



**Centre for Evolution and Cancer
Division of Molecular Pathology**

Evolutionary Genomics and Modelling Team

**POSTDOCTORAL TRAINING FELLOW (FORECAST DRUG RESISTANCE IN
CANCER)**

The Institute of Cancer Research, London, is one of the world's most influential cancer research institutes, with an outstanding record of achievement dating back more than 100 years. We provided the first convincing evidence that DNA damage is the basic cause of cancer, laying the foundation for the now universally accepted idea that cancer is a genetic disease. Today, The Institute of Cancer Research (ICR) leads the world at isolating cancer-related genes and discovering new targeted drugs for personalised cancer treatment.

Under the leadership of our Chief Executive, Professor Paul Workman FMedSci, the ICR is ranked as the UK's leading academic research centre. Together with our partner The Royal Marsden, we are rated in the top four cancer centres globally.

The ICR is committed to attracting, developing and retaining the best minds in the world to join us in our mission – **to make the discoveries that defeat cancer.**

The Centre for Evolution and Cancer within the Institute of Cancer Research is supported by a Strategic Award from the Wellcome Trust. We focus on interrogating clonal evolution in tumours by studying the dynamics of heterogeneous cancer cell populations and their microenvironment. We make use of multi-region genomic profiling, single-cell genetics, computational histopathological analysis and mathematical modelling to reconstruct the past evolutionary history of tumours and predict their future.

Dr Andrea Sottoriva's lab, in collaboration with the Greaves and Valeri's labs at the ICR and other research laboratories in the UK and Italy, has been awarded the CRUK Accelerator Award entitled "Single cell cancer evolution in the clinic".

The aim of the collaboration is to deliver tools and devices that could be promptly implemented in a clinical setting to pre-emptively intercept treatment resistance in individual cancer patients. The team combines cancer evolutionary modelling, new single-cell approaches, novel microfluidic devices, patient-derived organoid models, and new data integration techniques with the aim of providing comprehensive single-cell portraits of patient samples, before and after treatment.

For this position, we are seeking a highly motivated Postdoctoral Training Fellow with expertise in molecular and cellular biology applied to cancer evolution to work on forecasting drug resistance in cancer. The responsibilities include tissue culture of cancer model systems, specifically cell lines and patient-derived organoids, drug screening, lentiviral transfection, next-generation sequencing, and single-cell genomic profiling of

samples from patients and models. The post will be responsible for designing and running experimental evolution assays in cancer model systems and study the emergence of resistance to novel drugs in the context of intra-tumour heterogeneity and clonal evolution. The successful candidate will work closely with a diverse team to formulate hypotheses and validate predictions using quantitative assays.

Applicants should have a good first degree in biology, biotechnology, or similar and a PhD in cancer biology or similar. Applicants must have experience with cancer model systems, drug screening, and have a good publication record. Experience with next-generation sequencing is highly desirable. Experience with animal models would also be advantageous. Excellent organizational and communication skills are essential.

The position is offered on a 3 year fixed term contract. The full salary range for the post is £32,200 - £42,550 p.a. inclusive. Starting salary on the scale will be based on previous postdoctoral experience.

Informal enquiries can be made to Dr Andrea Sottoriva (andrea.sottoriva@icr.ac.uk). **Please DO NOT send your application via email, formal applications must be submitted online.**

To apply please complete an application form online, including supporting statement section and two referees contact details and upload your CV online at <http://www.icr.ac.uk/jobsearch>.

The Institute of Cancer Research

Job Description

JOB TITLE: Postdoctoral Training Fellow in Forecasting Drug Resistance in Cancer

DIVISION & TEAM: Division of Molecular Pathology, Evolutionary Genomics and Modelling Team

GRADE: PDTF

RESPONSIBLE TO: Dr Andrea Sottoriva

LOCATION Sutton, Surrey

SPECIFIC DUTIES AND RESPONSIBILITIES

The duties and responsibilities include the following:

1. Tissue culture of cell lines and patient-derived organoids.
2. Lentiviral transfections.
3. High throughput drug screening and standard drug response profiling.
4. Nucleic acids extraction and library preparation for next-generation sequencing.
5. Establishment of patient-derived organoid lines.
6. Single-cell genomic profiling.
7. Interpret the results in light of tumour evolution, tackling cancer as a complex system.
8. To design and execute experiments appropriate for projects as directed by Team leader.
9. To interact with the Team Leader and other members to pursue the agreed program of work.
10. To work in a flexible but organised manner.
11. To meet objectives within pre-determined timescales.
12. To stay up to date with the relevant literature.
13. To participate in grant application and publication writing.
14. To familiarize yourself with the ICR's approach towards risk management including its policies and procedures, which require all staff to play an active part in identifying and managing risk.

15. Any other duties which may be required which are consistent with the nature and grade of the post.

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.

APPOINTMENT DETAILS

The position is offered on a 3 year fixed term contract. The full salary range for the post is £32,200 - £42,550 p.a. inclusive. Starting salary on the scale will be based on previous postdoctoral experience.

In addition to annual performance related pay awards, the salary scales are reviewed to consider any 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.

This is a full-time post 35 hours per week, Monday to Friday, based at the ICR site in Sutton, Surrey.

ICR has a workforce agreement stating that the maximum length of employment for Post- doctoral Training Fellows should be no more than 7 years within ICR and no more than 10 years total postdoctoral employment (at ICR and elsewhere). Consequently, you should be aware that the length of contract offered will be limited by this agreement as well as the availability of funding.

Person Specification

Criteria	Essential or Desirable?
Education & Knowledge	
A good first degree in biology, biotechnology or similar subject	E
PhD** in cancer biology or similar subject	E
Strong publication record	E
Experience	
Experience with tissue culture	E
Experience with drug screening	E
Experience with immunohistochemistry, western blots, and flow cytometry	E
Experience with next-generation sequencing and digital droplet PCR	D
Experience with 3D culture model systems	D
Experience with animal models	D
Experience with public bioinformatics resources (e.g. genome browsers, gene ontology, etc)	D
Experience in designing and interpreting experiments relevant to the Team's research	E
Skills	
Good laboratory techniques including trouble-shooting skills	E
Excellent organisational skills	E
Ability to independently implement and optimise molecular biology and genomics protocols	E
Ability to keep good and accurate records	E
Proficient use of IT/ Good computer literacy and able to use basic tools (Office, Excel)	E

Ability to independently design experiments	E
Excellent organisational skills	E
Ability to work to tight deadlines	E
Strong analytical skill, problem solving and independent thinking	E
General	
Committed and highly motivated	E
Willingness to learn new techniques/approaches	E
Ability to interact effectively with other team members and work as a part of a dynamic team to drive projects forward	E
Ability to follow instructions, protocols and guidance	E
Ability to work with limited supervision	E

*** as a minimum requirement candidates must have submitted their thesis by the start date of their employment and been awarded their PhD within the six month probationary period.*