



# 20 YEARS

Ag-West Bio Inc. 2008-2009 Annual Report



# Ag-West Bio:

*Saskatchewan's  
catalyst for building  
Canada's most vibrant  
ag-bioeconomy*



The pond at Innovation Place Research Park, Saskatoon Saskatchewan. AVB photo by Jackie Robin

## Ag-West Bio Staff:

Ian McPhadden: Interim President and CEO • Terry-Lynn Quadri: VP, Strategy and Business Development • Darcy Pawlik: VP, Life Sciences & Regulatory Affairs • Muriel Adams: Acting General Manager • Kim Riel: Business Administrative Officer • Brad Bly: Technology Commercialization Manager • Jackie Robin: Communications Director • James Leier: Bioproducts & Biofuels Centre Director • Allison Sigstad: Office Assistant

## Ag-West Bio Board of Directors:

Chair: John Hyshka – Phenomenome Discoveries Inc. • Armand Lavoie – Foragen Technology Inc. • Abdul Jalil – Saskatchewan Ministry of Agriculture • Pete Desai – Desai & Desai Inc. • Susan Milburn – Raymond James • Ron Styles – Crown Investments Corporation • Joe Vidal – Bioriginal Food & Science Corporation • Jerome Konecsni – NRC-PBI • Brian Rossnagel – Researcher Malcolm Devine – Performance Plants





## President's Message

In 1989 Innovation Place consisted of a few buildings in a dirt field on the University of Saskatchewan campus, and big dreams for the future. Ag-West Bio was one of the founding members of that cluster of buildings. Now celebrating our 20th anniversary, we marvel at the many changes that have taken place over the years. What a milestone this is for us. Ag-West Bio is still going strong and serving a valuable function to the agbiotech sector and the life-science cluster.

I've had the fortune to sit on the Ag-West Bio Board for many years, and now to be part of the staff. The reason for the length of my tenure is I recognized the value of biotechnology in our ever changing world and saw the contribution Ag-West Bio made to the sector. Ag-West continues to be a catalyst for cluster convergence, leading the way for Saskatchewan and the world in the biotechnology field with a focus on creating wealth from research and development. Convergence and growth of the Saskatchewan ag-bioeconomy cluster will occur through collaborative leadership that addresses the collective goals of industry stakeholders through business development and commercialization.

Ag-West Bio's mandate remains consistent: First, to assist entrepreneurs with strong mentorship and guidance to increase their chance of success; and second, to help navigate the regulatory impediments to commercialization. All this is possible because of the calibre and dedication of the excellent staff I work with everyday at Ag-West Bio. Their tireless efforts to connect with organizations around the world increases Saskatchewan's profile, letting the world know about our successes and our potential.

I also wish to extend my thanks to the Board of Directors for their time and commitment.

On behalf of Ag-West Bio's staff and directors, I want to extend our sincere gratitude to the Saskatchewan Ministry of Agriculture, our members and stakeholders. Thank you for your continued support and involvement in our organization.

Yours truly,  
Ian McPhadden



## Message from the Chair

It has been an eventful two years since I became Chair of Ag-West Bio's Board of Directors. As my tenure expires, I am confident in the future of Ag-West Bio, with the dedication of the current board and the new board members we have been fortunate to recruit. Each person brings a set of skills and experience that will enable Ag-West Bio to grow. I wish to thank Calvin Sonntag and Ian McPhadden, two long-term board members resigning this year, for their efforts and expertise over the years.

I also want to thank Ian McPhadden for accepting the position of interim President and CEO of Ag-West Bio. He has done an excellent job steering the organization since January 2009.

Over the last year, we have been working on a strategic plan that will equip Ag-West Bio with the tools to build the strongest life science sector in the country, right here in our province. I want to thank the staff for working so hard to complete the strategic plan; it was a challenge to develop an effective plan within the limits of our resources.

I would also like to thank the organizations who have collaborated with Ag-West over the year, including NRC-PBI, Genome Prairie, Saskatchewan Research Council and the University of Saskatchewan. Their participation has been invaluable to the success of every Ag-West Bio event.

We are glad for the continued support of the Government of Saskatchewan's Ministry of Agriculture. Their commitment to our organization and to agricultural biotechnology has been unparalleled by any government in North America.

Ag-West Bio is getting back to its roots, focusing on agricultural technology that will help Saskatchewan's producers be more competitive. Our focus will be on activities to facilitate the commercialization of new technologies and help biotechnology companies grow.

Sincerely,  
John Hyska

# 1989

*“To facilitate the use of agricultural biotechnology as a means of advancing the economic competitiveness of Saskatchewan agriculture and business.”*

## Building on strength: *a catalyst for Saskatchewan's bio-economy*

Twenty years ago, Saskatchewan's scientific and political leaders laid out a bold vision.

They created an organization – a catalyst to accelerate the province's growing agricultural biotechnology sector. This new organization was intended to help Saskatchewan make the most of its strengths: a strong agriculture industry and a growing core of biotech expertise in its universities, public institutions and private companies.

The organization was named Ag-West Biotech. Launched by the Province of Saskatchewan and University of Saskatchewan (U of S) in 1989, its mission was to provide leadership and assistance for Saskatchewan's emerging agbiotech cluster – helping existing companies and attracting new ones by aiding in the commercialization of new biotechnologies. In the decades that followed, Ag-West would meet and then exceed the expectations of those earliest days.

“In the beginning, we were perceived as being out in the ‘middle of somewhere,’” says Dr. Murray McLaughlin, Ag-West Biotech's first president and CEO.

“People might have heard of Saskatoon but it certainly wasn't a mainstream place to go and do business in biotech. Our first challenge in building Saskatoon – and Saskatchewan – as a world-class centre for biotech was educating people on the place itself, and why they should be looking at us,” says McLaughlin.

That goal was attained early on.



photo courtesy Innovation Place

The Galleria at Innovation Place in 1987. Opposite page: The Galleria in 2009.

Saskatoon's strong research capacity, centred around the U of S and nearby Innovation Place Research Park, and a growing industry network that allowed for collaboration and support, meant decision makers were highly interested in Saskatchewan when they heard about its advantages. Ag-West played an important role in spreading the word to attract new business development, and through its commercialization fund, help establish or attract to Saskatchewan an average of two new bio-based companies each year since inception.

With growing synergy, the industry achieved numerous successes including the development of herbicide-resistant canola as a public-private partnership

between the National Research Council - Plant Biotechnology Institute, Agriculture and Agri-Food Canada, and AgrEvo (now Bayer Crop Science). Glufosinate- (trade name Liberty Link) resistant canola has achieved widespread popularity in Canada and among the world's producers and consumers. In 2009, it was approved for import and processing in Europe.

For Peter McCann, Ag-West Biotech's president and CEO from 1997-2004, one key achievement was helping promote a better understanding and acceptance of biotech in Canada and around the world.

Stable, multi-year funding from



Saskatchewan Agriculture and Food allowed Ag-West Biotech to develop a demonstration lab for public education and participate in numerous international trade missions to promote Saskatchewan's biotech cluster and attract international investment. It also meant Ag-West could provide seed money to more than 20 commercially-successful agbiotech ventures.

This role is even more important today, says McCann, because "with 800 million people on this planet undernourished and food security becoming a major issue – such as in Africa – biotechnology must never be underestimated as a way of meeting this urgent human need."

McCann says Ag-West was instrumental in helping Canada's regulatory system keep up with advances in biotechnology. While there is room for improvement, the federal system has become more **efficient in its testing and approval** processes. Related to this, Ag-West aided in the creation of Plant Inoculants Canada (PIC), which represents the microbial fertilizer industry and works proactively with federal regulators. An industry association, PIC is an important public voice for its members in Saskatchewan and across the country.

Biotech can be applied to more than agriculture and is a way of creating value across a wide spectrum of applications.

"Biotech is about creating value in all biological systems, which covers a lot of things," explains Dr. Ashley O'Sullivan, Ag-West's president and CEO from 2004-08.

During O'Sullivan's time at Ag-West, the organization broadened its focus to help Saskatchewan make the most of its



AWB photo by Kenneth Howe

advantages – and changed its name. In 2004, Ag-West Biotech amalgamated with two other entities to become Ag-West Bio. The Saskatchewan Nutraceutical Network and Bio-Products Saskatchewan were originally spin-offs from Ag-West Biotech. Bringing the three back together meant the new organization could focus on the entire spectrum of bio-based business.

"I think we're transitioning into a renewable feedstock economy right now," notes O'Sullivan.

"Agricultural biotechnology is just one piece of the puzzle. We're at a time where we're increasingly growing plants and using them to create all sorts of additional value."

Examples, says O'Sullivan, include bio-fuels, industrial chemicals and consumer goods such as plastics and textiles, which can be created from plant-based feedstocks used alone or in combination with microbial technologies.

"The other big area we worked on is health. In Canada and elsewhere, we have a reactive health care system – you get sick, you go into the system and hopefully are made better."

"That's important, but there's a need to focus on the wellness side. We're able to do that in Saskatchewan by growing nutritious foods, but we're also starting to look more at the biologically-active molecules in our foods. Nutraceuticals and functional foods represent tremendous opportunities, and a Saskatchewan strength," says O'Sullivan.

Another strength, he says, is in the area of biondiagnostics – allowing us to better understand the onset and progression of disease and the impact of various interventions. *(continued ...)*



Dr. Murray McLaughlin



Peter McCann



Dr. Ashley O'Sullivan

# 2009

*"To enable the development and commercialization of innovation by linking research to industry for a diversified Saskatchewan economy."*

## 1989~1990

Ag-West Biotech is formed with the mission: "to facilitate the use of agricultural biotechnology as a means of advancing the economic competitiveness of Saskatchewan agriculture and business."

- ▶ an interim board is established, recommends and implements a permanent board and reviews project proposals
- ▶ Murray McLaughlin is hired as president
- ▶ AWB Board of Directors holds their first meeting and reviews technology commercialization opportunities
- ▶ funding to BIOSTAR for development of livestock vaccines; to Micro BioRhizogen for development of its granular inoculant; and to Agrium (Esso) and Philom Bios

## 1990~1991

- ▶ delegates visit from France, Switzerland, Japan, and the US
- ▶ runs a biotech training course for members of the agriculture community in Saskatchewan
- ▶ distributes 3,500 information kits around the world. The kit is a key component in promoting Saskatchewan's agbiotech community and its outstanding capabilities.
- ▶ provides capital for BIOSTAR Inc., a VIDO spin-off company preparing to deliver genetically-engineered animal vaccines to the marketplace (BIOSTAR is acquired by MetaMorphix in 2000)
- ▶ funding for Philom Bios Inc., a microbial biotech company; and Esso Chemical Ag Biologicals

## 1991~1992

The Saskatchewan biotech community is growing....

- ▶ Cyanamid's Western Canadian office is relocated to Saskatoon
- ▶ Roussel Uclaf, Dow Elanco and others pursue collaborative arrangements with Saskatchewan research organizations
- ▶ Plant Genetic Systems Inc. of Ghent, Belgium is encouraged to locate its North American research base in Saskatoon
- ▶ up to four information inquiries on biotechnology are received each day
- ▶ over 100 inquiries on potential agbiotech business ventures are received
- ▶ organizes and hosts representatives from over 30 international organizations
- ▶ workshop on "Good Laboratory Practices"
- ▶ distributes over 6,000 AWB information kits around the world
- ▶ provides seed capital for three start-ups: MicroBio RhizoGen Inc. to commercialize a new formulation for seed inoculants; Microgro International Inc. a business based on tissue culture in Biggar, SK; and New Leaf Biotechnology Inc. to help license plant cell culture technology developed by NRC-PBI

(...continued) After two decades building a network of bio-based industries and research expertise in Saskatchewan, and with considerable advances in technological capacity, Saskatchewan has become a centre of excellence for agbiotech in Canada and beyond. It also became the model for others to follow, says Ag-West Biotech's first president.

"Ag-West Biotech was something new, and very unique, when we first started out. Gradually, most other Canadian provinces built similar organizations and this has allowed a network across the country that makes Canada a major global competitor," McLaughlin says.

Perhaps Ag-West's greatest role, he adds, was being the "glue" that brought together the first cohesive biotech cluster in Canada.

"If you look at the entire area of agbiotech, and biotech in general, it's a pretty disparate bunch of organizations and companies covering a lot of ground. Ag-West helped cement all of that together, and we were able to present Saskatchewan as a cluster and an entity that really has become well known."

"A lot of people are familiar with Saskatchewan biotech now," says McLaughlin.



A key element in Saskatchewan's life science cluster is the Canadian Light Source synchrotron. At the CLS opening gala in 2004, the staff gets a round of applause from: the CLS director Bill Thomlinson; Dr. Arthur Carty; Honourable Ralph Goodale; SK Premier Lorne Calvert, Dr. Eliot Phillipson; and U of S President Peter MacKinnon. (photo courtesy CLS)



The Administration Building at the University of Saskatchewan in 1983. The U of S has always been central to the life science cluster in Saskatchewan. (U of S Archives photo# DCP-0139)



Breaking new ground at the Vaccine & Infectious Disease Organization: Ted Leighton (WCVM) leads the oxen while VIDO director, Lorne Babiuk, holds the plough during the sod-turning ceremony in 2001 for a VIDO expansion. VIDO's International Vaccine Centre (InterVac) construction is scheduled for completion this fall. (photo courtesy VIDO)





# Ag-West Bio's Board of Directors ~ 1989 to 2009

## *20 years of building the bioeconomy*

### Interim Board of Directors 1989-1990

Dr. Blaine Holmlund (Chair)  
Mr. John Cross  
Mr. Harley Olsen  
Dr. Jim Hay  
Mr. Stuart Kramer  
Dr. Jack Manns  
Mr. Dalton Tamney  
Mr. Robert Morgan  
Dr. Steven Acres  
Dr. Bryan Harvey

### Board of Directors

Dr. Sue Abrams ..... 1990-1994  
Dr. Steven Acres ..... 1990-1992  
Dr. Ernie Barber ..... 1999-2004  
Mr. Doug Billett ..... 2000-2001  
Mr. Dale Botting ..... 2004-2006  
Ms. Bev Brennan ..... 1990-1993  
Ms. Shelley Brown ..... 1998-2004  
Mr. John Buchan ..... 1997-2000  
Ms. Maryellen Carlson ..... 2003-2004  
Mr. Roy Carr ..... 1990-1993  
Dr. Karen Chad ..... 2006-2008  
Dr. William Compton ..... 2004-2005  
Mr. Maurice Delage ..... 1990-1991  
Dr. Pete Desai ..... 1997-2003  
..... & 2004-2009  
Dr. Malcolm Devine ..... 2002-03 & 2008-09  
Dr. Harold Fast ..... 1997 & 2000-2001

Dr. Kevin Gellatly ..... 2005-2008  
Dr. Ron Howard ..... 1993-1994  
Mr. John Hyshka ..... 2005-2009  
Dr. Abdul Jalil ..... 2004-2009  
Dr. Dennis Johnson ..... 1993-1997  
Dr. Kutty Kartha ..... 1998-2004  
Dr. Wilf Keller ..... 1995-1998  
Mr. Brent Kennedy ..... 1999-2001  
Mr. Jerome Konecsni ..... 2002-2006  
..... & 2008-2009  
Mr. Stuart Kramer ..... 1990-1992  
Ms. Connie Lambert ..... 1989-1992  
Mr. Armand Lavoie ..... 2004-2009  
Mr. Roy Lloyd ..... 1993-1994  
Mr. Ed Makowski ..... 1991-1995  
Dr. Jack Manns ..... 1993-1996  
Mr. Ian McPhadden ..... 2001-2009  
Ms. Susan Milburn ..... 1994-1999  
..... & 2006-2009  
Mr. Robert Morgan ..... 1996-1997  
..... & 2004-2007  
Dr. Louise Nelson ..... 1996  
..... & 2000-2001  
Mr. Ian Newton ..... 2004-2007  
Dr. John Patience ..... 1996  
..... & 2000-2002  
Mr. Len Penner ..... 1991-1995  
Mr. Mark Pickard ..... 2004-2005  
Dr. Brian Rossnagel ..... 2008-2009  
Dr. Jim Russell ..... 2001-2002  
Mr. Dale Sigurdson ..... 1993-1997  
Mr. Calvin Sonntag ..... 2007-2009

Mr. Larry Spannier ..... 2005-2006  
Dr. John Stewart ..... 1997-1999  
Mr. Ron Styles ..... 2007-2009  
Mr. Murray Trapp ..... 2001-2004  
Mr. Joe Vidal ..... 2007-2009  
Dr. Carolyn Weeks-Levy ..... 1998-2003  
Dr. Brigitte Weston ..... 2004-2007

### Chairs

Mr. Roy Carr ..... 1990-1993  
Dr. Jack Manns ..... 1993-1996  
Mr. Robert Morgan ..... 1996-1997  
Dr. Pete Desai ..... 1997-2003  
Ms. Shelley Brown ..... 2003-2004  
Mr. Jerome Konecsni ..... 2004-2005  
Mr. Armand Lavoie ..... 2005-2007  
Mr. John Hyshka ..... 2007-2009

### Presidents

Dr. Murray McLaughlin ..... 1989-1996  
Dr. William Riley ..... 1996-1997  
Mr. Peter McCann ..... 1997-2004  
Dr. Ashley O'Sullivan ..... 2004-2008  
Dr. Perry Lidster ..... 2008-2009  
Mr. Ian McPhadden ..... 2009-

### Vice Presidents

Mr. Ron Kehrig ..... 2004-2008  
Dr. Carol Ann Patterson ..... 2004-2006  
Dr. Lisey Mascarenhas ..... 2006-2008  
Ms. Terry-Lynn Quadri ..... 2008-  
Mr. Darcy Pawlik ..... 2008-

### 1992~1993

- AWB joins the Canadian Institute of Biotechnology (CIB) to represent agricultural biotechnology in Saskatchewan
- represents Saskatchewan at close to 100 conferences, presentations, industry meetings, and trade shows outside the province
- presents evening lectures discussing biotechnology and visits high schools to talk to students about career prospects
- receives 30+ delegations from around the world
- AgBiotech Bulletin introduced. 2000 copies of each issue published and distributed worldwide.
- AgBiotech Infosource accompanies the Bulletin to science teachers across Saskatchewan
- partially funds a joint venture project initiated by the National Research Council to offer the biotech community the use of nuclear magnetic resonance (NMR) micro-imagery; provides capital for New Leaf Biotechnology

### 1993~1994

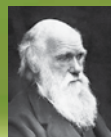
- on 16 national boards and advisory committees
- attends 35 conferences, industry meetings and trade shows
- founding member of the Food Biotechnology Communications Network
- hosts delegations from the UK, US, China, Iran and Thailand
- co-sponsors the 8th International Crucifer Genetics Workshop
- funding to Minerva Animal Health Corporation
- support to Fytokem to identify native prairie plants for commercial development
- involved when Esso Chemical Ag Biologicals is sold to Cominco Fertilizers Ltd.
- helps Microgro International Inc. establish a facility in Biggar, SK

### 1994~1995

- AWB Partner accomplishments
- NRC-PBI completes its NMR spectroscopy project
- Plant Genetic Systems Inc. completes field trials on hybrid canola
- Agrium Inc. concludes a relocation agreement
- Fytokem Products Inc. moves to Innovation Place
- MicroBio RhizoGen Inc. continues offshore marketing success
- AWB organizes trade show participation at the National Agricultural Biotechnology Conference, Pacific Northwest Biotechnology Exposition and BIO'94
- organizes Canadian government tours and visitors from Europe, the Pacific Rim, South America, and the US
- hosts regulatory affairs workshops; a seminar introducing biotech to scientists; and 18 biotech presentations
- first AWB web page is posted on the internet
- funds needs assessment survey and development plan for U of S Prairie Feed Resource Centre; funds the Global Agricultural Biotechnology Association (GABA)
- agreement with Prairie Plant Systems Inc.
- support to the Bio-Products Centre Inc.

1833 – First enzyme discovered and isolated.

1838 – Swedish chemist Jöns Jakob Berzelius discovers proteins.

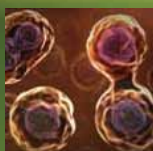


1859 – Charles Darwin publishes "The Origin of Species."

1861 – French chemist Louis Pasteur develops pasteurization.

1865 – Gregor Mendel discovers laws of inheritance.

1898 – Rudolph Diesel premieres the diesel engine at the World's Exhibition in Paris. It runs on peanut oil.



1839-1855 – German scientists Matthias Schleiden and Theodor Schwann propose that all organisms are composed of cells. Prussian physician Rudolf Virchow declares "every cell originates from another cell."

1870-1910 – Luther Burbank develops over 800 new strains of fruits, vegetables and flowers, including the blight-resistant Burbank potato heavily planted in Ireland.  
– Botanist William James Beal produces the first corn hybrid in the laboratory.





## 1995~1996

Saskatchewan's agbiotech community has grown to 30 companies .....

- ▶ trade missions to Cuba, Korea, Taiwan, Hong Kong, and Japan
- ▶ hosts Canadian MPs and delegations from Europe, Australia, and the Pacific Rim
- ▶ addresses the House of Commons Standing Committee on Environment and Sustainable Development
- ▶ helps form Canadian Value-Added Cereals Consortium (CVACC)
- ▶ first ABIC (Agricultural Biotechnology International Conference), the first major international conference devoted to science and business development in agbiotech. ABIC attracts 700 participants from 29 countries
- ▶ first AgBiotech Essay Scholarship Program for Sask. Grade 12 students: "Biotechnology, Agriculture, and Our Future"
- ▶ funding to Prairie Plant Systems Inc. to produce native fruits and operate an underground growth chamber; funding to Microgro
- ▶ Plant Genetic Systems Inc. concludes agreement with AWB (PGS eventually purchased by AgrEvo Canada Inc.)

## 1996~1997

- ▶ AWB assumes operations of the International Centre for Agricultural Science and Technology
- ▶ leads delegation to Biotechnology Industry Organization (BIO '97)
- ▶ hosts delegations from Germany, Mongolia, the US and Japan
- ▶ SABIC and SARAS created from Canada-Saskatchewan Agri-Food Innovation Fund:
- ▶ Saskatchewan Agricultural Biotechnology Information Centre (SABIC): Canada's first publicly accessible demonstration lab and resource centre
- ▶ Saskatchewan Agbiotech Regulatory Affairs Service (SARAS)
- ▶ a German television station produces a documentary on the Sask. biotech community
- ▶ second AgBiotech Essay Scholarship Program: "Molecular Farming" expands to include post-secondary students
- ▶ funding for Bioriginal Food & Science Corp., New Era Nutrition, Randolph and James Flax Mills Ltd., DowAgro Sciences, Agriculture Canada, Department of Western Economic Diversification and CanAmera
- ▶ involved when: Mycogen Corporation relocates its research to Saskatoon; Performance Plants Inc. of Kingston (Queens University) establishes in Saskatoon; Saskatchewan Nutraceutical Network (SNN) is formed; Fytokem Products Inc. goes public; and AgrEvo Canada Inc. releases two canola varieties for commercial sale

# momentum for unprecedented collaboration



Terry-Lynn Quadri  
Vice President, Strategy & Business Development

## This has been an exciting year for Ag-West Bio.

Saskatchewan agriculture is entering a new paradigm as the bioeconomy continues to develop in the province. Despite a worldwide economic melt-down, Ag-West Bio's management team continues to develop the global brand reputation for Saskatchewan capabilities in the ag-bio sector. Our business development efforts have identified new international partners with a need for Saskatchewan's expertise in crop and value added product development.

Events like the PBIO (Plant Bio-Industrial Oils Workshop) and ABIC (Agricultural Biotechnology International Conference), continue to receive accolades. In 2010, the sixth annual PBIO rises to the status of an international conference, hosted by Texas Tech University in San Antonio. Inter-institutional, multi-disciplinary collaboration has been successfully achieved with the early efforts of the Biorefinery Alliance initiative. Two projects have been developed with several others in the pipeline, illustrating the benefit of focused cooperation.

Tremendous progress has been made with the University of Saskatchewan and University of Regina's technology commercialization efforts and strong teamwork is providing the momentum for unprecedented collaboration in the province.

Ag-West Bio participated in several incoming missions – from the United States, Western Australia, Germany, China, Netherlands, as well as hosting a number of corporate sensing and scanning missions. New opportunities have developed because of these efforts and we are confident Saskatchewan will emerge as a destination province for investment in the ag-bio value chains.

2008-2009 was a stellar period for Ag-West Bio. With the collective effort of our partners and stakeholders, we are poised for another outstanding year.



**1907** – University of Saskatchewan is established in Saskatoon.

**1912** – University of Saskatchewan opens the College of Agriculture and College of Engineering.

**1914** – U of S College of Pharmacy opens.

**1919** – Karl Ereky, a Hungarian agricultural engineer, uses the word "biotechnology" in print for the first time.



**1922** – In Toronto, Dr. Frederick Banting and his assistant Charles Best discover insulin as a treatment for diabetes.

**1926**



**1908** – Henry Ford's new Model T runs on ethanol.

**1917** – Saskatoon Research Centre is formed by Agriculture and Agri-Food Canada.



**1920s** – diesel engine manufacturers modify their engines to run on petroleum based fuels, which have become cheaper than biofuels.

**1923** – Saskatchewan Co-operative Wheat Producers Ltd. is formed (renamed Saskatchewan Wheat Pool in 1953).

**1911** – Regina College opens. Renamed University of Regina in 1974.

# the power of cooperation and communication

## There is growing demand for goods produced through sustainable methods.

With innovative biological and chemical processes unlocking the potential of agriculture, Saskatchewan can meet this demand and emerge as a leader in the new bioeconomy. Ag-West Bio is helping Saskatchewan take advantage of its strengths.

How can we improve our ability to compete in the global bioeconomy?

This question guides Ag-West Bio's day-to-day activities and provides long-term direction when we look to effect change in the sector. Ag-West strives to be the catalyst, but the elements needed for a world-class bioeconomy rest with our stakeholders.

Our approach is to involve all stakeholders in various value chains in Saskatchewan. One way of doing this is to facilitate consortiums – harnessing the power of cooperation and communication. Our goal is to foster home-grown innovation and add to the expanding core of our technology cluster.

Another priority is adding value to crops and their components – such as fibre, oils, starches, biomass, bioactives, natural health products and other significant compounds. These opportunity areas build from our strengths in agriculture and focus our efforts to ensure Saskatchewan is a leader.

Ag-West Bio's successes over the past year include hosting events and speakers, organizing trade shows, providing regulatory input, leading delegations and helping entrepreneurs.

Looking forward, my promise to our membership is there is no job too small, no objective too big. Our members deserve a commitment to excellence. With strong, reinvigorated leadership, dedicated and skilled staff, as well as a provincial government that stands by its commitment to the sector, we will do our best to help you build your business.



Darcy Pawlik  
Vice President Life Sciences & Regulatory Affairs

## 1997~1998

- AWB signs MOU with Instituto Nacional de Tecnología Agropecuaria during a trade mission to Latin America led by Prime Minister Jean Chrétien
- hosts visitors from Norway, France, Japan, Costa Rica, Mongolia, the US and Ukraine
- SARAS seminars: market access for GM crops around the world, interspecific flow of transgenes, transgenic flax and wheat, biosafety protocol
- ABIC '98 attracts 68 speakers and 725 delegates from 31 countries. After ABIC, International delegations increase dramatically.
- ABIC Foundation established with AWB's president serving as Chair
- third student AgBiotech Essay Scholarship Program: "Agricultural Biotechnology and the Food Chain"
- 1,600+ business, government, media, agricultural producer groups, students and teachers have visited the SABIC lab
- funding to Bioriginal Food & Science Corp., Performance Plants, VIDO and MicroBio RhizoGen (MicroBio RhizoGen is bought by Becker Underwood in 2000)

## 1998~1999

- signs MOU with Chile on agbiotech cooperation
- helps develop the National Agricultural Genome Centre with Genome Canada
- visitors from Australia, US, Germany, Chile, Argentina, the UK, Brazil and China
- 20+ seminars on biosafety practices, sustainable industry development and intellectual property
- SARAS organizes the 6th International Symposium on the Biosafety of GMOs
- 3,500+ visitors to SABIC lab
- SABIC hosts the first Connaught Student Biotechnology Exhibition (CSBE) awards \$5,250
- funding to Prairie Plant Systems Inc., Termidor Corporation, Saskatoon Colostrum Company, Philom Bios, NRC-PBI

## 1999~2000

- SARAS meets with MPs to voice support for science-based, transparent regulatory processes
- second annual Connaught Student Biotechnology contest: \$5,000 awarded
- 41 meetings and tours with national and international delegations
- 44 events, including provincial, national and international conferences, forums, missions and workshops
- over 2,100 visit the SABIC lab
- fourth annual AgBiotech Essay Scholarship: "Agbiotech in the Barn" \$4,000 awarded
- SABIC wins a national award for its interactive displays from the Canadian Public Relations Society
- funding for Saskatoon Colostrum Company, MicroBio RhizoGen Corp., and MCN Canola Products, Ltd.

– U of S College of Medicine opens.

1928 – Scottish bacteriologist Sir Alexander Fleming discovers penicillin as an antibiotic.

1941 – Danish microbiologist A. Justin coins the term "genetic engineering," a technique involving the transfer of a select piece of genetic material from one organism to another.

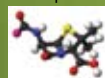


1944 – Oswald Theodore Avery, along with Canadian scientists Colin MacLeod and Maclyn McCarthy prove conclusively that DNA contained within the nucleus of a cell is genetic material. Before this, genetic material was assumed to be protein.

1931 – Ernst Ruska co-invented the electron microscope for which he won the Nobel Prize in Physics in 1986.



1942 – Penicillin is first mass-produced using microbes.



1943 – Canadian scientist Oswald Theodore Avery isolates pure DNA.



1947 – Saskatchewan Research Council is founded.



## 2000~2001

- ▶ AWB conducts an "Effectiveness and Opportunities" survey
- ▶ hosts the Biotech Communicators Workshop and a regulatory workshop
- ▶ fifth AgBiotech Essay Scholarship program: "The Impacts of Agricultural Genomics in Saskatchewan"
- ▶ third Annual Connaught Student Biotechnology Exhibition becomes the "Aventis Biotech Challenge"
- ▶ funding to MicroBio Rhizogen to centralize rhizobium business in Canada and to MCN Canola for its canola fractionation process

## 2001~2002

- ▶ develops the Business Plan Workshop for agbiotech entrepreneurs
- ▶ public forum on education and the perception of biotechnology
- ▶ co-hosts Bio-Products Saskatchewan Workshop with SREDA
- ▶ hosts visitors from China, Cuba, Taipei, the UK and Australia
- ▶ SABIC lab hosts over 2,500 visitors
- ▶ fourth Aventis Biotech Challenge
- ▶ first AWB Business Plan Competition: Phenomenome Discoveries wins \$100,000 with a plan to unlock the genome with non-targeted metabolic phenotyping
- ▶ helps form Bio-Products Saskatchewan and Bio-Products Canada Inc.
- ▶ funding to: Agrisoma Biosciences Inc., SynGene Biotek Inc., Clear Green Environmental, Pyxis Genomics, Adavance Technologies Inc., Northern Quinoa Corporation, Heads Up Technology
- ▶ funding to Prairie Plant Systems to expand their underground growth chamber for a Medicinal Marijuana Project

# Commercializing technology

**Ag-West Bio works to stimulate bio-industry growth by providing seed capital, industry connections, knowledge transfer and a sustained focus on advancing the industry.**

Access to capital is a barrier preventing innovative companies from commercializing promising biotechnology. Ag-West Bio's Commercialization Fund provides seed capital in early stages of development, often too risky for other capital sources.

One example is BioExx Extraction Technologies, with its innovative process for separating proteins from canola. Ag-West provided BioExx with \$300,000 of seed capital after working with the company to identify a commercial pathway for its technology. Funds were used in the pilot stage to develop commercially acceptable products and feasible production processes. BioExx is now poised to commercialize its unique canola proteins in the human and aquatic food markets.

The chance of success is greater when seed capital is complemented with networking and business development. Ag-West was instrumental in highlighting

Saskatchewan's bio infrastructure and brokering meetings with industry partners, helping attract BioExx and its first manufacturing plant to Saskatoon.

"From the moment we began looking at Saskatoon as a location to build our first canola protein plant, Ag-West has been there for us. Their strong support, in terms of business development and financial assistance, has been very beneficial to our efforts. We are proud to have our plant now commissioned

and operating and are very thankful to Ag-West for all its help along the way," says Samah Garringer, BioExx's vice president of business development.

BioExx will use Viterra's canola-quality *Brassica juncea* in its production. Ag-West (through its predecessor ICAST) provided initial funding to help Viterra develop this innovative crop species. This is a tremendous example of the potential of innovation in Saskatchewan – and how seed funding can help generate long-term economic growth. Ag-West Bio

Ag-West Bio is helping Northern Vigor Berries commercialize products made from seabuckthorn, a native Saskatchewan plant extremely high in vitamin C.



**1948** – Prairie Regional Laboratory established to develop alternative uses for Western Canadian crops to reduce waste and boost farming profits.



**1958** – DNA is produced in a test tube for the first time.  
– Agricultural Machinery Administration (AMA) is established in Saskatchewan.

**1968** – Marshall W. Nirenberg and Har Gobind Khorana are awarded the Nobel Prize for deciphering the genetic codes of the 20 amino acids.

**1971** – First complete synthesis of a gene; first gene-spliced DNA from different organisms.  
– Crop Development Centre is established at the U of S. CDC is the birthplace to more than 160 crop varieties, including low-phytate barley and CDC Imagine, Canada's first herbicide tolerant (non-GMO) wheat variety.



**1953** – James Watson and Francis Crick describe the double helix structure of DNA.

**1955** – The Salk polio vaccine is licensed in North America.

**1964** – The Western College of Veterinary Medicine opens at the U of S in Saskatoon.



**1970** – Norman Borlaug becomes the first plant breeder to win a Nobel Prize, for his work on new wheat varieties that increase yield by 70 percent.  
– American microbiologist Daniel Nathans discovers the first restriction enzyme that can cut DNA into pieces. His technique becomes a fundamental tool in modern genetic research.



congratulates BioExx on commissioning its plant in Saskatoon, and commends them on their efforts toward commercialization. These efforts have already created 30 construction jobs and 12 BioExx plant positions, with plans for 20 direct jobs and greater potential activity as they grow. We also congratulate Viterra on launching its registered new canola varieties, which are gaining market traction and giving producers (especially in southern Saskatchewan) viable new options.

Ag-West Bio increased its collaborative efforts in 2009. Working closely with other industry stakeholders ensures our seed capital is leveraged with other available funds. It also ensures the

efficient transfer of technical assistance to companies we work with, reduces duplication of services and promotes sharing of expertise. This leads to quicker technology commercialization.

Sharing business planning insights and technology assessments with organizations, such as NRC-IRAP – in a client-authorized and confidential manner – lets both organizations be more effective. Our joint efforts with Northern Vigor Berries to develop a commercialization plan for its Saskatchewan organic seabuckthorn products, is a good example.

Partnering with other stakeholders in knowledge transfer lets us leverage industry expertise and reduce costs. This year we provided a seminar on adapting commercialization and marketing plans to changing economic conditions. Building on this momentum, we worked with the Entrepreneurial Foundation of Saskatchewan to develop a joint seminar series on investment and commercialization. The series began in August 2009 with a focus on commercialization and IP protection strategies. Other topics will include building strategic alliances, raising private equity, understanding risk, and getting disruptive technology to market.

We are also working more closely with the U of S Industry Liaison Office (ILO). Both our organizations strive to commercialize Saskatchewan's biotech innovations; working together, we can speed up the process of commercialization. We look forward to working with the ILO to develop an effective system whereby U of S start-up companies can gain early insight from industry experts assembled by Ag-West Bio.

Ag-West Bio recognizes that entrepreneurial development is crucial to technology commercialization. In 2009, we partnered with the Raj Manek Business Mentorship Program to offer mentorship as a service to our entrepreneurial clients. In return, we supply the program with experienced mentors from our industry network. We encourage our clients to become Protégés, and work with them to reach milestones in their commercialization plan.

By providing leadership and assistance at every stage – supplying seed capital, building networks, transferring knowledge and working to advance the industry – Ag-West Bio continues to be a catalyst, helping Saskatchewan capitalize on its growing bio-economy.

*Brad Bly is Ag-West Bio's Technology Commercialization Manager*

## 2002~2003

- ▶ SARAS produces a report: Assessment Criteria for Novel Crops
- ▶ 977 people from 22 countries attend ABIC '02 in Saskatoon: "Ag-Biotech: Cultivating Convergence"
- ▶ 50+ groups visit from all regions of Canada, the US, Britain, Germany, France, Japan, Australia, New Zealand, Finland, Ecuador, Thailand
- ▶ new directory: Sources of Financing Available to Saskatchewan Life Sciences Companies
- ▶ Bioproducts Showcase is created for ABIC 2002
- ▶ SABIC lab hosts 1,775 visitors
- ▶ fifth annual Aventis Biotech Challenge awards \$5,250
- ▶ second Ag-West Biotech Business Plan competition: BioNatCom wins \$100,000 for its research on Chinese herbs

## 2003~2004

- ▶ AWB leads Team Sask to BIO 2003 in Washington, DC
- ▶ launches the BioScience Awards sixth annual Aventis Biotech Challenge
- ▶ co-hosts Bio-Logical Futures Conference with Bio-Products Saskatchewan
- ▶ Getting the Facts Straight Workshop provides an understanding of biotech issues
- ▶ 30+ visiting delegations from Chile, South Australia, Japan, and Germany; 11 foreign affairs and international trade officers
- ▶ seventh AgBiotech Essay Scholarship Program: "Bioproducts for the Future"
- ▶ SABIC lab is nominated for Agricultural Awareness and Education Award
- ▶ Newtrition, food biotech newsletter goes to 10+ countries
- ▶ funds to Agrisoma Biosciences Inc. and SynGene Biotech Inc.

**1972** – DNA ligase, which links DNA fragments together, is used for the first time.



– The DNA composition of chimpanzees and gorillas is discovered to be 99 percent similar to that of humans.



**1974** – Canadian scientists Keith Downey and Baldur Stefansson develop an edible oil rapeseed called canola.

**1976** – The sequence of nucleic acid base pairs that combine to make DNA is determined for the first time for a specific gene.

**1973** – Stanley Cohen and Herbert Boyer develop recombinant DNA technology. They complete the first successful genetic engineering experiment by inserting a gene from an African clawed toad into bacterial DNA.



**1975** – Veterinary Infectious Disease Organization (now Vaccine and Infectious Disease Organization) is established at the U of S.  
– Prairie Agricultural Machinery Institute (PAMI) established, operating three locations on the Prairies.  
– A method for producing monoclonal antibodies is developed by César Milstein and George Köhler.

**1977** – Procedures are developed for rapidly sequencing long sections of DNA.



## 2004~2005

- ▶ AWB helps launch Flax Canada 2015, Bio Industrial Oils, and Bio Actives initiatives
- ▶ helps secure funding for VIDO's International Vaccine Centre (InterVac)
- ▶ participates in consultations for the new Canada Health Act
- ▶ works with ag and ag-food associations to encourage implementation of Canada's Smart Regulations
- ▶ signs an MOU with Punjab Biotechnology Park in Chandigarh, India
- ▶ hosts Bio-Science Week for 300 attendees
- ▶ 25 delegations from India, Chile, Poland, Taiwan, Israel, Sweden, Germany, and the UK
- ▶ launches new website and Ag-West Bio E-News
- ▶ AgBiotech Bulletin, NutraNews, and Bio-Prospectors distributed to 50+ countries
- ▶ over \$500,000 to fund six local life science companies including Guardian Biotechnologies Inc. and Bio-ID Diagnostics

## 2005~2006

- AWB member company Performance Plants Inc. receives \$12 million in financing – one of the largest private investments in an agbiotech company in Canada.....
- ▶ leads Team Sask to BIO 2005 in Chicago, to IFT Annual Meeting in Philadelphia, and Food Expo 2006 in Orlando, Florida
  - ▶ hosts Plant Bio-Industrial Oils Workshop, Improving Human Health Workshop, Northern Plains Ethanol Workshop and Going Corporate workshop
  - ▶ Business Plan Workshop
  - ▶ hosts 20+ international delegations, workshops and seminars
  - ▶ publishes Bio-Solutions magazine
  - ▶ creates a video celebrating Saskatchewan's bioeconomy: "Saskatchewan: Providing Science and Technology Solutions" and the "Saskatchewan Solutions Online Directory"
  - ▶ 34 inquiries for commercialization fund financing
  - ▶ Guardian Biotechnologies and Northern Quinoa receive \$500,000 each

## Bioproducts and Biofuels Centre

# The Saskatchewan Biorefinery Alliance

In the fall of 2007, Ag-West Bio pulled key players together to pursue a Bioproducts and Biofuels Centre. Currently, this project is developing the Saskatchewan Biorefinery Alliance (SBA), funded through Advancing Canadian Agriculture and Agri-Food Saskatchewan (ACAAFS), the University of Saskatchewan, Saskatchewan Research Council, and Ag-West Bio. A network of Saskatchewan organizations is mobilizing resources to advance the research and development of biofuels, biochemicals, and bioproducts. The SBA focuses on building a value chain: from feedstocks, to logistics, to biorefinery options and sustainable commercialization.

Saskatchewan brings a number of strengths to the Canadian Biofuels and Biorefining opportunities:

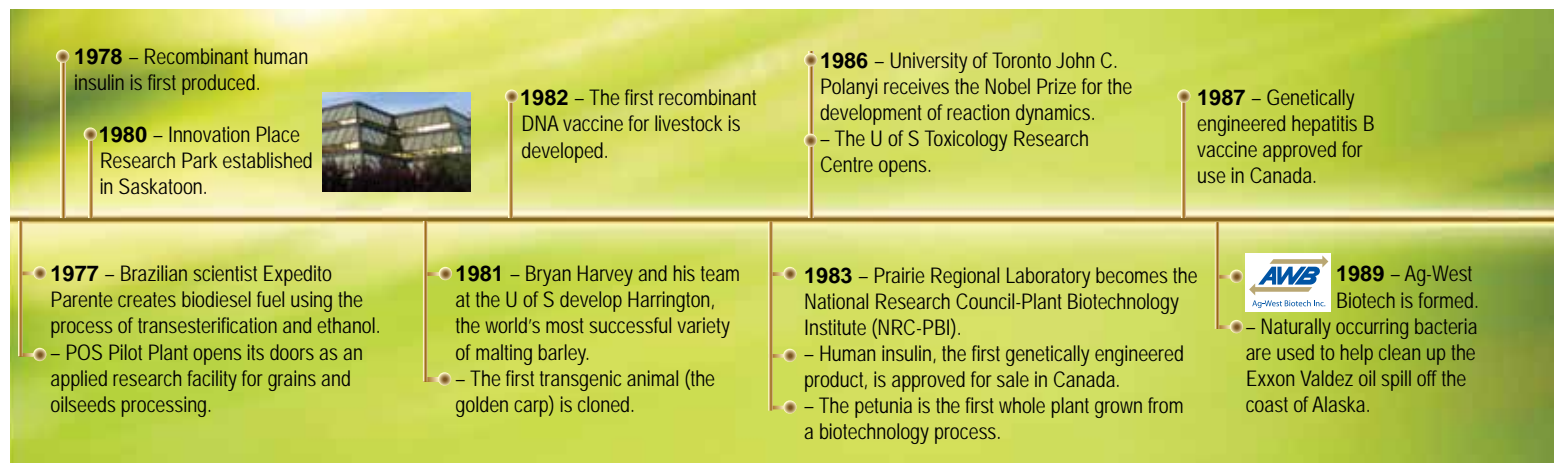
- Approximately 45% of Canada's cultivated farmland (50 million acres) is available for growing feedstocks to support Canada's bio-economy
- In addition to farmland, 52% of the province is forested; about 80 million acres with 37% (30 million acres) of commercial forest
- About 1/3 of Canada's biofuels, roughly 350 million litres per annum, are produced in Saskatchewan
- Saskatchewan has expertise in crop development, feedstock opportunities from crop residue, industrial biomass development, woody biomass, attributes development, and feedstock handling (materials pre-treatment, collection, transportation, and storage)

Ag-West Bio conducted a number of stakeholder consultations in the first half of 2009 to develop the SBA model:

- ▶ Thermochemical Biorefinery Value Chain Optimization Planning Consultation
- ▶ Lignocellulosic Feedstock and Logistics Planning Consultation
- ▶ National Renewable Energy Laboratory (NREL) and Colorado Centre for Biorefining and Biofuels (C2B2) Tour Mission
- ▶ Oilseed Feedstock and Biorefinery Group Planning Consultation

James Leier is Director of Ag-West Bio's Bioproducts and Biofuels Centre

go-BiO database is a valuable information centre for anyone looking for information about Saskatchewan organizations active in bioproducts and biofuels development and commercialization. Visit [www.go-bio.ca](http://www.go-bio.ca)



# valued members

Commitment to community and a culture of cooperation is our philosophy at Ag-West Bio. We work hard to bring value to our members, through networking opportunities, leadership and regulatory assistance.

## Corporate members

Advance-Tek Consulting Inc.  
Alberta Research Council  
Agriculture and Agri-Food Canada - Saskatoon Research Centre  
Becker Underwood Inc.  
Bioriginal Food & Science Corp.  
Canadian Light Source Inc., U of S  
CanMar Grain Products Ltd.  
College of Agriculture & Bioresources, U of S  
Crown Investments Corporation of Saskatchewan  
Dow AgroSciences Canada Inc.  
Emerald Seed Products Ltd.  
Enterprise Saskatchewan  
Farmers of North America  
Foragen Technologies Management Inc.  
Foreign Affairs and International Trade Canada

Genome Prairie  
Heads UP Plant Protectants  
Industry Liaison Office, U of S  
Innovation Place  
March Consulting Associates Inc.  
Milligan Bio-Tech Inc.  
Mustard Capital Inc.  
National Research Council - Plant Biotechnology Institute  
Pfizer Canada Inc.  
Phenomenome Discoveries Inc.  
Novozymes Biologicals  
Prairie Agricultural Machinery Institute  
Prairie Plant Systems Inc.  
Quantum Genetics Canada Inc.  
Saskatchewan Flax Development Commission  
Saskatchewan Food Industry Development Centre Inc.  
Saskatchewan Pulse Growers  
Saskatchewan Research Council  
SaskEnergy Corp.  
SNC Lavalin Agro  
The Saskatoon Colostrum Company Ltd.  
Saskatchewan Canola Development Commission  
MPT Mustard Products & Technologies Inc.  
Vaccine & Infectious Disease Organization

## Associate members

Agriculture in the Classroom  
BIOTECCanada  
Canadian Institute of Food Science and Technology  
Greater Saskatoon Chamber of Commerce  
Manitoba Food Processors Association  
POS Pilot Plant Corporation  
Saskatchewan Fruit Growers Association  
Saskatchewan Food Processors Association  
Saskatchewan Trade & Export Partnership  
Saskatchewan Canola Growers  
Saskatoon Regional Economic Development Authority  
The Saskatchewan Environmental Industry and Managers Association  
Western Canadian Functional Food and Natural Health Product Network

## Individual members

Les Beres	Brent Banda
Dr. Pete Desai	Garnet Martin
Susan Milburn	Dr. Joanne Post
Dr. Brian Rossnagel	Yafan Huang
Barb Stefanyshyn-Coté	Bev Gingras

\*complete membership list at print time.

## 2006~2007

- ▶ AWB contributes to Conference Board of Canada's Life Sciences Strategy Report
- ▶ appoints a full-time Regulatory Affairs Director
- ▶ leads Sask Solutions Teams to BIO 2007 in Boston, IFT Food and Expo 2007 in Chicago
- ▶ hosts bio-logical futures™ III conference with over 170 delegates
- ▶ hosts the 3rd annual Business Plan Workshop, the 2nd Plant Bio-Industrial Oils Workshop and the Animal Health and Nutrition Workshop
- ▶ Bio-Bulletin, the successor to AgBiotech Bulletin, NutraNews, and BioProspects, is distributed to over 2,500 individuals in more than 60 countries
- ▶ launches SUCCESS, a special publication directed at politicians
- ▶ funding to Quantum Genetics Canada Inc.

## 2007~2008

- ▶ leads Team Saskatchewan to BIO 2008 in San Diego
- ▶ works with the SRC and U of S to foster connections with India
- ▶ helps shape proposed federal bills such as Bill C-571 (labeling of GMOs) and C-51 (therapeutics and ensuring consumer safety)
- ▶ brings Dr. Roberta Bondar to Saskatoon for National Biotechnology Week
- ▶ hosts networking evening "A Night in the Lab" at ABIC 2007 in Calgary
- ▶ co-hosts the 4th annual Plant Bio Industrial Oils Workshop with NRC-PBI and the Improving Human Health Metabolic Syndrome Workshop
- ▶ launches www.go-BiO.ca database of biofuels and bioproducts organizations in Saskatchewan
- ▶ attracts Bio-Extraction Inc. and ARC Pharmaceuticals to Saskatchewan
- ▶ \$300,000 funding to Titan Clean Energy Projects Corporation

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**1990** – Chymosin, a substitute for rennet, is the first food product modified by biotechnology approved in Canada.  
– Modified yeast, the first product of biotechnology, is approved in the U.K.  
– World's first Human Genome Project launched.

**1994** – "Flavr Savr" tomato is the first GM food approved by U.S. Food and Drug Administration.



**1995** – The first genetically engineered potato, resistant to the Colorado potato beetle, is sold in Canada. Canada is the first country in the world to grow biotech crops.  
**1996** – Full commercial production of biotech canola, corn and soybeans begins in Canada.

**1998** – At the U of S, a lab led by Jeremy Lee is the first in the world to convert an antibody into an enzyme.



**1992** – Canada's Human Genome Project announced.

**1993** – Saskatchewan company BIOSTAR Inc. launches the world's first genetically engineered animal vaccine.  
– Canadian scientist Michael Smith wins the Nobel Prize in chemistry for developing a method of reprogramming segments of DNA.



**1997** – British scientists, led by Ian Wilmut, announce Dolly the sheep, the first cloned mammal.  
– AWB merges with International Centre for Agricultural Science and Technology (ICAST).  
– Saskatchewan Food Industry Development Centre (Sask. Food Centre) established.



# building on the past...

## Ag-West Bio Events 2008-09

Communications and networking continues to be a priority for Ag-West Bio. Communications at Ag-West Bio are being revamped to address the changing environment and tools available.

Saskatchewan was a busy place during National Biotechnology Week in 2008. Ag-West Bio hosted astronaut Dr. Roberta Bondar. A dynamic speaker, and surprisingly down-to-earth, Dr. Bondar enthralled students with stories from outer space – such as how astronauts heads expand and legs shrink due to fluid displacement in zero gravity – and shared her insights on how biotechnology can benefit the world. Education Outreach Day at the University of Saskatchewan College of Agriculture and Bioresources was also a hit, with three rural schools participating in hands on activities. Regional Advocacy Day held at the Legislative Assembly in Regina was well attended, drawing over 40 stakeholders and around 20 public officials.

The calendar for National Biotech Week 2009 (September 18-25) is full of educational, advocacy and business events.

Visit: [www.imagenation.ca](http://www.imagenation.ca)

At ABIC 2008 in Cork, Ireland, Ag-West organized a "Cool Canadian Celebration" in conjunction with the Western Canadian



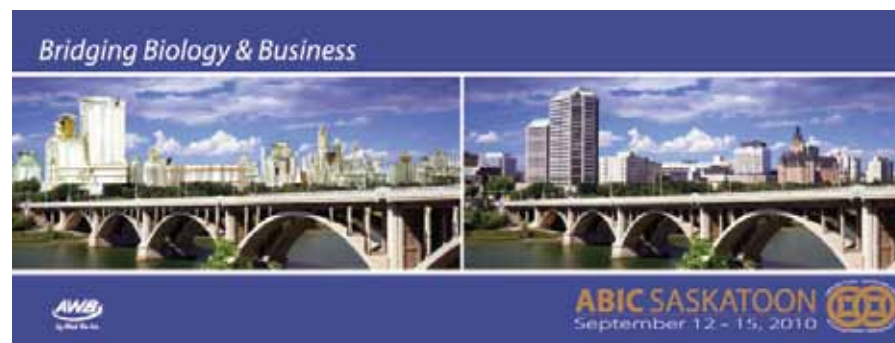
† Dr. Joanne Post and students from Saskatchewan Institute of Applied Science and Technology's (SIAST) Biotechnology program talk to Dr. Roberta Bondar at E.D. Feehan High School during National Biotech Week, September 2008

was a plus, and offered the right environment for networking ... Congratulations to you and your colleagues for being perfect hosts."

This year, Ag-West hosts a networking event, "Bridging Borders, Building the Future," at ABIC 2009 in Bangkok, Thailand. It will serve to promote ABIC 2010, coming to Saskatoon September 12-15.

Planning for ABIC 2010 has been underway since 2007, ramping up as the event draws near. Ag-West Bio heads the team of dedicated experts serving on the various committees drawn from our life science organizations. ABIC 2010 promises to be an exciting, world-class conference.

Genomics Centres. A team of 20 people representing 12 organizations, including political representation from Saskatchewan and the federal government, showed the world Canada's commitment to growing our biotechnology industry and increased the awareness of Western Canada's capabilities. John Sullivan, Trade Commissioner from the Canadian Embassy in Ireland, wrote, "I must say that the "Cool Canadian" reception was a superb evening... The lack of formality



Dr. Murray McLaughlin and Muriel Adams at ABIC 2004. ABIC was McLaughlin's concept while president of Ag-West Biotech. Muriel has been the ABIC Foundation Director since its inception in 1998. ABIC returns to Saskatoon in 2010.

1999 – Canada has 42 foods derived from biotechnology, including canola, corn, cottonseed, flax, potato, soybean, squash and tomato.

2001 – Canada is one of over 130 countries to sign the Cartagena Protocol on Biosafety, an international framework for science-based rules and procedures on the acceptance of genetically enhanced crops.  
– University of Montreal uses cloning technology to produce three identical calves.  
– Saskatchewan Forest Centre founded.



2003 – 50th anniversary of Watson and Crick's discovery of the double helix structure of DNA.

– Researchers at Canada's Michael Smith Genome Sciences Centre in British Columbia become the first to sequence the SARS genome.



2000 – Dr. Peter St. George-Hyslop at the University of Toronto successfully immunizes mice against Alzheimer's.

– Canada produces Starbuck II, the first cloned bull.  
– Regina Research Park is formed.  
– Genome Canada and Genome Prairie are established.



2002 – Rice becomes the first crop to have its genome decoded.  
– U of S discovery: Jeremy Lee and Palok Aich discover M-DNA, a DNA molecule capable of conducting electricity.

2003 – The Human Genome Project is completed. There are 20,000–25,000 genes in human DNA.



– GloFish, the first biotech pet, is specially bred with a bioluminescence gene to detect water pollutants.

## Plant Bio-Industrial Oils Workshop February 25-26, 2009 Delta Bessborough Hotel Saskatoon, Saskatchewan



Dr. Rex Newkirk (left) conducts a biodiesel mini-workshop during Plant Bio-Industrial Oils Workshop in February 2009.

Ag-West Bio co-hosted the 5th Plant Bio-Industrial Oils Workshop with NRC-PBI in February, registering about 100 attendees. Speakers came from across Canada, the United States, England and Germany. Attendees gave the event good reviews. Dr. Rex Newkirk (Director of Biofuels and Feed at the Canadian International Grains Institute) entertained around 25 participants while teaching them to make biodiesel during a bonus mini-workshop. In 2010, PBI goes international, as Texas Tech

Dick Auld of Texas Tech University, and Ron Kehrig of Enterprise Saskatchewan, at PBI 2009 in Saskatoon. Ron started the Plant Bio-Industrial Oils Workshop while VP Biofuels and Bioproducts at Ag-West Bio. PBI 2010 is moving to Texas, making it an international event.

University and Texas A&M will co-host the workshop in San Antonio, March 9-10.

A marketing luncheon entitled "How your business can capitalize on the current economic condition," presented by Brent Banda of Banda Marketing Group Inc. was co-hosted by Ag-West Bio and Innovation Place in March. In July, Ag-West hosted Dr. Manfred Schneider, from Wuppertal, Germany, as he presented his research on the use of enzymes as catalysts in organic synthesis to an appreciative audience.

Once again, Ag-West Bio organized Team Saskatchewan, and with funding from Agriculture Council of Saskatchewan and Enterprise Saskatchewan, traveled to BIO 2009 in Atlanta, GA. BIO was an incredible event with 14,352 attendees and more than 1800 exhibitors representing 61 countries. Team Saskatchewan made great



connections with organizations around the world and showcased our province as a centre of excellence.

World Congress on Industrial Biotechnology & Bioprocessing in Montreal became another opportunity to make connections. Ag-West Bio co-hosted a breakfast seminar, with speakers from the Prairie Provinces, Eastern Canada, Florida and North Carolina joining forces to identify sustainable alliances to address challenges in the growing area of advanced biofuels. Terry-Lynn Quadri says "Bringing these research groups together is a great opportunity to explore synergistic partnerships that will benefit bioeconomy innovators in both countries. Each group has unique strengths the others can tap into in order to avoid duplication, fill research gaps and build on collaborative efforts."

## to grow a bright biofuture...

Our province's bio-economy is increasingly adding value to our renewable resources, generating new business and jobs. How will Saskatchewan's bio-economy develop in the years to come? The people who brought Ag-West Bio, and Saskatchewan's biotech cluster, to the present day have a few ideas:

"The future bio-based socioeconomic opportunities for Saskatchewan are huge. Ag West Bio has the vision to understand this opportunity, and to work with government and the various companies and organizations to identify and exploit Saskatchewan's comparative advantage to ensure the province continues to be a world leader."

~ Dr. Ashley O'Sullivan

"Development in the Saskatchewan agbio-tech cluster equates to capital investment, jobs and revenues. Ag-West's role has been key to the acceptance of biotechnology both within Canada and internationally. It is a role that continues to be important."

~ Peter McCann

"We had the shift that involved getting biotechnology established in various sectors including agriculture, which we focused on at Ag-West. That's an effort that needs to continue. At the same time we're seeing an increased emphasis on clean technologies, green technologies, sustainability. A lot of this is probably due to the emphasis on global warming, but there's also the recognition that oil is something we'll eventually run out of, and we need to look at alternatives. Agriculture provides a strong opportunity to help provide some of that alternative chemistry through plant technologies, whether this is oil seed plants or cereal plants we work with, or culled stocks for that matter."

~ Dr. Murray McLaughlin



**2005** – The Canadian Light Source (CLS), welcomes its first user. The CLS is Canada's only synchrotron, located at the U of S.  
– The billionth acre of a biotech crop is planted by one of 8.5 million farmers, in one of 21 countries.

**2006** – VIDO researchers discover a key step in influenza A virus replication.  
– U of S College of Agriculture becomes College of Agriculture and Bioresources.



**2008** – U of S biologist Larry Fowke and Stephen Attree of CellFor develop 'somatic embryogenesis' for propagating coniferous trees, a technique that has dramatically enhanced reforestation practices.



**2004** – Ag-West Biotech, Saskatchewan Nutraceutical Network and Saskatchewan Bio-Products merge to become Ag-West Bio Inc.

– Schmeiser vs. Monsanto battle over GM canola: The Supreme Court of Canada votes in favor of Monsanto, promising greater security for intellectual property.

**2007** – An alliance between VIDO, University of British Columbia, the Alberta Research Council and Bioniche Life Sciences Inc. develops a vaccine to combat E.coli bacteria contamination from cattle.  
– Saskatchewan Wheat Pool becomes Viterra.



**2009** – Milligan Bio-Tech Inc. opens Canada's first canola-based biodiesel fuel plant.

**2009** – AWB celebrates 20 years as a catalyst in Saskatchewan's bioeconomy.



**Photo sources:**

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Financial Statements are  
available upon request.

Funding for Ag-West Bio is  
provided by the Saskatchewan  
Ministry of Agriculture.

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