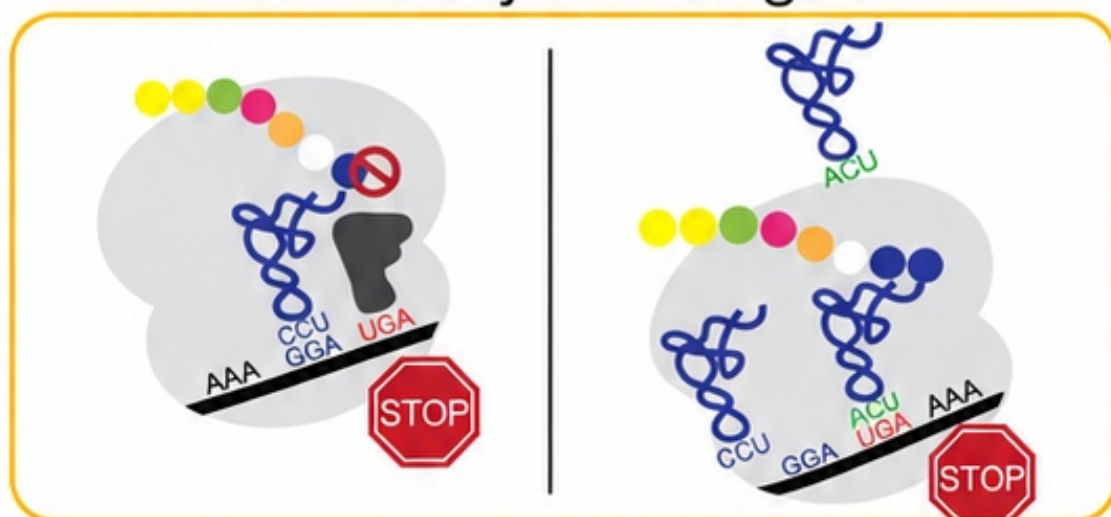




Kate Desrochers '24

Ph.D. student in the
Program in Chemical Biology,
University of Michigan.



**Thursday,
October 1**



3:45 PM



RNS 310

ABOUT THE TALK

Approximately 10% of Cystic Fibrosis (CF) patients carry premature termination codons (PTCs) which result from stop codons located before the end of the protein-coding region of a gene. These mutations are classified as class I mutations, which lead to the synthesis of truncated, and usually nonfunctional, proteins, often resulting in severe disease phenotypes. No currently available CF therapeutics address class I mutations. However, it is believed that rescuing modest levels of cystic fibrosis transmembrane conductance regulator (CFTR) channel function (15-30%) would have a meaningful impact on the disease state for patients with such mutations. Anticodon edited tRNAs (ACE-tRNAs) are exogenous tRNAs that can form three Watson-Crick base pairs with PTCs, enabling amino acid incorporation and PTC readthrough, indicating their potential for therapeutic uses. While ACE-tRNAs have been shown to be efficacious in cultured cells and mouse tissues, the molecular determinants that guide the efficiency and efficacy of ACE-tRNAs are not fully understood. Specifically, endogenous tRNAs are known to be highly modified biomolecules, with approximately 15% of nucleotides in each molecule modified. However, the contributions (if any) of post-transcriptional modifications, which are key for canonical tRNA stability, folding, and transport to ACE-tRNA function, remain to be established. Furthermore, the best delivery mode for ACE-tRNAs has not been determined and will likely depend on the modality of the therapeutic cargo (i.e. RNA or DNA).

MEET KATE

Kate Desrochers was a graduate researcher at St. Olaf College, where she worked in the Chemistry Department. Her research focused on the development and evaluation of anticodon edited tRNAs (ACE-tRNAs) as a potential therapeutic approach for premature termination codons in cystic fibrosis. Through a combination of biochemical, molecular, and cellular approaches, her work investigated how tRNA modification and delivery strategies influence the efficiency and efficacy of PTC readthrough. Kate is passionate about using chemistry to address real-world health challenges and is committed to advancing research that can make a meaningful impact for patients with cystic fibrosis.



Seminar cards will be in the room for students to complete in order to get seminar credit.