Post-doc/Research Engineer position at Institut Curie
« Analyzing and modeling the spatiotemporal dynamics of genomic loci in mES cells »

Project: The Dahan lab (Laboratoire Physico Chimie, Institut Curie) is seeking to recruit a post-doc (or research engineer) interested in developing and applying computational and modelling tools to analyze the dynamics of genomic loci in mouse embryonic stem cells. The work will be based on imaging data already available in the host lab coming from cells having multiple random insertions of gene arrays or from CRISPR-edited cell lines with tagged loci at specific genomic positions. In close collaboration with the Heard lab at Institut Curie, our goal is to investigate the multiscale, dynamic architecture of the genome and its relationship to gene regulation, in particular in the context of the inactivation of the X chromosome. A specific focus will be on deciphering the contribution of out-equilibrium processes to chromosome dynamics.

Requirements: Applicants are expected to have a training in (bio)physics with a strong background in computational tools (Matlab or equivalent) and a pronounced interested in research at the interface between physics and biology. Knowledge of polymer and statistical physics and/or genome biology would be an asset but is not required. The position is open to post-doctoral or research engineer candidates.

The position is open immediately and the candidate should start no later than December 15, 2017.

Contact: Interested candidates should email a recent CV, a letter motivation and the names of two to three references to M. Dahan.
email: maxime.dahan@curie.fr, https://science.curie.fr/equipe-dahan

Selected recent publications:
Dahan Lab:

1. Spencer C. Knight, Liangqi Xie, Wulan Deng, Benjamin Guglielmi, Lana Bosanac, Lea B. Witkowsky, Elisa T. Zhang, Mohamed El Beheiry, Maxime Dahan, Zhe Liu, Jennifer A. Doudna and Robert Tjian, *"Dynamics of CRISPR-Cas9 Genome Interrogation in Living Cells"*, Science (2015) **350**:823-6.
2. D. Normanno, L. Boudarene, C. Dugast-Darzacq, J. Chen, C. Richter, F. Proux, O. Benichou, R. Voituriez, X. Darzacq, and M. Dahan, *« Probing the target search of single DNA-binding proteins in mamallian cells »*, Nat. Commun. **6**:7357 (2015).
3. Mohamed El Beheiry, Maxime Dahan and Jean-Baptiste Masson, *« InferenceMAP: Whole-cell Mapping of Single-Molecule Dynamics with Bayesian inference »*, Nature Methods **12**, 594–595 (2015).
4. I. Izeddin, V. Récamier, L. Bosanac, I.I. Cissé, L. Boudaren, F. Proux, C. Dugast-Darzacq, O. Bénichou, R. Voituriez, O. Bensaude, M. Dahan*, and X. Darzacq*, *« Single-molecule tracking in live cells reveals distinct target-search strategies of transcription factors in the nucleus »,* Elife 2014 Jun 12:e02230.
5. Ibrahim Cisse, Ignacio Izeddin, Sebastien Causse, Lydia Boudarene, Adrien Senecal, Leila Muresan, Claire Dugast-Darzacq, Bassam Hajj, Maxime Dahan*, Xavier Darzacq*, *« Real time dynamics of RNA Polymerase II clustering in live human cells »,* Science (2013) **341**, 664-7.

Heard Lab:

1. Giorgetti L, Lajoie BR, Carter AC, Attia M, Zhan Y, Xu J, Chen CJ, Kaplan N, Chang HY, Heard E, Dekker J. *Structural organization of the inactive X chromosome in the mouse*. Nature. 2016 535(7613):575
2. Giorgetti L, Galupa R, Nora EP, Piolot T, Lam F, Dekker J, Tiana G, Heard E. *Predictive polymer modeling reveals coupled fluctuations in chromosome conformation and transcription.* Cell. 2014 157(4):950-63
3. Masui O, Bonnet I, Le Baccon P, Brito I, Pollex T, Murphy N, Hupé P, Barillot E, Belmont AS, Heard E. *Live-cell chromosome dynamics and outcome of X chromosome pairing events during ES cell differentiation.* Cell. 2011 145(3):447-58.