



UNIVERSITY OF CAPE TOWN



Paediatric Neurosurgery Unit
Division of Neurosurgery
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Advert for Postgraduate degree in Neuroscience (Brain Physics)

A Master's or PhD in Neuroscience project is being offered in the UCT Neuroscience Institute, Division of Neurosurgery.

Scope of the research: Brain Physics

We are looking for prospective students interested in exploring the physics of brain physiology. We have a rich stream of data from high frequency collection of signals (intracranial pressure, blood pressure, brain oxygenation, brain temperature, electrophysiology) with brain chemistry and biomarker data in patients who have acute brain injury. Our interests are diverse – the autoregulation affect on the relationship between blood pressure and intracranial dynamics, predicting intracranial stability from waveform analysis, carbon dioxide reactivity, and differences between adult and paediatric brain physiology. We have a strategic advantage in that we have a sophisticated infrastructure with a large pool of subjects. Over several years we have built this infrastructure to create the largest database of advanced brain monitoring in children and have now extended this to adults. We have collaborations with Cambridge University, who developed a brain physics department that has successfully combined interests in physics and clinical neuroscience. Students will be supported by the NRF SARChI Chair for Clinical Neurosciences for their projects, travel, and engagement with international groups.

Conditions of the award: we are looking for a candidate who

1. Has completed a BSc or MSc in Maths/ Physics/ Biomedical Engineering/ Physiology/ Neuroscience/ Biostatistics within the last 5 years and who has a strong foundation in mathematics and computer literacy.
2. Has not held full-time permanent academic or professional posts
3. Is mobile and able to work flexible hours.
4. Is able to travel for possible work training in Europe.
5. Is focussed, hardworking, flexible and can work independently.
6. Is a South African citizen or already holds a valid student visa for South Africa.

The Fellow will be required to:

1. Clean and curate physiological data files
2. Conduct analysis using in-house software
3. Set up software profiles for use in the ICU
4. Write up research for publication and present at local and international meetings

5. To comply with the University's approved policies, procedures and practises for the postgraduate sector.

Tenure and value:

The value of the bursary will be within the NRF's prescribed range, carries no fringe benefits and is for full time study. The project will run for 2-4 years depending on the level of postgraduate study and with the option to extend if applicable, the position is available from January 2021.

Application procedure:

Please send through a letter of application stating which project you are applying for, areas of expertise and research interests, a full CV, copies of academic transcripts, and the names of 2 referees to Professor Anthony Figaji (Anthony.Figaji@uct.ac.za). Eligible and complete applications will be considered by the Division of Neurosurgery.

The University of Cape Town reserves the right to: • disqualify ineligible, incomplete and/or inappropriate applications, • change the conditions of award or to make no awards at all

Prof Figaji

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