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New round of research and innovation funding aimed at growing sustainable bioeconomy in Alberta

Projects focus on novel bioproducts and disruptive technologies that use Alberta biomass

EDMONTON – Alberta Innovates Bio Solutions (AI Bio) has approved nearly \$13 million in funding for 61 projects by researchers and companies. The grants are for the development of new industrial bioproducts or technologies using Alberta agriculture and forestry byproducts or other biomass.

The funding is provided under the Alberta Bio Future research and innovation program, the province's flagship bioindustrial initiative. It is aimed at diversifying and strengthening the provincial economy by adding value to Alberta's renewable resources.

In addition to working toward reducing our reliance on fossil fuel exports, there is another major benefit – bioproducts and bioindustrial technologies have the potential to partially or fully replace petroleum-based products and energy sources, thereby potentially lowering GHG emissions and reducing the carbon footprint.

“The economy of the next 30 years is going to be very different than the economy of the past 30 years, and Alberta's innovators are leading the way in finding solutions to future challenges and capitalizing on future opportunities,” said Alberta Economic Development and Trade Minister Deron Bilous. “Using renewable materials in fascinating new ways, they are helping to diversify our economy and keep our province competitive.”

The approved projects span the research and innovation continuum from early applied research to commercialization. In addition to AI Bio funding, 25 projects also have industry funding.

“The projects were carefully chosen in a rigorous, competitive process, based on criteria designed to maximize public benefit and advance the bioindustrial sector in Alberta,” said Steve Price, CEO of AI Bio.

“Alberta is blessed with abundant biomass in our forests and crops, advanced infrastructure and universities, and highly qualified personnel in our academic community and bioindustrial sector. AI Bio works as a catalyst to bring these together to accelerate growth in an area with great potential.”

The researchers and companies carrying out the projects are using a variety of biomass types to develop or produce advanced biomaterials, biofuels, biochemicals or biocomposites for a broad range of applications. Examples include biofuels for transport and bioproducts that can be used in the energy, construction, forestry or manufacturing sectors. A sampling of projects are provided in the backgrounder following this release.

Numerous projects involve cellulose nanocrystals (CNC) for construction, manufacturing or medical applications. Alberta has one of only a number of facilities in the world capable of producing high-quality CNC, a high-performing, advanced biomaterial derived from cellulose (a compound in plants). The CNC research and innovation pilot plant is located at Alberta Innovates Technology Futures in Edmonton.

About: Alberta Innovates Bio Solutions

[Alberta Innovates Bio Solutions](#) (AI Bio) is a board-governed agency funded by the Government of Alberta. AI Bio invests in science and innovation to grow prosperity in Alberta's agriculture, food and forest sectors through new technologies, products, services or industry practices.

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Backgrounder:

What is Biomass?

Biomass can be defined as biological material from living or recently living organisms. Examples include forestry residues or byproducts such as lignin from wood; residues from food crops; specialty-grown, non-food crops; algae or bacteria; municipal waste; industrial wastes or byproducts.

A U.K. government website ([Biomass Energy Centre](#)) has a good explanation of the difference between biomass and fossil fuels:

“The vital difference between biomass and fossil fuels is one of time scale.

Biomass takes carbon out of the atmosphere while it is growing, and returns it as it is burned. If it is managed on a sustainable basis, biomass is harvested as part of a constantly replenished crop. This is either during woodland or arboricultural management or coppicing or as part of a continuous programme of replanting, with the new growth taking up CO₂ from the atmosphere at the same time as it is released by combustion of the previous harvest.

This maintains a closed carbon cycle with no net increase in atmospheric CO₂ levels.”

Alberta Bio Future – Funded Projects

AI Bio has approved nearly **\$13 million** in funding (**\$12,708,525**) under the Alberta Bio Future (ABF) initiative. (This amount does not include AI Bio funding for bioindustrial projects publicized previously.)

ABF is managed and funded by AI Bio with additional funding from the Ministry of Economic Development and Trade. The grants are going toward a diverse range of projects by researchers and/or companies developing bio-based products and/or bioindustrial technologies. The projects must utilize biomass that can be found in Alberta. Funding amounts were determined on a case-by-case basis according to program criteria. Length of projects vary.

Projects in the partial list below are provided as examples, in no particular order. The full project list is [here on the AI Bio website](#).

Project Name	Funding Amount Committed by AI Bio	Total Project Cost (includes cash and in-kind contributions from other sources)	Total Amount From Other Contributors (includes cash and in-kind)	Funding Recipient
Nanocrystalline cellulose (NCC) reinforced foam-core sandwich composite structures	\$240,000	\$411,300	\$171,300	Ayranci, Cagri - University of Alberta
Monomers and biopolymers from renewable plant oil for various industrial applications	\$194,400	\$391,540	\$197,140	Ullah, Aman - University of Alberta
Abrasion resistant, anti-corrosion pipeline coatings from nano cellulose reinforced polyurethane	\$387,000	\$553,000	\$166,000	Curtis, Jonathan - University of Alberta
Commercialization of Bio-polyol and Bio-based Spray Foam	\$850,000	\$1,337,500	\$487,500	BioFoam Inc.
Algae-based biomass for production of fuels and chemicals	\$100,000	\$320,000	\$220,000	Kumar, Amit - University of Alberta
Development of nanocellulose-based novel smart window	\$100,000	\$125,000	\$25,000	All Weather Windows Ltd.
Pilot Facility for the Production of Natural/Industrial Reinforcing Fibre	\$580,000	\$1,059,800	\$479,800	Canadian Greenfield Technologies Corporation
Bio-Resource Information Management System PHASE 3	\$1,999,600	\$6,489,600	\$4,490,000	The Silvacom Group
Cellulose nanocrystalline-based antimicrobial coatings for biofilm prevention	\$403,750	\$403,750	\$0.00	Heyne, Belinda - University of Calgary
Development of a liquid-applied moisture vapor permeable air barrier and fire retardant nano-composite emulsion	\$308,869	\$411,825	\$102,956	BarrierTEK Inc.
Development of bio-based resins for industrial use in fibre-mat based composite biomaterials	\$392,825	\$676,925	\$284,100	Curtis, Jonathan - University of Alberta
Co-conversion of C1 wastes from the Albertan energy and pulp and paper sectors by methylotrophic bacteria.	\$348,650	\$468,650	\$120,000	Sauvageau, Dominic - University of Alberta
Design and application of a high-pressure microwave drop-in biofuel reactor system	\$362,900	\$748,400	\$385,500	Bressler, David - University of Alberta
Utilization of boiler fly ash from Alberta pulp and paper mills for the removal of hydrogen sulfide from industrial gas streams	\$128,060	\$163,060	\$35,000	Mussone, Paolo – NAIT