

Biology Seminar



Western
UNIVERSITY · CANADA

12:30 - 1:30 pm
Friday, November 26, 2021
Via ZOOM



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High altitude adaptation and control of breathing in deer mice and songbirds

High altitude is a challenging environment characterized by cold temperatures and unremitting hypoxia (low oxygen), which can constrain O_2 supply to support physiological processes. Many species native to and/or migrating through high altitude are known to have adaptations important for maintaining O_2 supply in hypoxia. Unfortunately, most studies have not compared closely related species and have only recently started to identify potential genetic bases for these evolved changes. During my PhD, I focused on deer mice which are found across a broad altitudinal range and can thrive in this hypoxic environment, suggesting that adaptations have occurred to improve O_2 uptake from the O_2 thin air. I found that there were evolved changes in breathing and the hypoxic ventilatory response that contribute to high-altitude adaptation in deer mice, and that these changes were associated with a few gene variants specific to high-altitude. At Western, I'm investigating migratory flight at high altitude, as songbirds have recently been reported to fly at altitudes greater than 5,000 m above sea level during migration. This feat has only been well described and studied in bar-headed geese, which fly over the Himalayan Mountain range (altitudes above 8,000 m) and live at high altitude. In addition to my work on deer mice, I will share my recent findings on O_2 uptake and transport in a wide variety of songbird species.