Risk factors for development and progression of Primary Brain Tumours-a donor funded PhD

Supervisors

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Overview

The University of Bristol is offering a 3-year full time PhD in research around primary brain tumours to start in October 2017. The award covers a stipend (£18,000 per year), tuition fees (£4,121 in 16/17) and a consumables budget of £2,300 per year.

The studentship is based with the Brain Tumour research group at the School of Clinical Medicine and IMEG. For further information please see the websites below.

http://www.bris.ac.uk/social-community-medicine/

http://www.bristol.ac.uk/clinical-sciences/research/neurosciences/research/brain-tumour/

The project:

At present there is little knowledge of the causes of primary brain tumours such as glioma, which has an overall 5 year survival of 20% and there is an urgent need for research in this area. The only risk factors currently widely accepted are genetic cancer pre-disposition syndromes such as Li-Fraumeni syndrome and previous exposure to radiotherapy. Some speculation surrounds a number of hypothesised brain tumour risk factors including smoking, type II diabetes and epilepsy, but it is uncertain whether these associations reflect causality, bias or confounding.

Mendelian Randomization (MR) is a statistical methodology that uses genetic variants to test whether observational associations between environmental risk factors and disease represent causal relationships (Davey-Smith & Hemani, 2013).

Aims & Objectives

- To perform Mendelian Randomization of modifiable environmental exposures of glioma and to determine molecular intermediates
- To perform targeted NGS sequencing of candidate brain tumour biomarkers identified by MR.

Methods

A search of PubMed articles will be conducted to identify previously published observational studies and meta-analyses describing an association between risk factors and glioma incidence. Genetic instruments for the identified risk factors will be prepared by extracting publicly available GWAS summary data from the largest corresponding European study (non-instrumentable risk factors will be excluded). Using two-sample Mendelian randomization, we will use these genetic instruments to appraise the causal relevance of the identified risk factors for incidence of glioma. We will examine molecular intermediates in an MR framework, and also undertake laboratory investigation of novel biomarkers we

identify using MR, using targeted Next Generation Sequencing in conjunction with the University of Heidelberg.

References

1. Davey Smith G, Hemani G (2014). Mendelian randomization: genetic anchors for causal inference in epidemiological studies. Hum Mol Genet, 23(R1), R89-R98.

Candidate requirements: Applications are welcome from high performing individuals across a wide range of disciplines closely related to natural sciences, biostatistics, genetics, bio-chemistry, mathematics and computer science who have, or are expected to obtain, a 2.i or higher degree. Applications are particularly welcome from individuals with a relevant research Masters degree. The candidate must be available to start full time PhD studies in October 2017.

How to apply:

Please make an online application for this project at http://www.bris.ac.uk/pg-howtoapply. Please select 'Faculty of Health Sciences/School of Clinical Sciences PhD' on the Programme Choice page. Under Funding, identify `Brain Tumour Donor funded PhD` as your fee payer. Under Research Details, provide the names of both project supervisors listed above.

Please provide a current CV, covering letter, certified copies of degree certificates and transcripts, and two academic references.

Only applicants from the UK are eligible for this programme.

Closing date: 5pm 31st March 2017

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