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Biology in Space (8)

Author: Mr. Sean Farley
University of Victoria, Canada, farleyseandaniel@gmail.com

Ms. Annaliese Meyer
University of Victoria, Canada, annaliese_m@shaw.ca

Mr. Sean Waugh
University of Victoria, Canada, swaugh@uvic.ca

Ms. Sarah Ebert
University of Victoria, Canada, sarahnebert@gmail.com

Prof. Corey Nislow
University of British Columbia, Canada, corey.nislow@ubc.ca

Dr. Christopher Nelson
University of Victoria, Canada, cjn@uvic.ca
Mr. Sachintha Premathilaka
University of Victoria, Canada, sachintha.premathilaka@gmail.com

Mr. Eric Fraser
University of Victoria, Canada, enfraser@uvic.ca

Ms. Cheyenne Heenan
University of Victoria, Canada, cmheenan@uvic.ca

Ms. Shannon Dawson
University of Victoria, Canada, shandaw@uvic.ca

DIFFERENTIAL GENE EXPRESSION PATTERNS INDUCED BY PARABOLIC FLIGHT AND
LOW-SHEAR MODELLED MICROGRAVITY IN *SACCHAROMYCES CEREVISIAE***Abstract**

Microgravity is a unique environment with profound effects on biological systems. Understanding these effects presents the opportunity to harness and apply them to applications both for spaceflight and for biomedical techniques on earth. Previous investigations have shown that altered mechanical conditions and gravitational forces translate to changes in gene expression, including changes in heat shock proteins and shear stress response. The robust model microorganism *Saccharomyces cerevisiae* is an ideal candidate to uncover mechanisms of responses of interest to a microgravity environment. Access to space is limited by cost and infrequent launches, but ground-based and sub-orbital analogs provide valuable platforms for studies with microgravity conditions. Here we use RNA sequencing to study the changes in gene expression patterns of the model microorganism *S. cerevisiae* in two microgravity conditions. *S. cerevisiae* will be exposed to short-term microgravity onboard a parabolic flight and to low-shear modelled microgravity with a rotating wall vessel. The flight campaign is scheduled for July 22-26th, 2019, on the Canadian Space Agency Falcon-20 parabolic flight aircraft.