Neuroinflammation and nociception in a dish

Researchers from the University of Turin, Italy are seeking partners to help further develop and validate innovative spinal cord slice platforms (SCSPs) for studying nociception and neuroinflammation ex vivo, and for preclinical development of novel therapeutics.

What could the Solution be used for?

The organotypically cultured postnatal (P7-P10) and young adult (P30) spinal cord slice preparations can be used to study pain in the following ways:

- Cultures can be subjected to a surrogate inflammatory challenge and the response of the synapses between different nociceptive neurons can be monitored using multiple endpoints.
- The system can be manipulated by genetic engineering using a gene-gun method.
- Slices can be co-cultured with a biosensor cell line expressing receptors for an inflammatory factor of interest.
- Human iPSCs can also be used as biosensor “sniffer” cells to obtain information on the response of human neurons to slice-derived inflammatory mediators.

Need for collaboration

Collaborations are sought with academics and/or pharmaceutical and biotechnology companies to:

- Expand (e.g. by the use of microfluidic culture systems) and validate SCSPs for preclinical drug development and precision medicine.
- Provide a larger panel of candidate pain-controlling drugs/molecules for testing in SCSPs.
- Explore the utility of the slice model for investigating other disease models.

3Rs impact assessment

Using SCSPs has the potential to reduce the number of animals used in experiments in two ways:

- Multiple slices (up to four) from a single animal can be cultured in each well of a multi-well plate, and subjected to different experimental challenges. A typical in vivo approach would use eight mice per group in four groups, therefore SCSPs have the potential to reduce the number of mice used from 32 to eight.
- SCSPs can be transiently transfected to express one or more proteins of interest, removing the requirement to breed transgenic animals for some experiments.

For more information or to contact the Solution provider: http://www.crackit.org.uk/neuroinflammation-and-nociception-dish