



Position Title	PhD Studentship – A Smart Biosensing Cell Reservoir For Treatment of Diabetes
Project Abstract	<p>The last decade has resulted in several medical advances that have dramatically improved treatment of Type 1 diabetes (T1D). A critical hurdle preventing the long-term use of implantable technologies for treatment of T1D is the foreign body response (FBR). Implantable glucose sensors are particularly vulnerable to the FBR, with disruption of the native tissue during implantation causing a local inflammatory response that leads to protein absorption to the sensor surface an immediate decrease in sensitivity of up to 80%. This can result in a substantial diffusion barrier leading to device failure of implantable sensors or drug delivery systems. In the case of islet cell encapsulation devices, which typically utilize a semipermeable membrane to allow for selective diffusion while preventing host immune cells from clearing donor cells, the FBR has also prevented this approach from providing a permanent cure for diabetes. Contribution of the FBR to device failure is only appreciated after device failure has occurred. Clearly, new methods for continuous monitoring of the FBR are needed to predict impending device failure.</p> <p>The overall objective of this research is to develop an implantable, replenishable cell encapsulation system with a novel, multimodal biosensor membrane for continuous monitoring of the foreign body response <i>in vivo</i>.</p>
Experience	The PhD position is funded for 4 years, including a monthly stipend and materials and travel budget. Applicants should hold a minimum of an honours bachelor's degree at 2:1 level or equivalent in a relevant subject such as Medicine/Biomedical Engineering. Candidates should also have a strong interest in Biomaterials, 2D Materials, Membrane Technology.
Funding	The studentship will cover fees up to €5,500 pa and a stipend of €18,500 pa
Location	NUIG
Closing Date	Friday 29 th June 2018
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