

Jan 31st

STC 0020

14:30-15:30

Biology Seminars



**MEHRAN
DASTMALCHI**
POSTDOCTORAL FELLOW
DEPARTMENT OF
BIOLOGICAL SCIENCES
BROCK UNIVERSITY

Engineered microorganisms producing plant-derived drugs; lessons from opium poppy

Plants produce a diverse array of medicinal compounds, contributing to or inspiring over 75% of approved antibiotics and anticancer drugs in use today. The study of plant metabolism has revealed the secrets of plants such as opium poppy and Madagascar periwinkle. Knowledge of the genes and enzymes required to convert simple compounds to complex drugs is the first step in leveraging plant chemistry. Transfer of the plant metabolic machinery to engineered microorganisms (e.g., yeast) can facilitate the bio-production of the opioid antidote naloxone, and anticancer drugs vinblastine and vincristine. Along the way, we have identified bottlenecks to heterologous production in yeast, found new catalysts, and improved metabolic flux into the desired pathways. Engineered microorganisms can relieve dependence on plant cultivation and provide a dynamic, scalable, global supply of plant-derived drugs.