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## **Developing Next-Generation Sequencing multiplexes for Birds of Prey: A pilot study for non-human forensics and conservation biology**

A 4year iCASE PhD studentship, fully funded for UK / EU students, is available at the University of Leicester, UK , in conjunction with Illumina (UK) as part of the **BBSRC Midlands Integrative Biosciences Training Partnership (MIBTP)**.

Supervisors: Dr Celia A May, Prof Mark A Jobling, Dr Jon H Wetton (University of Leicester) and Nicola Oldroyd (Illumina, UK).

Informal enquiries to primary supervisor Dr Celia May ([cam5@le.ac.uk](mailto:cam5@le.ac.uk)).

Full details of the iCASE MIBTP programme, and how to apply can be found at the MIBTP website:

<http://www2.le.ac.uk/colleges/medbiopsych/research/Postgraduate%20Opportunities/mitbp-at-the-university-of-leicester>

<i>Application Deadline:</i>	6 January 2016
<i>Interviews:</i>	Week commencing 25 January 2016
<i>Start Date:</i>	26 September 2016

### *Project Description:*

Over the last decade, NGS has revolutionised biology allowing cost-effective characterisation of whole genomes; this holds great promise as the next innovation in forensic analysis too. Illumina has developed a human forensic NGS kit that allows simultaneous testing of multiple autosomal and Y-specific STRs, mtDNA and single nucleotide polymorphisms (SNPs). This multi-target approach conserves biological material whilst maximizing discrimination and efficiency. This same approach could be applied to animal and plant forensic evidence allowing both human and non-human tests to be performed using a common platform, bioinformatics pipeline, and ultimately reporting procedure.

This iCASE studentship will explore the approach as applied to birds of prey. Theft from the wild for resale to the falconry trade has been a lucrative undertaking and DNA testing via classical approaches has already led to many court cases in the UK. However, nowadays, forensic service providers cannot support such specialised tests but an NGS approach could circumvent this. Furthermore, since birds of prey are indicator species of the environment, the developed multiplexes may also be a useful tool for molecular

ecologists and conservation biologists. The project will involve mutation rate analysis to establish exclusion probabilities, creation of population reference databases, and multiplex design, validation and implementation on the Illumina MiSeq platform.

The industrial partner, Illumina is a global leader in genomics, developing and manufacturing platforms and associated consumables as well as providing bioinformatics solutions for modern day analyses of genetic variation. The successful applicant will undertake a placement within Illumina's UK specialist forensic genomics division during which they will

- receive comprehensive practical training on the Illumina NGS platforms,
- be trained in NGS data interpretation, specifically in the context of forensic analysis and case reporting, using ForenSeq analysis software and other data analysis pipeline packages as appropriate,
- be placed within one of Illumina's development teams, working alongside highly skilled application scientists to develop high quality commercial laboratory skills, e.g. working to appropriate ISO accreditation standards,
- be involved in commercial sales and marketing activities such as seminars and conferences with the opportunity to present on project findings,
- be able to take advantage of Illumina internal training programs to gain a wider understanding of all Illumina-supported applications, techniques and technologies.

To reflect industry practice, a performance-dependent annual supplement to the student stipend may be negotiated with Illumina after the first year. Travel and subsistence costs for attendance at and support of Illumina sales and marketing events will also be met.

*Eligibility criteria in brief:*

Full funding (University fees, training grant and a salary) is available to UK/EU citizens living in the UK during the three-years preceding the scholarship. Those living abroad in that period can be awarded a fees-only studentship (including the training grant).

A 1st or a 2.1 degree in a relevant field (a 2.2 plus Master's degree or 3+ years relevant post-graduate experience may be eligible). Evidence of quantitative training (AS or A level Maths, IB Standard or Higher Maths, or University maths/statistics course).

Those with degrees from abroad may be eligible if their qualifications are deemed equivalent.

Applicants are strongly advised to check their eligibility at:

[http://www2.warwick.ac.uk/fac/cross\\_fac/mibtp/pgstudy/phd\\_opportunities/application/#Eligibility](http://www2.warwick.ac.uk/fac/cross_fac/mibtp/pgstudy/phd_opportunities/application/#Eligibility)