

Department of Molecular and Cellular Biology
Graduate Seminar MCB*6500

Friday, February 9, 2024 @ 1:30 p.m.

presented by:

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(Advisor: Dr. Jim Uniacke)

"Investigating the impact of physiological oxygen levels on RNA oxidation and mitochondrial biology in human cell culture"

Human cell culture is an invaluable tool for molecular biology and biomedical research. Because critical culture parameters, such as temperature and pH, must reflect human physiology, cells are cultured in humidified incubators at 37 degrees supplied with 5% CO₂. However, cells are routinely maintained and experimented on at ambient oxygen levels of ~21%, or 'normoxia', despite this condition being far from physiological. Indeed, 'physioxia', the oxygen levels within human tissues, ranges only from ~2-9%. Despite the ability of cells to survive and grow at normoxia, it is acknowledged that physioxia can impact experimental outcomes and improve the translatability of in vitro research. Here, we aim to assess how culture oxygen levels affect cells at the molecular level by examining differences in RNA oxidation and mitochondrial biology between normoxia and physioxia. This research will contribute to the understanding of how oxygen regulates cell physiology, and highlight the importance of oxygen as a parameter in human cell culture experiments.