

SÉMINAIRES ET CONFÉRENCES



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“Design principles of disorder-driven transitions in transcriptional organization”

Eukaryotic transcription is organized into compartments that concentrate regulatory factors and DNA. Recent studies suggest that these compartments can form through intrinsically disordered region (IDR)-mediated interactions that couple transcription factor binding to biomolecular condensation. A key open question is how transcription factors use IDRs to coordinate sequence-specific motif recognition with the ability to drive local condensate formation. In this talk, I will present our work uncovering design principles that link these processes using the human transcription factor NF- κ B. Combining single-molecule biophysics, cell biology, and theory, we find that IDR properties tune fundamental transitions in transcription factor behaviour on DNA. We show that the length of the IDR and DNA-binding valency determine how transcription factors search DNA and form DNA-associated condensates. This points to a more general view in which IDRs act as tunable elements that regulate transitions between distinct modes of genome interaction—from binding and one-dimensional exploration to multivalent co-condensation that can exert forces on DNA.



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Jeudi 4 juin 2026, 12h30

Pavillon Joseph-Armand-Bombardier, Salle : 1035

ET

[Zoom](#)

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