



MARCS Spotlight

Welcome to the MARCS Institute for Brain, Behaviour and Development Spotlight!

This quarter has seen our researchers in action at the Powerhouse Museum's Family Science Festival in Parramatta Square, the Westmead Research Hub Research & Innovation Conference, as well as welcoming many MARCS International Visiting Scholars from Canada, Italy, USA and China. Our social media feeds have been showcasing our excellent researchers and wonderful facilities during the month of October as we ask #WhyMARCS.



We have also commenced an international and national search for a new professorial appointment – the Charter Hall Chair in Human Neuroscience. Drawing on the combined strengths of the MARCS Institute for Brain, Behaviour and Development and the School of Medicine at Western Sydney University and the multidisciplinary approach they provide, Charter Hall has provided a generous gift for this new leadership position. The Chair will lead and grow health and medical research using cutting-edge neuroimaging methods while guiding and training future generations of researchers. If you are interested please reach out to me to discuss. The Institute is committed to a culture that embraces equity and a diverse and inclusive community where everyone participates in a safe and respectful environment. Applications close 22nd October 8:30pm AEDT.

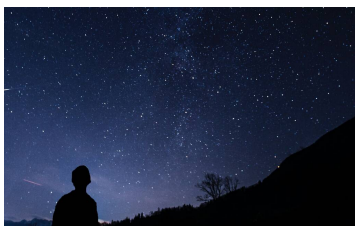
We hope you enjoy this snapshot of the Institute.

Professor Kate Stevens

Director, MARCS Institute for Brain, Behaviour and Development

Grant Successes

Dr Joyce Siette and team have been awarded over \$400,000 from the National Health Medical Research Council [to develop health campaigns that will target dementia risk reduction awareness in Arabic, Chinese and Vietnamese communities.](#)



Dr Imogen Jones and **Dr Nicholas Ralph**, in collaboration with Gilmour Space Technologies, Lintek and Macquarie University have been awarded a Cooperative Research Centre Project (CRC-P) grant from the Australian Government of over \$1.4 Million to develop the [Event Detection Gyro \(EDGy\)](#) that uses a neuromorphic vision sensor to view the star field to produce precise rotation measurements.

Research in Focus

Music Science:

REGULAR RHYTHMS HELP CHILDREN WITH DEVELOPMENTAL LANGUAGE DISORDER

A new study led by a Western Sydney University researcher has found that musical rhythms can help children with speech and language processing difficulties in finding their voice by improving their capacity to repeat sentences they just heard.

Source: Hweah, A., Laddby, E., et al. Regular rhythmic primes improve sentence repetition in children with developmental language disorder. *npj Sci Learn* 8: 23 (2023). <https://doi.org/10.1038/s41539-023-0070-1>

PREVALENCE
Developmental language disorder (DLD) affects approximately 3–7% of the population.

CHALLENGES FACED BY CHILDREN WITH DLD
Limitations in language processing result in a struggle to understand others and to efficiently express thoughts, which can lead to lifelong consequences in individuals' academic and social life.

Clinically, sentence repetition tasks are sensitive for DLD diagnosis, as the repetition of grammatically complex sentences is particularly challenging for children with DLD.

HOW WAS THE STUDY CONDUCTED?
French-speaking children with DLD and age-matched children with typical development (TD) aged 5.4 to 13 years listened to regular or irregular rhythms followed by sets of six sentences.

REGULAR RHYTHM
Step 1: Child listens to regular rhythm
Step 2: Child hears a sentence then repeats it out loud
Step 3: Repeat Steps 1 and 2 (for a total of 6 times)

IRREGULAR RHYTHM
Step 1: Child listens to irregular rhythm
Step 2: Child hears a sentence then repeats it out loud
Step 3: Repeat Steps 1 and 2 (for a total of 6 times)

HOW DOES THIS DISCOVERY BENEFIT SOCIETY?
The findings showed improved sentence repetition performance after regular compared to irregular rhythmic primes in children.
This suggests that using rhythmic priming (regular rhythms) during clinical sessions may help to enhance the learning of syntax and performance on syntactic tasks.
This discovery could help supplement and improve current speech therapy guidelines and practices.

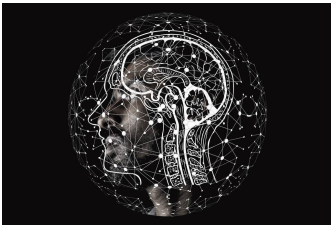
Celebrating our Indigenous Students

This month we are celebrating **Anjilkurri Radley's** eligibility to graduate with PhD. Anjilkurri is the Institute's first Indigenous PhD graduate. We feel privileged to have worked with her on the usefulness of Gesture as Teaching Modality to learn the Gathang Language and congratulate Anjilkurri on her doctoral achievements and success.

Congratulations also to our new PhD student **Ted Vanderfeen** (left) from International Centre for Neuromorphic Systems who was selected to be part of the first cohort of students for Monash University's National Indigenous Space Academy Program for a 10 week internship with NASA's Jet Propulsion Lab in California!



MARCS Insight Series



Our **MARCS Insight** series has continued to feature a range of cutting edge research including using AI-generated synthetic images to drive object responses in the human brain, nurturing Little Multilingual Minds in Australia and the world, how the quality and quantity of parent-child interactions shape linguistic development as well as a promising intervention in residential aged care incorporating virtual reality, exercise and a bit of healthy competition.

We hope you can join us for the next presentation. More info: <http://tinyurl.com/MARCSInsights>

Strengthening Westmead & Parramatta Connections



Did you see our staff at the 2023 Westmead Research Hub Research and Innovation Conference?

Or perhaps you were one of the hundreds of people who attended the Healthy Brain Aging or Babylab booths at the Powerhouse's Family Science Festival in August?

Listen Now

Season 2 of the [BabyLab Podcast](#) hosted by Emma Watkins, continues to gain more listeners each week. Be sure to catch up episodes you've missed or get a sneak peak behind the scenes [here](#).

Dr Gough Lui was also featured on ABC's Health Report program discussing a collaborative project [using gaming to support recovery for people with a brain injury](#).

Professor André van Schaik has been interviewed for the [Brains and Machines podcast](#) by EE Times hosted by Sunny Bains about history of neuromorphic engineering, a new project to help simulate neural and neuromorphic models, and more.



What's coming up?



MARCS Insights Series

Dr Anna Fiveash will be presenting at the MARCS Research Meeting on Tues 31 Oct 11am, Level 4 Seminar Room, Westmead Innovation Quarter as part of our [MARCS Insights Series](#). These meetings are hybrid. Email marcs@westernsydney.edu.au for zoom information.



2023 ICNS NeuroEng Workshop

11-13 December 2023 | St George Sailing Club

The International Centre for Neuromorphic Systems (ICNS) welcomes NeuroEng Association members and guests to join in a 3-day workshop focusing on Computational Neuroscience and Neuromorphic Engineering as well providing a valuable platform for networking and collaboration. [More information here](#).

<https://www.westernsydney.edu.au/marcs>

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