



## Institute of Technology

### Ciência sem Fronteiras / Science Without Borders

#### Postgraduate Project Template

<b>Institution:</b>	Institute of Technology Sligo
<b>Title of Postgraduate Opportunity:</b> (include level of study)	Treatment of Neurodegenerative disorders by biological therapeutics to the central nervous system via retrograde transit through axons from terminal fields
<b>PI Name &amp; Contact Details:</b>	<p>MacDara Bodeker, B.A., Ph.D.</p> <ul style="list-style-type: none"> <li>• Institute of Technology, Sligo</li> <li>• Ash Lane, Sligo, Ireland</li> </ul> <p>+ 353 (0)71 91 55222  <a href="mailto:Bodeker.macdara@itsligo.ie">Bodeker.macdara@itsligo.ie</a></p>
<b>Department/School:</b>	Life Sciences Department
<b>Research Centre /Group:</b>	The Centre for Biomolecular Environmental and Public Health Research
<b>Research Centre/Group website:</b>	<a href="http://www.itsligo.ie">www.itsligo.ie</a>
<p><b>Brief Summary of PI research / research group /centre activity.</b>            PI Research: Molecular neurobiologist. Development of Neuro Retrograde Transporting Molecules, Molecular Biology, Protein Engineering.</p> <p>Research will be carried out in conjunction with the International Centre for Neurotherapeutics at Dublin City University, Ireland. <a href="http://www.dcu.ie/icnt/about.shtml">http://www.dcu.ie/icnt/about.shtml</a></p>	
<p><b>Brief Description of Masters or PhD Project</b>            Treatment of Neurodegenerative disorders are best treated by the specific delivery of biological therapeutics to the Central nervous system via retrograde transit through axons from terminal fields (the site of therapeutic introduction). Using recombinant technology we wish to generate delivery vehicles incorporating portions of or entire sequences of an inactive form of tetanus toxin which is known to undergo retro axonal transport. This project will aim to pinpoint retrograde transporting signals that are apparently unique to the molecule. Developed molecules will also have utility in retrograde mapping of neural connectivity. Molecular biology and protein purification will take place at IT Sligo. Efficacy of constructs in CNS delivery will be carried out at Dublin City University, where the necessary bioresource facilities and microscopy suites exist.</p>	
<p><b>Key Attributes of Project for Brazilian Postgraduate Students</b>            Bioresource unit and fluorescent microscopy suites are not readily available in Brazil.</p>	

**Name and contact details for project queries, if different from PI named above:**

As above

**Please indicate graduate disciplines which are eligible for application:**

Biotechnology  
Molecular Biology  
Cell Biology  
Neurobiology

**Alignment with Science Without Borders Priority Areas:**

Engineering and other technological areas	
Pure and Natural Sciences (e.g. mathematics, physics, chemistry)	
Health and Biomedical Sciences	✓
Information and Communication Technologies (ICTs)	
Aerospace	
Pharmaceuticals	
Sustainable Agricultural Production	
Green Chemistry	
Oil, Gas and Coal	
Renewable Energy	
Minerals	
Biotechnology	
Nanotechnology and New Materials	
Climate Change	
Biodiversity and Bioprospection	
Marine Sciences	
Productive Inclusion and Social Technologies	
Housing and Sanitation	