

Biology Seminar



Western
UNIVERSITY · CANADA

12:30 - 1:30 pm
Friday, November 20, 2020
Seminar to be held via ZOOM



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Surviving and thriving in trash – microbial diversity and function in municipal landfills

Municipal landfills are highly heterogeneous environments with complex contaminant profiles. Microorganisms in landfills are actively conducting organics degradation, contaminant transformations, and biogeochemical cycling, despite landfills generally being engineered for stable storage of wastes. My research group used a combination of culture-independent and cultivation-based techniques to identify a remarkable heterogeneity in microbial community membership across a municipal landfill site, with near-complete community turn-over from one location to the next. Key microbes persisting at multiple locations provide insight into the lifestyles stably supported in the landfill. Impacts of leachate contamination in the aquifer were

visible within the community analyses, with implications for waste management best practices. Spotlighting cellulolytic microorganisms, given paper comprises 15% or more of landfilled waste despite recycling diversion programs, we identified a low abundance but high diversity community of predicted cellulose-degrading organisms. Landfills host highly diverse microbial communities with significant phylogenetic novelty. Predicted activities have implications for the long-term stability of waste in the landfill and for the fate of contaminants housed at the site.

