

# RESEARCH DIRECTIONS

## Gauging a good night's sleep

**Professor Philip de Chazal, from the MARCS Institute, has been awarded funding to investigate more accurate, less invasive ways of monitoring sleep. By advancing the important field of sleep monitoring, this Australian Research Council project will contribute to better care for people living with sleep issues.**

'Science is only beginning to understand the importance of sleep,' says Dr de Chazal. 'Increasingly stressful lifestyles have led to people getting less sleep, with poor sleep being associated with decreased mental performance and increased risk of accidents. It is also associated with health issues such as high blood pressure and weight gain.'

Sleep problems are commonplace. It is estimated as many as 15 per cent of people suffer from sleep apnoea (interruptions of breathing during sleep) and 10 per cent have chronic insomnia. Our knowledge of human sleep patterns, however, remains poor as it is difficult to conveniently measure sleep in the home environment. At the same time, there is an urgent medical need to understand and monitor sleep because sleep apnoea is linked with physical and mental health issues such as heart failure, diabetes and depression.

Dr de Chazal's research will test technologies that are suitable for non-invasive, long-term sleep monitoring against the gold standard, polysomnography (PSG) as used in a sleep clinic. PSG captures high-quality and diverse measurements (heart rate, brain activity, breathing effort, air flow and blood oxygen level), but it constrains the sleeper's movements, must be done in a clinic and is unsuited to more than one or two nights' use, on cost and comfort grounds. On the other hand, much of the convenient, less invasive monitoring technology fails to provide data that is accurate enough for clinical diagnosis.



Dr de Chazal will advance the field of sleep medicine by researching ways of monitoring sleep in the home environment that are both highly accurate and minimally invasive. He aims to achieve this by using multiple types of less invasive sensors and then use the cross-sensor information to improve diagnostic performance. He will test this system in a home-based trial.

Care for chronically ill patients is a big challenge for Western world healthcare systems. This project seeks to promote preventive health by promoting better sleep. It also aims to provide clinicians with low-cost, highly convenient sleep sensors, giving them a greater ability to offer improved care to patients suffering from sleep issues.

**Project Title:** Minimally invasive monitoring of sleep for disease management  
**Funding has been set at:** \$878,988

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