ICR The Institute of Cancer Research

Data Scientist
Candidate Information

July 2024

The Institute of Cancer Research

About our organisation

We are one of the world's most influential cancer research institutes with an outstanding record of achievement dating back more than 100 years. We are world leaders in identifying cancer genes, discovering cancer drugs and developing precision radiotherapy. Together with our hospital partner The Royal Marsden, we are rated in the top four centres for cancer research and treatment worldwide.

As well as being a world-class institute, we are a college of the University of London. We are consistently in the top performing universities in the league table of university research quality compiled from the Research Excellence Framework (REF 2014 & 2021).

We have charitable status and rely on support from partner organisations, charities, donors and the general public.

We have more than 1000 staff and postgraduate students across three sites – in Chelsea and Sutton.

About the position

We seek a data scientist to join the Centre for Target Validation at the ICR. The postholder will use machine learning / AI and other bioinformatics approaches to identify/develop patient hypotheses, explore target/tumour links and discover biomarkers. Their work will contribute to target identification and validation, assist the clinical translation of our research and align with the ICR strategy to defeat cancer.

Work experience in relevant research areas is required, preferably focused on cancer biology. Typically, candidates holding a PhD qualification and some work experience will be suitable for this Analytical Scientist 3 role.

The Centre for Target Validation

The ICR has established a Centre for Target Validation that will accelerate the translation of ICR and collaborator research into drug

discovery programmes. The Centre will deliver bespoke, hypothesis-driven data packages to support decision-making for launch of a drug discovery project. The Centre's dedicated resources, including biology, functional genomics, assay sciences, chemistry, and bioinformatics teams, will support joint project teams that combine the deep biological and therapeutic knowledge of ICR investigators with the validation and technical expertise of drug discovery scientists. Scientists in the Centre for Target Validation will work closely with colleagues in the ICR's Centre for Protein Degradation to exploit emerging technology and protein degradation tools for robust target validation experiments. The Centre for Target Validation will serve as a hub, connecting researchers to expertise and resources that will validate and streamline robust, targets into drug discovery programmes in the ICR's Cancer Therapeutics Unit or into collaborative programmes with external commercial therapy discovery partners.

The Computational Biology and Chemogenomics Team

Bioinformatics provision for both centres is catered by the Computational Biology and Chemogenomics team. CBC develops and applies state-of-the-art computational approaches, multidisciplinary data integration and analyses to inform and support the CCDD drug discovery projects and generate experimentally testable hypotheses. CBC collaborates closely with the In Silico Chemistry team to create integrated bioinformatics / chemoinformatics pipelines and further enhance in silico target assessment and selection.

Division of Cancer Therapeutics, housing the Centre for Cancer Drug Discovery

The Division of Cancer Therapeutics, housing the Centre for Cancer Drug Discovery (CCDD), has an unrivalled track record at discovering novel cancer treatments for the personalised treatment of cancer. The Division also develops biomarkers designed to confirm the effectiveness of molecularly targeted therapies and help determine which therapy will benefit each patient.

The CCDD is a multidisciplinary 'bench to bedside' centre, comprising 160 staff dedicated to the discovery and development of novel therapeutics for the treatment of cancer. We are one of the largest academic cancer drug discovery groups in the world and, with our collaborators, have discovered 21 preclinical development candidates, 12 of which have been progressed to clinical evaluation with our partners in the ICR/Royal Marsden Drug Development Unit. Our drug abiraterone (Zytiga) has been approved in the US, Canada and Europe for late-stage prostate cancer.

The CCDD's mission is to develop personalised medicines by translating information from the cancer genome and cancer biology into drugs for patient benefit. We implement innovative drug discovery technologies, discover novel mechanism-based drugs, and develop these as rapidly

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as possible from the laboratory through to hypothesis-testing early clinical trials. All necessary science disciplines and technologies are in place to make this possible. Our biologists work alongside medicinal chemists focusing on new molecular targets emerging from human genome and cell biology research. In addition, we collaborate closely with colleagues throughout the ICR and beyond. Drug discovery is carried out in highly focused multi-disciplinary project teams analogous to those in a biotechnology company, with patient benefit as the primary driver. We also publish our work extensively and have a large network of collaborations with academia, biotechnology companies, and the pharmaceutical industry. The Division of Cancer Therapeutics is based in state-of-the art laboratories in the new £75m Centre for Cancer Drug Discovery building, opened in 2021 on the ICR Sutton campus.

Our mission is to make the discoveries that defeat cancer.

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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. They are what bring us together as one team - as 'One ICR'.

Pursuing excellence

We aspire to excellence in everything we do, and aim to be leaders in our field.

Acting with Integrity

We promote an open and honest environment that gives credit and acknowledges mistakes, so that our actions stand up to scrutiny.

Valuing all our people

We value the contribution of all our people, help them reach their full potential, and treat everyone with kindness and respect.

Working together

We collaborate with colleagues and partners to bring together different skills, resources and perspectives.

Leading innovation

We do things differently in ways that no one else has done before, and share the expertise and learning we gain.

Making a difference

We all play our part, doing a little bit more, a little bit better, to help improve the lives of people with cancer.

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

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Job description

Department / division:	Centre for Cancer Drug Discovery / Cancer Therapeutics
Pay grade / staff group:	Analytical Scientist Grade 3
Hours / duration:	Full time (35 hours per week), Monday to Friday. Fixed term contract for 2 years
Reports to:	Konstantinos Mitsopoulos
Location:	Sutton, London
Main purpose of the job:	Application of machine learning / AI methods for analysis and integration of large multi omics datasets to generate potential patient hypotheses and identifying biomarkers.

Duties and responsibilities:

Data analysis pertinent to the CTV role

The successful applicant will work on the application and development of machine learning/AI tools for the integration of multi-omics patient-derived data (e.g. RNA/DNA/Ribo-seq/proteomics) with patient survival outcomes, cell line model data (e.g. DepMap sensitivity and chemogenomics screens) and target ligandability potential (Chemistry and 3D structure assessments). The data integration via machine learning has the potential to generate novel patient hypotheses for drug discovery projects, not achievable from analysis of the component datasets.

Duties & Responsibilities

Evaluate, develop and maintain Machine Learning and other AI pipelines
Curate and integrate in house and public data for ML feature extraction
Plan, organise, prioritise and execute work in an effective manner
Communicate and present work in a meaningful manner to the CTV team to assist in decision making
Work closely with other members in the Centre for Cancer Drug Discovery, Computational Biology and Chemogenomics and In Silico Chemistry teams

General

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

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

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Person specification

Education and Knowledge

PhD in Computational Biology / Bioinformatics or equivalent subject	Essential
General knowledge of cancer and its biology	Desirable

Skills

Established machine learning / AI skills preferably using cancer omics data	Essential
Proficient in languages including R, Python and other scripting languages as appropriate	Essential
Good working knowledge of Unix/Linux shell (e.g., Bash)	Essential
Established skills in the application of broad bioinformatics analysis tools and databases	Essential
Proven ability to work effectively in an interdisciplinary team	Essential
Good observation skills, attention to detail and ability to keep appropriate records	Essential
Ability to work independently and to demonstrate initiative in planning and designing experiments	Essential

Experience

Experience of machine learning / AI for analysis and integration of biomedical and/or proteomics big data pertinent to the role	Essential
Experience of computational biology research methodologies pertinent to the role	Essential
Experience of statistical methodologies pertinent to the role	Essential
Experience of using high performance computing (HPC) systems for scientific computing	Essential
Network Biology / Protein Interactome analysis experience	Desirable
Drug discovery experience for target ligandability assessment, patient hypothesis	Desirable

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Benefits

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 Konstantinos Mitsopoulos for further information by emailing Konstantinos.mitsopoulos@icr.ac.uk. 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.