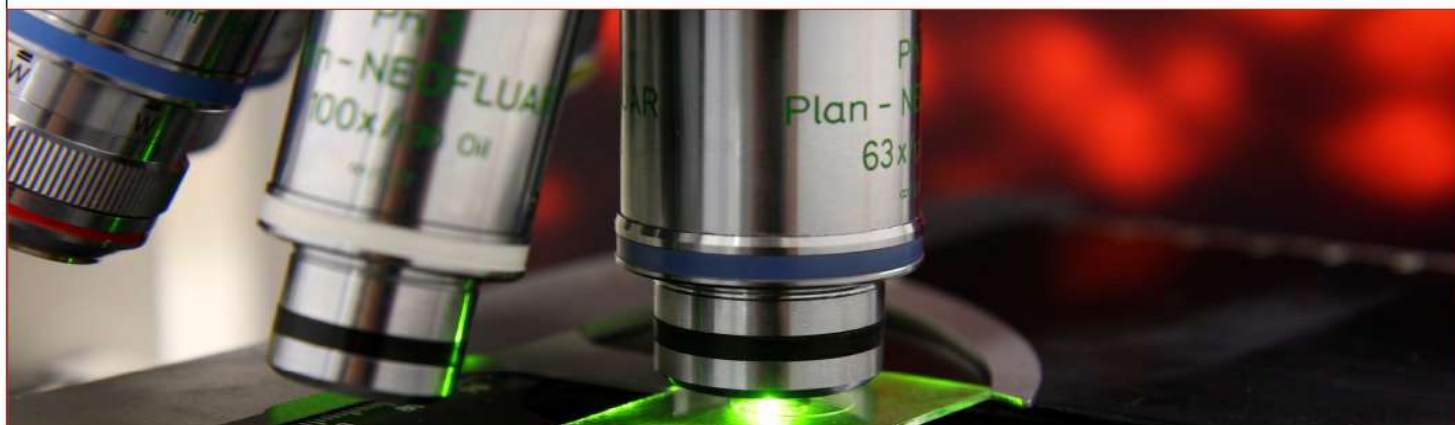


SÉMINAIRES ET CONFÉRENCES



Ute Kothe

**Department of Chemistry,
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“How small nucleolar RNAs facilitate the Assembly of Ribosomes”

Ribosomes are RNA-Protein machines that synthesize all proteins in living cells. The synthesis of ribosomes is a complex, yet poorly understood process, which is based on the co-transcriptional folding and processing of large precursor ribosomal RNA (pre-rRNA). To facilitate ribosome synthesis, hundreds of assembly factors as well as ribosomal proteins interact with the nascent pre-rRNA. In the Kothe group, we are investigating how small nucleolar Ribonucleoproteins (snoRNPs) aid in ribosome assembly by facilitating the (un-)folding, chemical modification and processing of pre-rRNA. Specifically, H/ACA snoRNPs base-pair with pre-rRNA to select uridines for isomerization to pseudouridines. Notably, at least one specialized H/ACA snoRNP facilitates pre-rRNA processing to mature rRNA through an unknown molecular mechanism.

In this seminar, I will report how we reconstituted the early steps of ribosome biogenesis to understand the mechanism of H/ACA snoRNPs using quantitative biochemical approaches. Thereby, we show that H/ACA snoRNPs can unfold ribosomal RNA and that pseudouridine formation occurs independently in the two active centres of H/ACA snoRNPs. Moreover, we reveal that the specialized snR30 snoRNP interacts with another assembly factor to increase its affinity for pre-rRNA as a critical step towards facilitating pre-rRNA processing.

Our findings provide molecular insight into the early dynamic stages of pre-rRNA (un-)folding, modification and processing. Thereby, we gain not only fundamental knowledge about macromolecular assembly in the cell, but a molecular understanding of ribosome assembly also lays the foundation to address ribosome biogenesis defects in inherited diseases and to inhibit ribosome formation in cancer cells.

Lien zoom:

<https://umontreal.zoom.us/j/84401942874?pwd=MTkxZmNIS0svRG5kdHdSZXRCTm9WUT09>



Le lundi 25 avril 2022, 11h30

Invitée de Christian Baron

Faculté de médecine
Département de biochimie
et médecine moléculaire

Université 
de Montréal