BIRMINGHAM CITY
Faculty of Health, Education and Life Sciences

The Faculty of Health, Education and Life Sciences (HELS) is based at our City South Campus. The Faculty has a strong focus on the training of health and education professionals with a rapidly growing life sciences portfolio.

HELS is making major investments in growing the quality and volume of research across its three constituent Schools (The Schools of Education and Social Work, Health Sciences, and Nursing and Midwifery) through investments in academic staff and researchers, doctoral students and new labs and equipment. Excellence in Nursing, Health Sciences and Education is essential for the development of new solutions to major societal challenges including the Ageing Population; Sustainability and Health and is driven by the faculties two research Centres: The Centre for Studies in Practice and Culture in Education (CSPACE) and the Centre for Social Care, Health and Related Research (CSCHaRR).

Graduate Research & Teaching Assistants (GRTA):

GRTA opportunities at Birmingham City University provide you with an opportunity to study for a PhD whilst gaining experience as an Assistant Lecturer on a funded, four-year programme. The GRTA payments consist of two elements:

1. 0.75 GRTA DTG - tax-free stipend paid monthly and has a current (2019/20) value of £11,257 per annum. The bursary is renewable annually for up to 48 months in total, subject to you making satisfactory progression within your PhD research.

2. 0.25 fixed term contract of employment (Assistant Lecturer) - renewable for up to 48 months in total, subject to satisfactory performance and progression within your PhD research. Please note that the pro rata salary for 2017-18 will be £7,213 (and this may be subject to some taxation).

This funding model also includes a FT Home fees studentship (£4,327 for 2019-20) for up to 4 years, subject to you making satisfactory progression within your PhD research.

If you are interested in a career in academia, working as a GRTA enables you to develop a range of transferable skills while building up vital work experience in your field.

GRTA opportunities are open to UK, EU and Overseas applicants. All applicants will receive the same stipend irrespective of fee status, however international applicants may be required to meet the difference in fee costs from their own funds.

How to apply

The closing date for applications is 23.59 on Wednesday 1st May 2019.

To apply, please complete the project proposal form and then complete the online application where you will be required to upload your proposal in place of a personal statement.

You can find further details on studying for a PhD and details of how to apply here

Project title: The Football Gene Project – The practical application of total genotype scores in professional football. (REF: GRTAFOOT)

Contact:

The successful candidate will be supported by an interdisciplinary research team, consisting of Dr Adam Kelly, Dr David Hughes, Dr Loukia Tsaprouni, and Dr Ian Varley. For further information please contact the Director of Studies, Dr Adam Kelly, via Adam.Kelly@bcu.ac.uk or +44 (0)121 331 7092.

Overview:

The genetic make-up of the performer is suggested to account for approximately 50% of overall physical performance potential, although these estimations may vary across specific performance components, with the predicted genetic influence on performance ranging from 14% to 81% (Williams & Folland, 2008). Single nucleotide polymorphisms (SNPs) represent common variations in the DNA sequence between individuals, potentially altering translation of the corresponding protein (Ahmetov & Fetodovskaya, 2015). For example, a SNP in ACTN3 termed R577X (rs1815739) has been shown to alter the production of α-actinin-3, a protein found in type-II muscle fibres (Yan et al., 2016) which can modify muscle force production (Kikuchi & Nakazato, 2015), muscle fibre composition (Vincent, De Bock, Ramaekers, Van den Eede, Leemputte, Hespel, & Thomis, 2007) and overall muscle mass increase achieved from training (Kikuchi & Nakazato, 2015). Despite this, a summary of 17 studies (N = 1982) conducted by Ahmetov and Fetodovskaya (2009) demonstrated a positive association between the ACTN3 RR genotype and elite power performance in 12 of these studies (N = 1484), with no association found in 5 studies (N = 498). The authors reviewed 120 genetic markers linked to elite athletic status, finding at least 1 piece of conflicting research in 81 of 91 SNPs that were replicated by 2 or more studies. As such, the role of individual SNPs within elite athlete status remains unclear (Webborn et al., 2015). Additionally, single genetic markers used for talent identification (Williams, Miah, Harris, Montgomery, & Wackerhage, 2012) and/or for exercise prescription (Vlahovich et al., 2017) are currently deemed inappropriate. Williams and Folland (2008) coined the term 'Total Genotype Score' (TGS), which was generated by the quantification of the combined influence of 23 SNPs associated with endurance performance. Egorova, Mustafina, Gabbasov, and Ahmetov (2014) demonstrated a significantly higher TGS for 246 elite (Russian Premier League), sub-elite (Second and Third Division) and non-elite (Russian Premier League Youth) Russian professionals (52 ± 17.6) when compared to 872 Russian controls (41.3 ± 15.5; $p < 0.0001$) using a TGS derived from only four SNPs. No significant difference was observed between 51 elite athletes (52.1 ± 21.1), 81 sub-elite athletes (51.0 ± 14.1) or 114 non-elite athletes (52.5 ± 17.6), suggesting that using a TGS may not be sensitive enough in predicting elite soccer status within

It is likely that a vast number of genes will be available for use in TGSs in the future, with the number of publications per year relating to sports genomics going from zero in 1997 to one-hundred and thirty in 2012 (Ahmetov & Fetodovskaya, 2015). Approaches that incorporate not only polygenic TGS, but also apply weighted algorithms to these scores represent a potentially more accurate approach towards individualised predictions to training response (Monnerat-Cahli, Paulucio, Moura Neto, Silva, Pompeu, Budowle, & Santos, 2017) as per the model used by Lall, Magi, Morris, Metspalu and Fischer (2017) who identified a 3.45 times more accurate TGS for predicting type 2 diabetes when utilising one of six algorithmic scores generated (95% CI: 2.31–5.17).

The purpose of this study will be to determine whether the TGS' provided by genetic testing companies for their utility in professional football. The study is a quantitative cross-sectional research study with a deductive approach. By measuring relevant environmental, psychological, sociological, physiological, technical, and tactical attributes, it is anticipated that this project will identify significant factors to support greater individualised coaching and the talent development process in professional football. There is an expectation that the successful applicant will be able to work independently, to gather, interpret, and analyse relevant genetic / TGS data. Please use the relevant information above to form your own research proposal as part of the application process.

The program of work will involve:

- Liaising with professional football clubs to facilitate and conduct the collection of DNA samples and relevant developmental variables.
- Conducting large scale genetic analysis.
- Working with large data set to perform novel statistical analysis.

Person specification:

Essential –

- An undergraduate degree (2.2 or above) in a related discipline
- An interest in genetics, biosciences, talent development, skill acquisition, sports coaching, and / or sport science
- Available to work evenings and weekends due to the demands of potential data collection requirements

Desirable –

- A post-graduate degree in a sport-related discipline
- Previous experience as a Geneticist
- Experience in conducting quantitative research methods, alongside a strong understanding of SPSS or R software

References:

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