McGill University Research Centre on Complex Traits – MRCCT
SEMINAR SERIES

Dr. Jerome Waldispuhl, Ph.D.

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Title: "Analysis and Synthesis of RNA Structures: Genesis of a computational platform to manipulate the RNA code"

Wednesday, September 6, 2017

Karp Amphitheater | Room 501, 4:00 PM

Goodman Cancer Research Centre

"Ribonucleic acids (RNAs) are versatile biomolecules involved in a broad range of biological functions. For instance, as messenger RNA it encodes genes and as riboswitch it regulates gene expression. The knowledge of the structure is often key to understand their non-coding function.In this talk, I will describe our progresses toward the implementation of a customizable computational platform to analyze, predict, and construct structured functional RNAs. First, I will present a large-scale analysis of experimentally-determined 3D structures that enabled us to discover non-local RNA modules and build a catalog of recurrent structural units. Then, we show how to use this data to accurately predict 3D structures of large molecules, and introduce new paradigms allowing us to combine chemical probing data with the evolutionary information available in multiple sequence alignments, to predict nucleotides located in RNA–RNA, RNA–protein, RNA–DNA and RNA–ligand interfaces. Finally, I will describe our latest software for designing RNA sequences with target folding properties. This technology could facilitate the design of nucleic acid devices in synthetic biology, but also help designing gene editing experiments.Joint work with V. Reinharz, Y. Ponty, A. Denise, E. Westhof, F. Major."

LOCATION: **Goodman Cancer Centre, Room #501, 4:00 PM**

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