**Boosting Creativity with Sleep engineering**

**Description of Research Opportunity:**We spend 1/3rd of our life asleep, and the brain is very busy during this time.  The neural oscillations of sleep have known restorative functions, and are also critical for memory consolidation and emotional processing.  The NAPS research group studies all of these functions of sleep, (see:  http://sites.cardiff.ac.uk/cubric/research-2-2/neuroscience-and-psychology-lab-naps/).  Potential PhD projects include investigations into ways to manipulate sleep (called ‘sleep engineering’) in order to enhance all of these functions.  Sleep engineering involves both manipulation of oscillations through auditory and electrical (tACS / tDCS) stimulation and manipulation of memory replay (targeted memory reactivation) in sleep.  See my TEDx talk for an easy intro (<https://www.youtube.com/watch?v=9KaMufF0rAY>.  In the [NAPS lab](https://www.cardiff.ac.uk/research/explore/research-units/neuroscience-and-psychology-of-sleep-lab-naps), we are interested in enhancing sleep to improve health (for instance by counteracting the impacts of ageing which lead to reductions in deep slow wave sleep).  We are also interested in manipulating memory consolidation by triggering the replay of selected memories in different combinations and in different sleep stages.  This can lead not only to stronger memory, but to integration of new memories with each other and with existing knowledge, providing a basis for creativity.

We would particularly encourage applicants with a strong background in EEG analysis or other timeseries signal processing. However, candidates with a strong background in Psychology or Cognitive Neuroscience in general are also encouraged.

The Neuroscience and Psychology of Sleep (Naps) lab is a thriving community of computer scientists and sleep researchers studying all aspects of how sleep impacts on cognition (see our nascent [web pages](http://www.cardiff.ac.uk/research/explore/research-units/neuroscience-and-psychology-of-sleep-lab-naps).

Cardiff University’s Brain Research Imaging Centre (CUBRIC) opened in Spring 2016, housing a unique combination of facilities and expertise that will further its world-leading research in Neuroimaging, Cognitive Neuroscience and Biological Psychiatry.  Further details of CUBRIC can be found on our web-page: <http://sites.cardiff.ac.uk/cubric>

**Award:**

The studentships will commence in 1 October 2019 and will cover your tuition fees (at UK/EU level) as well as a maintenance grant. In 2017-18 the maintenance grant for full-time students was £14,553 per annum. As well as tuition fees and a maintenance grant, all School of Psychology students receive conference and participant money (approx. £2250 for the duration of the studentship).They also receive a computer and office space, additional funding for their research, and access to courses offered by the University’s Doctoral Academy and become members of the University Doctoral Academy.

**Eligibility:**

Full awards (fees plus maintenance stipend) are open to UK Nationals, and EU students.

Send a CV and 1-2 page research proposal to Penny Lewis: [lewisp8@cardiff.ac.uk](mailto:lewisp8@cardiff.ac.uk) for more info – please title the email ‘Sleep Engineering PhD’ by June 25th (you will need to apply through a more official channel after I look at your CV).