

CogSleep Centre of Research Excellence for Optimising Sleep in Brain Ageing and Neurodegeneration



Newsletter - June 2021



A message from the CogSleep CIA Prof Sharon Naismith

Welcome back to our CogSleep newsletter! I sincerely hope you and your families have been keeping well. It's been a few months since our last newsletter, and I wanted to give you an update on all the great things achieved by our CogSleep team in this last little while.

Please read on for more details on the exciting events we have in store for this year, as well as news on successful grants, publications and media appearances by our CogSleep team.



As always, please send any content for newsletters to our email address: cogsleep.cre@sydney.edu.au and follow CogSleep on Twitter @cogsleep for all the latest updates.

I hope you enjoy this edition of the CogSleep Newsletter!

Warm wishes,

Sharon

News from the Team

Dr Angela D’Rozario featured as an invited international speaker at the ‘Sleep, Circadian Rhythms and Neurodegeneration – a Multidisciplinary Perspective’ Symposium at the 3rd Congress of Asian Society of Sleep Medicine (ASSM), Beijing, China in May 2021.

At this year’s Australian Dementia Forum in May 2021, **Prof Glenda Halliday** featured as a keynote speaker, **Dr Angela D’Rozario** also presented on ‘Objective measurement of sleep in mild cognitive impairment: a systematic review and meta-analysis’, and posters were presented by **Prof Sharon Naismith** and **Jake Palmer** on relationships between sleep and Alzheimer’s biomarkers (from the EPAD Cohort) and on HBA data linking sleep microarchitecture with structural white matter tracts.

Dr Craig Phillips and **Prof Bandana Saini** led a webinar for the Australasian Sleep Association (ASA) in May 2021 titled ‘Clocking Up: What Time Should I Take This Medicine?’.

Dr Craig Phillips and **Prof Sharon Naismith** featured as presenters at the American Thoracic Society (ATS) Symposium – Sleep Disorders: The New Risk Factor for Age-Related Neurodegenerative Diseases. **Dr Camilla Hoyos** was also instrumentally involved in the development of the symposium. All have been invited to a subsequent workshop which will lead to a position paper on OSA and neurodegeneration.

We are delighted to announce that **Prof Sharon Naismith** will join **Prof Ralph Martins** as a member of the Board of the Australian Alzheimer’s Research Foundation.

Dr Craig Phillips, **Dr Camilla Hoyos** and **Prof Sharon Naismith** presented at the ATS Workshop titled ‘The Link between Obstructive Sleep Apnea and Neurocognitive Impairment’.

Prof Sharon Naismith presented at the Australasian Society for the Study of Brain Impairment (AASBI) on “the effect of sleep-wake disturbance in relation to cognition and brain degeneration”.

Clinical CogSleep Fellow Spotlight: Dr Lachlan Stranks

We are delighted to introduce **Dr Lachlan Stranks**. Lachlan completed his medical studies at the University of Adelaide before undertaking his initial medical training at the Royal Adelaide Hospital. Lachlan developed an interest in respiratory medicine during his years as a junior doctor, and commenced Advanced

Physician Training in Respiratory & Sleep Medicine at the Royal Adelaide and Queen Elizabeth Hospitals. He is currently in his final year of advanced training, and has taken up the position of Clinical Sleep Fellow at the Woolcock Institute of Medical Research. Lachlan has a keen interest in sleep medicine, and his current areas of research include sleep-disordered breathing in severe mental illness, disorders of central hypersomnolence in Australian populations, and qualitative differences between at-home and in-laboratory polysomnography.



Lachlan will be joining CogSleep undertaking mood assessments in the HBA Clinic, and training activities, and is looking forward to working with the team.

Grants News

Since the last newsletter, there have been a number of exciting grants awarded to members of the CogSleep team.

Prof Ralph Martins, Dr Stephanie-Rainey Smith and **Prof Sharon Naismith** were successful in receiving funding from Alzheimer's UK, for a large collaborative project seeking to test new digital technologies in ageing, including some digital sleep measures.

Dr Camilla Hoyos has recently been awarded a Heart Foundation Future Leader Fellowship. The fellowship will take place over a four-year period in which she will run a program of research titled "Targeting the heart to optimise healthy brain ageing". This program focuses on understanding how improving aspects of cardiovascular disease and sleep may help slow changes in memory and thinking which are common in dementia.

Congratulations to all!

In the media

Prof Sharon Naismith appeared in the Sydney Morning Herald (26th January 2021), in an article that addressed how an afternoon nap could boost your mental agility. See the article [here](#). She also spoke to Channel 7 news about the WhiteHall study (21st April 2021) which showed that short sleep duration increases the risk for dementia. She appeared in the Sydney Morning Herald (16th May 2021), in an article that addressed how poor sleep increases the risk of cognitive decline and dementia. See the article [here](#). Sharon also made numerous appearances on various radio shows this year to discuss sleep and dementia including Hope Radio Sydney (17th May 2021), 2GB radio with John Stanley (27th January 2021) and ABC Drive with Richard Glover (27th January 2021).

A/Prof Chris Gordon appeared on ABC radio (18th March 2021) at the start of Sleep Awareness Week to discuss insomnia and the importance of getting a good night's sleep. Listen to the full

interview [here](#).

Prof Simon Lewis appeared on Insight on SBS (13th April 2021) to discuss the 'strange things people do while they're asleep'. See the episode [here](#).

Dr Camilla Hoyos featured on Channel 9 (6th June 2021) to discuss the use of melatonin for people at risk of dementia.

Prof Ron Grunstein featured on Channel 7 (2nd June 2021) to discuss the availability of over-the-counter melatonin for Australians aged over 55. See the article [here](#).

Update from the CogSleep Academy

Despite the ongoing trials of 2020 and 2021, the CogSleep Academy members have been busy making the most of their time by publishing! We have had a number of publications from CogSleep Academy PhDs and ECRs in the first half of 2021, including, but not limited to: **Aaron Lam, Carla Haroutonian, Shawn Kong, Jonathon Pye, Zoe Menczel Schrire, Charmaine Diep, Jessica Manousakis, Pratishta Chatterjee** and **Jake Palmer**. Congratulations to all!

Additionally, a number of Academy members presented at the USYD Forefront Ageing and Neurodegeneration Symposia earlier this year, including **Shawn Kong, Zoe Schrire, Jake Palmer, Carla Haroutonian, Yue Yang** and **Aaron Lam**.

We would also like to welcome a new member, **Sam Bramich**, from the University of Tasmania. Sam will be characterising REM Sleep Behaviour Disorder in the ISLAND Cohort and is being supervised by Jane Alty, Anna King and Sharon Naismith.

Finally, congratulations to **Charmaine Diep** and **Jake Palmer** on submitting their PhD theses! Charmaine's thesis examined the efficacy of acoustic stimulation on enhancing slow wave sleep and cognition. Jake's thesis examined sleep, rest-activity rhythms and white matter in older adults at risk for cognitive decline and dementia.

We will of course feature what is set to be another stellar ECR session at our annual symposium, so look out for the details and line up of speakers.

We'd like to take the opportunity to offer a huge thanks to **Jessy Manousakis** and **Zoe Schrire** for all the leadership activities throughout 2020 and 2021.

Funding opportunities

We are excited to announce that the 2021 round of CogSleep CRE **Seed Grants** (up to \$20,000) is open for applications. Information regarding the funding and application process has been provided via email to the CogSleep mailing list. Applications are due by **COB Friday 13th August 2021**.

We are also pleased to announce that the 2021 **\$50,000 ECR Fellowship** will open for applications this week. In addition, we will be re-advertising and offering up to three new **HDR Scholarships** in the coming weeks. More detailed information will be provided in the application

announcement, so please keep your eye out for this email.

If you wish to join our mailing list to see upcoming opportunities, please email cogsleep.cre@sydney.edu.au.

Update on CogSleep Fellows

Dr Pratishtha Chatterjee

An update on blood-based biomarkers for preclinical Alzheimer's disease

A recent study published by Dr Chatterjee, Prof Ralph Martins and colleagues in Translational Psychiatry showed that glial fibrillary acidic protein (GFAP), an astrocytic cytoskeletal protein, was higher ($\approx 60\%$) in the blood in cognitively unimpaired older adults at risk for Alzheimer's disease. Additionally, GFAP along with the known risk factors for Alzheimer's disease, namely, age, sex and apolipoprotein $\epsilon 4$ carrier status, provided a sensitivity=85% and specificity=80% to identify cognitively unimpaired older adults at risk for Alzheimer's disease. These observations could be attributed to a process called "astrogliosis" (i.e., the proliferation of astrocytes) occurring within the long 20-30 year preclinical phase of Alzheimer's disease, however, further validation studies are required. Studies in the future also need to examine GFAP along with a panel of other potential blood-based makers (such as the phosphorylated forms of the protein tau, a major component of the Alzheimer's disease brain pathology called neurofibrillary tangles) to increase the detection sensitivity of this potential blood-based marker for individuals at risk for Alzheimer's disease and specificity against other neurodegenerative diseases. See below for reference to the publication.

Dr Andrew McKinnon

We are delighted to announce that former CogSleep Fellow Andrew McKinnon began a Research Fellowship awarded by the Dementia Australia Research Foundation in conjunction with the Race Against Dementia Fellowship Programme in April 2021. Andrew is co-supervised by CogSleep's Sharon Naismith and Stephanie Rainey Smith as well as Jurgen Fripp from CSIRO. In a sub-study of the Australian Dementia Network, he will determine from actigraphy and oximetry how sleep-wake disturbances contribute to the accumulation and progression of amyloid beta ($A\beta$) and tau pathology over time and will develop and validate statistical and machine learning models for clinical reporting and dementia risk prediction. To facilitate this second aim, Andrew will undergo a secondment in the second year at CSIRO in Brisbane with Jurgen Fripp's Bioinformatics team, where he will undergo training in PET image analysis, machine learning applications, and advanced multimodal neuroimaging data analyses. We look forward to hearing about this project as it progresses!

Jake Palmer

We are so pleased to congratulate Jake Palmer on his joint CogSleep and CSIRO Postdoctoral Fellowship. This will be with the Biomedical Informatics group led by Jurgen Fripp in Brisbane as well as with CogSleep working with Prof Jim Lagopoulos at the University of the Sunshine Coast (USC). In his Postdoc position, he will continue working on projects examining links between neuroimaging, sleep-wake functioning and lifestyle factors that represent potentially modifiable risk factors for cognitive decline and dementia. Jake will still be working in collaboration with the CogSleep team and will shortly lead an invited book chapter on sleep and ageing, in collaboration with Sharon Naismith, Andrew McKinnon and Bei Bei from Monash. Good luck Jake!

Tom Altree

Tom Altree undertook a Clinical Fellowship in Sleep Medicine in 2019 with the CogSleep CRE and was awarded a Fellowship of the Royal Australasian College of Physicians (RACP) at the end of

2019 as a Respiratory and Sleep Medicine Physician. In 2020, he commenced a PhD at the Adelaide Institute for Sleep Health under the supervision of Prof Danny Eckert. His research is focused on assessing airway physiology during sleep. In 2021, he received an outstanding PhD/ECR researcher award from the ASA South Australian Branch 2021 for his clinical trial of noradrenergic and antimuscarinic agents as potential drug treatments for OSA. He is also currently assessing the effects of opioids during sleep in people with COPD. Tom works as a Respiratory and Sleep Physician in the private sector and as a staff specialist at Flinders Medical Centre. He is the ASA representative on the RACP Adult Medicine Division Council.

Update on Ongoing Projects

Sleep Matters Course

Prof Sharon Naismith, A/Prof Christopher Gordon and Dr Shantel Duffy worked with Dementia Training Australia and academics from Queensland University of Technology to develop a course focusing on sleep in residential aged care facilities. The online program called “Sleep Matters” was produced incorporating three modules (i) Understanding sleep, (ii) Assessing sleep, and (iii) Optimising sleep underpinning the learning needs of nurses and care workers in aged care. The free online program was published in late 2020 <https://dta.com.au/online-courses/sleep-matters/> and has since attracted over 365 health professionals. As part of this course, we developed a semi-structured CogSleep questionnaire, that is available for CogSleep researchers and clinicians – please let us know if you’d like a copy to use!

Melatonin Study

Dr Camilla Hoyos and CogSleep Academy HDR Fellow Zoe Schrire are conducting a placebo-controlled, double-blind randomised controlled trial to investigate the role of the sleep hormone melatonin in reducing oxidative stress in the brain linked to dementia. They are looking to recruit 40 participants for this 3-month trial where they will attend the clinic in Camperdown before and after 3 months for MRI, bloodwork, blood pressure and pulse wave velocity measurements. Participants will also complete questionnaires about their mood, cognitive tests and rest-wake activity measurements while wearing an actiwatch. Dr Hoyos and Zoe are seeking participants between 60 and 80 years old who have noticed changes to their thinking and memory. Participants will then complete a 40-minute assessment over the phone to determine if they are in the cognitive bracket of Mild Cognitive Impairment. To date, an additional 31 people are needed to complete the study. If you know of potential participants or are able to assist with advertising the trial, please contact Zoe on 9351 0755 or zoe.schrire@sydney.edu.au.

ReShaped Trial

Plans for the Reducing Sleep Apnoea for the Prevention of Dementia (ReShaped) trial are coming along nicely and include many of our CogSleep sites and collaborators as sites including USYD, Monash (Melinda Jackson), Stephanie Rainey Smith and Ralph Martins (Murdoch and Macquarie). We are also in discussions with University of Tasmania to run ReShaped through their new ISLAND clinic.

CogSleep-Related Projects: Adult Schizophrenia Project

Prof Ron Grunstein, Dr Angela D’Rozario and colleagues in collaboration with Prof Tim Lambert at the Collaborative Centre for Cardiometabolic Health in Psychosis (ccChiP) have recently completed a Medical Research Future Fund (MRFF) Rapid Applied Research Translation (RART)

grant awarded by Sydney Health Partners in 2019. The grant, titled 'Oximetry screening to detect sleep-disordered breathing in severe mental illness (SMI)' was the second pilot study of a novel screening pathway for patients with SMI. Patients with SMI experience impaired sleep health with sleepiness, insomnia and irregular sleep hours resulting in major functional impairment. OSA is common in SMI and can lead to daytime sleepiness, problems with thinking and memory skills, worsening mood and increased cardio-metabolic disease. The MRFF program screened over 150 patients for OSA using home-based finger oximetry. Results of the study will be published in the coming months. An MRFF RART grant was submitted to continue the study in Sydney and expand to regional Australia with sites in Orange, Dubbo, Albury and Wagga Wagga.

Further to the above, **Prof Grunstein, Dr D'Rozario** and Prof Lambert are also undertaking a high-density EEG sleep study on participants with SMI, which will give great insights into sleeping brain activity in schizophrenia and potentially show how we can modify sleep structure to improve memory and thinking in schizophrenia.

Upcoming Events

20 July 2021, Australia and New Zealand Obesity Society Conference. **Prof Ron Grunstein** will be speaking on "Losing sleep over obesity – Can we fix the problem?"

31 July 2021, ASA Hypersomnolence Masterclass. **Dr Lachlan Stranks** will be speaking alongside Woolcock colleagues Dr Sheila Sivam and A/Prof Brendon Yee.

26 August 2021, 4-5pm, Australian Dementia Network (ADNeT) Sleep Webinar. **Prof Sharon Naismith** and **Prof Simon Lewis** will be speaking to a clinical audience on sleep in Alzheimer's disease and Dementia with Lewy Bodies. Keep an eye out on the ADNet website for further information!

8 September 2021, 8-9:30am CDT, Alzheimer's Association International Conference (AAIC) Professional Interest Area (PIA) day. **Prof Sharon Naismith** is Vice Chair of the committee and they will host a PIA day on Sleep and Circadian Rhythms. There will be data blitzes and ISTAART members can submit abstracts, which close on July 8th.

We will hold our annual CogSleep conference on **Monday 13th and Tuesday 14th September 2021, 9:30-2:00pm**. We will also offer an online option for those unable to attend. Expressions of interest to be a part of the organising committee are welcome. Please let us know if you have ideas for a keynote speaker or would like to run a skills workshop for the CogSleep Academy.

Other News

We are delighted to welcome Alessandra Lee to the CogSleep CRE team. Ally is in the final stretch of completing a Masters in Clinical Neuropsychology and will be commencing her PhD under the supervision of **Prof Sharon Naismith** in July 2021. Ally joins the CogSleep CRE team as a research assistant, and will be coordinating many of our meetings and activities.

Publications

[Sleep health management in community pharmacy: Where are we and where should we be heading? Research in social & administrative pharmacy.](#)

Basheti, M. M., Gordon, C., Bawa, Z., Grunstein, R., & Saini, B. (2021). Advance online publication.

[Presymptomatic Dutch-type hereditary cerebral amyloid angiopathy-related blood metabolite alterations.](#)

Chatterjee, P., Fagan, A. M., Xiong, C., McKay, M., Bhatnagar, A., Wu, Y., Singh, A. K., Taddei, K., Martins, I., Gardener, S. L., Molloy, M. P., Multhaup, G., Masters, C. L., Schofield, P. R., Benzinger, T., Morris, J. C., Bateman, R. J., Greenberg, S. M., Wermer, M., van Buchem, M. A., ... Dominantly Inherited Alzheimer Network. (2021). Journal of Alzheimer's disease.

[Plasma glial fibrillary acidic protein is elevated in cognitively normal older adults at risk of Alzheimer's disease.](#)

Chatterjee, P., Pedrini, S., Stoops, E. et al. (2021). Transl Psychiatry.

[Plasma amyloid-beta levels in a pre-symptomatic Dutch-type hereditary cerebral amyloid angiopathy pedigree: A cross-sectional and longitudinal investigation.](#)

Chatterjee, P., Tegg, M., Pedrini, S., Fagan, A. M., Xiong, C., Singh, A. K., Taddei, K., Gardener, S., Masters, C. L., Schofield, P. R., Multhaup, G., Benzinger, T., Morris, J. C., Bateman, R. J., Greenberg, S. M., van Buchem, M. A., Stoops, E., Vanderstichele, H., Teunissen, C. E., Hankey, G. J., ... The Dominantly Inherited Alzheimer Network. (2021). International journal of molecular sciences.

[The efficacy of combined bright light and melatonin therapies on sleep and circadian outcomes: A systematic review.](#)

Cheng, D., Ganner, J. L., Gordon, C. J., Phillips, C. L., Grunstein, R. R., & Comas, M. (2021). Sleep medicine reviews.

[Circadian rhythm sleep-wake disturbances and depression in young people: Implications for prevention and early intervention.](#)

Crouse JJ, Carpenter JS, Song YJC, Hockey SJ, Naismith SL, Grunstein RR, Scott EM, Merikangas, KR, Scott J, Hickie IB. The Lancet Psychiatry (in press), accepted 22/01/2021.

[Acoustic enhancement of slow wave sleep on consecutive nights improves alertness and attention in chronically short sleepers.](#)

Diep, C., Garcia-Molina, G., Jasko, J., Manousakis, J., Ostrowski, L., White, D., & Anderson, C. (2021). Sleep medicine.

[Sleep-disordered breathing in severe mental illness: clinical evaluation of oximetry diagnosis and management limitations.](#)

Espinell, P., Marshall, N., Yee, B. J., Hollis, J., Smith, K., D'Rozario, A. L., Gauthier, G., Lambert, T., & Grunstein, R. R. (2020). Sleep & breathing.

[A critical review of the pharmacological treatment of REM sleep behavior disorder in adults: time for more and larger randomized placebo-controlled trials.](#)

Gilat, M., Marshall, N. S., Testelmans, D., Buysse, B., & Lewis, S. (2021). Journal of neurology.

[Population-based analysis of sociodemographic predictors, health-related quality of life and health service use associated with obstructive sleep apnoea and insomnia in Australia.](#)

Hoon, E., González-Chica, D. A., Vakulin, A., McEvoy, D., Zwar, N., Grunstein, R., Chai-Coetzer, C., Lack, L., Adams, R., Hay, P., Touyz, S., & Stocks, N. (2021). Australian journal of primary

health.

[The association of insomnia disorder characterised by objective short sleep duration with hypertension, diabetes and body mass index: A systematic review and meta-analysis.](#)

Johnson, K. A., Gordon, C. J., Chapman, J. L., Hoyos, C. M., Marshall, N. S., Miller, C. B., & Grunstein, R. R. (2021). *Sleep medicine reviews*.

[Altered heart rate variability during sleep in mild cognitive impairment.](#)

Kong, S., Hoyos, C. M., Phillips, C. L., McKinnon, A. C., Lin, P., Duffy, S. L., Mowszowski, L., LaMonica, H. M., Grunstein, R. R., Naismith, S. L., & Gordon, C. J. (2021). *Sleep*.

[Sleep-dependent memory in older people with and without MCI: The relevance of sleep microarchitecture, OSA, hippocampal subfields, and episodic memory.](#)

Lam, A., Haroutonian, C., Grummitt, L., Ireland, C., Grunstein, R. R., Duffy, S., D'Rozario, A., & Naismith, S. L. (2021). *Cerebral cortex*.

[Pharmacokinetics of exogenous melatonin in relation to formulation, and effects on sleep: A systematic review.](#)

Moroni, I., Garcia-Bennett, A., Chapman, J., Grunstein, R. R., Gordon, C. J., & Comas, M. (2021). *Sleep medicine reviews*.

[Rest-activity functioning is related to white matter microarchitecture and modifiable risk factors in older adults at-risk for dementia.](#)

Palmer, J. R., Duffy, S. L., Meares, S., Pye, J., Calamante, F., Cespedes, M., Hickie, I. B., & Naismith, S. L. (2021). *Sleep*.

[Irregular sleep-wake patterns in older adults with current or remitted depression.](#)

Pye, J., Phillips, A. J., Cain, S. W., Montazerolghaem, M., Mowszowski, L., Duffy, S., Hickie, I. B., & Naismith, S. L. (2021). *Journal of affective disorders*.

[Feasibility of 3 months melatonin supplementation for brain oxidative stress and sleep in Mild Cognitive Impairment – Protocol for a randomised, placebo-controlled study.](#)

Schrire ZM, Phillips CL, Duffy S, Marshall NS, Mowszowski L, Chapman JL, Saini B, Lewis SJG, Naismith SL, Grunstein RR, Hoyos CM. *BMJ Open* (In Press: Accepted 14/01/2021).

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Sweetman, A., Putland, S., Lack, L., McEvoy, R. D., Adams, R., Grunstein, R., Stocks, N., Kaambwa, B., Van Ryswyk, E., Gordon, C., Vakulin, A., & Lovato, N. (2021). *Sleep medicine reviews*.

[Chronic opioid use and central sleep apnea, where are we now and where to go? A state of the art review.](#)

Wang, D., Yee, B. J., Grunstein, R. R., & Chung, F. (2021). *Anesthesia and analgesia*.

Recruitment Ads for CogSleep-Related Studies

Help us to better understand if boosting overnight sleep enhances memory in older people



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E: richard.lim@sydney.edu.au

P: (02) 9114 0443

You may qualify if you are:

- ✓ 50-75 years of age
- ✓ Fluent in English
- ✓ Willing to attend an overnight sleep study

This study has been approved by Sydney Local Health District Ethics Review Committee (RPAH Zone), Protocol Number X19-0158

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Phone : 02 9114 0478

To qualify you must be:

- Over the age of 50
- Fluent in English

This study includes:

- An in-person screening visit with questionnaires and tasks to determine further eligibility
- An overnight sleep study and memory tasks before and after sleep



This study has been approved by The University of Sydney Human Research and Ethics Committee Project Number 2020/867
Advert Version 2.0 02 February 2021

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