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Ph.D.

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Biotechnology and
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Open PhD position to study the role of DNA methylation in mammalian cell fate

Description:

DNA methylation is an epigenetic mark with pivotal roles in mammals. DNA methylation profiles are reprogrammed in differentiating cell lineages during embryogenesis but how DNA methylation contributes to establish the identity of the cell is unclear.

The objective of the project is to study the role of DNA methylation in the specification of the muscle lineage in mouse embryos. Myogenic stem cells arise from the myotome of mesodermal somites in early embryogenesis and then form the skeletal muscle structures. The student will study the dynamics of DNA methylation patterns at the genome scale in myogenic progenitors and during myogenic commitment in the mouse *in vivo*. He/she will create mouse models with a conditional deletion of the DNA methyltransferases in myogenic progenitors and analyze the consequences on the methylome and transcriptome. The candidate will also study the phenotypic consequences at the organism level and by performing muscle regeneration assays.

The project will be carried out in collaboration between two laboratories that are experts in DNA methylation (Michael Weber in Strasbourg) and muscle development (Aurore l'Honoré in Paris). The candidate will be based in Strasbourg but will make frequent visits in Paris. All mouse lines are already available and the student will be part of a young and dynamic research team supported by the European Research Council (ERC). The host Institute in Strasbourg is located on the international Illkirch research campus with access to state-of-the-art facilities.

Some recent publications:

- Auclair G, Guibert S, Benber A, **Weber M** (2014). Ontogeny of CpG island methylation and specificity of DNMT3 methyltransferases during embryonic development in the mouse. *Genome Biology* 15:545.
- L'honoré A**, Commère PH, Ouimette JF, Montarras D, Drouin J, Buckingham M (2014). Redox regulation by Pitx2 and Pitx3 is critical for fetal myogenesis. *Developmental Cell* 29:392-405.
- Guibert S, Forne T, **Weber M** (2012). Global profiling of DNA methylation erasure in mouse primordial germ cells. *Genome Research* 22:633-641.
- Borgel J, Guibert S, Li Y, Chiba H, Schübeler D, Sasaki H, Forne T, **Weber M** (2010). Targets and dynamics of promoter DNA methylation during early mouse development. *Nature Genetics* 42:1093-100.

Qualifications: We are looking for a highly motivated candidate with a Master's Degree in Molecular or Developmental Biology. A previous experience with chromatin analysis (ChIP, DNA methylation), mouse embryology and/or with the analysis of genomic datasets is desirable.

Starting date: November 2015

Salary: 1750 € / month according to the standards of the CNRS.

Application details:

Please send a CV, letter of motivation, Master's rankings and at least one letter of recommendation to Dr Michael Weber or Dr Aurore L'Honoré:

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