**What is Neuroscience?**

Neuroscience is the study of the nervous system, which is one of the last great frontiers of knowledge. Neuroscience research spans from molecules, through cells and pathways, all the way up to complex human behaviour. Neuroscience integrates physics, chemistry, and biology, with studies of anatomy, physiology, and behaviour including human emotional and cognitive functions.

Neuroscientific research may focus on:
- understanding the human brain and how it regulates the body and behaviour, including giving rise to consciousness;
- finding ways to prevent or cure neurological and psychiatric disorders.

Neuroscientists use tools such as:
- antibodies and gene probes to identify proteins responsible for brain function;
- fluorescent dyes to mark neurons and synapses with specific characteristics;
- microelectrode arrays to study the activity of living neurons in real-time;
- behavioural methods to study the processes underlying behaviour in humans and in animals;
- computational models of neurons and their connections in the brain.

**Careers in Neuroscience?**

Graduates in neuroscience can be found working in the public sector performing scientific research at a University or Research Institute, providing direct and indirect health care at a hospital or clinic, working for the Therapeutic Goods Administration or other government body, teaching at school, TAFE or University. Neuroscience careers in the private sector may be in pharmaceutical companies researching new drugs or supervising drug trials, in patent offices, science journalism, or advertising and communications design, where understanding neural processing of sensory input is very useful.

**Want to find out more?**

See the Neuroscience Honours website for further details and a list of available supervisors.

Neuroscience Honours is co-ordinated by Dr John Power, T: +612 93852910, E: john.power@unsw.edu.au. If you have any questions, please call or email Dr Power. If you are interested in applying for Neuroscience Honours, please download and complete the application form.
Neuroscience Honours

Neuroscience Honours is run jointly by the School of Psychology and the School of Medical Sciences to provide cutting-edge training in the neurosciences. The course is a research-based, full year project with assessment by thesis (75%) and by a course-work component (25%).

The Neuroscience Honours course is open to students who:
- majored in Neuroscience at UNSW, or
- have some background in disciplines allied to neuroscience and conduct a project in the area of neuroscience.

The research project will be supervised by an academic in Medical Sciences or Psychology, or a conjoint member of those schools from an Institute such as NeuRA or the Garvan, or a clinical school in the Faculty of Medicine.

Neuroscience at UNSW Australia

UNSW Australia is recognised as a major centre for Neuroscience Research in Australia. Brain Sciences UNSW is the peak organisation, and is composed of researchers from the medical sciences, psychiatry, psychology, neurology, neurosurgery, biomedical engineering and mathematics. Its researchers are based in the Faculties of Medicine, Science and Engineering, and in the UNSW-affiliated research institutes: Neuroscience Research Australia, Black Dog Institute, and the Garvan Institute for Medical Research.

How can I study Neuroscience?

Training in Neuroscience begins at the undergraduate level and is available as a Major or Specialisation in the Bachelor of Science, Bachelor of Advanced Science or the Bachelor of Medical Science. There are a number of courses that provide the background needed to study neuroscience, but the first NEUR coded course is Neuroscience Foundations at level 2. From here you can progress to advanced undergraduate education with level 3 courses and then to level 4 (Neuroscience Honours) courses. This is one recommended pathway towards postgraduate training at UNSW and affiliated Institutes in the Brain Sciences.

What sort of projects can I do?

Supervisors will have some projects for you to select from, but as the year progresses, you will be more able to direct the research.

Examples of projects conducted by students in previous years include:
- Sleep disturbances in behavioural-variant frontotemporal dementia (bvFTD), which identified the biological correlates of sleep disorder in bvFTD and the impact of sleep changes on emotion processing in this disease.
- Effects of transcranial direct current stimulation on dynamic brain bioenergetics in healthy control subjects, which measured changes in phosphate-containing metabolites in the frontal cortex of healthy subjects.
- Obesity and the neural control of the intestine, which investigated whether the inflammatory state caused by obesity affected sympathetic and enteric nerves, by using video imaging and electrochemical recording techniques.

With supervisors in Psychology, Medical Sciences and the Institutes such as the Black Dog and Neuroscience Research Australia, you will certainly be able to find someone working on a project that will fascinate you.

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