## PhD Research Fellowship in Lab on a Chip for Pathogen Analysis available at Faculty of Science and Engineering, University of Hull (UK)

supervisor: Prof. Nicole Pamme  
location: School of Mathematics and Physical Sciences (Chemistry)   
 University of Hull (UK)

**background**: Pathogen infection is a big burden in the developed as well as developing world affecting millions each year with symptoms ranging from mild discomfort to a threat to life. A large challenge in managing pathogen treatment is that fact that pathogen analysis is hampered by lengthy procedures, often involving selective culturing of samples that may take several days. One promising technique for faster pathogen analysis is fluorescence *in-situ* hybridization (FISH), which allows the identification of microbial cells by fluorescence microscopy directly in a sample of interest in less than 3 h. However, due to low numbers of cells present in the clinical samples, pre-enrichment steps are required before the FISH procedure can be carried out, which results in full analysis taking one day.

**aim of project**: In this project we will investigate microfluidic-based methods for fast pathogen cell pre-enrichment in blood samples and subsequent trapping in defined locations for FISH analysis. Pathogen cell enrichment procedures will include inertial microfluidics, as well as magnetic or acoustic trapping forces. For analysis, we will employ biochemistry developed by one of the ITN partners (Biomode), based on peptide nucleic acid (PNA) or locked nucleic acid (LNA) which are more robust and specific compared to conventional DNA probes. Furthermore, in collaboration with our parnters in Frankfurt, we will develop miniaturised platforms with immobilised adhesins to study binding and interactions to host-receptors. The post holder will be trained in a highly interdisciplinary manner, gaining experience of microfluidic device design and fabrication, physical principles of cell separation and bioanalysis of pathogens.

**requirements:** The successful candidate must hold a BSc in Biochemistry/Chemistry or a related discipline and ideally an associated Masters or an equivalent level of professional qualifications or experience. Candidates must comply with both EU and the Hull University eligibility criteria. Due to the EU rules to promote mobility, you are not eligible for a position in a country where you have lived (worked, studied) for more than 12 months in the last 3 years. You are thus eligible for this position no matter what your nationality, unless you have studied or worked in the Sweden for more than 12 of the last 36 months. For applicants finishing or who have just finished their degree, this typically means that you can be graduating from any university except a UK university.

Further details on this project are available from Professor Nicole Pamme ([n.pamme@hull.ac.uk](mailto:n.pamme@hull.ac.uk)) and at [www.hull.ac.uk/chemistry/pamme](http://www.hull.ac.uk/chemistry/pamme) and [www.pammegroup.org](http://www.pammegroup.org). Please consult further details about the [post](file:///C:\Users\516641\AppData\Local\Microsoft\Windows\INetCache\IE\KODNK2RM\Research%20Band%206%20-%20JD%20and%20Spec%20Template.docx) and the Hull University [PhD programme](http://www.hull.ac.uk/Choose-Hull/Study-at-Hull/Admissions/Postgraduate/Entry-requirements.aspx).

**Job Description**

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| Job Title: | PhD Researcher |
| Faculty/Department: | Science and Engineering / Chemistry |
| Reporting to: | Prof. Nicole Pamme |
| Duration: | Fixed term, 3 years |
| Job Family: | Academic |
| Pay Band: | 6 |
| Benchmark Profile: | Research Band 6 |
| DBS Disclosure requirement: | N/A |
| Vacancy Reference: | ESR14 |

**Details Specific to the Post**

**Background and Context**

The position has arisen as a result of a successful application for an EU-funded Marie Skłodowska-Curie Actions (MSCA) Innovative Training Networks (ITN) programme on *‘Viral and Bacterial Adhesin Network Training (ViBrANT)’*. VibrANT will bring together 15 Early Scientific Researchers (ESRs) based in academia and industry in seven EU countries. Each ESR will study approaches to improve our understanding of adhesion biology, to detect infections at the earliest possible stage, and thus to meet the threat posed by new and (re)emerging pathogens.

Each ESR will have a full contract of employment and will be studying for a PhD as part of their employment for a period of three years. Each ESR will carry out two secondments at partner institutions, consisting of 9 academic institutions, 1 non-profit research institute, 3 SMEs, and 1 large enterprise. Each ESRs will have a personal development plan and comprehensive training providing for exceptional scientific and career development using through summer schools, workshops, a programme for outreach and science communication, as well as online training. This multidisciplinary and intersectoral training will enable the ESR to acquire the necessary skills to translate fundamental research into technologies with a strong positive impact on European socio-economic development and the care of patients with infectious diseases and forming a cross-European network.

The successful candidate will be based at the University of Hull in School of Mathematics and Physical Sciences joining the reserach [Prof. Nicole Pamme](http://www.pammegroup.org/), and will also work closely with the two co-investigators on the project, Dr Alex Iles in Chemistry who manages our newly refurbished [Lab-on-a-Chip Fabrication Facility](https://pammegroup.org/facilities/) and Dr Charlotte Dyer in Biomedical Sciences. The candidate will join a vibrant cohort of PhD students, PostDocs and academics studying lab-on-a-chip devices for chemistry and life science applications.

### Specific Duties and Responsibilities of the post

Applications should be made through the ViBrANT website, www.vibrant.itn.eu . The closing date for applications is 4th January 2018. Applications should include a 1 page summary of a previous research project and copies of certificates where appropriate. Candidates can identify their favourite project and up to two alternative projects with the ViBrANT consortium. Two letters of recommendation on the ViBrANT form should be sent independently by your referees to vibrant.application@leeds.ac.uk

In your covering letter please refer directly to the criteria, given in the person specification below.  Applications are assessed by the selection panel according to these criteria.

**GENERIC JOB DESCRIPTION**

The job duties and responsibilities listed below are intended to describe the general nature of the role. The duties and responsibilities and the balance between the elements in the role may change or vary over time depending on the specific needs at a specific point in time or due to changing needs in the department. Candidates should note that there may not be an immediate requirement to carry out all the activities listed below.

### Overall Purpose of the Role

This is an entry level post and may be suitable for those planning to train and develop their research skills so that they may take on a more senior research post in the future.

Research Staff at this level will assist an individual research leader or team to carry out a particular study or studies.

The research assistant will receive close supervision and direction from more senior colleagues and will receive academic, pastoral support and guidance which may include specific training, career counselling and mentoring.

The main focus of the work will involve the generation or collection of data using standard methods which have been developed by others. The role holder will assist with analysis and interpretation of results and the drafting of research reports and publications.

**Main Work Activities**

1. Pro-actively contribute to the research project and conduct own research to include:

* Gather, prepare, analyse and interpret data
* Conduct literature and database searches
* Write up and present own research results

1. Contribute to the management of research projects to include:

* Contribute to the planning of projects
* Plan own research activity within the framework of the agreed programme

1. Prepare reports and papers describing the results of the research for both internal and external publication to include:

* Contribute to the production of research reports and publications
* Present information on research progress and outcomes to bodies supervising research

1. Work positively with colleagues in the research team and other collaborators and partners and support staff on routine matters both inside and outside the University

* Make internal and external contacts to develop knowledge and understanding and form relationships for future collaboration.
* Actively participate as a member of the research team which will involve attending and contributing to relevant meetings.

1. Provide guidance as required to support staff and any project students who may be assisting with the research.
2. Demonstrate evidence of own personal and professional development including:

* Appraisal, induction and performance reviews
* Participation in training and development activity
* Maintenance of links with professional institutions and other related bodies

### Additionally the post holder will be required to:

* Fulfil the employees’ duties described in the University’s health and safety policies and co-operate with the health and safety arrangements in place within the department. May be required to undertake specific health and safety roles on request e.g. Display screen equipment assessor, departmental safety officer, fire warden
* Show a commitment to diversity, equal opportunities and anti-discriminatory practices This includes undertaking mandatory equality and diversity training
* Comply with University regulations, policies and procedures

**PERSON SPECIFICATION – Research Band 6**

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| **Specification** | **Essential** | **Desirable** | **Examples Measured by** |
| **Education and Training**  Formal qualifications and relevant training | * Working towards a PhD in relevant discipline * BSc, BA or Masters degree in relevant discipline |  | Application  Interview  Other |
| **Work Experience**  Ability to undertake duties of the post | **Evidence of:**   * Data collection * Analysis and interpretation of results * Drafting research reports, participating in scientific conferences and contributing to drafting scientific publications |  | Application  Interview  Other |
| **Skills and Knowledge**  Includes abilities and intellect | **Evidence of :**   * Collaborative working and networking to enhance and develop research | * Membership of Departmental Research Committee or equivalent | Application  Interview  Other |
| **Personal Qualities**  Includes any specific physical requirements of the post – (subject to the provisions of the Equality Act 2010) | **Evidence of:**   * An expectation to positively contribute to University activities and initiatives including open days, graduation ceremonies etc and willingness to undertake administrative activities * Working in an open and transparent way, providing information and communicating effectively with colleagues * Collaborative working, particularly on interdisciplinary activities * Continuous Professional Development. |  | Application  Interview  Other |