

COGSLEEP > COGSLEEP CRE NEWSLETTER - DECEMBER 2021

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



Newsletter - December 2021



A message from the CogSleep CIA Prof Sharon Naismith



As 2021 draws to an end, it's fair to say that it has been another very uncertain year for us all, and I sincerely hope you and your families have been keeping well and safe. Despite these strange conditions, the CogSleep team have continued our work and progress, and we have celebrated numerous fantastic achievements over the past months.

Recently in September, we held our annual CogSleep CRE Symposium via Zoom. It was a great success and a wonderful opportunity to connect and collaborate, as well as see the inspiring work being done by so many throughout our network. Thank you again to all our speakers and chairpersons, as well as everyone who was able to join. Please don't hesitate to email any feedback to cogsleep.cre@sydney.edu.au (<mailto:cogsleep.cre@sydney.edu.au>) so we can plan for our next event!

Please read on for more details on the exciting year we have had, as well as news on successful grants, publications, and media appearances.

As always, please send any content for newsletters to our email address cogsleep.cre@sydney.edu.au (<mailto:cogsleep.cre@sydney.edu.au>) and follow CogSleep on twitter [@cogsleep](https://twitter.com/cogsleep) for all the latest updates.

I hope you enjoy this edition of the CogSleep Newsletter and wish you all a relaxing holiday season and a Happy New Year!

Warm wishes,

Sharon

CogSleep Symposium 2021

The CogSleep Symposium was held virtually over two half days on 13th and 14th September 2021. We had the pleasure to be joined by national and international speakers, together with researchers and clinicians from different disciplines to discuss new initiatives and research developments relating to sleep disturbances in aging and neurodegenerative diseases.

The symposium featured two outstanding international keynote presentations. Assistant Professor Yue Leng from University of California, San Francisco presented an epidemiological perspective on sleep, napping and neurodegeneration. Associate Professor Brendan Lucey from Washington University presented a fascinating discussion on the role of prevention trials in sleep and Alzheimer's disease. The program also showcased the breadth of sleep research occurring in the aging and neurodegeneration field, including dedicated sessions on neurobiology and biomarkers, treatment targets, clinical trials and the links between sleep and cardiovascular disease.

The symposium also offered an excellent opportunity for research students and ECRs from the CogSleep Academy to gather and present their own research. Congratulations to ECR presentation winner Dr Rick Wassing and runner-up Shawn (Dexiao) Kong. Congratulations also to the HDR presentation winner Ely Francis-Pester and runner-up Anna Cai.

We would like to take this opportunity to thank all our speakers for sharing their research and our chairs Prof Sharon Naismith, Prof Ralph Martins, Dr Jade Murray, Dr Hasthi Dissanayake, Prof Simon Lewis, Prof Romola Bucks, Prof Ron Grunstein, Dr Craig Phillips, Dr Camilla Hoyos, Dr Jessica Manousakis and Shawn (Dexiao) Kong for facilitating the smooth running of each session. Lastly, we would like to extend our thanks to the organising committee who made the symposium such a tremendous success!

Neuronal Activity Decreases With Sleep

A **B**

EEG traces for F2, C2, P2, O2 channels over time (0-10s and 0-20s). Below are brain MRI slices with highlighted regions in yellow. Two scatter plots show the relationship between sleep stages and neuronal activity. The left plot shows 'Alpha power' vs 'Delta power' with a negative correlation. The right plot shows 'Alpha power' vs 'Delta power' with a negative correlation. A legend indicates: A: spindles; B: slow waves; green=N2; red=N3/4.

Dang-Vu TT, et al., Sleep 2010; 33:1589

Washington University in St. Louis School of Medicine Department of Neurology

Brendan Lucey

CogSleep Funding Recipients

The 2021 CogSleep HDR Scholarship recipients were announced during the CogSleep Symposium, and were awarded as follows:

- Arina Ridha, Woolcock Institute, for her project 'Temporal associations between regional sleep spindles and slow waves during NREM sleep in older adults with and without MCI'.
- Teha Bahadur Pun, University of Sydney, for his project 'Light to improve sleep, circadian rhythm, cognition and daytime alertness'.
- Emma Stumbles, Woolcock Institute, for her project 'Age and sleep apnoea related changes in sleep quantitative EEG brain activity and longitudinal relationship to cognitive function'.
- Hamish Mundell, University of Sydney, for his project 'The combined influence of sleep and APOE4 on dementia: A comprehensive analysis of association and mechanism'.

The 2021 CogSleep Fellowship recipients were announced during the CogSleep Symposium, and were awarded as follows:

- Dr Prerna Varma, Monash University, for her project 'A personalised digital sleep and circadian management tool to improve cognition in older shift workers'.
- Dr Jade Murray, Monash University, for her project 'Using Mendelian Randomisation methods to understand whether circadian disruption is casually related to dementia'.
- Dr Julia Chapman, Woolcock Institute, for her project 'Novel biomarkers to understand the links between sleep and neurodegeneration in at-risk populations'.
- Dr Jessica Manousakis, Monash University, for her project 'Ocular predictors of sleep and driving in older adults with cognitive complaints'.
- Shawn (Dexiao) Kong, University of Sydney, for his project 'Delineating the neural basis and prognostic value of altered nocturnal heart rate variability in people at risk of dementia'.

Additionally, we introduced the CogSleep Academy Publication Award to recognise the outstanding contribution to our field from the emerging investigators of the CogSleep CRE. Current students (Honours and postgraduate students) and post-doctoral fellows were invited to nominate one research publication for consideration. Winners were announced during the CogSleep Symposium, and were awarded as follows:

- Dr Pratistha Chatterjee, Macquarie University, received the ECR CogSleep Publication Award for her article 'Diagnostic and prognostic plasma biomarkers for preclinical Alzheimer's disease and plasma glial fibrillary acidic protein is elevated in cognitively normal older adults at risk of Alzheimer's disease'.
- Shawn (Dexiao) Kong, University of Sydney, received the HDR CogSleep Publication Award for his article 'Altered heart rate variability during sleep in mild cognitive impairment'.

Congratulations to all.

Grant News

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

Dr Craig Phillips was awarded an NHMRC Ideas Grant for his project titled, 'Understanding brain cleaning in obstructive sleep apnoea'. We are looking forward to hearing of his progress and discoveries regarding brain glymphatics.

Dr Angela D'Rozario was awarded an NHMRC Investigator Grant for her work, 'Investigating sleep biomarkers of cognitive impairment and improving cognitive outcomes through targeted sleep interventions in adults at risk for dementia'.

Prof Sharon Naismith was awarded an NHMRC Leadership 2 Fellowship for her work, 'Improving dementia outcomes with new targets, trials and national standards'.

Prof Ralph Martins, A/Prof Stephanie Rainey-Smith and **Prof Sharon Naismith** were awarded a Research Grant from the Alzheimer's Association for their project titled, 'The sleep ancillary study of the AU-ARROW dementia risk reduction trial'.

The 2021 CogSleep CRE Seed Grant winners were announced during the CogSleep Symposium, and were as follows:

- **Prof Bandana Saini**, awarded \$19,417 for her project 'Assessing sleep and cognitive health in older people through community pharmacies – A triage, patient education and capacity building opportunity in primary care'.
- **Dr Camilla Hoyos**, awarded \$23,421 for her project 'Sleep disturbance in MCI: A pilot study of a cognitive behavioural therapy digital intervention (SUCCEED)'.
- **Dr Yue Yang**, awarded \$10,000 for her project 'Exploratory assessment on correlations between nocturnal hypoxemia and novel neurodegeneration and sleep fluid biomarkers in older adults at risk of dementia'.

Congratulations to all, we look forward to seeing your work develop!

News from the Team

Prof Ron Grunstein was named a 2021 Fellow of the Australian Academy of Health and Medical Sciences. The prestigious fellowship is bestowed on 28 of the country's top medical and health researchers elected by their peers in recognition of their outstanding contributions to the health and medical research landscape.

A number of CogSleep researchers featured as speakers at the virtual Sleep DownUnder 2021 Conference. **Prof Rajaratnam** presented on 'Optimising sleep as a therapeutic target for mental health'. Prof Ian Hickie presented on 'A neurobiological basis for the relationship between sleep and mental health'. **Prof Sharon Naismith** presented on the 'Associations between sleep and Alzheimer's disease biomarkers in the EPAD cohort'.

Prof Sharon Naismith presented at the Australian Society for the Study of Brain Impairment (webinar), November 2021, on 'The effect for sleep-wake disturbance in relation to cognition and brain degeneration'.

Prof Sharon Naismith presented at the Dementia Collaborative Research Centre, October 2021, titled 'How is sleep altered in early neurodegenerative disease? Insights from epidemiology, clinical research and neuroimaging'.

Prof Sharon Naismith presented at the MCI Masterclass, September 2021, titled 'What benchtop memory tests can I use in my practice?'. She also led a MCI Masterclass webinar titled 'Making the MCI diagnosis'.

Very well-deserved achievements, congratulations to all!

In the media

Prof Ron Grunstein appeared on Channel 9 News to discuss the possibility of melatonin becoming available over the counter, <https://www.9news.com.au/national/melatonin-for-sleep-could-be-available-over-the-counter/e26ce6b1-1eb7-499d-819d-1f4746d6a385>. (<https://www.9news.com.au/national/melatonin-for-sleep-could-be-available-over-the-counter/e26ce6b1-1eb7-499d-819d-1f4746d6a385>)

A/Prof Christopher Gordon appeared on Channel 9 News, Sunday Morning and regional stations (18-19 September 2021) to discuss how an innovative smartphone app, SleepFix, designed to treat insomnia is even more effective when connected to a wearable sleep-tracking device like a FitBit.

Dr Camilla Hoyos and **Prof Ron Grunstein's** journal article, "Development and validation of a model for diagnosis of obstructive sleep apnoea in primary care", was featured on the limbic (31 August 2021), <https://thelimbic.com/respiratory/primary-care-osa-model-offers-alternative-to-sleep-specialist-management/>. (<https://thelimbic.com/respiratory/primary-care-osa-model-offers-alternative-to-sleep-specialist-management/>)

A/Prof Christopher Gordon was interviewed on ABC Radio (14-19 September 2021) to discuss all things sleep – and particularly the impact that lockdown is having on people's sleep.

Prof Ron Grunstein was interviewed on The Medical Republic to discuss "Chronic insomnia – what to do when everything fails", <https://medicalrepublic.com.au/chronic-insomnia-what-to-do-when-everything-fails/50509>. (<https://medicalrepublic.com.au/chronic-insomnia-what-to-do-when-everything-fails/50509>)

Update from the CogSleep Academy

It has been a busy time for CogSleep Academy members this year. Congratulations to these members who have published and featured on publications: **Aaron Lam, Alessandra Lee, Anna Cai, Carla Haroutonian, Charmaine Diep, Shawn Kong, Elly Francis-Pester, Jade Murray, Jake Palmer, Jesse Parker, Jessy Manousakis, Prerna Varma and Tiffany Lo.**

Additionally, a number of members presented at the CogSleep Symposium including: **Shawn Kong, Jade Murray, Alex Mladenovic, Samantha Bramich, Anna Cai, Elly Francis-Pester, Zoe Menczel Schrire, Jesse Parker, Aaron Lam and Keith Johnson.** At the symposium, it was announced that **Shawn Kong, Jessy Manousakis, Jade Murray, Prerna Varma and Julia Chapman** were awarded CogSleep fellowships and **Emma Stumbles, Arina Ridha, Teha Pun** and **Hamish Mundell** were awarded CogSleep Academy scholarships. We would like to welcome all of these new members to the academy. **Pratishtha Chatterjee** and **Shawn Kong** was awarded the publication prize and **Elly Francis-Peter** and **Anna Cai** were awarded best research presentation. Congratulations to all!

We would also like to congratulate **Shawn Kong** on submitting his PhD thesis! He examined heart rate variability during sleep in mild cognitive impairment and will continue this exciting research during his CogSleep fellowship.

In terms of activities, we will be planning a Christmas catch-up on zoom in the coming weeks, so stay tuned for details. We are also in the process of preparing a webinar workshop series on life after PhD, which will run early next year with a variety of guest speakers.

Thank you again to **Jessy Manousakis** and **Zoe Menczel Schrire** for their leadership activities throughout the year and wishing all academy members happy holidays and good luck with their research activities.

Upcoming Funding Opportunities

The CogSleep Academy Collaborative Team Project Award was announced at the CogSleep Symposium to further develop the themes of the CRE and enhance cross-institutional collaboration. The selected team will be awarded \$3000-5000 to conduct their project. Stay tuned to hear about the successful recipients!

Upcoming Events

TBC 2022, GP seminar titled 'Sleep and the Ageing Brain – Applying the Evidence'. Dr Catriona Ireland, Geriatric and Cognitive Disorders Physician, will offer a translational approach with a focus on bringing sleep difficulties and sleep assessments into the clinic. More details to come!

Publications



Altered heart rate variability during sleep in mild cognitive impairment.

(<https://pubmed.ncbi.nlm.nih.gov/33306103/>)

Kong SDX, Hoyos CM, Phillips CL, McKinnon AC, Lin P, Duffy SL, Mowszowski L, LaMonica HM, Grunstein RR, Naismith SL, Gordon CJ. (2021). Sleep.

Circadian depression: A mood disorder phenotype. (<https://pubmed.ncbi.nlm.nih.gov/33689801/>)

Carpenter JS, Crouse JJ, Scott EM, Naismith SL, Wilson C, Scott J, Merikangas KR, Hickie IB. (2021). Neuroscience & Behavioural Reviews.

Circadian rhythm sleep-wake disturbances and depression in young people: Implications for prevention and early intervention. (<https://pubmed.ncbi.nlm.nih.gov/34419186/>)

Crouse JJ, Carpenter JS, Song YJC, Hockey SJ, Naismith SL, Grunstein RR, Scott ER, Merikangas KR, Scott J, Hickie IB. (2021). Lancet Psychiatry.

Development and validation of a model for diagnosis for obstructive sleep apnoea in primary care.

(<https://onlinelibrary.wiley.com/doi/10.1111/resp.14122>)

Chapman JL, Hoyos CM, Killick R, Sutherland K, Cistulli PA, Zwar N, Yee BJ, Marks G, Grunstein RR, Wong KKH. (2021). Respiriology.

Diagnostic and prognostic plasma biomarkers for preclinical Alzheimer's disease.

(<https://pubmed.ncbi.nlm.nih.gov/34494715/>)

Chatterjee P, Pedrini S, Ashton NK, Tegg M, Goozee K, Singh AK, Karikari TK, Simren J, Vanmechelen E, Armstrong NJ, Hone E, Asih PR, Taddei K, Dore V, Villemagne VL, Sohrabi HR, Zetterberg H, Masters CL, Blennow K, Martins RN. (2021). Alzheimers Dement.

Feasibility of 3-month melatonin supplementation for brain oxidative stress and sleep in mild cognitive impairment: protocol for a randomised, placebo-controlled study.

(<https://pubmed.ncbi.nlm.nih.gov/33568368/>)

Menczel Schrire Z, Phillips CL, Duffy SL, Marshall NS, Mowszowski L, La Monica HM, Gordon CJ, Chapman JL, Saini B, Lewis SJG, Naismith SL, Grunstein RR, Hoyos CM. (2021). BMJ Open.

On-road driving impairment following sleep deprivation differs according to age.

(<https://www.nature.com/articles/s41598-021-99133-y>)

Cai A, Manousakis JE, Singh B, Kuo J, Jeppe, KJ, Francis-Pester E, Shiferaw B, Beatty CJ, Rajaratnam SMW, Lenne MG, Howard MG, Anderson C. (2021). Scientific Reports.

Sleep microarchitecture but not obstructive sleep apnea is independently associated with cognitive function in only older men of a population-based cohort.

(<https://pubmed.ncbi.nlm.nih.gov/33890335/>)

Parker JL, Appleton SL, Melaku YA, Stevens D, Wittert GA, Martin S, Adams RJ, Vakulin A. (2021). J Sleep Res.

Smart home sensing and monitoring in households with dementia: User-centered design approach. (<https://pubmed.ncbi.nlm.nih.gov/34383672/>)

Tiersen F, Batey P, Harrison MJC, Naar L, Serban A, Daniels SJ, Calvo RA. (2021). JMIR Aging.

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COMMENTS