



INSTITUTE OF PHYSICS IPHYS

Seminar in Biological and Statistical Physics

Mercredi 21 juin 2023 à 10h15

Salle BSP 234 auditoire CUB II

Dr. Remi Casier

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“Untangling the Disaggregation Mechanism of the Hsp100 Protein Machine ClpB”

Abstract:

Protein disaggregases are nano-sized machines capable of reversing protein aggregation and are vital for maintaining cell homeostasis. Hsp100 disaggregases, such as ClpB, are believed to liberate proteins from aggregates by actively pulling a strand of a substrate into a large central pore utilizing the energy of ATP hydrolysis. However, the mechanism utilized by ClpB to convert this energy into mechanical force, including the timescale at which this occurs, remains uncertain. To address this issue, we use single-molecule FRET spectroscopy to directly observe the dynamic interactions between ClpB and a model substrate, casein. The real-time monitoring of the efficiency of energy transfer between fluorescently tagged casein and ClpB revealed that, in the presence of ATP, casein is fully translocated through the central pore of ClpB on the millisecond timescale.

Host: Prof. De Los Rios
Institute of Physics and Institute of Bioengineering