

Research Role Profile

<b>Job Title:</b>	<b>Clinical Research Fellow in Neuromodulation Sleep and Dementia</b>
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<b>Responsible to:</b>	Professor Derk-Jan Dijk
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<b>Responsible for:</b>	Not applicable
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<b>Job Summary and Purpose:</b>
To undertake research in accordance with the specified research project(s) under the supervision of the principal investigator.

<b>Main Responsibilities/Activities</b>
<p>To undertake a range of research activities within a specified research area, assuming responsibility for specific areas of projects and making use of new research techniques and methods, in consultation with the research award holder or supervisor. This may include fieldwork, interviews, laboratory experimentation, critical evaluation and interpretation, computer-based data analysis and evaluation or library research.</p> <p>Using initiative and creativity to identify areas for research develop new research methods and extend the research portfolio. Analysing and interpreting results of own research. Write up results and prepare papers for submission to appropriate journals and conferences, and other outputs as required and/or appropriate. Attend appropriate conferences for the purpose of disseminating research results of personal development. The post holder may also contribute to writing bids for research grants and will contribute to collaborative decision making with colleagues in areas of research.</p> <p>Continually to update knowledge and develop skills, and translate knowledge of advances in the area into research activity.</p> <p>To plan and manage own research activity in collaboration with others. To carry out administrative tasks associated with specified research funding, for example risk assessment of research activities, organisation of project meetings and documentation. Implementation of procedures required to ensure accurate and timely formal reporting and financial control.</p> <p>To contribute to teaching in the Faculty by carrying out student supervision and/or demonstrating within the post holder's area of expertise and under the direct guidance of a member of departmental academic staff, as appropriate.</p> <p>The post holder may occasionally be required to supervise more junior research staff.</p>

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### Person Specification

#### The post holder must have:

A doctoral degree in a relevant discipline (although individuals who have almost completed a doctoral degree may be appointed). Consideration may also be given to individuals who do not hold a doctoral degree but have required skills based on a number of years' experience in specified / relevant fields

The post holder will have authority over some aspects of project work and must be capable of providing academic judgement, offering original and creative thoughts and be able to interpret and analyse results.

### Relationships and Contacts

Direct responsibility to the principal investigator or academic supervisor. The post holder may be asked to serve on a relevant Faculty committee. There may be additional reporting and liaison responsibilities to external funding bodies or sponsors. The post holder may work on original research tasks with colleagues in other institutions.

### Special Requirements

To be available to participate in fieldwork as required by the specified research project

#### All staff are expected to:

- Positively support equality of opportunity and equity of treatment to colleagues and students in accordance with the University of Surrey Equal Opportunities policy.
- Help maintain a safe working environment by:
  - Attending training in Health and Safety requirements as necessary, both on appointment and as changes in duties and techniques demand
  - Following local codes of safe working practices and the University of Surrey Health and Safety Policy
- Undertake such other duties within the scope of the post as may be requested by your Manager.

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Addendum

This document provides additional information relating to both specific aspects of the post/faculty and any post specific person specification criteria. The information contained within this document should always be read in conjunction with the accompanying generic Job Purpose.

Job Title:

**Clinical Research Fellow in Neuromodulation, Sleep and Dementia**

Background Information/Relationships

This Research Fellow post is in support of the project Elucidating and mitigating the aberrant homeostatic neuralplasticity mechanism in early-stage Alzheimer's disease which is funded the UK Medical Research Council in a collaboration between the University of Surrey and Imperial College London. The Academic leads of this project are Nir Grossman (Imperial College London), Christopher Butler (Imperial College London), Derk-Jan Dijk (University of Surrey), Ines Violante (King's College London), and Adam Hampshire (King's College London).

UK Dementia Research Institute: The project is conducted at the UK Dementia Research Institute (DRI) Centres at Imperial College London and the University of Surrey. The UK DRI is a world-leading institute intended to transform the treatment and care for people with dementia and lead the way in early diagnosis and prevention.

The post is located within the Surrey Sleep Research Centre (SSRC) at the University of Surrey, led by Prof Derk-Jan Dijk.

The SSRC undertakes a wide range of research studies across the 'bench to bedside' spectrum. The overall research theme of the SSRC is regulation and function of sleep and circadian rhythms. The research is enabled by our excellent clinical and support staff and state-of-the art clinical and biomedical research facilities.

Dementia is a global health challenge, with an estimated 55 million individuals globally, projected to increase to 152 million by 2050. The leading cause of dementia is Alzheimer's disease (AD), a neurodegenerative disease accounting for 60–70% of all dementia cases. There is an urgent need for a therapeutic breakthrough that stops and even reverses the cognitive decline in a broad range of AD patients.

This project aims to establish scientific evidence for the neural plasticity mechanism in people with early AD and then to demonstrate a neuromodulation strategy to ameliorate it. The neuromodulation strategy is based on closed-loop non-invasive deep-brain stimulation (DBS) via electrical temporal interference (TI) in combination with sensory stimulation. It involves a stepwise experiment that includes two studies with repeated measurements of neural activity during sleep, neural excitability, and cognitive performance before and after in a cohort of people with early-stage AD.

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### Person Specification

This section describes the sum total of knowledge, experience & competence required by the post holder that is necessary for standard acceptable performance in carrying out this role. This is in addition to the criteria contained within the accompanying generic Job Purpose.

<b>Qualifications and Professional Memberships</b>	<b>Essential/ Desirable</b>
Bachelor of Medicine (MBBS) or equivalent	Essential
fully registered with the GMC	Essential
<b>Technical Competencies (Experience and Knowledge) This section contains the level of competency required to carry out the role (please refer to the competency framework for clarification where needed and the Job Families Booklet).</b>	<b>Essential/ Desirable</b>
Practical experience in dealing with patients, particularly those with dementia or other cognitive disorders	Essential
Practical experience within a research environment	Essential
Knowledge of research methods and statistical procedures	Essential
Good knowledge of human research ethical principles and methods, including Good Clinical Practice (GCP)	Essential
Demonstrated success in delivering research results	Essential
Ability to conduct a detailed review of recent literature	Essential
Ability to develop and apply new concepts; Able to formulate research questions and develop successful research proposals and funding bids	Essential
Creative approach to problem-solving	Essential
Excellent verbal communication skills and the ability to deal with a wide range of people	Essential
Excellent written communication skills and the ability to write clearly and succinctly for publication	Essential
Ability to direct the work of a small research team and motivate others to produce a high standard of work	Essential
Practical experience in conducting non-invasive brain stimulation, EEG recording (in particular during sleep), and/or cognitive tests.	Desirable
Programming skills (Matlab, Python)	Desirable
Knowledge and practical experience in analysing EEG data	Desirable
A record of high-quality publications in international peer-reviewed journals	Desirable

### Key Responsibilities

This document is not designed to be a list of all tasks undertaken but an outline record of any faculty/post specific responsibilities. This should be read in conjunction with those contained within the accompanying generic Job Purpose.

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1. To recruit individuals with early-stage Alzheimer's disease (AD)
2. To carry out clinical assessments in study candidates and participants.
3. To administer non-invasive brain stimulation (phase-locked TI electric fields and audio), electroencephalography (EEG) to study's participants during overnight sleep.
4. To administer EEG and cognitive testing to study participants during wakefulness.
5. To analyse data generated in the study, including EEG and cognitive tests.
6. To take initiatives in the planning and leading of research
7. To direct the work of small research teams, supervising and taking responsibility for the research team
8. To write reports for submission to research sponsors
9. To present findings via publications to referred journals and to colleagues at conferences
10. To provide guidance to staff and students
11. To attend relevant workshops and conferences as necessary
12. To develop contacts and research collaborations within the Imperial-Surrey consortium and the wider community
13. Attend face-to-face meetings with other members of the Imperial-Surrey consortium

N.B. The above list is not exhaustive.