



Mathematical Biology Seminar

Monday, October 20, 2025

3 pm MT – Room UComm 2-108 (in person)

Join Zoom Meeting

<https://ualberta-ca.zoom.us/j/97624718507>

Meeting ID: 976 2471 8507



Pablo Venegas Garcia

Postdoctoral Fellow

Department of Mathematical and Statistical Sciences

University of Alberta

Risks of methane mitigation via human-driven microbial community shifts in oil sands tailings

Oil sands tailings ponds are waste reservoirs where bioavailable organic material can be largely converted into methane. This methane is produced by active methanogenic and bacterial communities capable of surviving even under nutrient-poor conditions. Recently, mitigation strategies have been proposed to shift these microbial communities through the addition of various terminal electron acceptors to the tailings. Such electron acceptors can stimulate microbial populations that outcompete methanogens while still degrading hydrocarbons. However, no studies have yet examined the potential risks of partially applying these strategies or the unintended outcomes that may arise. Our current research demonstrates that, if not carefully designed and implemented, such interventions can substantially compromise the potential for effective methane mitigation.