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Metagenomics for Greener Production and Extraction of Hydrocarbon Energy

Integrated GE³LS Research Understanding Issues Related to Metagenomics

GE³LS Project Leader Gregor Wolbring, University of Calgary

Summary

This metagenomics project aims to identify genes and bioprocesses of naturally occurring microorganisms in oil sands and coal beds that produce methane and carbon dioxide. New knowledge derived from this project will enhance our understanding of how to decrease use of water and emission of greenhouse gases, enhance extraction of clean burning gas from coal beds, and minimize the adverse environmental impact of oil sands production. This relatively new field of science brings with it new questions related to its potential impact on society.

Metagenomics raises questions relating to: regulatory concerns about the definition and meaning of microbial species; potential environmental, health and safety risks; the application of the International Convention on Biological Diversity to this type of research; the effect of public perception; and current metagenomics patenting practices. Metagenomic studies will lead directly to the discovery of products or processes based on microbial metabolism that may be deployed in hydrocarbon rich environments. This raises further concerns of environmental health and safety and as well as questions of public reaction. The GE³LS component of this project will explore public conceptions around energy and investigate issues linked to this project in the areas of; a) metagenomics, b) water use, c) greenhouse gas emissions, d) bioremediation and e) manipulation of microorganisms to enhance hydrocarbon recovery. The GE³LS team will also cover patent and regulatory issues pertinent to the project.

We aim to provide tools to the public, policy makers, regulators, the business community and researchers that help with the understanding and the management of the GE³LS issues related to the project. This will enable them to compare emerging technologies with established ones and identify legitimate questions associated with new science.