

### Job Description – Postdoctoral Research Scientist

<b>Department</b>	Epigenetics
<b>Grade</b>	BI 6
<b>Salary range</b>	£30,751 to £34,166 per annum
<b>Length of appointment</b>	Up to 18 months
<b>Location</b>	Babraham Institute
<b>Working Hours</b>	37

### Job Profile Summary

The job holder will undertake a research project to investigate the role of DNA modifications in controlling lineage priming, transcriptional heterogeneity, and RNA splicing in different *in vitro* and *in vivo* systems. The Epigenetics Programme has major strengths in applying single and low cell number epigenomic assays to a wide range of questions in developmental and ageing biology, and provides a thriving research environment with state-of-the-art facilities.

DNA methylation patterns are reprogrammed genome-wide in early development and this is followed by rapid *de novo* methylation at the exit from pluripotency and leading up to gastrulation. It is thought that lineage and cell fate specific methylation patterns are established at these critical stages. We are profiling DNA methylation and transcription patterns across these priming and differentiation stages both in *in vitro* cell systems and *in vivo* in mouse embryos. We have detected profound heterogeneity of methylation and transcription patterns prior to cell fate decisions, leading to the hypothesis that such ‘noise’ may facilitate fate decisions. Later in development we found that active tissue-specific enhancers are marked by specific DNA modifications (5fC), and that 5fC at intron-exon boundaries may be involved in the regulation of splicing.

The successful candidate will work with already established mutant cell or mouse lines, and will additionally use CRISPR technology to engineer new cell lines with deletions of critical factors for the regulation of DNA modifications. The candidate will characterise the mutant cells or embryos using single cell transcriptional approaches (scRNA-seq, scBS-seq, scM&T-seq) and low cell number epigenetic assays (ChIP-seq; 5fC-seq) to define levels of epigenetic and transcriptional noise, and splicing patterns. To functionally associate the DNA modification dependent changes with altered lineage priming or differentiation, the candidate will carry out *in vitro* differentiation assays or test cell lines for differentiation in chimeras *in vivo*. The work on splicing may involve manipulating epigenetic marks and their readers in cell lines.

### **Key areas of Responsibility**

- Design, implementation and interpretation of own experiments
- Method development
- Work with line manager to decide direction of project
- Work with colleagues on related or collaborative projects
- Mentor junior staff/students
- Present results at lab meetings, Institute meetings and conferences
- Write drafts of manuscripts, together with the line manager

## Person Specification

Criteria	Essential (✓)	Highly Desirable (✓)	Desirable (✓)	Shortlisting (please indicate the specific criterion that can be shortlisted) (✓)
<b>Education &amp; Qualifications</b>				
Ph.D. in developmental biology, molecular biology, genetics, chemistry or related biological discipline	✓			✓
<b>Relevant Experience</b>				
Expertise in molecular biology	✓			✓
Hands on experience with making RNA-seq, BS-seq, or ChIP-seq libraries		✓		✓
First or second author research publication within the past two years ( <i>time for career breaks will be taken into consideration</i> )		✓		✓
Experience in low cell number techniques (eg scRNA-seq, scATAC-seq, scBS-seq)		✓		
Pluripotent stem cell culture and their manipulation with Crispr/Cas		✓		
<b>Knowledge &amp; Skills</b>				
Extensive knowledge of epigenetics, development, stem cell biology, or transcription regulation	✓			✓
Ability to bioinformatically analyse BS-seq, ChIP-seq and RNA-seq datasets		✓		
An aptitude for the development and troubleshooting of molecular methods		✓		
Able to comprehend and communicate in the English language to a level appropriate for the position	✓			✓
Proactive, motivated and uses initiative to move projects forward	✓			
Excellent interpersonal skills with the ability to communicate with staff at all levels	✓			
Ability to work independently and as part of a team	✓			
Excellent accuracy and attention to detail	✓			
Excellent organisational skills, with good time management	✓			
Strong IT skills, including Microsoft Office	✓			✓

<b>Personal Attributes &amp; Characteristics</b>				
Willing to work with human embryonic stem cells	✓			
Self-motivated and adaptable to change	✓			
Willing to work flexibly at times	✓			
Empathy with the life sciences work of the Institute	✓			

## The Babraham Institute

### Postdoctoral Research Scientist (WR-PD-LTC)

#### INFORMATION ON TERMS & BENEFITS

The following is for information only and is not contractual statement of terms and conditions.

Holiday Entitlement	25 days per annum
Bank Holidays	Applicable to England and Wales
Christmas Closure days	3 days
Pension Scheme	Babraham Institute is able to offer membership of a Group Personal Pension Scheme.  We will provide you with details of this scheme once you commence work. Membership of the scheme is not compulsory but it is designated as Babraham Institute's Stakeholder exempt plan. The Institute does not make contributions to other personal pension schemes.
Restaurant Facilities	There are a number of facilities on site.
Onsite Accommodation	The Institute has a number of hostels, flats and houses which can be rented. (There is currently a waiting list for all types of accommodation.)
Social	Sports & Social Club
Nursery	Nursery and Holidays Playscheme on site. (Availability of places is dependent on demand.)



Car Parking

There is free car parking in the Institute Car Park.

The Institute is committed to the implementation of a commuting strategy to try and reduce the growth in numbers of cars used to travel to work

**Any offer of employment will be subject to security screening and may be subject to health screening. Any offer may also be subject to a general medical.**