Senior Research Associate
University of Oxford

Job Title Senior Research Associate

Department (Bio)Mechanical Engineering

https://weickenmeierlab.com

Institution University of Oxford

Oxford, Oxfordshire, United Kingdom

Date Posted May 19, 2025

Application Deadline Jun. 16, 2025

Position Start Date Available Immediately

Job Categories Post-Doc

Academic Field(s) Mechanical Engineering

Engineering Mechanics

Bioengineering (all Bio-related fields)

Job Website https://my.corehr.com/pls/uoxrecruit/erq_jobspec_version_4.display_form?p_company=10&p_in

Apply By Email info@weickenmeierlab.com

Job Description

We are seeking to appoint a highly motivated Senior Research Associate in Multiphysics Modelling of

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Brain Health. You will be part of an interdisciplinary team of researchers with the primary aim to understand the impact of age, trauma, and neurodegenerative diseases on the brain's unique form and function. We pose that brain shape changes result from continuously evolving microstructure that may be affected by neurodevelopment, age, degeneration, and injury. We seek to uncover fundamental mechanisms of healthy and accelerated brain aging by coupling neurobiology and mechanics to create multiphysics-informed predictive models of the brain. Specifically, our approach combines finite element modelling, mechanical characterization of brain tissues, and medical image analysis. The group's long-term vision is to impact clinical practise by identifying characteristic manifestations of age, trauma, and disease on the brain's form and function.

You will be expected to dedicate your time to i) identifying physiological manifestations and physics-based biomarkers that allow to differentiate between healthy and accelerated brain aging; ii) creating multiphysical constitutive models of cortical tissues degeneration during aging and injury; iii) utilizing longitudinal medical image data to infer brain aging and injury mechanisms; and iv) studying the potential relationship between exposure to head impacts and the development of neurodegenerative diseases such as Alzheimer's, Parkinson's and related dementias later in life.

Reporting to the Principal Investigator, you will help creating a healthy and vibrant research environment within The Podium Institute for Sports Medicine at the University of Oxford. This will involve leading, devising, coordinating, and supervising research projects in this area, leading and/or contributing to the work involved in the collaborations with project partners, guidance to researchers and students, and applying for further funding to underpin the research.

Specific Duties

- Contribute and drive the continuous preparation of peer-reviewed journal articles, scientific reports, and presentation of papers and posters at conferences and seminars.
- Take on leadership roles within the research group including (i) coordinating activities with senior researchers and post-doctoral research associates, (ii) mentoring and supporting DPhil students, and (iii) advising master's projects and other student-led research projects.
- Identify and validate mechanics-based biomarkers associated with the manifestation of brain aging, traumatic brain injury, and neurodegenerative diseases.
- Supervise the development of a virtual twin of the brain - a framework we will use to simulate and predict brain changes across the lifecycle.

- Lead efforts on multiphysics constitutive modelling of brain aging, neurodegenerative disease, and traumatic brain injury with a focus on long-term brain shape changes.
- Develop registration-based algorithms to quantify the spatiotemporal changes of the brain from longitudinal medical images.
- Research on methods to analyse potential causes of injury from multimodal dataset (i.e., imaging data, mouth guard recordings, etc.) and build predictive finite element models.

Additional Duties

- Contribute ideas for new research projects and facilitate new research collaborations within the Podium institute, the University of Oxford, and industrial partners.
- Develop ideas for generating research income and help raise research funds through grant applications.
- Act as a source of information and advice to other members of the group on scientific protocols and experimental techniques.
- Carry out collaborative projects with colleagues in partner institutions and research groups.
- The researcher may have the opportunity to undertake ad-hoc paid teaching (this includes lecturing, demonstrating, small-group teaching, tutoring of undergraduates and graduate students and supervision of master's projects in collaboration with principal investigators). Permission must be sought in advance for each opportunity.
- Liaise with funding bodies and provide information to project stakeholders and represent the research group at external meetings/seminars, either with other members of the team or alone.
- Any other duties appropriate with the role.

EEO/AA Policy

Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at: https://compliance.admin.ox.ac.uk/job-applicant-privacy-policy. The University's Policy on Data

Protection is available at: https://compliance.admin.ox.ac.uk/data-protection-policy.

The University's policy on retirementhe University operates an Employer Justified Retirement Age (EJRA) for very senior research posts at **grade RSIV/D35 and clinical equivalents E62 and E82**, which with effect from 1 October 2023 will be 30 September before the 70th birthday. The justification for this is explained at: https://hr.admin.ox.ac.uk/the-ejra.

For **existing** employees on these grades, any employment beyond the retirement age is subject to approval through the procedures: https://hr.admin.ox.ac.uk/the-ejra.

There is no normal or fixed age at which staff in posts at other grades have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

Equality of opportunity

Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact	Johannes Weickenmeier
	Department of Engineering Science
	University of Oxford
	Roosevelt Dr
	Oxford, Oxfordhsire
	United Kingdom

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Contact E-mail   info@weickenmeierlab.com