



Australian Government
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MOLECULAR
HORIZONS



SEMINAR SERIES 2026

17 February*, 10:00 AM AEDT

A/Prof. Seychelle Vos

HHMI Freeman Hrabowski Scholar, Massachusetts Institute of Technology, Cambridge, MA, USA

Prof. Vos obtained her bachelor's degree in Genetics from the University of Georgia and pursued a PhD in the lab of James M. Berger at UC Berkeley, where she studied how bacterial topoisomerases are regulated using a combination of X-ray crystallography, solution biochemistry, and genetics. Vos completed her postdoctoral training with Patrick Cramer at the Max Planck Institute for Biophysical Chemistry, where she employed cryo-electron microscopy and solution biochemistry to elucidate how RNA polymerase II activity is regulated in promoter-proximal regions of genes. She started her group at MIT as an Assistant Professor in the Department of Biology in the fall of 2019 and was promoted to associate professor in 2025. Her lab focuses on how local chromatin environment and global genome architecture influence transcriptional activity. The lab investigates molecular machines that are involved in transcription, nucleosome positioning, and global genome organization using a combination of structural (X-ray crystallography, cryo-electron microscopy, cross-linking mass spectrometry), biochemical, and genomics techniques. Work in the Vos lab is funded by the NIH New Innovator Award, the Howard Hughes Medical Institute Freeman Hrabowski Program, Alex's Lemonade Foundation, and The Cancer UK Grand Challenges Program.



Understanding Gene Expression in the Context of Genome Organization

RNA polymerase (Pol) II is regulated during all stages of transcription to ensure appropriate gene expression. Seychelle will discuss recent cryo-electron microscopy (EM) and biochemical work that has uncovered how Pol II is regulated by both protein factors and the underlying DNA sequence. Pol II activity is also influenced by the organization of the genome. Genome organization is regulated at multiple levels, ranging from the underlying DNA sequence to large-scale interactions between chromosomes. Our recent efforts to understand how these multiple levels of genome organization are used to regulate gene expression will also be discussed.

***Please note, this is the third Tuesday of the month**