



GenomeCanada

Genomic Applications Partnership Program (GAPP)

Radhakrishnan Mahadevan (U of T) / Visolis

Genomics Driven Engineering of Hosts for Bio-Nylon

- Project goal is to optimize and scale-up a biological manufacturing process for adipic acid – a \$6B / year commodity currently derived from petroleum and used to produce nylon and other materials.
- The new process will use forest biomass as the primary source of sugars (precursor), and engineered yeast strains for the conversion process.
- “Bio-adipic acid” will be commercially competitive and have a significantly reduced environmental footprint – replacement of a portion of petroleum feedstock, reduced greenhouse gas emissions during production, reduced chemical waste.
- If the project succeeds, Visolis plans to significantly expand its manufacturing capacity in Canada.



David Levin (U Manitoba) / Composites Innovation Centre

Fibre composite and biomatrix genomics (FiCoGEN) – application to the ground transportation industry

- The team is developing a manufacturing process for rigid, formable and durable bio-composites using renewable inputs – fibre from non-transgenic flax lines and binding resin produced by microbes.
- The composite material will first be used to produce a structural ‘tub’ for a lightweight vehicle (Westward Industries GO-4) for local service uses (e.g., parking enforcement, street cleaning).
- The new product line is expected to position CIC and WWI as leading suppliers of bio-composite materials and parts to major markets (e.g., California) and lead to significant investments in Canadian manufacturing.

GAPP Project Outcomes

A. Tsang (Concordia University) & Elanco Animal Health

Development and Commercialization of Next Generation of Enzyme Supplements for Swine and Poultry

Problem

- Swine and poultry are unable to digest up to 25% of current feed ingredients because the animals lack necessary enzymes

Solution

- Develop novel enzyme cocktails as feed additives and engineer *Aspergillus niger* as production host

Challenges Faced

- Additional funding was required to expand Elanco's facilities to include a dedicated fermentation group

Social and Economic Benefits

- Improved cost of production for swine and poultry producers
- Decreased environmental footprint
- Enzyme cocktails resulted in a 4% improvement in Feed Conversion Rate, and saving \$17.5M in feed costs to Canadian growers

