



CANCER
RESEARCH
UK

National
Biomarker
Centre

Ref: MI/24/18

Job Title: Principal Bioinformatician

1. The Institute invites applications for the above post.
2. Salary will be within the range £38,000 - £48,000 per annum, dependent upon experience.
3. Informal enquiries can be made to Dr Dominic Rothwell, email:
dominic.rothwell@cruk.manchester.ac.uk.
4. The Institute will endeavour to contact shortlisted candidates promptly; however there may be occasions where a high volume of applications are received therefore applicant's patience is appreciated.



COPY OF THE ADVERTISEMENT

The University will actively foster a culture of inclusion and diversity and will seek to achieve true equality of opportunity for all members of its community.

Principal Bioinformatician

- Starting salary within the range of £38,000 - £48,000 per annum (depending upon experience)
- Job Ref: MI/24/18
- Duration: Fixed term until 31 March 2027

About the role:

The CRUK National Biomarker Centre (NBC) has an international reputation for liquid biomarkers, with the aim to develop, validate and implement biomarkers that facilitate cancer precision medicine through improved cancer detection, prognosis prediction, and prediction and monitoring of patient response to therapy. Our research integrates clinical, molecular and computational science into a highly convergent programme, with advanced computational biology playing a critical role in our biomarker agenda.

An exciting opportunity now presents for a Principal Bioinformatician to join the Bioinformatics and Biostatistics (BBS) Team within NBC. You will work alongside a multidisciplinary team of clinicians, biologists, statisticians, bioinformaticians and computational scientists to analyse genomic, epigenomic and transcriptomic data arising from patient samples; including cell-free DNA and RNA (cfDNA, cfRNA), single cell data and circulating cancer-associated cells.

The primary focus will be to further develop already established computational approaches for detecting and analysing tumour signals in liquid biopsies. This will include the analysis of a range of multiomic data (DNA methylation, RNA-seq, fragmentomics) using computational statistics and machine learning/AI approaches. This work will require collaboration across a wide range of studies involving early detection of cancer, monitoring of treatment response, molecular characterisation of tumours and detection of treatment-related toxicity.

This is a unique opportunity to work in a translational and collaborative team and develop data analytics bespoke to the intersect of research and the clinic.

About you:

You should have a PhD in Computational Biology/Bioinformatics, Mathematics/Statistics (or a related discipline) or have a relevant postgraduate degree in one of the above (or a related discipline) along with significant relevant experience. You will have significant experience in writing code in R and/or Python for robust and reproducible analysis and demonstrable experience in many areas of bioinformatics pertaining to the processing and/or analysis of high-throughput data. An understanding of liquid biopsies, cancer genomics, and cancer biology are desirable, as is experience in machine learning and developing bioinformatics pipelines (e.g. Nextflow).

You will have excellent communication skills to converse successfully with interdisciplinary collaborators from non-mathematical backgrounds. Experience of multidisciplinary teamwork would be beneficial.

Why choose Cancer Research UK National Biomarker Centre?

The Cancer Research UK National Biomarker Centre is a leading and highly specialised translational research centre within The University of Manchester (www.manchester.ac.uk), core funded by Cancer Research UK (www.cancerresearchuk.org), the largest independent cancer research organisation in the world.

Our Centre discovers, develops, validates and qualifies biomarkers in clinical studies and trials that



detect cancer earlier and predict and monitor therapy responses to support optimised treatment of patients with cancer. Our advanced research programmes, agnostic to cancer type, develop biomarkers in tissue and less invasive clinical samples such as blood (liquid biopsy) with sophisticated bioinformatic and artificial intelligence solutions for multi-modal laboratory and clinical biomarker data analysis and interpretation. Our preclinical programmes focus on development of pharmacodynamic biomarker and evaluation the efficacy of novel therapeutics in patient derived models. As a bridge between discovery science and clinical research, we are highly collaborative across Manchester, nationally and internationally.

How to apply?

To apply for this position please visit our website:

<https://www.cruk.manchester.ac.uk/recruitment/candidate/searchvacancies>.

For any informal enquiries about this post, please contact Dr Dominic Rothwell:

dominic.rothwell@cruk.manchester.ac.uk.

CANCER RESEARCH UK NATIONAL BIOMARKER CENTRE JOB DESCRIPTION

JOB DETAILS

Job Title:	Principal Bioinformatician
Grade:	Informatician 4 (MI4)
Department:	Bioinformatics and Biostatistics (BBS) Team
Division:	Cancer Research UK National Biomarker Centre (NBC)

ORGANISATIONAL ARRANGEMENTS

Accountable to:

1. NBC BBS Deputy Team Lead(s)
2. NBC BBS Team Lead
3. NBC Director

JOB PURPOSE

To develop and implement computational approaches for detecting and analysing tumour signals in cell-free DNA (cfDNA) or cell-free RNA (cfRNA). This will include the analysis of a range of epigenomic (DNA methylation, fragmentomics) and transcriptomic data using statistical/machine learning approaches. Applications of this work include early detection of cancer, monitoring of treatment response, detection of treatment-related normal tissue toxicity and non-invasive analysis of cancer hallmarks.

The post-holder will develop and undertake specified computational data analyses guided by the



Bioinformatics and Biostatistics (BBS) team lead.

The post-holder will apply their own expertise, leverage local expertise and work collaboratively to:

1. analyse data sets from a range of experimental studies (including genomes, epigenomes and transcriptomes sequencing).
2. process sequencing data using standard and/or tailored bioinformatics pipelines.
3. develop and apply statistical/machine learning methods for the analysis of both liquid and tissue-derived sequencing data.
4. present and discuss data analyses to the collaboration partners.
5. mentor BBS and NBC staff to improve their computational and analytic skill sets.

In addition, you will:

- keep abreast of current developments in computational biology/bioinformatics to implement new techniques as and when necessary.
- develop working knowledge in the field of cancer biomarkers.
- communicate effectively with cross-disciplinary teams within the NBC.
- discuss work-plans and results with collaborators.

DUTIES AND RESPONSIBILITIES

- Perform high quality data analyses using software tools and/or build robust bioinformatics pipelines. All analysis will conform to the best practices of reproducible research.
- Keep comprehensive and up-to-date records of the data analyses of all designated projects in the format agreed and provide these periodically to the BBS Team Lead or collaborators.
- Deliver and interpret data analyses to the researchers involved in data generation.
- Present and discuss data analyses with other team members and collaborators.
- Share knowledge of techniques and procedures for the benefit of others within the collaboration framework.
- Provide specialist advice and guidance to colleagues in NBC and collaborators.
- Keep abreast of current developments in computational biology/bioinformatics and implement new techniques as and when necessary.
- Develop working knowledge of the field of cancer genomics and biomarkers in a translational research setting, gain an increasing appreciation of cancer biology/pharmacology.
- Work independently and be responsible for delivery of pre-defined aspects of multiple collaborative projects.
- Manage time efficiently to bring multiple concurrent projects to completion according to the agreed deadlines.
- Understand the confidential nature of research associated with Pharma partnerships and act in accordance with any legally binding research contract stipulations on confidentiality.
- Perform other functions consistent with the position, nature of the post and as determined by the team leads.

STANDARDS OF PERFORMANCE

- ◆ Work efficiently, cost-effectively and in a flexible manner.
- ◆ Meet objectives within pre-determined timescales.
- ◆ Effective communications to be maintained with staff at all levels.
- ◆ Manage and prioritise own workload to meet deadlines.
- ◆ Strict adherence to protocols and Institute policies.



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- ◆ Comply with Health & Safety requirements, including having an awareness of personal responsibilities to maintain a safe working environment.
 - ◆ Contribute to the University's agenda for social responsibility, including sustainability.
 - ◆ Maintain confidentiality of information in line with data protection requirements and University and collaborative agreement.
 - ◆ Familiarise themselves with the University's Equality and Diversity policies and to actively support these wherever possible.
 - ◆ Be a team player.
 - ◆ Strive to accomplish high quality of work.
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PERSON SPECIFICATION

The person specification should set out the qualifications, experience, skills, knowledge, personal competencies and other requirements which the post holder requires to perform the job to a satisfactory level.

Job Title: **Principal Bioinformatician**

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		bioinformatics approaches.	
SKILLS	- Significant experience writing code in R and/or Python. - Comfortable working with the Linux command line and bash scripts. - Significant experience troubleshooting and debugging software. - Attention to detail with coding and annotation. - Accurate comprehensive record-keeping and attention to detail. - Effective organisational skills and ability to multi-task. - Ability to be flexible around supervisors with clinical commitments. - Demonstrable ability to design and plan experiments and interpret results. - Ability to work in a collaborative environment. - Ability to select and apply the correct statistical methodologies to complex data sets. - Ability to work independently with minimal supervision. - To set goals, respond to challenges and take the initiative. - Excellent communication skills, written and verbal, including the ability to explain complex statistical/computational issues to a non-statistical/computational audience.	- Comfortable in the use of project control software (git, GitHub). - Comfortable in the use of high performance computing clusters (docker, slurm, python GIL etc.). - Familiarity with working in a distributed computational environment. - Proven ability to work effectively within a multidisciplinary team including clinicians to achieve timely and valued objectives. - Strong mathematical skills, including applied statistics. - Ability to inspire and motivate colleagues, including students and technicians.	Application, references, publications and interview
SKILLS contd...			Application, references, publications and interview
KNOWLEDGE	- An insight into current machine learning approaches for robust analysis of complex datasets. - An understanding of bioinformatics approaches for processing of sequencing data. - Knowledge in the field of bioinformatics and computational biology as applied to cancer studies. - Some understanding of basic cell biology and cellular processes.	- An understanding of computational approaches applicable to classifier development, including relevant statistical models. - Working knowledge of liquid biopsies. - Some knowledge of DNA methylation and/or fragmentomics. - Some understanding of immunology. - A general knowledge of cancer.	Application, references, publications and interview
	- Willingness to travel - Self-motivated		Interview



OTHER	• Meticulous • Interactive • Organised • Ability to work to strict deadlines • Ability to work well within a multidisciplinary team framework as well as on an individual project • Technically focused • Willingness to learn and implement new experimental techniques • To show commitment to equality and fairness and integrity in dealing with others • To be willing to work across organisational boundaries • To seek new knowledge and share ideas • To be open and responsive to change and innovation		Referees comments
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THE CITY OF MANCHESTER AND THE REGION

Manchester is one of the great European cities and the Cancer Research UK Manchester Institute is located a short distance from the city centre and is serviced by regular public transport to the city centre. The city's architecture represents one of the high points of Victorian achievement. The modern city is a major centre of banking, commerce and manufacturing. It has a highly cosmopolitan atmosphere and its cultural life is internationally renowned.

There are three outstanding professional theatre companies, the halls of the Hallé and BBC Philharmonic orchestras, the Cornerhouse as well as other cinemas, and Europe's fastest-growing Chinatown. On the way into the city, there is perhaps the best stretch of road in the entire country for Indian and Pakistani food, known as the curry mile in Rusholme.

Amongst developments enriching the area's cultural life have been: the opening of the Lowry Centre and Media City at Salford Quays; the opening of the Bridgewater Concert Hall; the refurbishment of the City Art Gallery; the opening of Urbis in the centre of Manchester and of the Imperial War Museum North, designed by Daniel Libeskind, in Trafford.

Trafford, specifically Old Trafford, is known internationally for sport: it is a venue for Test cricket and the home of Manchester United FC. The Commonwealth Games were held in Manchester in 2002 and were highly acclaimed. The Commonwealth Stadium became the home of Manchester City FC in 2003.

Housing is varied, plentiful and the price ranges can start moderately priced and are as varied as the requirements.

Schooling ranges from world-famous private schools to excellent sixth-form colleges and comprehensives.

Manchester is well served by a major international airport, with direct scheduled flights to many destinations in Europe as well as North America and Asia.

Manchester Piccadilly railway station has been refurbished and is served by inter-city and other train services – with a direct link to Manchester Airport. The expanding network of Metrolink tram services offers an alternative mode of public transport from certain parts of the conurbation and is currently being expanded to include connections near to the Institute. Some of the most beautiful countryside in Europe is just short of an hour's drive from the Institute in the Peak District National Park, while the Lake District and Snowdonia are also within easy reach.

Manchester offers extensive provision for research. Library facilities include the John Rylands University Library (the major library in the North West and the third largest in the country) and the Manchester Central Reference Library. Facilities for quantitative analysis are provided by Manchester Computing and the Computer Support Unit.



ADDITIONAL RECRUITMENT AND SELECTION PARTICULARS:

Shortlisted Candidates:

1. We will reimburse reasonable travel expenses. You need to retain all your receipts as you will need to submit these with your expense claim form. This form will be given to you when you attend your interview.
2. If candidates require accommodation the Institute can arrange this for you. Please notify the Institute's Human Resources Department as soon as possible so that this can be arranged on : +44 (0)161 200 8870 / 8866 or email: cruk.jobs@manchester.ac.uk. Please note that reimbursement for accommodation may **not** apply.
3. If candidates have any additional support needs to enable them to attend an interview they will be able to request/discuss this with the Institute's HR department when arranging the interview.
4. Shortlisted candidates may be expected to complete a presentation as part of the selection process. Information regarding the duration and title of the presentation will be provided in the invitation to interview correspondence. We supply both laptop and projector for presentations.
5. All dates and times stated in correspondence from the Institute refer to UK BST (British Summer Time).
6. Candidates need to bring along their passport to interview, (a copy of which will be taken for our records) and where applicable, your visa, when you visit the Institute. If candidates have difficulty in producing their passport, please contact the Institute's Human Resources Department prior to the interview on via cruk.jobs@manchester.ac.uk Tel: +44 (0)161 200 8870 / 8866 who will be able to advise you.
7. **Zoom interview with or without presentation:**
Instances may arise where we propose to hold a Zoom interview as a (first stage) selection process. If this is the preferred method of interview, you will be provided with a link and password to attend the interview at a specified time on a specified date. This link will redirect you to your Zoom interview. 24 hours prior to interview we will require:
 - ◆ A contact telephone number emailed to cruk.jobs@manchester.ac.uk along with a scanned copy of passport for ID purposes

Please note:

You do not have to have a Zoom account to attend a Zoom interview. You will be prompted to download the software, once you have clicked on the link that you have been provided. You do however, need to have a working microphone and camera connected to your electronic device in order for this interview to go ahead.

The criteria will be consistent with all other candidates.

STANDARD CRUK MANCHESTER INSTITUTE TERMS AND CONDITIONS

The following is a basic summary of the standard terms and conditions applicable to the post you have applied for:

- The Principal Bioinformatician role is on a Cancer Research UK salary. It is an MI4 grade. Salary in the range: £38,000 - £48,000 per annum (dependent upon experience).
- Your employment will be with The University of Manchester appointed under The Cancer Research UK Manchester Institute terms and conditions.
- Salary is paid monthly.
- There are 32 days holiday per year plus Bank Holidays for England.
- The duration of the contract is: fixed term until 31st March 2027
- 35 hour week.
- There is a probationary period attached to this post of 6 months. It's standard for many organisations now and consists of two 3-monthly reviews with your line manager.
- You are eligible to join the USS (<https://www.uss.co.uk/>) pension scheme.
- Any offer made by the Cancer Research UK Manchester Institute would require the successful candidate to undergo a medical clearance. This is arranged with Occupational Health department at The University of Manchester prior to starting employment and consists of a basic medical. This is to address and gain clearance for any potential hazards identified for the role on offer.



- Offer is subject to receipt of 2 satisfactory references and proof of your highest qualification.
- Offer is subject to documented evidence of your right to work in the UK under the Home Office UK Border Agency Regulations.
- Overseas candidates should determine, when applying for the position, the likelihood of obtaining a Certificate of Sponsorship (CoS) for the post by assessing their own circumstances against the criteria specified on the [gov.uk website](https://www.gov.uk).
- Successful overseas candidates may be eligible to claim reimbursement of expenses to cover their visa and National Health Surcharge costs, if required. Overseas candidates will be required to meet the eligibility criteria as specified in the skilled worker points-based system. (NB; reimbursement does not extend to include family members, although a loan scheme is available).
- The successful candidate is required to complete a Rehabilitation of Offenders/ Criminal Records declaration form at the offer stage of the process. Please note: a criminal record will not necessarily be a bar to obtaining a position.
- The Institute is promoting a green travel plan and there are staff benefits promoting this including a cycle to work scheme and the use of public transport. There are strong links to bus routes and tram and train lines around the site. Annual interest free loans are also available to support the purchase of season travel tickets.

Please note: there are car parking restrictions imposed around these sites.

- There are a range of staff benefits. If you require further information at this stage please contact Institute's HR department directly.