

Molecular disorder on a dynamic nucleoprotein landscape

Pétur O. Heidarsson¹

¹ *Department of Biochemistry, Science Institute, University of Iceland, Reykjavík, Iceland.*

Corresponding author: pheidarsson@hi.is

The complex nucleoprotein landscape of the eukaryotic cell nucleus is rich in dynamic proteins that lack a stable three-dimensional structure. Many of these intrinsically disordered proteins operate directly on the first fundamental level of genome compaction: the nucleosome. Disordered interactions with and within nucleosomes shape the dynamics, architecture, and epigenetic regulation of the genetic material, controlling cellular transcription patterns. In this talk I will show how single-molecule spectroscopy can be a powerful tool to study disordered interactions and how integrative approaches that combine experiments and simulations are increasingly unveiling the fine details of nuclear interaction networks. As drivers of many critical biological processes, disordered proteins are integral to a comprehensive molecular view of the dynamic nuclear milieu.