



**Post-doc position in Circulating Biomarkers Analysis**

**Paris FRANCE**

**MMBM Team**

The MMBM team leads interdisciplinary research in Microfluidics at the frontier between biophysics, biology and medicine. The MMBM team belongs to UMR 168 at Curie institute. It benefits from the direct, walking distance environment of i/ Curie Institute, providing access to a multiplicity of technological platforms such as the Curie-Nikon imaging center, equipped with essentially all the available super-optics technologies; Curie is also a comprehensive oncology center of high reputation, with particularly easy access to clinical cooperation; ii/ PSL\* University of Excellence, gathering the highest density in France of interdisciplinary research; and iii/ the team is located at the Institute Pierre Gilles de Gennes for Microfluidics, a 7000 sqm Institute built at the heart of Montagne Ste Geneviève Paris campus, and entirely dedicated to microfluidics.

**The project**

The MMBM is involved in two FET OPEN EU projects aiming at developing innovative technologies for tumoral circulating biomarkers analysis (ctDNA and exosomes). In particular our team is involved in developing microfluidic approaches to perform tumoral biomarkers extraction and preconcentration, one of the major bottleneck of the bioanalytical workflow. This extraction step will be performed using a technology recently pioneered by our team: a microfluidic and magnetic fluidized bed. Fluidized-beds are commonly used to enhance surface interactions in a solid/liquid mixture, with high stirring and low backpressure. Our team developed a completely new concept of micro-fluidized beds based on magnetic micro-particles in equilibrium between flow-induced drag forces and magnetic forces [1]. This system already showed unprecedented efficiency for solid phase extraction and was successfully applied for bacteria analysis [2] and proteins preconcentration [3].

**The objectives :**

Based on this existing technology, this project aims at implementing this approach for ct DNA and exosomes extraction form body fluids. In particular we will work implement new modes of fluidization recently investigated in the team. The candidate will optimize the capture conditions in terms of biochemistry and fluidics and characterize the potential of this approach for circulating biomarkers preconcentration in the context of the EU projects INDEX and CATCH U DNA. The candidate will also be in charge of the interactions with the partners of the projects consortium and of the EU reporting.

**The candidate**

We are looking for a highly motivated and creative post-doctoral researcher with a strong drive and motivation to tackle major challenges in microfluidics for circulating biomarkers.

Skills required

* **PhD in Physics, Biophysics or Biomedical engineering**
**– Previous experience in microfluidics and/or bioanalysis**
**– Experience with circulating biomarkers will be an asset**
**– High level of English**
**– High motivation and ability to be involved in a multidisciplinary team and in EU Consortium**
**– Excellent team working and communication skills**

Applicants should send their CV, a cover letter and the contact of two references.

**Contacts :**

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**REFERENCES**

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2. I. Pereiro, A. Bendali, S. Tabnaoui, L. Alexandre, J. Srbova, Z. Bilkova, S. Deegan, L. Joshi, JL Viovy, L. Malaquin, B. Dupuy, S. Descroi*x A new microfluidic approach for the one-step capture, amplification and label-free quantification of bacteria from raw samples* Chemical Science, 2017
3. [Thanh Duc Mai](http://pubs.rsc.org/-/results?searchtext=Author%3AThanh%20Duc%20Mai),  [Iago Pereiro](http://pubs.rsc.org/-/results?searchtext=Author%3AIago%20Pereiro),  [Mohamed Hiraoui](http://pubs.rsc.org/-/results?searchtext=Author%3AMohamed%20Hiraoui),  [Jean-Louis Viovy](http://pubs.rsc.org/-/results?searchtext=Author%3AJean-Louis%20Viovy),  [Stéphanie Descroix](http://pubs.rsc.org/-/results?searchtext=Author%3ASt%C3%A9phanie%20Descroix), Myriam Taverna and  [Claire Smadja](http://pubs.rsc.org/-/results?searchtext=Author%3AClaire%20Smadja),*Magneto-immunocapture with on-bead fluorescent labeling of amyloid-β
peptides: towards a microfluidized-bed-based operation* , Analyst, 2015