

## **The journey of a pioneer transcription factor towards its target sequence.**

Non-membrane bound compartments, exhibiting material properties ranging from classic liquids to gel-like play a mayor role in cell material compartmentalization. These granules are commonly composed of nucleic acid-binding proteins containing low complexity domains. Using state of the art optical tweezers coupled with fluorescence microscopy we will explore, starting at the single molecule level, the structure and function of model systems exhibiting liquid like properties: How do pioneer transcription factors scan a single DNA molecule to reach a target sequence? Which material properties are required to achieve 3D genome organization?

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