Postdoctoral Training Fellow in Computational Discovery of Cancer Vulnerabilities



Candidate Information

August 2025

#### Description of the role

This is a position in the Breast Cancer Research Data Science Team led by Dr Syed Haider, working in close collaboration with the Precision Oncology laboratory led by Professors Chris Lord and Andrew Tutt.

We are seeking a highly motivated postdoctoral researcher to apply and develop computational approaches for investigating genomic and transcriptomic determinants of cancer vulnerabilities, with a focus on homologous recombination deficient cancers. By harnessing the power of big data and synthetic lethal approaches, our recent work has shown both new cancer vulnerabilities and highlighted mechanisms of therapy resistance in cancers harbouring these vulnerabilities (Haider et al. Nature Genetics 2025, Iacovacci et al. Science Advances 2025, Harvey-Jones et al. Annals of Oncology 2024). By building on principles identified through these studies, the successful candidate will employ artificial intelligence (AI) and machine learning (ML) to further the hypothesis that there exist genomic and transcriptomic indicators of robust, highly penetrant synthetic lethal vulnerabilities. The successful candidate will use/integrate a combination of public and in-house patient datasets along with perturbation screens to enhance our understanding of underlying pan-cancer biology of context specific genetic vulnerabilities. The candidate will also focus on how the reversal of these vulnerabilities could lead to resistance to targeted therapies (Harvey-Jones et al. Annals of Oncology 2024, CRAN R package revert). In addition to computational discovery; resulting suitable therapeutic targets will be subject to pre-clinical investigation and subsequent design of translational studies at our research centre. Hence, candidate will work in collaboration with experimental and clinical investigators at the Breast Cancer Now Research Centre, Institute of Cancer Research, London, in particular with the Precision Oncology Laboratory (Professors Chris Lord and Andrew Tutt).

The project offers experience in understanding the biology of DNA damage and repair mechanisms, AI/ML, data science and statistical modelling while investigating molecular biomarkers of aggressive cancers. The successful candidate will also have opportunities to optimise/extend our existing computational pipelines for pre-processing of big data in breast cancer. Given the multidisciplinary nature of this position, the successful candidate is expected to play a key role in liaising with wet-lab scientists, as well as write up of research results in a highly collaborative environment.

Applicants should hold a PhD (strictly) in a quantitative subject with exposure to genomic/transcriptomics dataset, have programming experience, and possess relevant experience in statistics and genetics.

This position is offered on a fixed term contract, for 3 years in the first instance. Starting salary is in the range of £45,600 to £49,350 per annum inclusive based on previous experience.

In addition to annual performance related pay awards, the salary scales are reviewed annually to consider cost of living increases.

Annual leave entitlement is 28 days per annum. There is an additional entitlement to 8 bank/public holidays and 3 ICR-set privilege days.

## About the team

The Breast Cancer Research Data Science Team is an interdisciplinary group of researchers (~15) who are experts in high-throughput data analyses, machine learning and software engineering. We work in a highly dynamic and collaborative environment focussing on the identification of molecular markers of breast cancer by interrogating genomic, epigenomic and transcriptomic datasets profiled using bulk as well as single-cell assays. These molecular datasets are generated using patient samples and patient-derived models (xenografts and organoids), and interpreted alongside clinical covariates of patients. In particular, we are interested in the application and development of models to help understand the molecular basis of treatment resistant breast cancers.

## About the Division of Breast Cancer Research

The Breast Cancer Now Toby Robins Research Centre, within the Division of Breast Cancer Research at The Institute of Cancer Research is the first centre in the UK entirely devoted to breast cancer research. Our goal is to advance research into the causes, diagnosis and treatment of breast cancer. It is located in state-of-the-art laboratory space, with excellent core facilities and is funded through a long term renewable programme grant from Breast Cancer Now. The Centre is Directed by Clinician Scientist Professor Andrew Tutt, Professor Chris Lord is Deputy Director of the Centre. Our Breast Cancer Research Centre was awarded the 2022 AACR Team Science award with our breast cancer clinical partners in the ICR’s CTSU clinical trial unit and Royal Marsden Hospital, and also received recognition in an award to the ICR for the 2023 Queen’s Anniversary Prize for transforming lives through world-leading breast cancer research.

#### About our organisation

The Institute of Cancer Research, London, is one of the world’s most influential cancer research institutions with an outstanding track record of achievement dating back more than 100 years. Our mission is to make the discoveries that defeat cancer.

As well as being one of the UK’s leading higher education institutions in research quality and impact, the ICR is consistently ranked as one of the world’s most successful for industry collaboration. As a member institution of the University of Lonon, we also provide postgraduate higher education of international distinction.

We are also a charity and rely on the support of partner organisations, funders, donors and the general public.

## Our values

The ICR has a highly skilled and committed workforce, with a wide variety of roles, each requiring different skills. But whether you work as a researcher, or work as part of our corporate team, your work and behaviour is underpinned by these six [values](https://www.icr.ac.uk/about-us/strategy-2022-27/our-values). They are what bring us together as one team - as 'One ICR'.

***Our values set out how each of us at the ICR, works together to meet our mission – to make the discoveries that defeat cancer. “****They summarise our desired behaviours, attitudes and culture – how we value one another and how we take pride in the work we do, to deliver impact for people with cancer and their loved ones”*

**Professor Kristian Helin**

**Chief Executive**

Our mission
is to make the discoveries that defeat cancer.

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| **Department / division:** | Breast Cancer Research |
| **Pay grade / staff group:** | Postdoctoral Training Fellow |
| **Hours / duration:** | Full time 35 hours per week, Monday to Friday. Fixed term contract for 3 years |
| **Reports to:** | Dr Syed Haider |
| **Accountable to:** | Prof. Chris Lord and Dr. Syed Haider |
| **Main purpose of the job:** | The postholder will work independently and as a part of a multi-disciplinary team, to identify molecular markers of therapy resistance using in-house and publicly available high-throughput sequencing and clinical datasets. The identified targets will be used to guide pre-clinical studies at the Breast Cancer Now Research Centre. The successful post holder will be involved in the design, analysis, interpretation and scientific writing of results for high impact journals. |

Job description

Duties and responsibilities:
Specific duties

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| Analysis and interpretation of high-throughput sequencing datasets |
| Implementation of statistical modelling, AI and ML in R/python |
| Where necessary, development and maintenance of analysis pipelines |
| Collaborate with other teams within the Breast Cancer Now Research Centre and ICR  |
| Reporting progress in lab meetings, ICR events and conferences |
| Preparation of data and manuscripts for publications |

General

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| All staff must ensure that they familiarise themselves with and adhere to any ICR policies that are relevant to their work and that all personal and sensitive personal data is treated with the utmost confidentiality and in line with the General Data Protection Regulations |
| Any other duties that are consistent with the nature and grade of the post that may be required. |
| To work in accordance with the ICR’s Values. |
| To promote a safe, healthy and fair environment for people to work, where bullying and harassment will not be tolerated. |

Person specification

Person specification

# Education and Knowledge

Benefits

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| --- | --- |
| PhD in a quantitative subject | Essential |
| BSc/MSc in a quantitative subject | Essential |
| Programming experience in R/python | Essential |
| Basic knowledge of NIX systems and shell scripting | Essential |
| Basic knowledge of biology | Desirable |

Skills

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| --- | --- |
| Ability to work independently, collaboratively and as a part of an interdisciplinary team | Essential  |
| Ability to work accurately, with a strong attention to detail and to deadlines | Essential |
| Ability to write scientific manuscripts | Essential  |
| Proven ability to design and implement experiments  | Essential |
| Excellent interpersonal skills to facilitate liaison with colleagues and collaborators | Essential  |

Experience

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| --- | --- |
| Experience in statistical modelling, AI and ML for genetics/genomics datasets | Essential  |
| Experience in processing and interpretation of next generation sequencing datasets  | Desirable |
| Experience in using NIX systems and compute clusters  | Essential  |

General

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| --- | --- |
| Interest in cancer research  | Essential  |
| Excellent data presentation skills  | Essential  |
| Excellent organisational skills  | Essential  |
| Ability to project a positive and professional image of the ICR-BCN both to ICR and at external events/conferences  | Essential  |
| Effective verbal and written communication | Essential  |
| Committed to publish collaborative & independent research | Essential  |

We offer a fantastic working environment, great opportunities for
career development and the chance to make a real difference to defeat cancer. We aim to recruit and develop the best – the most outstanding scientists and clinicians, and the most talented professional and administrative staff.

The annual leave entitlement for full time employees is 28 days per annum on joining. This will increase by a further day after 2 years’ and
5 years' service.

Staff membership to the Universities Superannuation Scheme (USS)
is available. The USS is a defined benefit scheme and provides a
highly competitive pension scheme with robust benefits. The rate of contributions is determined by USS and details of the costs and benefits of this scheme can be found on their website. If staff are transferring from the NHS, they can opt to remain members of the NHS Pension Scheme.

We offer a range of family friendly benefits such as flexible working,
a parents’ group, and a maternity mentoring scheme. Other great benefits include interest free loans for discounted season tickets for travel and bicycle purchases, access to the NHS discounts website,
a free and confidential Employee Assistance Programme which offers
a range of well-being, financial and legal advice services, two staff restaurants, and access to a gym and sporting facilities at our
Sutton site.

## Further information

You may contact Dr. Syed Haider (Syed.Haider@icr.ac.uk) for further information by email. Please note, this address is for enquiries only and you should not send your application to this address.

This job description is a reflection of the current position and is subject to review and alteration in detail and emphasis in the light of future changes or development.