

UNIVERSITY OF CAMBRIDGE
DEPARTMENT OF VETERINARY MEDICINE
RESEARCH ASSOCIATE IN VETERINARY HEALTH INFORMATICS

Background Information

The Department of Veterinary Medicine, also known as the Veterinary School, is situated adjacent to the city centre of Cambridge on Madingley Road, on the University's West Cambridge Site. The site currently houses the Department of Physics (Cavendish Laboratories), the Nanoscience Centre, the new Physics of Medicine facility and the Gates Computational Science centre, sections of the Department of Engineering, residential accommodation, and a nursery. The site is being further developed to provide new purpose built accommodation for science and technology departments, as well as a centre of excellence meeting centre. The main building of the Department incorporates the Queen's Veterinary School Hospital. Further details about the Department are available at <http://www.vet.cam.ac.uk>

Job context

The Queens Veterinary School Hospital (QVSH) currently employs multiple databases for accounts (AT Veterinary System), laboratory information management system (LIMS) (a legacy system provided by Technidata, and a trial system provided by Autoscribe), clinical pathology (Filemaker Pro), imaging (Visbion PACS), and most recently for discharge and diagnostics data (CRIS). In addition, there is a large amount of patient files in hardcopy only. We wish to develop an integrated medical records database (IMRD), to draw into a single, searchable database all the data relating to QVSH patients from these data sources, in order to assist research projects conducted within QVSH and the Department of Veterinary Medicine (DVM).

Role

The role holder will be responsible for a challenging programme of linking current and additional datasets. S/he will liaise with different groups within QVSH and DVM, working closely with clinicians, researchers, technical and administrative staff ('stakeholders'). Initially, the role will involve assessing the information and knowledge needs of the stakeholders (for example, as 'user stories'), and the current data infrastructure. The IMRD will house a wide range of data types, including clinical assay results and raw files, images, normal web documents (text), and potentially, research data such as genetic sequences. Integration of the existing databases will be accompanied by quality control of the data, in particular the assessment of the integrity of the 'hospital number' as a unique patient identifier. The system will be developed on the basis of open source components, and consist of an SQL data backend, a data abstraction layer, communication modules, and custom

document types for a web-based content management system. Based on the stakeholders needs, metadata will be generated in order to assist in specific queries, such as longitudinal follow-up of specific patients. The role holder will also be responsible for developing a front-end to the integrated database for regular queries. In the longer term, the role holder will research and advise on mechanisms for digital storage, indexing, and retrieval of hard copy patient files. Significant investment has already been made in computer hardware, including computer workstations in consultation rooms to assist capture of electronic medical records in real time, a high-performance database server, with an associated development workstation and laptop computer.

Although significant effort will be required to accomplish the main goal of creating a single, searchable database, the role holder will be encouraged to assist in the analysis and interpretation of the data for research purposes. To this end, within the first six months of the post, demonstration projects will be tested using the integrated database. Examples may include text mining of discharge and referral letters to extract medical information, and establishment of an infrastructure for facilitating case-control studies through defining similarity measures (or 'kernels') for different data types (images, text, time series data, etc.). It is hoped that significant advances in research will be made through the establishment of an integrated medical records database, and depending on performance, the role holder will be encouraged to seek further funding to develop health informatics within the DVM.

The role holder will report to the Principal Investigator responsible for the Bioinformatics Research Group.

Key Responsibilities

- Develop an understanding of the existing databases and the modes of data stored therein, and liaise with providers of individual databases
- Develop, set up, maintain, backup the database
- Administrate database server
- Document database (with others) including manuals and data dictionaries and other meta-data essential for highly curated datasets
- Plan and implement quality checks on data, including report generation
- Champion the acquisition and linkage of different datasets
- Develop visualisations and analytical tools to facilitate the use of the database for research purposes

Database Management responsibilities

- Ensure proper security and governance of all data holdings, demonstrating compliance with Data Protection legislation, and other legal requirements
- Open access for collaboration
- Plan and organise a system of access to bespoke data subsets for analysis by self and others
- Merge and prepare datasets for statistical analysis involved in demonstration projects

Person specification

- highly motivated team player
- well organised and able to focus on several priorities
- excellent interpersonal skills
- excellent verbal and written communication skills

Other

The role holder will participate in the academic life of the DVM, including attending any research seminars or research meetings as appropriate

For interested candidates there are the following opportunities:

- To undertake own research
- To assist in writing for publication
- To present at academic conferences
- To assist in grant applications

Job descriptions cannot be exhaustive, and the role holder may be required to undertake other duties, which are broadly in line with the above key responsibilities.

Qualifications

Essential:

- PhD in Computer Science, Bioinformatics or a related scientific field; or comparable combination of education and experience.
- Significant experience with open source Relational Database management systems (e.g. MySQL, PostgreSQL, SQLite), database administration, SQL query design and optimisation, database normalisation, security, versioning, and transaction logging.
- Significant demonstrated experience with Linux to be able to install, update, and set up web services, and content management systems.
- Expert knowledge of programming in Python, and web design with JavaScript, HTML, CSS, and AJAX.

Desirable:

- Interest in integrating medical data of diverse types with statistical analysis and visualisation using R.

Leave Entitlement

There is an entitlement to paid annual leave of 33 days plus public holidays in any one academic year. The periods or period of leave must be agreed, in advance with the Head of the Institution.

The period for calculating entitlement for holiday is the academic year, i.e. 1 October to 30 September.

Contract Period

The appointment will be for a period of one year and will be subject to a 6-month probationary period.

Stipend

The pensionable scale of stipends for a Research Associate is £27,428.00 to £35,788.00 Appointment on the scale is made according to qualifications and experience.

Hours of Work

Your hours of work should be agreed between yourself and your Head of Institution. As a guideline the General Board expect the average full time working week to be in the region of 37 to 40 hours a week.

Equal Opportunities

The University of Cambridge is committed to a policy and practice which require that entry into employment with the University and progression within employment be determined only by personal merit and by the application of criteria which are related to the duties of each particular appointment and the relevant stipend or salary structure.

No applicant for an appointment in the University, or member of staff once appointed, will be treated less favourably than another on the grounds of sex (including gender reassignment), marital or parental status, race, ethnic or national origin, colour, disability, sexual orientation, religion or age. If any employee considers that he or she is suffering from unequal treatment, he or she may make a complaint which will be dealt with through the agreed procedures for dealing with grievances.

Part-Time Working & Disability

The University has policies on arrangements for part-time work and disability. These can be accessed on the University website at <http://www.admin.cam.ac.uk/offices/hr/policy/> should any applicant have specific requirements at interview they should contact Melissa Large as a matter of urgency.

Pre-employment Checks

An offer of employment will be conditional upon the satisfactory outcome of a pre-employment health check. Whether an outcome is satisfactory will be determined by the University.

No Dogs on Site Policy

Please note that it is the Department's policy that members of staff and students joining the Department are not allowed to bring dogs on site.

Application Procedure

Applicants should supply the following documents:

- A letter of application stating areas of interest
- A current Curriculum Vitae
- A completed CHRIS/6 application form

For a CHRIS/6 application form contact Melissa Large on 01223 337055, or download from <http://www.vet.cam.ac.uk/news/>

Applications should be sent for the attention of Melissa Large, Department of Veterinary Medicine, Madingley Road, Cambridge, CB3 0ES in order to reach her no later than the closing date of 26 February 2012 or as word attachments to vetmed@hermes.cam.ac.uk, quoting the PN reference number in the subject

Interviews for the post will be held on 15 March 2012.