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To Whom It May Concern

Letter of Recommendation for Michael Poirier

It is a pleasure for me to recommend Dr. Michael Poirier for a position in your institute. I know him quite well and appreciate very much his capabilities and qualities.

I first met Michael during my sabbatical at University of Chicago in 2000-2001. I was working at the James Franck Institute on the modelling of biophysical systems, with a special care to single molecule experiments. I soon got into touch with Prof. John Marko's group at University of Illinois at Chicago, a leader in the field both from theoretical and experimental points of view. There, I closely collaborated with John Marko and a post-doc, Dr. Simona Cocco, on issues related to the unzipping of DNA under mechanical stress. This explains how I came to know Michael, who was doing his PhD at that time, and how I often discussed with him.

I was immediately very impressed by Michael's maturity. I knew by experience that many PhD students have a strong tendency to focus very intensely on their work, to get deeper and deeper in technicalities without a broad overview of their field and its context. Michael was exactly the opposite. He was excellent at doing his experiments (as far a theoretician like me can judge ...) and mastering all necessary techniques e.g. computer programming and interfacing. In addition, he knew a lot of literature and had a strong interest in various issues in physics and biology, not directly related to his ongoing research. He showed a great autonomy in his day-to-day research.

Clarity is another of Dr Poirier's main qualities I recognized from the beginning. Michael has a very strong ability to communicate and explain in clear and accessible terms his work and findings. I suppose you will share this impression once you hear him giving a talk. Briefly speaking, by hiring Michael, you will benefit from an experimentalist capable of presenting his research with great clarity and eager to interact with theoreticians. This is very precious for a physics department.

During his PhD, Michael obtained important results on the elasticity and structure properties of mitotic chromosomes through micromanipulation experiments. Before his

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work, it was usually assumed that the ability to sustain external stretch came from the presence of an internal protein scaffold. His experiments showed it is not the case: the chromosome falls apart when attacked by restriction enzymes; thus rigidity is due to DNA only. This result is challenging from a theoretical point of view. There is a clear need for the modelling of the DNA network in a chromosome to interpret data from Michael's biochemical and micromechanical studies. Dr Poirier's results have led to various publications in top level journals e.g. PNAS, Physical Review Letters, ...

Dr. Poirier came to Strasbourg as a post doc in January 2002 to work under the supervision of Prof Didier Chatenay on genetic diversity in bacteria populations. This is a fascinating but hard subject, quite far away from what he had done in Chicago. Michael could have opted for a more "quiet" post doc, pursuing on single molecule experiments and likely to give rise to more publications in a limited period of time. But he likes taking calculated risks, and was clearly excited by the idea of moving to a new subject.

As I spend around half of my research time in Strasbourg to collaborate with S. Cocco and Chatenay's group, I saw how Michael entered his new field and was able to obtain concrete results in a few months. He worked at the same time on the molecular biology aspect of the project (constructions of plasmids, ...) and on the experimental device building up (construction of microcanals with lithography, data acquisition system, ...). My impression is that he essentially acted as a supervisor for the PhD student, C. Rich, involved in the project.

I am currently working on a theoretical modelling of Michael's data on the fluctuations of protein expression and plasmids number. Besides their biological intrinsic interest, these questions are related to non trivial and new physics. Regulation networks are highly non linear dynamical systems with many coupled degrees of freedom. Understanding how noise propagates, gets amplified, or reduced in such a dynamical system is a question of fundamental interest, not only from a biological point of view.

Michael is a young bright and independent experimentalist, capable of communicating and interacting very efficiently with other researchers, among which theoreticians. He is curious and has very broad interests in biophysics, and has shown a strong ability to change subject and to take risks. What motivates him, to my opinion, is to do true physics on biologically inspired and related problems. In addition he is a very sociable and friendly person. I therefore strongly recommend Michael's application to your institute.



Yours sincerely. Rémi Monasson