

27th RiboClub Annual Meeting

October 4 to 8, Hôtel Chéribourg, Orford, Québec

RNA in Antimicrobial Resistance

Sunday, October 4

- | | |
|-------------|---|
| 13:30-17:00 | Registration |
| 13:30-14:30 | Student Orientation |
| 14:30-17:00 | Social activity - Hike on Mont Giroux (trail: The Familiale)
Difficulty Level: Easy
Ascent: 30 to 50 minutes
Descent: 15 to 20 minutes |
| 17:00-18:30 | Welcome Reception and industry showcase
Music with Marily Dorion |
| 18:30-20:00 | <i>Opening dinner and welcome note</i>
Sherif ABOU ELELA |
| 20:00-20:05 | Presentation of After Dinner Speaker
Amrit SINGH , Ohio State University |
| 20:05-21:00 | After Dinner Presentation
Cellular learning and the night science creative process
Itai YANAI , NYU School of Medicine |

Monday, October 5

08:00-09:00 Registration

08:30-08:40 Opening Notes and Announcements

Eric MASSÉ, Université de Sherbrooke

Session 1: RNA Synthesis, Processing and Metabolism

Chairs: **Hubert SALVAIL**, **Dila AYCAN**

08:40-08:45 Introduction by **Hubert SALVAIL**, University of Central Florida

08:45-09:05 Harnessing the unusual chemistry and biology of tRNA modification enzymes

Jane JACKMAN, Ohio State University

09:05-09:25 Reconstitution of the tetrameric “switch” at the center of ER stress-dependent mRNA processing

Vlad BELYY, Ohio State University

09:25-09:45 Post-transcriptional regulation of the rapidly oscillating vertebrate segmentation clock

Sharon AMACHER, Ohio State University

09:45-10:00 Dissecting unexpected connections between transcriptional control and Nonsense Mediated mRNA Decay

Rene ARVOLA, Ohio State University

10:00-10:15 The molecular determinants of PABP-mediated deadenylation rate

Ryan MULLER, Whitehead Institute for Biomedical Research, MIT

10:15-10:45 *Coffee break*

Session 2: RNA Modification and Organization

Chairs: **Mathieu FLAMAND, Omid GHOLAMALAMDARI**

10:45-10:50 Introduction by **Mathieu FLAMAND**, Université Laval

10:50-11:10 How do ADARs achieve binding specificity *in vivo*
Heather HUNDLEY, Indiana University

11:10-11:30 Conserved tRNA modifications complement each other
in optimizing protein synthesis
Ute KOTHE, University of Manitoba

11:30-11:50 Cryo-electron tomography reveals neuron-specific
remodeling of the translation machinery in RNA granules.
Joaquin ORTEGA, McGill University

11:50-12:05 Single-molecule m6A profiling reveals
position-dependent mRNA regulation and non-canonical
roles for Ythdf2 in early embryogenesis
Jean-Denis BEAUDOIN, University of Connecticut

12:05-12:20 Near-atomic structure of the *Candida albicans* ribosome
uncovers rRNA modifications and new antifungal targets
Olga KOLOSOVA, French National Centre for Scientific
Research

12:20-13:40 Mentoring *Lunch* organized by **Andrea RIVERA**,
Université de Sherbrooke

13:40-13:45 Presentation of Keynote speaker
Evan MERCIER, Université de Sherbrooke

13:45-14:45 Translational fidelity, ambiguity, and protein folding
Marina RODNINA, Max Planck Institute for Biophysical Chemistry

14:45-15:15 *Coffee Break*

Session 3: RNA Translation

Chairs: **Maria Vera UGALDE**, Talar GHADANIAN, Nicolas LESPINASSE

15:15-15:20 Introduction by **Maria Vera UGALDE**, McGill University

15:20-15:40 Autoregulation of bS21 synthesis in *Flavobacterium Johnsoniae*
Kurt FREDRICK, Ohio State University

15:40-16:00 Assembly factors and snoRNAs manage programmable RNA folding and misfolding to support growth in stationary phase
Katrin KARBSTEIN, Vanderbilt University

16:00-16:15 Evaluating the role of 5'-UTR RNA G-quadruplexes as a global regulator of translation.
Sanjucta ADAK, University of Connecticut

16:15-16:45 *Coffee Break*

16:45-17:05 Translation elongation as a rate-limiting step of protein production
Liana LAREAU, UC Berkeley

- | | |
|-------------|---|
| 17:05-17:25 | An autism spectrum disorder mutation in TOP3B causes accumulation of TOP3B•mRNA covalent intermediates, stimulates ribosome collisions, and is neurotoxic
Mike KEARSE , Ohio State University |
| 17:25-17:45 | m6A-mediated regulation of gene expression in microglia
Kate MEYER , Duke University |
| 17:45-18:00 | A new protein-dependent riboswitch activates ribosomal frameshifting in cardioviruses
Jemma BETTS , University of York |
| 18:00-18:20 | Poster flash talks |
| 18:20-19:15 | <i>Dinner</i> |
| 19:15-21:15 | Poster Session (odd numbers) |
| 21:15- | <i>Social Gathering and Networking</i> |

Tuesday, October 6

Session 4: tRNA Biology

Chairs: **Karin MUSIER-FORSYTH, Jennifer PORAT**

- | | |
|-------------|--|
| 08:30-08:35 | Introduction by Karin MUSIER-FORSYTH , Ohio State University |
| 08:35-08:55 | Enigmatic distribution and evolution of RNase P variants
Venkat GOPALAN , Ohio State University |
| 08:55-09:15 | CELF2 regulates translation through PUS7-mediated tRNA modification
Kristen LYNCH , University of Pennsylvania |
| 09:15-09:30 | Aminoacyl-tRNA synthetase organization is critical for neurodevelopment
Samuel NYANDWI , University of Toronto |
| 09:30-09:45 | Genome-wide analysis of the tRNA structurome reveals alternate tRNA structures in an anaerobic methanogen grown with different carbon substrates
Anwasha GHOSH , Pennsylvania State University |
| 09:45-10:15 | <i>Coffee Break</i> |

Session 5: RNA Structure-Function

Chair: **Jonathan PERREAULT, Sara HUBBELL**

- | | |
|-------------|--|
| 10:15-10:20 | Introduction by Jonathan PERREAULT , Institut national de la recherche scientifique |
|-------------|--|

10:20-10:40	Aptamer-based control of therapeutic mRNAs Maureen MCKEAGUE , McGill University
10:40-11:00	Shape-shifting HIV-1 RNAs: Structural dynamics in viral assembly and gene expression Karin MUSIER-FORSYTH , Ohio State University
11:00-11:20	Using in extracto cryo-EM to visualize translation initiation Andrei KOROSTELEV , UMass Chan Medical School
11:20-11:40	Assembly of RNA processing machines: Common and idiosyncratic mechanisms Aaron HOSKINS , University of Wisconsin-Madison
11:40-11:55	RNA folding as a stress switch for spliceosome selectivity Jasmine TSANG , Université de Sherbrooke
11:55-12:10	Loss of the exon junction complex make a 'MES' of the transcriptome David MCWATTERS , MIT
12:10-13:10	<i>Lunch</i>

Session 6: RNA in Health and Diseases

Chairs: **Mathieu QUESNEL-VALLIERES**, Mina **ANADOLU**

13:10-13:15	Introduction by Mathieu QUESNEL-VALLIERES , Université de Sherbrooke
-------------	--

- 13:15-13:35 Uncovering post-transcriptional circuitries underlying dysfunctional hematopoiesis
Kristin HOPE, University Health Network
- 13:35-13:50 CityRNAs selectively silence mutant alleles with single nucleotide variants
Mackenzie DILLENBECK, Ohio State University
- 13:50-14:05 Poly(A) tail remodeling during the innate immune response
Sydney TOWNSEND, Ohio State University
- 14:05-14:25 The RNA virus warfare of yeast
Artem BABAIAN, University of Toronto
- 14:25-14:55 *Coffee Break*

Session 7: RNA Applications

Chairs: **Martin HOLCIK, Syeda Zainab ALI**

- 14:55-15:00 Introduction by **Martin HOLCIK**, Carleton University
- 15:00-15:20 Cross-kingdom RNA communication and eco-friendly RNA-based disease control solutions
Hailing JIN, University of California Riverside
- 15:20-15:40 RNA-based technologies to control disease vectoring insects
Steve WHYARD, University of Manitoba
- 15:40-15:55 Understanding the dynamics of AGO proteins in the *C. elegans*–Orsay virus pathosystem
Julie CLAYCOMB, University of Toronto

15:55-16:10 Riboswitch-targeting therapeutics against *C. difficile*
Joshua LECUYER, University of Michigan

16:10-18:00 Poster Session (even numbers)

18:00-19:00 *Dinner and Networking*

19:00-20:30 Patient/Clinician Panel
Moderated by Sarah SCHULTZ, Western University
and **Matthieu FLAMAND**, Université Laval

Karl Sauvageau

(patient representative with Wilson syndrome)

Dr. Ian McDonald

(Director of the ophthalmology department at
Université de Montréal)

Sumaya Ali

(patient representative, DNM1 Epilepsy)

Dr. Jean-Philippe Lambert

(researcher and patient)

Sylvie Turcotte

(patient representative, Sjögren Disease)

Wednesday, October 7

Session 8: RNA and AMR

Chairs: **Sylvain MOINEAU**, **Jessica SHEN**, **Grace CROWE**

- | | |
|-------------|---|
| 08:30-08:35 | Introduction by Sylvain MOINEAU , Université Laval |
| 08:35-08:55 | RNA-targeting therapeutics to address antimicrobial resistance
Nicolas MOITESSIER , McGill University |
| 08:55-09:15 | Post-transcriptional control of horizontal gene transfer in <i>Acinetobacter baumannii</i>
Michael GEBHARDT , University of Iowa |
| 09:15-09:35 | Natural ribosomal RNA heterogeneity contributes to bacterial fitness in sub-lethal antibiotic concentrations
Jessica A. WILLI , University of Lethbridge |
| 09:35-09:55 | Harnessing bacterial conjugation for CRISPR-Cas9 targeting of antimicrobial resistance
Sébastien RODRIGUE , Université de Sherbrooke |
| 09:55-10:10 | Kinetic and structural mechanism of Tet(O) mediated tetracycline resistance
Dylan GIRODAT , University of Lethbridge |
| 10:10-10:50 | <i>Coffee Break</i> |
| 10:50-11:05 | Translation inhibiting antibiotics induce an asRNA regulating purine metabolism in <i>S. pneumoniae</i> TIGR4 via an ISL3 derived hybrid promoter
Michelle MEYER , Boston College |

11:05-11:20 6S RNA: A Small bacterial ncRNA that regulates gene expression and is involved in oxidative stress response and antimicrobial resistance
Lisa KHARKOVA, Simon Fraser University

Session 9

Keynote: **Anita HOPPER**

11:20-11:25 Introduction by **Dylan GIRODAT**, University of Lethbridge

11:25-12:25 tRNA introns: novel small noncoding regulatory RNAs
Anita HOPPER, Ohio State University

12:25-12:30 Group Photo

12:30-14:30 *BBQ Lunch*

14:30-16:00 Equity Diversity and Inclusion Activity
Organized by the RNA Canada ARN EDI committee

Panelists:

Michelle Scott (Université de Sherbrooke)

Ute Kothe (University of Manitoba)

Jessica Willi (University of Lethbridge)

Benoit Laurent (Université de Sherbrooke)

Jane Jackman (Ohio State University)

Moderated by **Jennifer Porat** and **Isabella Todd**

16:00-16:30 *Coffee Break*

Session 10

- 16:30-16:35 Introduction of the Alumnus of the year
By **Louis-Philippe Chaumont** and **Andrea Rivera Pizana**, Université de Sherbrooke
- 16:35-16:55 Structure-function studies of protein synthesis machinery in human pathogenic protozoa
Melissa LÉGER-ABRAHAM, Harvard Medical School / Boston Children's Hospital
- 16:55-17:00 Introduction of the winner of the Best Monthly Seminar Award
By **Louis-Philippe Chaumont** and **Andrea Rivera Pizana**, Université de Sherbrooke
- 17:00-17:20 Best Monthly Seminar Award Presentation
Speaker announced during meeting
- 17:20-18:20 *Networking and cocktails*
- 18:20-19:30 *Gala Dinner*
- 19:00-19:10 Student travel and poster awards
Presented by **Jean-Philippe Brosseau** and **Evan Andre Mercier**, Université de Sherbrooke
- 19:10-19:40 RNA Canada ARN Award Ceremony
Presented by **Amanda Hargrove**
Volunteer of the year
Trainees of the year
Discovery of the year

- | | |
|-------------|--|
| 19:40-19:45 | RNA history of the Sherbrooke RNA community
Presented by Michelle Scott , Université de Sherbrooke |
| 19.45-19.50 | Introduction of the Student's Choice Keynote speaker
By Louis-Philippe Chaumont and Andrea Rivera Pizana , Université de Sherbrooke |
| 19:50-20:50 | After Dinner Presentation: Student's Choice Keynote speaker
Hagen TILGNER , Cornell University |
| 20:50- | Entertainment with Qualité Motel |

Thursday, October 8

Session 11: Industry Workshop: Established companies (RiboContact)

Chair: **Leslie Madden - Moderna**

- | | |
|-------------|---|
| 08:30-08:40 | Introduction by Moderna |
| 08:40-09:00 | Successes and Challenges ahead
Leslie Madden - Moderna |
| 09:00-09:20 | Fred Vaillancourt , REmix Therapeutics |
| 09:20-09:40 | Feldan Shuttle peptide technology enables development of PMO-based therapeutics to treat basal cell carcinoma and muco-obstructive lung diseases
David Guay , Feldan Therapeutics |
| 09:40-10:00 | Question panel |
| 10:00-10:45 | <i>Coffee Break</i> |

Session 12: Recent Start-Ups

Chair: **Sébastien RODRIGUE**

- | | |
|-------------|---|
| 10:45-10:55 | Introduction by Sébastien RODRIGUE |
| 10:55-11:15 | Marc Lavertu , RNA Technologies and Therapeutics |
| 11:15-11:35 | Systemic delivery of self-amplifying RNA lipid nanoparticle for long-term protein expression
Francesca Ferraresso , Syrina Therapeutics |

11:35-11:50 Question Panel

11:50-12:20 Micropresentations and networking

12:20-13:25 *Lunch*

Session 13: Translation in progress: Building a Project Around Your RNA Discovery (RiboContact)

13:25-13:30 Introduction by **Simon FORTIER** and **Sam OSSEIRAN**

13:30-13:45 **Nicolas MOITESSIER** – McGill University

13:45-14:00 **Kristin HOPE** – University Health Network

14:00-14:15 **Venkat GOPALAN** - OSU

14:15-14:30 **Janet PRINCE** – Innovation and Partnerships, McGill University

14:30-14:55 Panel discussion

14:55-15:30 *Departure*