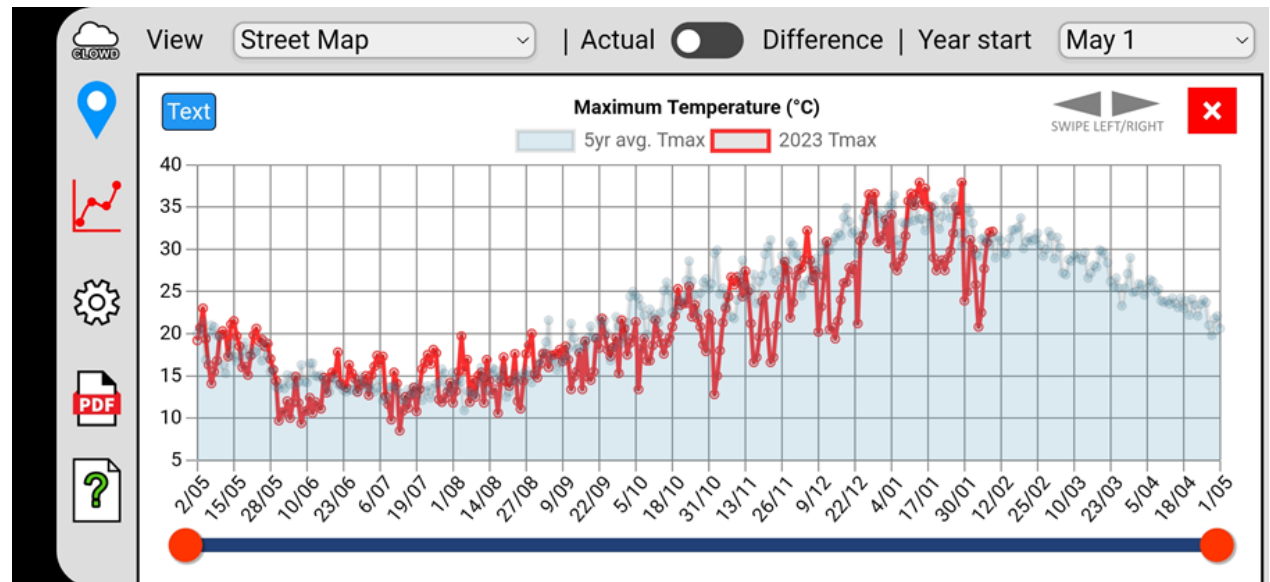


Photo: CLOWD (smartphone version)

## RiversNearMe – know your rivers, fast

The effects of climate change continue to be felt in extreme weather events, from blazing bushfires and fast-flowing floods to devastating droughts. Knowing the level of nearby rivers can be just as vital for those in low-lying communities, as knowing water flow-rates can be for farmers and growers. However, finding this data quickly is not always easy. RiversNearMe is a new prototype web application for smartphones that displays available river level and flow-rate data for any rivers within a 70kms-radius of your selected NSW location at the click of a map. The web application is customisable and can show river level record peaks, along with river level and flow-rate trends over the last seven days or last seven hours. RiversNearMe requires no installation and runs on iOS (Apple) and Android devices. RiversNearMe is available now, at [riversnearme.csu.edu.au](http://riversnearme.csu.edu.au)

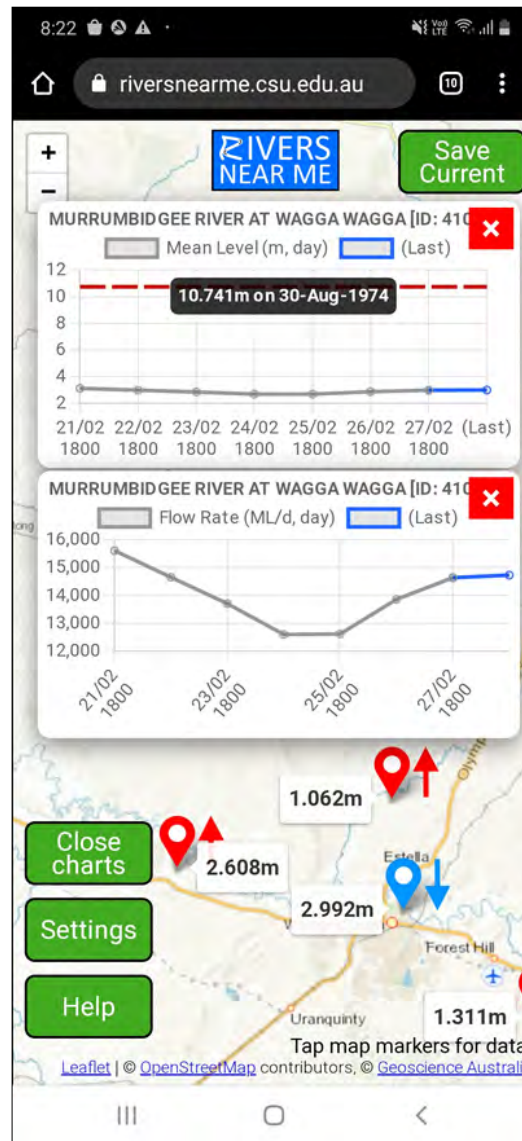


Photo: RiversNearMe

## Patience and technology provide insights on how to save threatened birds



Dr Elizabeth Znidersic

This Charles Sturt University research project involved perfect timing to record the sounds of animals, particularly the Australasian bittern, that were impacted by recent floods.

In collaboration with the NSW National Parks and Wildlife Service, Charles Sturt [Gulbali Institute of Agriculture, Water and Environment](#) researcher [Dr Elizabeth Znidersic](#) (pictured) led a team that deployed acoustic recorders in the Barmah-Millewa Forest in spring 2022. [Read more...](#)



## Student's innovative design a game-changer in safeguarding wildlife populations

Charles Sturt University ecologists and engineers have created an alternative artificial environment for Australia's native animals to call home, providing a solution to dwindling tree hollows.

Tree hollows provide habitats for about 15 per cent of the country's native animals, including the endangered Greater Gliders and Glossy Black Cockatoos, but the number of hollows has declined dramatically in the past century, as large trees were cleared for development.

Timber nest boxes are commonly installed as artificial habitats but have been found to have a limited lifespan and become extremely hot, exceeding 50 degrees.

Ecologists and engineers from Charles Sturt worked to create another alternative using 3D printing technology. [Read more...](#)



Mr Mick Callan and Mr Carl Tippler

## Red meat glycans for health research at Gulbali Institute

Professor Bing Wang

Meat from a range of species has provided a cornerstone for the diets of different ethnic groups across our globe since the advent of mankind. We have learnt in recent times that the desirability of the flavour of meat is accompanied by an improvement in our understanding of its nutritional value to our diet given that it provides a rich source of creatine, magnesium, zinc, omega 3 fatty acids, high quality protein, and iron, all of which play a significant role in promoting the health and proper functioning of our organs and in particular our musculature. However, our knowledge of the importance of some nutrients in meat is now just starting to come to light. The family of 9 carbon sugar molecular, sialic acids (Sia) has been implicated in physiological and pathological processes as they are widely distributed among many polysaccharides, glycoproteins and glycolipids expressed within our body.

Only now are we realising the importance of these structures in red meat diet. The two major forms of Sia found in most mammalian cell types are N-acetylneuraminic acid (Neu5Ac) and N-glycolylneuraminic acid (Neu5Gc). The newest member of the Sia family is 2-keto-3-deoxy-D-glycero-D-galacto-nononic acid (KDN), which is often expressed at lower levels than Neu5Ac and Neu5Gc. Neu5Ac is a human Sia that serves as an essential nutrient for neurodevelopment, cognition, and immune function. However, an increasing number of studies show a relationship between the consumption of the red meat derived, non-human Sia, Neu5Gc, and inflammation,

cancer progression, cardiovascular disease, and several autoimmune diseases (Samraj etc PNAS 2015).

Our new findings show that human Sia (Neu5Ac) was the most abundant form of Sia in all muscles and organ meat (60-90%) in the tested 9 animal species. The goat muscle meat expressed the highest Neu5Ac (662 µg/g protein) followed by sheep, pig, deer, horse, kangaroo and cattle, respectively. Among organs, kidney contained the most Neu5Ac (1992-3050 µg/g protein) across species. Nine commercial sheep meat cuts contained similar levels of Sia. Thus, red meat provides a significant amount of human Sia Neu5Ac for health promotion. We were surprised that non-human Sia Neu5Gc is not expressed in all organs and muscles of 9 animal species, as Neu5Gc was not detected in kangaroo and dog muscles and 7 organs of female deer. Total Neu5Gc in organs was generally about 2-54% higher than in muscle. Previous studies have shown Neu5Gc can incorporate into human cells by eating red meats and some dairy products, and the immune system recognises it as a foreign threat, producing antibodies to counter it. Therefore, the high concentration of Neu5Gc in organ meats should be avoided for consumption, especially spleen and lungs.

We observed that the red meat-derived Sia Neu5Ac, Neu5Gc and KDN are tissue and species-specific. Our study provides guidelines for the selection of animal meat products for consumers relating to Neu5Ac and

Neu5Gc to promote health and prevent inflammatory disease. Our work sheds light on the functionality of red meat glycan Sia for human nutrition.

The findings of the Charles Sturt team are published in Q1 journal **Foods** [10.3390/foods12020337](https://doi.org/10.3390/foods12020337) and **Food Chemistry** [doi.org/10.1016/j.foodchem.2020.128439](https://doi.org/10.1016/j.foodchem.2020.128439)



## Researcher Spotlight



Photo: AWARDS: Winning Eureka Prize, with Elder Auntie Isabel O'Loughlin 2017

### Professor Alan Cooper joins Gulbali Institute

Professor Alan Cooper has played a central role in the development of the field of ancient DNA since his PhD work with Svante Pääbo and Allan Wilson at UC Berkeley in 1989. He was appointed the inaugural Professor of Ancient Biomolecules at the University of Oxford, and an Australian Research Council Federation Future Fellow, and Laureate Fellow at the University of Adelaide, where he built the Australian Centre for Ancient DNA. His multi-disciplinary research integrates data from ancient genomics, records of climate and environmental change, bioinformatics and mathematics, archaeology, microbiology, palaeontology, and medical sciences and has resulted in over 35 papers in Nature and Science. He has won many science prizes, including the South Australian Scientist of the Year and Eureka Prize, and led the multiple-award winning Aboriginal Heritage Project to reconstruct pre-European Aboriginal Australia history using ancient DNA. More information about his research, papers and podcasts is available at [blueskygenetics.com](http://blueskygenetics.com).



Photo: SCIENCE TEAMS: The core team on the recent 'Out of Arabia' human genetic selection paper, published in PNAS in May 2023. Tobler, R., Souilmi, Y., Huber, C. D., Bean, N., Turney, C. S., Grey, S. T., & Cooper, A. (2023). The role of genetic selection and climatic factors in the dispersal of anatomically modern humans out of Africa. *Proceedings of the National Academy of Sciences*, 120(22), e2213061120. [doi.org/10.1073/pnas.2213061120](https://doi.org/10.1073/pnas.2213061120)



Photo: COMMUNITY: Family enjoying our recently opened Ashton Cafe - I worked on the garden and stone walls



Photo: SCIENCE: Working with Mirning Elders and archaeologists studying paleoenvironments, Koonalda Cave





### 3. Prosperous, Circular and Digital Societies

Agri-innovation research to generate new thinking on the farm of the future, precision and circular farming and building digitally connected and inclusive regional communities.



Professor Ganna Pogrebna  
Executive Director, Artificial Intelligence and Cyber Futures Institute



## Generative AI: Einstein or Frankenstein?

Professor Ganna Pogrebna

The advent of artificial intelligence (AI) has been a game changer for many industries, and education is no exception. Recently, generative AI made headlines with the development of ChatGPT and other conversational AI-based tools. Generative AI is a type of artificial intelligence that involves creating new data, images, videos, music, or other content. It uses machine learning algorithms to analyse and learn patterns from existing data and generate new, unique content, based on those patterns. Generative AI can be used for a wide range of applications, from generating art and music to creating realistic images and videos, and even producing new ideas or solving complex problems. Apart from ChatGPT, some popular examples of generative AI include [deepfakes](#), which use AI to create realistic but fake videos or images, and chatbots like [YouChat](#), which use natural language processing to generate responses to user queries.

While generative AI may offer benefits for the educational sector in general and for education in rural and regional areas in particular, it may also be a source of harm. On the one hand, the development of generative AI like ChatGPT has its pros for education in regional and rural areas. For many students in these areas around the globe, access to quality education can be a challenge due to a lack of resources and infrastructure. However, with the help of technology like ChatGPT, students can access a wealth of information and support regardless of their location. Such technology can be used as a training tool (i) to showcase to the student how to approach homework assignments, (ii) to provide examples of exam-style questions, and even (iii) to offer support for students struggling with their coursework. More specifically, generative AI, if applied correctly, has an ability to provide personalised learning experiences and generate live feedback, thereby aiding educators in rural areas, who are often unable to work with each student separately due to limited resources, large class sizes, geographic isolation, student mobility, and other issues.



Yet, there are also concerns about the impact of generative AI on traditional forms of educational assessment. For example, concerns have been raised that chatbots may be the death knell for essays as an assignment for education. This is because the responses generated by the chatbot are so well-articulated that they can be difficult to distinguish from those written by human students. This problem, however, is not new. For many years, academia has been fighting against the “[essay mills](#)” – businesses, which offer pre-written or customised essays to facilitate student academic fraud. Chatbots like ChatGPT are not designed to support contract cheating. At the same time, the very nature of generative AI implies that it may “make up” evidence, events, and facts, which do not exist and have never existed. Though chatbots are often designed with built-in safeguards, such as fact-checking mechanisms, to prevent them from providing false or misleading information, these safeguards are not foolproof, and there is always the risk that chatbots could provide inaccurate or misleading information. A typical example of this is ChatGPT, which engineers non-existent scientific references, generates fake quotes from people who never existed, and even makes up historical facts.

While it is fair to say that responsibility for discerning the accuracy and reliability of information ultimately rests with the individual user who passes on the false information, the danger of overreliance on generative AI is that in the current era of speed, information, and convenience, too much false information may be ultimately produced. In the current “[post-truth](#)” era, when emotional appeals and personal beliefs are often more influential in shaping public opinion and political discourse than objective facts or evidence, this is particularly dangerous.

To fully realise the potential of generative AI in education, it is important to develop robust ethical and regulatory safeguards as well as to produce comprehensive yet accessible user guides to clearly explain to educators and students the benefits and limitations of generative AI. The AI and Cyber Futures Institute (AICF) at Charles Sturt University is dedicated to exploring the ethical and societal implications of AI and cyber technologies and developing strategies

to ensure their safe use. Within its Responsible AI strand, the AICF is exploring the applications of generative AI in education and developing guidelines to suggest their ethical and responsible implementation modes. This includes ensuring that users of generative AI have a transparent and user-friendly understanding of generative AI abilities, and that these abilities are used in a manner that promotes individual learning and development.

Ultimately, ChatGPT and other generative AI technologies are a product of human data, made by humans with human users in mind. Because of that, such technologies carry all the errors humans are prone to and this is the fact that all of us should remember when we engage with generative AI tools.

While many problems remain to be solved in this domain, only through educating people about the limitations of generative AI and through the power of critical and open discussions about the underlying issues of this technology will we, as a society, be able to turn the Frankenstein of generative AI into an Einstein of personalised education, capable of helping rural and regional communities to maximise their potential.



Source: This image is generated by AI. No humans or algorithms were harmed in the process of its generation.



## Telstra to road test Global Digital Farm's ag data platform

Charles Sturt University is providing access to data generated by its integrated Global Digital Farm in Wagga Wagga to Telstra in a year-long trial program.

The partnership between the University, Telstra and Food Agility will assist the Farm Data Services platform to overcome one of the biggest hurdles in modern, data-driven agriculture – how to securely manage and integrate data from multiple technologies across the farm.

Built by Telstra with global technology partners IBM and Proagrica, the secure Farm Data Services platform integrates, standardises and distributes data sets from existing agtech deployments.

Successful integration of the available data streams will provide a single point of access for Charles Sturt farm management, teaching and research activities and enable focused programs to develop new decision support tools.

It will be trialled over 12 months at the Global Digital Farm at Charles Sturt in Wagga Wagga, which is managed in partnership with Food Agility, as a test bed for agrifood research and technology.

Charles Sturt University Vice-Chancellor Professor Renée Leon said the partnership with Telstra cemented the University's reputation as the Australian epicentre for data-driven agrifood innovation.

**“Home to the Global Digital Farm and AgriPark, Charles Sturt University's Wagga Wagga campus connects the research and innovation ecosystem to our farmers so they have new technologies in their hands sooner,” Professor Leon said.**

“The Global Digital Farm is forging a new path for the future of farming in Australia and Charles Sturt University is proud to be able to share this technology and innovation with Telstra.”

Food Agility CEO Mr Richard Norton said the Global Digital Farm was unique in Australia and the perfect place to road test Telstra's Farm Data Services Platform before scaling nationally.

“The Global Digital Farm is a real-world testing environment, where the 1600-hectare commercial farming operation works in tandem with scientists and technologists,” Mr Norton said.



*Photo: Charles Sturt's Global Digital Farm Director Mr Jon Medway, shows Telstra Chief Executive Officer and Managing Director Ms Vicki Brady the Global Digital Farm's DualEM soil conductivity sensor and associated field navigation computing system in the John Deere ATV. Photo by Jackie Cooper at Jack of Hearts Studio*



## Computational methods for fluid flows

Dr Zhenquan Li

School of Computing, Mathematics and Engineering

Although fluid flows are commonplace, we still have not found a way to simulate them precisely. One example is cyclone forecasting. If we can determine the accurate location for the centre of a cyclone at every instant, we can forecast the path of the cyclone accurately. We have mathematical equations that model fluid flows accurately after long-term verifications. However, the exact solutions of the equations are not yet available. Currently we calculate the numerical solutions of the equations using computers. A limitation of using computers is that we can only perform finite operations. However, there are

infinite points in a domain of interest (for example, if we want to forecast the Canberra weather, the domain of interest is a region much larger than Canberra). My research in computational methods is to create techniques for the selection of finite points in a domain that provides sufficient information about the characteristics of flows in that domain. I received a large grant (2000-2003) from the New Zealand government for the theoretical research of the methods, and several grants (2004-2010) from The University of the South Pacific for the investigations of the methods I proposed based on

the theory on accuracy, reliability and efficiency in 2D (two dimensions) and 3D (three dimensions) and practical applications in 2D. I also received support for a few projects (2011-2016) from CSU FBJBS and the former ILWS for programming of the proposed methods in 2D and a part of 3D cases in Matlab for more verifications.



## Helping farmers to improve their carbon footprint and reporting

A research project led by Charles Sturt University with Food Agility and other agribusiness partners aims to provide farmers with a transparent and credible tool to understand and manage natural capital and greenhouse gas (GHG) emissions.

[Dr Mark Frost](#), Senior Lecturer in Agribusiness in the Charles Sturt [School of Business](#), is the Chief Investigator for the project with the [Food Agility](#) Cooperative Research Centre ([CRC](#)).

He said farmers and agribusinesses are under pressure to demonstrate that they are improving the carbon footprint of the commodities they produce.

**“Farmers need a credible way to demonstrate they are reducing their carbon footprints,” Dr Frost said.**

**“Direct and indirect greenhouse gas (GHG) emissions generated from agricultural production is now a reporting requirement for all participants in the agricultural supply chain, and is an important factor in reaching environmental, social and governance (ESG) milestones.**

“Furthermore, financiers are facing mounting pressure to both fund climate-related activities and report climate-related exposure, while consumers across domestic and international markets are gradually turning to products that are environmentally sustainable.”

Dr Frost said the Australian Agricultural Sustainability Framework (AASF) designed by the [National Farmers Federation](#) and the [Australian Farm Institute](#) with funding from the federal government has been introduced to assist farmers to be able to understand the finance, supply chain and market expectations about sustainability and ESG reporting. [Read more...](#)



## AgriPark



Nick Pagett

We are pleased to announce the appointment of Nick Pagett as Executive Director of the AgriPark.

Prior to joining Charles Sturt, Nick was Director, Business Development & Global for CSIRO where he was looking after external engagement and innovation programs, including delivery of the ON program. Nick has more than 30 years' experience working in senior executive roles in a range of

industries, including research and development, food supply chains, and agriculture. His experience spans both commercial and scientific research environments, where he has been involved in activities including commercialisation, R&D service delivery, and global business development. He has particular expertise in science parks and precinct ventures.



## Digital Agrifood Summit returns to Wagga Wagga

The Digital Agrifood Summit, a partnership between Charles Sturt University, the Food Agility CRC and Charles Sturt's Agrisciences Research and Business Park (AgriPark), will return to Wagga Wagga, NSW, on Wednesday, 11 and Thursday 12 October 2023, bringing together experts in everything digital, data and agrifood.

This year's event is themed "Paddock to Profit" and will examine how Australia's agrifood industry can apply data-driven solutions to increase value and drive sustainability across supply chains.

The event will feature leading Australian and international speakers, presentations of the latest research and innovation projects, an exhibition hall of commercially available technology, a tour of the Global Digital Farm, and a Gala Dinner.

People can [register their interest](#) in attending via the Global Digital Farm website, and companies interested in [sponsoring or exhibiting](#) are encouraged to get in touch.



On 21 and 22 February, the AgriPark hosted an Exhibition Space at the AgriFutures Australia [evokeAG](#) conference, one of the largest agtech gatherings in Australia. This year the event was held at the Adelaide Convention Centre and featured domestic and international agtech organisations plus a number of startups pitching their businesses to potential investors and collaborators.

Our space included Andrew Hagan's demonstrations on using eXtended Reality in agriculture and Jon Medway promoting agtech research on the Global Digital Farm. Professor Michael Friend, Sam Beresford, Kelli Edwards and Jodi Slocombe also attended the event on behalf of Charles Sturt University and AgriPark.

We had a paperless display and used two large presentation screens to showcase everything ag at Charles Sturt. On these, we presented the Gulbali Institute, Red Meat Innovation Centre, Innovation Hub, Winery, Biosecurity Training Centre, Charles Sturt Sustainability, our amazing research facilities, new post-grad ag and environmental courses, student engagement with industry, scholarships and philanthropic opportunities, and our [Digital Agrifood Summit](#) which is being held at our Wagga campus on 11-12 October 2023. Thanks to everyone who provided content, and a special thank you to Cass Dray, Grace Gribble and James Siegert from the marketing team for preparing our digital collateral.

We had a lot of people visit our exhibition space over the two days and some promising conversations with industry around future opportunities that we are following up.

If you would like more information about our evokeAG experience, don't hesitate to get in touch with Kelli Edwards, AgriPark Manager.



*Photo: Professor Michael Friend speaks with high school ag students about careers in agriculture and studying at Charles Sturt University.*



## Researchers built an analogue computer that uses water waves to forecast the chaotic future

Dr Ivan Maksymov

Can a computer learn from the past and anticipate what will happen next, like a human? You might not be surprised to hear that some cutting-edge AI models could achieve this feat, but what about a computer that looks a little different – more like a tank of water?

We have built a small proof-of-concept computer that uses running water instead of a traditional logical circuitry processor, and forecasts future events via an approach called “reservoir computing”.

In benchmark tests, our analogue computer did well at remembering input data and forecasting future

events – and in some cases it even did better than a high-performance digital computer.

### Throwing stones in the pond

Imagine two kids, Alice and Bob, playing at the edge of a pond. Bob throws big and small stones into the water one at a time, seemingly at random.

Big and small stones create water waves of different size. Alice watches the water waves created by the stones and learns to anticipate what the waves will do next – and from that, she can have an idea of which stone Bob will throw next.

Reservoir computers copy the reasoning process taking place in Alice’s brain. They can learn from past inputs to predict future events.

Although reservoir computers were first proposed using neural networks – computer programs loosely

based on the structure of neurons in the brain – they can also be built with simple physical systems.

Reservoir computers are analogue computers. An analogue computer represents data continuously, as opposed to digital computers which represent data as abruptly changing binary “zero” and “one” states.

Representing data in a continuous way enables analogue computers to model certain natural events – ones that occur in a kind of unpredictable sequence called a “chaotic time series” – better than a digital computer. [Read more...](#)





## Researcher Spotlight



Professor Jane Quinn

### Professor Jane Quinn

Professor Jane Quinn’s research focuses on strategies to improve livestock productivity and economic outcomes for the Australian farming sector using innovative field and molecular technology-based approaches. Jane has contributed substantially to animal welfare, health and production in Australia. She investigates novel pharmaceuticals, diagnostics and management practices for the animal health industries to improve productivity in Australian sheep and beef systems and she is the lead inventor on several awarded patents. Her research is extensively funded by industry-focused bodies, including Meat and Livestock Australia, as well as numerous industry partners.

She undertakes research in the areas of:

- Intensive beef production, including economic pathways for beef steers;
- Veterinary diagnostics and molecular approaches to pathogen identification for the livestock industries;
- Improving production in livestock systems through advanced diagnostics and new therapeutics;
- Novel approaches to automated assessment of disease in livestock;
- Impacts of toxic plants, including invasive weeds, on livestock health and production;
- Effects of production systems and processes on meat sensory characteristics.

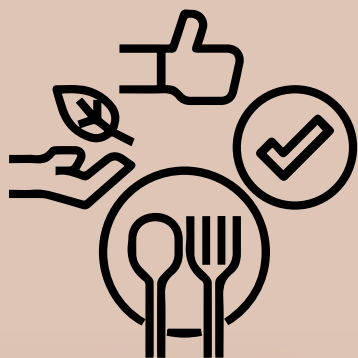
Jane is a named inventor on two awarded patent families covering 9 geographic jurisdictions, with two more pending examination. She was a member of the MLA Strategic Pathway for Animal Welfare, and inaugural Charles Sturt Committee member of the National Primary industries Research, Development and Extension Strategy for Animal Welfare.

In addition to her work in agriculture and animal health, she has been a long-term advocate for military veterans with brain injuries related to environmental and acquired exposures, has published on this topic, and has presented at multiple parliamentary inquiries in the United Kingdom, Canada and Australia related to veteran’s mental health. She was an initiating and founder member of the Open Arms Neurocognitive Health Program Steering Committee, a group which established, in partnership with the Department of Veterans Affairs, a national programme for veterans with neurocognitive ill-health.

Jane has held academic leadership roles at Charles Sturt including Associate Dean Research for the Faculty of Science and currently as Chair of Academic Senate and member of University Council. She has two kids, who currently are, or have navigated through university, including one completing a degree at Charles Sturt. Having bred sheep, cattle, dogs and horses in the past, she now enjoys a somewhat quieter existence with just 4 dogs, 2 cats and some lively Eclectus parrots that enjoy chatting along with zoom meetings.

Jane has been elected as a Fellow of the Royal Society of New South Wales In recognition of her contributions to science and community in Australia.





## 4. Health, Safe and Sustainable Communities

Research focusing on reducing health inequalities, delivering high-quality education from the cradle to the grave, supporting healthy food as an easy choice, and building safe and secure communities.



## Project in Laos provides lasting economic and social benefits for river-dependent communities

A project in Laos led by Charles Sturt University scientists will benefit hundreds of Lao families and help preserve over 100 local fish species.

[Professor Lee Baumgartner](#) (pictured below, in a green T-shirt), Executive Director of the Charles Sturt [Gulbali Research Institute of Agriculture, Water and Environment](#), leads the project, with implementation partners in Laos, Indonesia and Cambodia. It follows [the success of earlier projects](#) elsewhere in South-East Asia.

The project is part of a \$7.8m program co-funded by the Australian Centre for International Agricultural Research (ACIAR) and the Department of Foreign Affairs and Trade (DFAT) through the Mekong-Australia Partnership, to rehabilitate fisheries in the Lower Mekong Region.

Professor Baumgartner said the project recently completed a Fishway at Nam Pok in the Vang Vieng district of Lao PDR. The technology aims to mitigate the environmental impact of irrigation development on fish migration, with lasting economic and social benefits for river-dependent communities.

**“Irrigation is an important source of rice production in the Lao People’s Democratic Republic (PDR) but fisheries’ resources are also an important source of nutrition and livelihoods,”** Professor Baumgartner said.

[Read more...](#)



*Photo: Professor Lee Baumgartner with Australian Ambassador to the Lao PDR Mr H.E. Paul Kelly and other dignitaries at the opening ceremony of the Nam Pok Fishway Project in Laos on Wednesday 28 June 2023*



## Healthy, safe and sustainable communities, Aquatics systems and eco systems

The Gulbali Institute is committed to making a difference and conducting world-class research into the sustainability of our rivers for future generations. The projects focus on maximising fisheries returns for food security, restoring connectivity at a landscape scale, and understanding how to protect and maintain wetland and freshwater communities in a changing world, focusing on species conservation. The Institute recognises the critical importance of preserving our natural resources and the need for sustainable practices that will ensure the health and wellbeing of our planet for years to come. The Gulbali Institute is dedicated to making a positive impact through their research, and we invite you to join them in their efforts to protect our rivers and their ecosystems.



Professor Allen Ross, Executive Director

## Ground-breaking research will reduce the incidence of the world's third most devastating tropical disease

Ground-breaking research by Charles Sturt University, the University of Georgia in the USA and the Research Institute for Tropical Medicine in Manila will assist in saving thousands of lives as part of the global quest to reduce the incidence of schistosomiasis.

The research 'Towards sustainable control and elimination of schistosomiasis in the Philippines' was led by Charles Sturt researchers from the [Rural Health and Medical Research Institute \(RHMRI\)](#) in Orange NSW and funded by the National Health and Medical Research Council.

Schistosomiasis can cause a range of symptoms such as abdominal pain, bloating, bloody diarrhea, chills, fatigue and/or fevers and can lead to major cognitive impairment, liver and spleen damage and sometimes death.

The disease ranks as the third most devastating tropical disease in the world and is a major cause of morbidity in Asia, Africa, South America, the Middle East and the Caribbean.

Professor of Medicine and Executive Director of the RHMRI [Allen Ross MD](#), PhD said schistosomiasis is caused by blood flukes of the genus *Schistosoma*.

"Schistosomiasis is caused by parasitic worms that penetrate the skin of humans and bovines when they come into contact with infested water," Professor Ross said.

"The intermediate snail host – a particular species of snail about the size of a grain of rice – release a free-swimming larvae stage of the parasite called cercariae into freshwater, which then infects people or bovines when entering the water."

The research trial focused on developing a vaccine for bovines (cattle and water buffalo), which act as major reservoir hosts of schistosomiasis, thereby assisting with the elimination of the disease in Asia and Africa.

Professor Ross said the main method of treatment for schistosomiasis currently is praziquantel (PZQ) – a pyrazinoisoquino-line derivative that is used to treat people with this disease.

"However, praziquantel [does not prevent reinfection](#) and the development of drug resistance is a constant concern," Professor Ross said.

Professor Ross said there is no commercially available human vaccine against any of the human schistosomes.

**"Overall, by vaccinating bovines we will be able to prevent approximately a third of infections in people by reducing the number of bovines transferring eggs into endemic water that could later hatch and infect humans," Professor Ross said.**

The research trial was conducted over six years from 2012 until 2017 among 18 schistosomiasis-endemic villages comprising 18,221 residents in Laoang and Palapag, Northern Samar, in the Philippines.

Professor Ross lived in rural villages for roughly three-to-four months per year to conduct the trial with a team of approximately 50 medical personnel, including doctors, nurses, midwives and vets.

"We conducted a one-year cross-sectional survey which was followed by a 5-year phase IIIa cluster randomised control trial that was conducted among the 18 schistosomiasis-endemic villages," Professor Ross said.

"This is the first trial to demonstrate the effectiveness of a bovine vaccine for schistosomiasis in reducing human schistosome infection."



Professor Ross noted the prevalence of schistosomiasis globally.

**“Worldwide it is estimated that more than 250 million people (1 in 30) have Schistosoma infection,” he said.**

“During 2005 to 2010 the rates of positive Schistosoma serology in new refugee arrivals to Australia was roughly between five and 40 per cent.”

Professor Ross said the reason his team focused on trialling a vaccine in bovines to reduce schistosomiasis transmission in Asia was because of the complicated nature of schistosomiasis control in China and the Philippines based on the zoonotic nature of the disease, with bovines acting as major reservoir hosts.

“Sustainable control strategies are required to combat schistosomiasis to overcome rapid reinfection, the potential threat of PZQ resistance, and problems of drug compliance which is currently only at levels of 25 to 40 per cent in China and the Philippines,” Professor Ross said.

“A multifaceted integrated approach targeting transmission pathways for the disease could comprise complementing PZQ treatment with vaccination of bovines and snail control as the key to sustainable control and eventual elimination (defined as the reduction to zero in human incidence).

“In light of their importance as major reservoirs for *S. japonicum*, vaccination of bovines has been proposed as a tool to assist in long-term prevention, which is supported by mathematical modelling.”

Professor Ross said that vaccination of bovines would be particularly applicable to areas where mechanised farming is unsuitable.

“Vaccination can reduce egg excretion from cattle and buffalo, thereby interrupting transmission from bovines to snails,” he said.

“We are now planning to conduct a larger Phase 3b clinical trial in three endemic zones in the Philippines.”

Ross AG, Harn DA, Chy D, Inobaya M, Guevarra JR, Shollenberger L, Li Y, McManus DP, Gray DJ, Williams GM. First bovine vaccine to prevent human schistosomiasis – a cluster randomised Phase 3 clinical trial. *Int J Infect Dis*. 2023 Feb 1;129:110-117. doi: 10.1016/j.ijid.2023.01.037. Epub ahead of print. PMID: 36736992.



## Researcher Spotlight



Professor Sharynne McLeod



### Best in the world

Sharynne McLeod, Professor of Speech and Language Acquisition at the School of Education, was named by The Australian's Research magazine as Australia's Research Field Leader in Audiology, Speech and Language Pathology and "[best in the world based on the quality, volume and impact of work](#)".

Over the past year, the research of Professor Sharynne McLeod and her team received several awards and opportunities to share the findings with professionals and families across the world. Additionally, she was awarded:

- Fellow of the Academy of the Social Sciences of Australia (see picture)
- Fellow of the American Board of Child Language and Language Disorders
- Charles Sturt University Researcher/Research Team of the Year Award (Faculty of Arts and Education)
- Charles Sturt University Research Excellence through Partnership Award
- Dr Van Tran (supervised by Prof McLeod and A/Prof Sarah Verdon) was awarded Charles Sturt University Higher Degree by Research Thesis of the Year Award.

Professor McLeod gave invited addresses to:

- The American Speech-Language-Hearing Foundation Inaugural International Symposium in New Orleans, USA,
- [The European Speech and Language Therapy Association \(ESLA\) Congress](#) in Salzburg, Austria (online),

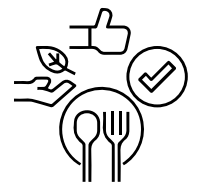
- The Third Iranian Conference on Developmental Language Disorder (online),
- The Autumn Lecture for the journal [Advances in Communication and Swallowing](#) (online),
- Vietnamese Speech Therapy Education - Da Nang University of Medical Technology and Pharmacy, Viet Nam (online)

Additionally, she was an invited representative on

- The Federal Government's Education Disability Loading Review Expert Panel
- The 73rd session of the World Health Organization Regional Committee for the Western Pacific on behalf of International Association of Communication Sciences and Disorders (IALP).

In 2022 the Multilingual Children's Speech website ([csu.edu.au/research/multilingual-speech](https://csu.edu.au/research/multilingual-speech)) was popular with 82,764 views.

Finally, she co-edited a special issue of the International Journal of Speech-Language Pathology (Q1) with Professor Julie Marshall titled *Communication, Swallowing and the Sustainable Development Goals*. The special issue included an introduction advocating for [Communication for all as SDG 18](#) and an invited paper by Professor Graeme Clark, who invented the cochlear implant.





## 5. A Knowledgeable and Active Citizenry

Research aimed at building community capability, social and economic innovation, critical citizens and participatory governance.



## Yindyamarra Pledge for Democracy

At the end of 2022, under the leadership of Professor Stan Grant, Vice Chancellor's Chair of Indigenous Belonging and Yindyamarra Nguluway Founding Director, Charles Sturt University launched the Yindyamarra Pledge for Democracy.

The Yindyamarra Pledge aims to bring Yindyamarra – a staple Wiradjuri value gifted to CSU by the Wiradjuri people – to bear on public debates in Australia around issues of First Nations justice, equity, and belonging.

Yindyamarra means respect – respect for others and respect for oneself. Yindyamarra draws our attention to where we are and the love we owe each other on this land. Yindyamarra says that we are not only responsible for ourselves but for each other.

Following initial support around the Yindyamarra Pledge for Democracy – taken by high-profile Australian Champions – Yindyamarra Nguluway was founded within Charles Sturt University as a way of giving practical expression to its commitment to Wiradjuri nation-building, knowledge, and wider objectives of spiritual and democratic renewal in Australia and around the world.

Yindyamarra Nguluway has been home to several key programs, including: a Wiradjuri nation-building program, involving key Wiradjuri researchers such as Professor Sue Green; an international research democratic comparisons project, led by Professor Dominic O'Sullivan; and programs related more directly to democratic reform.

Professor Stan Grant and Yindyamarra Research Fellow Jack Jacobs have hosted a range of public engagement activities including the Yindyamarra Podcast and Yindyamarra Talks with live interviews and panel discussions.

The Yindyamarra Pledge for Democracy is a crucial steppingstone towards creating a better, more inclusive Australia in the year of the Voice referendum. Yindyamarra Nguluway will continue to be a force for

national good in the wider public debate. Under the leadership of Stan Grant, rooted in living Wiradjuri traditions, it will breathe new life into our nation.





## Charles Sturt continues to put regional Australia first: new Local Government Policy Working Group

Continuing its advocacy for regional Australia, Charles Sturt University has formed a working group with the Central NSW Joint Organisation that will focus on addressing key issues facing regional communities.

The [Central NSW Joint Organisation](#) is a local government network comprising of 11 regional NSW councils - Lithgow City Council, Blayney Shire Council, Oberon Council, Bathurst Regional Council, Orange City Council, Cabonne Shire Council, Forbes Shire Council, Parkes Shire Council, Cowra Shire Council, Weddin Shire Council and Lachlan Shire Council, along with the Central West Water Authority.

The Local Government Lab Policy Working Group (LGLPWG) met for the first time in Bathurst recently, which saw representatives from Charles Sturt and the 12 organisations from the Central NSW Joint Organisation collaborate on policy to improve outcomes for regional communities using research, education and action learning.

Co-Chair of the LGLPWG and Working Group Lead Deputy Vice-Chancellor Research at Charles Sturt University [Professor Mark Evans](#) said the group intended to work together to inform policy for improved outcomes for the groups' shared regional communities.

"The Working Group has two areas of focus - the first being to facilitate the growth of our regional health workforce; and the second is to develop policy more broadly for local government," Professor Evans said.

**"The forming of this group reflects Charles Sturt's renewed commitment to going the extra mile for regional communities by collaborating with external stakeholders to address pressing issues facing regional Australia."**

"One of the group's main focus areas is to facilitate the growth of our regional health workforce which is an ongoing issue for many of our country communities."

The main objectives of the Working Group will be achieved by:

- Facilitating up to five Policy Labs per year using an 'action learning' model
- Co-developing marketing collateral for advocacy purposes
- Encouraging stakeholders to pilot new ideas and innovation
- Building stronger and better-informed networks

Chair of the Central NSW Joint Organisation Cr Kevin Beatty Mayor of Cabonne said the formation of the Working Group represented another milestone in the relationship between organisations at the local level and Charles Sturt.

"Charles Sturt is an anchor institution for a large part of NSW, extending into Victoria," Cr Beatty said.

"Our local councils have enjoyed a close working relationship with the University for years which has benefitted local communities in many ways, most prominently by contributing to local employment and service delivery.

"The new Working Group can only serve to strengthen collaboration and action on tackling the issues that matter most, thereby strengthening our voice and bargaining power at the local level to achieve outcomes for regional Australia."



*Photo: General Manager, Bathurst Regional Council, Mr David Sherley; Executive Officer, Central NSW Joint Organisation, Ms Jenny Bennett; Mayor of Orange City Council, Cr Jason Hamling; Charles Sturt University Deputy Vice-Chancellor Research, Professor Mark Evans; Charles Sturt University Director External Engagement, Ms Julia Andrews; and Charles Sturt University Associate Dean Research in the Faculty of Science and Health, Professor Julian Grant.*

## 2023 Innovation Showcase

For a number of years, the Charles Sturt Innovation Hub and its predecessor, the Agritech Incubator, have organised the annual 'Pitch Night' as the final stage of its 'Ready to Launch' early-stage incubation program. In the first half of 2023, the Innovation Hub has run two incubation programs simultaneously: the 10th edition of the Ready to Launch Program and the Charles Sturt Indigenous Entrepreneur Program, both aimed at supporting Indigenous entrepreneurs in the agricultural and native ingredients sector from across New South Wales. Both programs were funded by the New South Wales Government's Boosting Business Innovation Program and presented by Charles Sturt University in partnership with Pyrus Events, The Scale Institute, and The Food Futures Company.

Held at the Charles Sturt Riverina Playhouse Theatre in Wagga on the 25th of May, the Innovation Showcase brought together aspiring entrepreneurs from both programs, allowing them to share their stories, pitch their concepts, and connect with the business and start-up community. The event, emceed by Jack Jacobs, a Research Fellow at Yindymarra Nguluway, Charles Sturt University, was an evening full of optimism, networking, and knowledge exchange, with participants coming from various regions of New South Wales, including the Queensland border, Albury, inland areas, and metropolitan Sydney.

The Innovation Showcase, featuring inspiring pitches, stories, and achievements, provided a platform for entrepreneurs and change-makers in both programs

to share the thinking behind their concepts, emergent businesses and social ventures and get valuable feedback from the audience and members of the feedback panel. While the members of the crowd might have been somewhat parochial, there's little doubt that the standard of pitches and the production of the evening was at least equal to similar types of events held in metropolitan areas. The university's senior leadership was well represented and led by Deputy Vice-Chancellor Research, Professor Mark Evans.

Ged Bourke, Manager of the Charles Sturt Innovation Hubs, reflected on the event by noting that the trust shown by the participants was a real privilege. He highlighted the participants' strong focus on purpose-driven concepts, such as sustainability, increased access to the arts, and sustainable agriculture and food production. This positive evaluation echoed the sentiments of Ben Grozier, the Entrepreneur in Residence for the Ready to Launch Program, who described working with the participants as a highlight of his year.

Charles Sturt University's commitment to supporting regional communities and fostering connections across the innovation landscape was evident through the success of the Innovation Showcase, and participants remarked on the fact that it was great to be able to network and connect with members of the university community both before, during and now after the event.



*Photo: Staff and participants from the 2023 Charles Sturt Ready to Launch and Indigenous Entrepreneur programs immediately before the Innovation Showcase event held in Wagga on May 25th.*

The Islamophobia Register Australia (the 'Register'), in partnership with Charles Sturt University and ISRA published the fourth Islamophobia Report on 21st March 2023 in Canberra on the UN declared International Day for the Elimination of Racial Discrimination. It also marks 4 years on from the Christchurch Terror Attack.

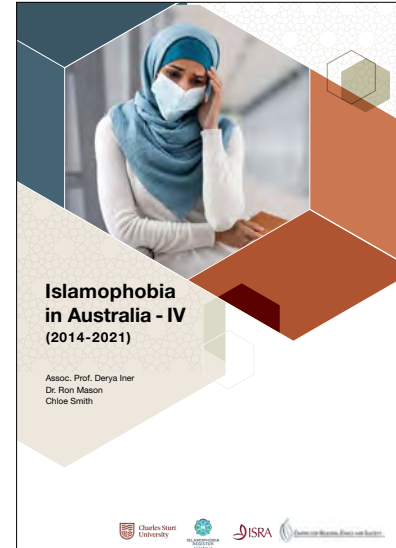


Associate Professor Derya Iner

Associate Professor Derya Iner, who is also the Register's head of research and deputy chair, showcased the key findings of the 4th Islamophobia in Australia report.

The launch hosted an impressive line-up of speakers and panelists including Minister for Immigration and Multicultural Affairs Andrew Giles MP, Minister for Youth and Early Childhood Education Dr. Anne Aly, Senator Mehreen Faruqi, Senator Fatima Payman, Kylea Tink for North Sydney, Sally Sitou and Associate Professor Mehmet Ozalp.

The Register is the leading organisation tracking and tackling incidents of Islamophobia within Australia. The event in Canberra aimed to shed light on the nature and extent of Islamophobic incidents that are occurring in Australia and touch upon the kinds of measures needed to help combat Islamophobia in Australia. To view the full report [here](#).





Associate Professor Andrew McGrath



Dr Emma Colvin

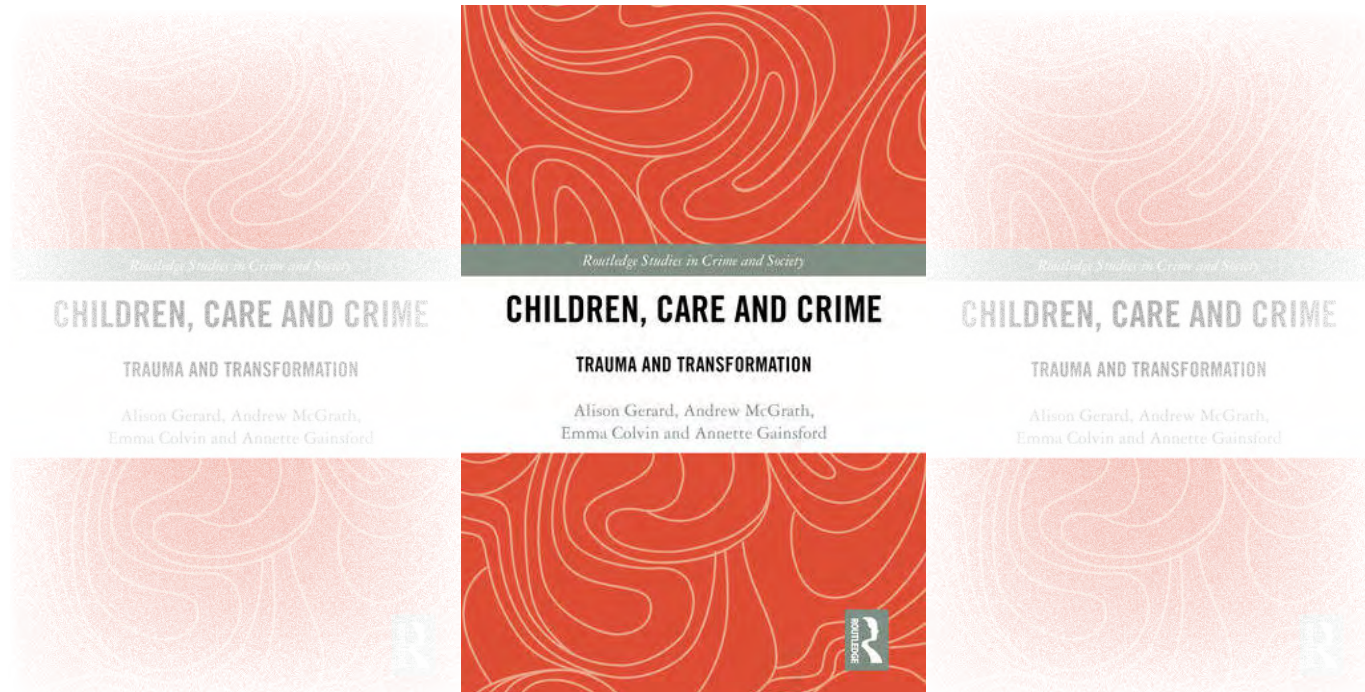
Associate Professor Andrew McGrath and Dr Emma Colvin from the Centre for Law and Justice and School of Psychology are part of an interdisciplinary team that has recently published *Children, Care and Crime: Trauma and Transformation* (Routledge, 2023).

The book stems from a project funded by the Australian Institute of Criminology that examined the criminalisation of children in out of home care. The book outlines the impact of trauma and responses to trauma, including inter-generational trauma caused by policies of colonisation and criminalisation. It then follows

a child's journey through the continuum of care to the criminal justice system, examining data at each stage including the residential care environment, interactions with police, the provision of legal services and experiences at the Children's Court. Drawing together an analysis of the gendered and racialised treatment of women and girls with care experience in the criminal justice system, the book particularly focuses on legacies of forced removal and apprenticeship which targeted Aboriginal and Torres Strait Islander women and girls. Through analysing what practices

from England and Wales might offer the NSW context, the findings are enriched by further reflection on how decriminalisation pathways might be imagined. The book is co-authored with Adjunct Professor Alison Gerard, from the University of Canberra and former Charles Sturt academic Associate Professor Annette Gainsford, University of Technology Sydney.

[Read more...](#)



## Researcher Spotlight



Professor Dominic O'Sullivan

### Honorary Fellow of the Royal Society of New Zealand

Professor Dominic O'Sullivan has been elected as one of the four Ngā Ahurei Honore a Te Apārangī Honorary Fellows of the Royal Society of New Zealand.

Being made a Fellow is an honour that recognises distinction in research, scholarship or the advancement of knowledge at the highest international standards. Fellows can use the post-nominal 'FRSNZ' after their name to indicate this honour.

Professor Charlotte Macdonald FRSNZ, Chair of the Academy Executive Committee, said it was impressive to see the strength of Aotearoa New Zealand's research communities in the cohort of New Fellows.

"The newly-elected Ngā Ahurei Fellows have made contributions to knowledge at the highest levels in their different fields and across disciplinary boundaries. Their election adds significantly to the breadth of knowledge held within the Academy and will support Te Apārangī to engage and inform New Zealanders on a diverse range of important topics."

"The election process is rigorous and new Fellows can be rightfully proud to be recognised by their peers in this way. On behalf of the Academy and Society, I heartily congratulate all the new Fellows." [Read more..](#)



Professor Wayne Hudson

### Fellow of the Australian Academy of the Humanities

Professor Wayne Hudson was elected to the Australian Academy of the Humanities for his work on connections between religion, utopianism and modernity. With outstanding contributions to Australian historiography, his work ranges from the exploration of republicanism and citizenship in Australia, the role of Deism in the Enlightenment, to the interpretation of the utopian philosophy. Election to the Australian Academy of Humanities is the highest honour for achievement in and contribution to the humanities in Australia.

"The calibre of these new Fellows is a testament to the continuing strength of the humanities in Australia today, despite the many difficulties experienced by the sector over the past few years", said Academy President Emeritus Professor Lesley Head FASSA FAHA.





Charles Sturt  
University

## Call to action

We end with a clarion call for applied research excellence – a call to action to academic staff, government, industry and community partners to work with us in reimagining and delivering a prosperous future for regional New South Wales.

Contact:

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