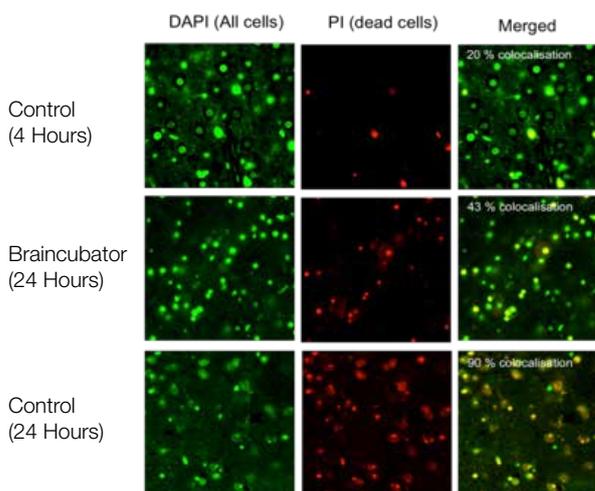


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Braincubator

To simplify brain research, neuroscientists use brain slices. A major concern regarding brain slices is their short lifespan (6-8 hrs) as it limits the time available to study the neuronal properties in the slice. Researchers at the University of Western Sydney have invented a system, which can keep brain slices viable for research for 36+ hours.

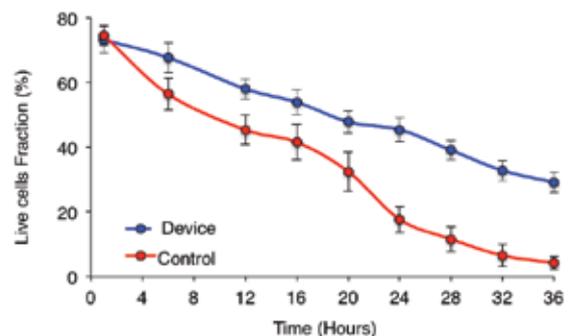
The main reason for the short lifespan is that the brain slices are susceptible to bacterial and environmental degradation and the cells die. Brain slices need an environment that simulates their natural environment to maintain slice metabolic activity and electrophysiological function. A few tools are available to attempt to maximise longevity, however, they are ad hoc.



The System developed by the MARCS Institute researchers (Dr Buskila, Dr Breen and Mr Wright), provides a simulated brain environment, which enhances slice metabolic activity and electrophysiological function by controlling the ionic environment, temperature, oxygen and glucose levels. Importantly, the incubator provides for a bacteria free environment.

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All of these factors can be monitored and controlled leading to an extended brain slice lifespan as could clearly seen from both graph and stained images.



Cost & Efficiency

Neurophysiology experiments can take multiple hours to complete with a single slice. As a result many brain slices are wasted and discarded. Consequently, researchers require more animals and spend more time preparing brain slices (typically 2 hours per animal). Extending the lifespan of these slices would have an immediate impact on researcher efficiency, research costs and the number of animals required.

Standardisation

No standard method of brain slice incubation currently exists. This leads to differences between labs, and even between scientists within individual labs, making the reproduction of results difficult. The Braincubator enhance standardisation via control of temperature, pH and Oxygen levels.

New Research Opportunities

Extending the lifespan of brain slices opens new opportunities to study long-term effects on brain tissue, such as studies of neuronal metabolism and pharmacological dynamics.

Ethics

This Braincubator allow for the same quality and quantity of research to be performed with fewer animals. Numerous laws, policies and regulations are in place governing the use of animals in research. These laws ensure the humane use of animals including the implementation of practical measures to use the smallest number of animals to produce significant results.

Status: Provisional Patent filed

School: The MARCS Institute

Commercialisation Contact Details:

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