## PhD Project Template

**PI name & contact details:**
Dr Dara M Cannon  
Email: [Dara.cannon@nuigalway.ie](mailto:Dara.cannon@nuigalway.ie)  
Phone: 0035391495692  
Address: Anatomy Block B, NUI Galway, University Rd., Galway, Ireland

**School:**
School of Medicine

**Research Centre / group affiliation:**
Galway Neuroscience  

**Research group / centre website:**
Clinical Neuroimaging Laboratory  
[http://www.nuigalway.ie/psychiatry/research/neuroimaging_lab/staff.html](http://www.nuigalway.ie/psychiatry/research/neuroimaging_lab/staff.html)

**PI website / link to CV:**
[http://nuigalway.academia.edu/DaraMCannon](http://nuigalway.academia.edu/DaraMCannon)

**Brief summary of PI research / research group / centre activity (2 or 3 lines max):**
If you are already involved in relevant scholarly activities relating to Brazil, please mention them here.  
The Clinical Neuroimaging Laboratory is part of the psychiatric research programme at NUI Galway. We employ a range of brain imaging techniques to study the neurobiological underpinnings of the major affective and psychotic disorders. We currently focus on anatomical and diffusion magnetic resonance based imaging using computational techniques, shape analysis and tractography. Shape analysis and pattern recognition are techniques we apply to larger imaging datasets collected in collaboration with the biomedical engineering department at NUI Galway (Dr Cathy Scanlon & Dr Liam Kilmartin). We additionally combine these techniques with genetic analyses to better understand the genetic contribution to morphometric abnormalities detected. We also perform pharmacokinetic modelling of molecular positron emission tomography datasets acquired via our US collaborations and have interests in female related mood disorders and the menstrual cycle. Post-mortem brain microscopy is performed using a range of techniques and includes polarized light microscopy to examine the orientation of fibers in the human brain as a means of examining the diffusion based anisotropy signal detected post-mortem and in vivo.

**Title & brief description of PhD project (suitable for publication on web):**
**Title:** Pattern Recognition in Clinical Neuroimaging of Psychiatric Disorders  
**Description:** This project will examine the performance and future potential of pattern recognition and machine learning tools applied to clinical neuroimaging datasets of anatomical and diffusion based magnetic resonance images of the human brain from populations with psychiatric disorders. The goal is to assess performance of these methods in classifying disease using whole brain and parcellation based approaches. Students competent in computing skills should apply and programming experience or prior use of matlab would be an advantage.
Unique selling points of PhD project in NUI Galway:
This project will involve an established and productive multi-disciplinary team including biomedical engineering, neuroscience, the clinical neuroimaging team and psychiatry. The student will be supported by the NUI Galway structured PhD in neuroscience including development of academic skills, career guidance and with access to neuroscience modules.

Name & contact details for project queries, if different from PI named above:
Dr Cathy Scanlon
Email: Cathy.scanlon@nuigalway.ie
Phone: 0035391495465
Website/CV: http://nuigalway.academia.edu/CathyScanlon

Please indicate the graduates of which disciplines that should apply:
Engineering, Biomedical Subjects, Science

Ciência sem Fronteiras / Science Without Borders Priority Area:
Please indicate the specific programme priority area under which the proposed PhD project fits - choose only one (tick box):

<table>
<thead>
<tr>
<th>Engineering and other technological areas</th>
<th>Pure and Natural Sciences (e.g. mathematics, physics, chemistry)/Physical Sciences (Mathematics, Physics, Chemistry, Biology and Geosciences)</th>
<th>Health and Biomedical Sciences / Clinical, Pré-clinical and Health Sciences</th>
<th>Information and Communication Technologies (ICTs), Computing</th>
<th>Aerospace</th>
<th>Pharmaceuticals</th>
<th>Sustainable Agricultural Production</th>
<th>Oil, Gas and Coal</th>
<th>Renewable Energy</th>
<th>Minerals, Minerals Technology</th>
<th>Biotechnology</th>
<th>Nanotechnology and New Materials</th>
<th>Technologies for Prevention and Mitigation of Natural Disasters</th>
<th>Bioprospecting and Biodiversity</th>
<th>Marine Sciences</th>
<th>Creative Industry</th>
<th>New technologies in constructive engineering</th>
</tr>
</thead>
</table>

Please indicate which of the following applies to this project (referring to Science Without Borders arrangements):

Suitable only as a Full PhD (Y/N): Y
Available to candidates seeking a Sandwich PhD arrangement (Y/N): N
Suitable for either/Don’t know: N