Transport through nuclear pore complex: Theory and simulation

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Abstract:

The nuclear pore complex (NPC) is most probably the nature's finest analytical chemist [1]. Seated at the gateway between the cytoplasm and nucleus in eukaryotic cells it distinguishes proteins by their chemical affinity. In the earlier part of the talk I will present a simple theoretical model [2] that addresses this issue of "selectivity" and the transport mechanism of proteins. Our model also suggests that the central plug of NPC is most likely to be a gel than a brush. In the later part of the talk, I will show how a simple coarse-grained molecular dynamics simulation on a NPC like model system [3] can shed light on the issue of normal versus anomalous mode of transport of tracers.

References:

1. K. Weis, *Cell* **130**, 405 (2007).

2. R. Chakrabarti, A. Debnath and K. L. Sebastian (under revision, *Euro. Phys. J. E*).

3. R. Chakrabarti, S. Kesselheim, P. Kosovan and C. Holm (under revision, *Phys. Rev. E*).