

## Post-doctoral Position – Genetics/genomics/microfluidics

### *Deciphering the mutational signature of transcription and DNA repair processes combined with exogenous DNA damages*

A **2-year post-doctoral position** funded by a grant from ITMO Cancer (Aviesan, Inserm) is open from **March 2023** to work on the interdisciplinary project in the group headed by Dr. Julie Soutourina at the Institute for Integrative Biology of the Cell (I2BC) on the Saclay campus of the CEA (Paris region, France), in close collaboration with Dr. Florent Malloggi at the Interdisciplinary Laboratory on Nanoscale and Supra Molecular Organization (LIONS, CEA/Saclay).

The post-doctoral fellow will participate in the interdisciplinary collaborative project to improve our understanding of the mutational processes at the origin of cancers. We aim in deciphering the **impact of transcription and DNA repair combined with mutagen exposure on mutational processes in human cancers** using a combination of genetic, genomic, microfluidic and computational approaches. We propose to take advantage of the **yeast model** to perform large-scale mutational experiments and to identify the most mutagenic combinations of genetic background and mutagen treatment that will be then directly tested in human cells. A novel methodological framework based on **microfluidics**, allowing to considerably accelerate mutation accumulation experiments in yeast by unprecedented parallelization that we recently developed, will be applied. A computational analysis of these experimental data will help to understand underlying mechanisms of mutational processes and the acquired knowledge will be then transferred to human cells.

The successful candidate will have a PhD in molecular biology with solid background knowledge in genetics and functional genomics. We are seeking for highly motivated candidates with a strong interest in the field of transcription and DNA repair in eukaryotes together with interdisciplinary approaches based on microfluidics. A previous experience on yeast model and DNA sequencing approaches will be important. Good communication skills in English or French are required.

Interested candidates should contact Dr. Julie Soutourina at [julie.soutourina@cea.fr](mailto:julie.soutourina@cea.fr) and Dr. Florent Malloggi at [florent.malloggi@cea.fr](mailto:florent.malloggi@cea.fr) and send to both contacts a Curriculum Vitae, including past research experience and publication records, as well as a letter detailing their motivation and interest in our work. Applicants should also provide the names and contact details for two or three references and recommendation letters.

#### **Selected references:**

- Sipos, E. H., Lety-Stefanska, A., Wilkes, C. D., **Soutourina, J. & Malloggi, F.** (2021) Microfluidic platform for monitoring *Saccharomyces cerevisiae* mutation accumulation. *Lab Chip* 21, 2407-2416.
- Gopaul D.#, Denby Wilkes C.#, Goldar A., Giordanengo Aiach N., Barrault M.B., Novikova E., Soutourina J. (2022) Genomic analysis of Rad26 and Rad1–Rad10 reveals differences in their dependence on Mediator and RNA polymerase II. *Genome Research*, 32(8), 1516-1528.
- Eyboulet F., Cibot C., Eychenne T., Neil H., Alibert O., Werner M. & Soutourina J. (2013) Mediator links transcription and DNA repair by facilitating Rad2/XPG recruitment. *Genes & Dev.* 27, 2549-2562.
- Soutourina, J. et al. (2011) Direct RNA polymérase II – Mediator interaction required for transcription *in vivo*. *Science* 331, 1451-1454.