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**Faculty of Science**

**Centre for Enzyme Innovation, School of Biological Sciences**

**SENIOR RESEARCH FELLOW (ENZYME ENGINEERING – MOLECULAR DYNAMICS)**

**ZZ005305**

**Information for Candidates**

**THE POST**

Please see the attached job description and person specification.

**TERMS OF APPOINTMENT**

Full-time

Fixed-term

Salary is in the range from £39,609 to £48,677 per annum and progress to the top of the scale is by annual increments payable on 1 September each year. Salary is paid into a bank or building society monthly in arrears.

Working hours are normally from 8.30 a.m. to 5.15 p.m. Monday to Thursday and 8.30 a.m. to 4.15 p.m. Friday with one hour and ten minutes for lunch. As this post is research based, working hours will vary depending on the needs of the project so a flexible approach is required. Specific working hours will be agreed once an appointment has been made. Overtime is not normally payable but time off in lieu may be given.

Annual leave entitlement is 35 working days in a full leave year. The leave year commences on 1 October and staff starting and leaving during that period accrue leave on a pro-rata basis. In addition, the University is normally closed from Christmas Eve until New Year’s Day inclusive and on bank holidays.

The Appointee will be entitled to join the Local Government Pension Scheme. The scheme's provisions include a final salary based, index-linked pension with an option to exchange some pension for a lump sum on retirement together with dependants’ benefits. Contributions by the employee are subject to tax relief.

There is a probationary period of six months during which new staff are expected to demonstrate their suitability for the post.

It is a condition of the appointment for the proper performance of the duties of the post that the appointee will take up residence at a location such that they are able to fulfil the full range of their contractual duties. This residential requirement will be expected to be fulfilled within twelve months of taking up the appointment. The University has a scheme of financial assistance towards the cost of relocation, details of which can be found on the University website:

<http://www.port.ac.uk/departments/services/humanresources/recruitmentandselection/informationforapplicants/removalandseparationguidelines>

There is a comprehensive sickness and maternity benefits scheme.

**All interview applicants will be required to bring their passport or full birth certificate and any other 'Right to Work' information to interview where it will be copied and verified.** The successful applicant will not be able to start work until their right to work documentation has been verified.

Please note if you are the successful candidate once the verbal offer of employment has been made and accepted, references will be immediately requested. It is the University’s policy that all employment covering the past three years is referenced. A minimum of two references is required to cover this three-year period of employment or study (where there has been no employment). One of your referees must be your current or most recent employer.

The successful candidate will need to bring documentary evidence of their qualifications to Human Resources on taking up their appointment.

To comply with UKVI legislation, non-EEA candidates are only eligible to apply for this post if it has been advertised for a total of 28 days.

If the position has a requirement for Disclosure and Barring Service check (DBS), this will be stated in the advert. The DBS Application Form will be provided once the selection process has been completed.

All applications must be submitted by 23:59 (UK time) on the closing date published.



**UNIVERSITY OF PORTSMOUTH – RECRUITMENT PAPERWORK**

1. **JOB DESCRIPTION**

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| **Job Title:** | Senior Research Fellow  (Enzyme Engineering – Molecular Dynamics) |
| **Grade:** | 8 |
| **Faculty/Centre:** | Science |
| **Department/Service:**  **Location:** | Centre for Enzyme Innovation (CEI)  School of Biological Sciences |
| **Position Reference No:** | ZZ005305 |
| **Responsible to:** | Principal Investigator(s)/CEI Director/Head of School |
| **Responsible for:** | Post-Doctoral staff and postgraduate students within the CEI research group |
| **Effective date of job description:** | March 2019 |

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| **Purpose of Job:** |
| **Overview**  To successfully design, manage and deliver research projects and related activities on behalf of the research leader, and to develop their own research projects. Liaise and network with local, national and international collaborators, and other relevant professionals. Design and manage collaborative experimental research sub-projects and generate high-quality data, including detailed analysis and interpretation. Lead and contribute to writing high-quality joint papers for research journals and material for publications. Lead and contribute to grant writing with UKRI, industrial and US funding bodies. Contribute to the growing research culture in the School of Biological Sciences, and specifically the newly established Centre for Enzyme Innovation (CEI), where the post will be based.    **The Local Environment and Team**  The recently-established CEI creates a flagship research hub focused on delivering transformative enzyme-enabled solutions for circular recycling of plastics. The unique approach of the CEI pipeline is to Discover new enzymes from the environment that break down plastics; Engineer these enzymes and their production mechanisms to optimise their activity, stability and yield; and Deploy these enzymes through industrial-scale production and processing. The website address is:  <https://www.port.ac.uk/research/research-centres-and-groups/centre-for-enzyme-innovation>  Funded by a wide range of external sources, including BBSRC, NERC, EPSRC, Leverhulme Trust and the U.S. Department of Energy’s National Renewable Energy Laboratory (NREL), the pipeline is built on our innovative technological advances and a strong IP portfolio, combined with significant national and international academic and industrial collaborations. This has resulted in a number of high-profile successes including novel lignocellulose degrading enzyme discoveries impacting on biofuel production, and the engineering of an enzyme, PETase, which can digest some of the world’s most commonly polluting plastics.  The Senior Research Fellow opportunity is available within the Engineer – Enzyme group of the CEI pipeline. The Senior Research Fellow’s practical work will be conducted within the CEI which will include access to high-end computing facilities (<http://www.sciama.icg.port.ac.uk/>) to complement our state-of-the-art laboratory facilities.  **Project and Role**  A major challenge in the engineering of improved enzymes for the depolymerisation of solid substrates, such as plastics, is the development of our understanding of how biomolecules interact at surfaces. We aim to determine the key interactions at the enzyme-surface interface by the application of *in silico* modelling. This will not only help us to identify these key dynamic interactions, but will also directly inform our engineering pipeline. It, therefore, provides the exciting prospect of using these computation studies to guide our experimental programmes of work which, in turn, can help to validate and refine our computational approaches.  The project combines *in silico* techniques, such as surface modelling and molecular dynamics, with biochemical characterization, structural biology and protein engineering that will enable the creation of new industrially relevant enzymes to convert natural and man-made polymers into chemicals with significant economic value. The main role of the Senior Research Fellow will be to apply and develop computational approaches for predicting the properties and catalytic performance for a range of our most promising enzymes. We anticipate this will require the use of cutting-edge *in silico* methods and, as such, the successful candidate will be encouraged to enhance her/his experience and training at relevant conferences, workshops and courses.  The Senior Research Fellow will be expected to design and develop new projects, to participate in drafting of manuscripts, and to present findings at workshops and conferences. Additionally, the Senior Research Fellow will be expected to lead and participate in the design, drafting, submission and management of grant applications. Participation in the reporting duties for ongoing grants and facility access will also form a part of the role.  The Senior Research Fellow will play a key part in the design and execution of the work plan for the University of Portsmouth component of this international project. The Senior Research Fellow will undertake a substantial experimental programme drawing upon their existing skills and upon skills that they will be expected to develop during the programme. The Senior Research Fellow will operate with a substantial degree of autonomy and will supervise postgraduate research students in the group (Masters and PhD).  The Senior Research Fellow will engage with teaching duties that relate to their research area, including running final year undergraduate workshops and masters-level specialist structural biology workshops. In addition, they will support the delivery of a limited number of lectures in biotechnology and/or biomolecular science, as required by the Head of School.  **References**   * Austin, H.P., Allen, M.D., Donohoe, B.S., Rorrer, N.A., Kearns, F.L., Silveira, R.L., Pollard, B.C., Dominick, G., Duman, R., El Omari. K., Mykhaylyk, V., Wagner, A., Michener, W.E., Amore, A., Skaf, M.S., Crowley, M.F., Thorne, A.W., Johnson, C.W., Woodcock, H.L., McGeehan, J.E., Beckham, G.T. (2018) Characterization and engineering of a plastic-degrading aromatic polyesterase. *PNAS* 115(19):E4350-E4357. * Mallinson, S.J.B., Machovina, M.M., Silveira, R.L., Garcia-Borràs, M., Gallup, N., Johnson, C.W., Allen, M.D., Skaf, M.S., Crowley, M.F., Neidle, E.L., Houk, K.N., Beckham, G.T., DuBois, J.L., McGeehan, J.E. (2018) A promiscuous cytochrome P450 aromatic O-demethylase for lignin bioconversion, *Nature Communications* 9: 2487. * Kern M, McGeehan JE, Streeter SD, Martin RN, Besser K, Elias L, Eborall W, Malyon GP, Payne CM, Himmel ME, Schnorr K, Beckham GT, Cragg SM, Bruce NC, McQueen-Mason SJ. (2013) Structural characterization of a unique marine animal family 7 cellobiohydrolase suggests a mechanism of cellulase salt tolerance. *PNAS* 18;110(25):10189-94 |

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| **Key Responsibilities:** |
| 1. To design, manage and be responsible for the delivery of research projects (on their own and on behalf of the Principal Investigator), ensuring that the aims and objectives are met. 2. To present research project findings to a variety of stakeholders and to write papers for research journals and materials for publication. 3. To contribute as PI or Co-I on new grant applications related to the work of the CEI. 4. To take on an overview role for the training and delivery of specialist techniques. 5. To identify and actively pursue potential sources of research income.   **Management Responsibilities**   1. In line with the research project aims and objectives, the role holder is required to plan, prioritise and organise their own workload. 2. To lead a research group on behalf of an academic and to develop and lead a research group of their own. 3. To have day-to-day responsibility for directing research staff and postgraduate students within the Project Team. 4. To assign tasks and allocate workloads to deliver projects in a timely fashion. 5. To communicate with team members and liaise and network with relevant others, to ensure effective working relations. 6. To liaise with the Principal Investigator to ensure the efficient operation of the Research Group. 7. To contribute to the operational planning and development of the CEI, including coordination of project work. 8. To lead team meetings when required, providing relevant and timely information in order to aid decision making. 9. To investigate performance, disciplinary and grievance matters when necessary following University procedures. 10. To conduct performance & development review (PDR), recruitment, induction and training of staff and regular reviews of PGR student progress, where appropriate. 11. To deputise for the Principal Investigator, where appropriate. 12. To represent the School of Biological Sciences and the Research Group at meetings, where appropriate.   **Additional expectations of the role holder**   1. To provide information, appropriate to the role, to relevant stakeholders. 2. To solve problems that occur during the research project applying knowledge of subject area. 3. To develop and communicate methodologies and design data gathering and analytical techniques that can be used by others in order to analyse, interpret and evaluate research data. 4. To deliver short one-off training sessions or lectures such as explaining how to conduct literature, database searches and other experimental approaches. 5. To analyse research data and develop new evaluation methods, select existing methodologies determining when they should be applied. 6. To participate in and contribute to a performance & development review (PDR), ensuring that work produced is in line with the CEI/School/Faculty/University aims. 7. To comply with the University's Health and Safety Policy and pay due care to own safety and the safety of others. Report all accidents, near misses and unsafe circumstances to line management. 8. To support the University's commitment to equality, diversity, respect and dignity, creating an environment in which individuals will be treated on the basis of their merits, abilities and potential, regardless of gender, racial or national origin, disability, religion or belief, sexual orientation, age or family circumstances. 9. Any other duties as required by the PI and / or Head of School. |

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| **Working Relationships:** |
| Managed by the Principal Investigator.  Working with other researchers in the Research team within the School of Biological Sciences and the Faculty of Science as well as with research collaborators in the local, national and international groups named above.  Liaising with Head of School, Associate Head (Research), research/academic colleagues and support/technical staff on day-to-day issues.  Managing research students operating in the same laboratory. |

1. **PERSON SPECIFICATION**

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| **No** | **Attributes** | **Rating** | **Source** |
| **1.** | **Specific Knowledge & Experience** |  |  |
|  | Recent or ongoing research experience in computational biochemistry | E | AF, S |
|  | Practical knowledge of atomistic and coarse-grain simulation methods as applied to biological systems. | E | AF, S |
|  | Research experience of collecting quantitative data | E | AF, S |
|  | Recent or ongoing research experience in a related field | E | AF, S |
|  | Previous experience of successfully managing a research project through to completion | E | AF, S |
|  | Practical knowledge of molecular dynamics software (e,g. GROMACS / AMBER) | E | AF, S |
|  | Experience of writing or co-writing funding applications | E | AF, S |
|  | Experience of writing research publications | E | AF, S |
|  | A strong publication record in relevant areas | E | AF, S |
|  | Knowledge of relevant Health & Safety requirements in a laboratory setting | E | AF, S |
|  | Experience in programming and scripting languages | D | AF, S |
|  | Previous experience of managing staff | D | AF, S |
|  | Previous experience of supervising the training of Masters and/or PhD students | D | AF, S |
|  | A track record of successful funding as principal or co-investigator | D | AF, S |
| **2.** | **Skills & Abilities** |  |  |
|  | Ability to anticipate and solve problems when they occur | E | AF, S |
|  | Ability to plan, organise and prioritise workloads | E | AF, S |
|  | Good communication and interpersonal skills | E | AF, S |
|  | Good report writing skills | E | AF, S |
|  | Statistical data analysis skills | E | AF, S |
|  | Excellent oral presentation skills | E | AF, S |
|  | Ability to communicate fluently in English to a scientific standard | E | AF, S |
|  | Project and laboratory management skills | E | AF, S |
| **3.** | **Qualifications, Education & Training** |  |  |
|  | Completed PhD in relevant subject or equivalent professional experience | E | AF, S |
|  | Relevant publications in leading peer-reviewed journals | E | AF, S |
|  | Significant relevant postdoctoral research experience | E | AF, S |
| **4.** | **Other Requirements** |  |  |
|  | Ability to motivate and engage others in research | E | AF, S |
|  | Ability to work on own initiative and as part of a team | E | AF, S |
|  | Ability to work to tight deadlines | E | AF, S |

**Legend**

Rating of attribute: E = essential; D = desirable

Source of evidence: AF = Application Form; S = Selection Programme (including Interview, Test, Presentation)

1. **JOB HAZARD IDENTIFICATION FORM**

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| **Please tick box(s) if any of the below are likely to be encountered in this role. This is in order to identify potential job related hazards and minimise associated health effects as far as possible. Please use the** [**Job Hazard Information**](http://www.port.ac.uk/departments/services/humanresources/occupationalhealthservice/jobhazardinformation/filetodownload,164407,en.doc) **document in order to do this and give details in the free text space provided.** | | | |
| 1. International travel/Fieldwork |  | 13. Substances to which COSHH regulations apply (including microorganisms, animal allergens, wood dust, chemicals, skin sensitizers and irritants, welding fume) |  |
| 1. Manual Handling (of loads/people) |  | 14. Working at height |  |
| 1. Human tissue/body fluids (e.g. Healthcare settings, First Aiders, Nursery workers, Laboratory workers) |  | 15. Working with sewage, drains, river or canal water |  |
| 1. Genetically Modified Organisms |  | 16. Confined spaces |  |
| 1. Noise > 80 DbA |  | 17. Vibrating tools |  |
| 1. Night Working   (between 2200 hrs and 0600 hrs) |  | 18. Diving |  |
| 1. Display screen equipment |  | 19. Compressed gases |  |
| 1. Repetitive tasks (e.g. pipette use etc) |  | 20. Small print/colour coding |  |
| 1. Ionising radiation/ non-ionising radiation/lasers/UV radiation | | 21. Soil/bio-aerosols |  |
| 10. Asbestos and or lead | | 22. Nanomaterials | |
| 11. Driving on University business: mini-bus (over 9 seats), van, bus, forklift truck, drones only) | | 23. Workplace stressors (e.g. workload, relationships, job role etc) | |
| 12. Food handling | | 24. Other (please specify) | |

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**Completed by Line Manager/Supervisor:**

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| **Name (block capitals)** | Prof. John McGeehan |
| **Date** | 8th March 2019 |
| **Extension number** | 2042 |

Managers should use this form and the information contained in it during induction of new staff to identify any training needs or requirement for referral to Occupational Health (OH).

Should any of this associated information be unavailable please contact OH (Tel: 023 9284 3187) so that appropriate advice can be given.