**CN Bio H-KEPS - Advert**

**Programme Description**
Applications are invited for a fully-funded PhD studentship, joining the Hertfordshire Knowledge Exchange Partnership (H-KEP) programme. This integrated project allows graduate research scientists to undertake a 4-year R&D alliance between the University of Hertfordshire (UH) and CN Bio Innovations Ltd. This project fulfils eligibility for a PhD with Industry Experience award.

**Start date**
05/02/2018

**Duration**
1-year Company placement, followed by 3 years PhD programme at UH, in collaboration with the Company.

**Company**
CN Bio Innovations Limited, Welwyn Garden City, Hertfordshire

**Funding**
4-year PhD studentship pays an annual stipend starting at £14,553 in year 1 and covering all UK/EU tuition fees.

**Research Area**

Increasing attrition rates in the pharmaceutical industry have catalysed requirements for new technologies, which can be incorporated into pre-clinical drug development to de-risk compounds pre clinic entry. These new technologies will replace, or augment, current available in vitro cell culture and animal models for assessing drug safety and efficacy. One such technology is microphysiological systems (MPS), also known as organ-on-a-chip. These are small-scale, in vitro cell cultures, which model facets of tissue/organ level function. MPS typically contain multiple cell types, co-cultured to recapitulate in some manner the tissue’s histoarchitecture, via controlled positioning of cells in the device, and/or utilising three-dimensional scaffolds.

MPS can be utilised alone, or connected through fluidic circuits, creating advanced multi-MPS that model interactions between organ systems, allowing greater analysis of molecular pathways and disease mechanisms. Several liver MPS systems already exist, however, most current models are simple mono-cultures of hepatocytes lacking the complexity to analyse interactions between different tissue types and determine how these interactions drive specific phenotypes.

The aim of this project is to establish liver multi-MPS models. Allowing interactions between the liver and other organs to be accurately modelled in vitro. Primarily the interaction of the liver and gut will be modelled, building on CN Bio’s existing POC data. Latterly this project could expand to explore interactions between the liver and other organ systems, particularly, other barrier models (i.e. lung, eye and skin) and potentially incorporate additional cell populations (i.e. immunological cells and/or
gut microbiota) for the elucidation of diseases, identification of metabolic pathways and/or utilised for toxicological studies.

1. To develop and fully characterise the culture of hepatocytes and intestinal cells (i.e. primary cells, commercially-available cell lines) using CN Bio proprietary technology as single organ entities.
2. To develop and fully characterise a microfluidic-based co-culture of hepatocytes and intestinal cells using CN Bio proprietary technology.
3. Combine organ-chip system with additional cell population e.g. immunological cells and/or gut microbiota.
4. Assess and validate the liver-gut model using standard industrial compounds and reagents and compare/develop in silico predicative modelling software.

The ultimate goal will be developing and characterising novel, inter-connected, microphysiological systems (MPS) of human organs for analyses of molecular pathways and disease mechanisms.

**Supervisor Information**
- Dr Kostrzewski (CN Bio)
- Dr Chau (UH)
- Dr Hoffman (UH)
- Dr Hutter (UH)
- Prof Murnane (UH)

**Eligibility**
Minimum requirement of first or upper second-class honours degree (or equivalent) from a recognised institution in Pharmacy, Life Sciences or Engineering. Candidates with industrial/translational experience will be distinctly advantaged.

**Deadline**
Please email hsp@herts.ac.uk for info & to apply. Deadline for applications 7 December 2017.

**Interviews:**
Early Jan

Failure to hear within 2 weeks of submitting your application, unfortunately means you have been unsuccessful.