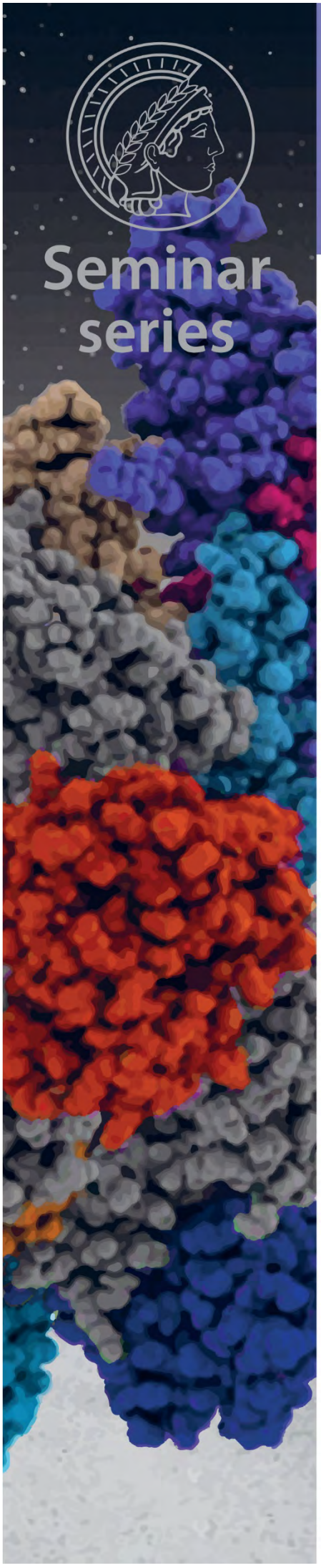
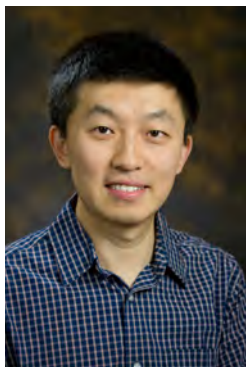


Gene transcription and genomic regulation

Thursday
14 October 2021
4:00 p.m.



Yuan He
Northwestern University, Evanston

Structural Visualization of Chromatin Regulatory Complexes using Cryo-EM

My research program seeks to address the fundamental biological questions of how information stored in DNA is correctly transcribed and how genome integrity is maintained. Transcription is the first process involved in the genetic readout and incorrect spatial and/or temporal patterns of gene transcription contribute to the etiology of many human diseases. The genome is relentlessly subjected to a variety of environmental insults to which cells respond by deploying multiple, distinct mechanisms to counter the deleterious effects depending on the type of damage sustained. My research program integrates a combination of approaches including protein biochemistry, biophysics, and structural biology to elucidate structure-function relationships of complex macromolecular machines. Since establishing my independent laboratory in 2015 at Northwestern University, we have made significant progress and impactful discoveries addressing fundamental questions regarding how cells have evolved molecular mechanisms to read and repair our genome. These include: 1) How does a transcription initiation complex assemble at gene promoters? 2) How does a chromatin remodeling complex expose DNA sequences shielded by chromatin? 3) How are DNA double strand breaks (DSBs) detected and repaired? Our work has provided fundamental mechanistic insights into each of these processes at atomic resolution and raised important questions for future investigations. We anticipate that our scientific contributions have and will continue to shape and advance the exciting, rapidly growing fields of gene regulation and DNA repair with the results of these studies being directly relevant to human health and disease.

Host: Prof. Dr. Patrick Cramer
Place: Zoom (Details to be announced by email)