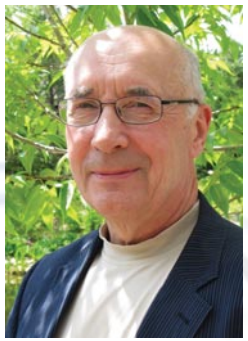

Ag-West Bio
The path to success
Ag-West Bio 2010-2011 Annual Report

president's message



For 22 years, Ag-West Bio has held an important role in building Saskatchewan's bioeconomy. The company has been involved in nearly all aspects of the promotion of the bioscience sector, from public education and outreach, to government liaison and regulations. Today, our focus relates to the commercialization of technologies, with activities targeting business development and attraction, pathfinding, mentorship, and building strategic alliances to create a culture of collaboration for biobusiness in Saskatchewan.

The path to commercialization is rarely smooth or free of obstacles. Embarking on an entrepreneurial journey takes patience and resilience, and perhaps most importantly, careful planning.

Ag-West Bio strives to clarify and, if possible, remove some of those obstacles for our industrious entrepreneurs setting out to create bio-based businesses. In the past year, Ag-West approved financing for six early-stage companies and provided advice and assistance to many more.

Vaccines, crop improvement, diagnostics, industrial bioproducts, natural health products, and genomic technologies; these are just a few of the areas where we really excel, both in research and increasingly, in the commercialization of technologies, creating new opportunities for our resource-rich province. Growing biobusiness will benefit our economy – and ultimately– Saskatchewan people.

The past year has brought growth to the sector, and to Ag-West Bio.

In January, we welcomed Mike Cey to the Ag-West Bio team as VP Corporate & Business Development. Building on past experience, Mike has been able to quickly build a network, connecting with people from Saskatchewan and around the world.

Among his many activities, Mike is leading a project funded by CAAP (Canadian Agricultural Adaptation Program) through the Agriculture Council of Saskatchewan (ACS) to evaluate the feasibility of developing industrial oil platform crops in Saskatchewan for use as feedstock in the jet fuel industry. The knowledge gained from this study will allow us to make informed decisions regarding development of an industry that appears to have great potential for the province.

The Ag-West Bio team consists of dedicated individuals who know the value of connecting with people. Numerous meetings were held this year, in Saskatchewan and at conferences around the world, including the World Congress on Industrial Biotechnology and Bioprocessing in Toronto, Ontario, BIO International Convention in Washington DC, and the Institute of Food Technologists Conference in New Orleans, Louisiana. We continue to offer the Saskatchewan Life Science Showcase at Innovation Place, an opportunity for local entrepreneurs to share their experiences turning science into business with the community. A new website was created to update our internet presence; the Saskatchewan Biosciences database contains information about Saskatchewan's research and analytical capabilities.

Thank you to our Board of Directors, an outstanding group of industry and research experts who work diligently to develop strategy for Ag-West Bio to make it the best vehicle for growing biobusiness in Saskatchewan.

And of course, thank you to the Saskatchewan Ministry of Agriculture for ongoing funding support, which indicates continued trust in Ag-West Bio to lead the way on the path to success.

Wilf Keller

letter from the chair

The path to success can be measured in many different ways. At the board, we spend time thinking about success for Ag-West Bio and its members, and about how we measure that success.

Path finding, clearing a path, or treading down a beaten path might all describe Ag-West but we are most interested in creating opportunities for the ag-bioeconomy in Saskatchewan, and expanding the reach of companies in that sector to gain international attention.

We remain committed to our two areas of strategic importance – business development and ag-bioeconomy commercialization, and can report that this year we made good progress on both fronts. During the year, we invested in three companies with promising technology, providing much needed capital to fund further research and business development, and giving those companies the foundation to leverage funds from other lenders.

We also work hard to clear a path for small and medium sized businesses, whether untangling legal and regulatory challenges, understanding capital markets, or introducing them to a mentor who has had similar experiences and can provide guidance on difficult business issues.

Ag-West Bio also plays a key role in organizing and supporting conferences where information can be shared and networking proves invaluable.

The measures we use all point to a successful year for Ag-West Bio. We will continue ensuring that our strategic plan is executed, adjusted if necessary, and always focused on the success of the ag-bioeconomy cluster in Saskatchewan.

The staff at Ag-West Bio is to be commended for the great work they do to advance the strategic initiatives, and to think innovatively about the needs of companies that do business in the ag-bioeconomy. We appreciate their dedication and commitment.

To my board colleagues, I offer my sincere appreciation for your efforts over the past year, and for the significant amount of volunteer time you commit to Ag-West in order to ensure its success.

Finally, we are most grateful to the Ministry of Agriculture for the financial support that allows Ag-West Bio to be Saskatchewan's catalyst for building Canada's most vibrant ag-bioeconomy.

Susan Milburn

Vision: To be Saskatchewan's catalyst for building Canada's most vibrant ag-bioeconomy.

Mission Statement: To enable the development and commercialization of innovation by linking research to industry for a diversified Saskatchewan economy.

Mandate: To provide leadership as a catalyst, to link existing capabilities and resources, in order to strengthen ag-bioeconomy industries in Saskatchewan.

Ag-West Bio Staff

President and CEO: Wilf Keller
VP Corporate & Business Development: Mike Cey
Manager, Finance and Administration: Kim Riel
Director of Commercialization: Brad Bly
Communications Director: Jackie Robin
Manager, Event Development: Brenda Scott
Corporate Assistant: Allison Sigstad
Research Analyst: Nicola Goosen

Ag-West Bio Board of Directors

Chair: Susan Milburn – Raymond James Ltd.
Vice Chair: Brent Zettl – Prairie Plant Systems Inc.
Abdul Jalil – Saskatchewan Ministry of Agriculture
Brian Rossnagel – Researcher, U of S Crop Development Centre
Jerome Konecsni – CEO, Innovation Saskatchewan
Barb Stefanyshyn-Coté – Tierra del Sol
Steven Fabijanski – Agrisoma Biosciences Inc.
David Gauthier – Entrepreneurial Foundation of Saskatchewan
Peter Phillips – U of S Johnson Shoyama Graduate School of Public Policy

Saskatchewan's bioeconomy is poised for sustainable long term growth. While attracting investment may be a challenge, there exists in Saskatchewan an enviable mix of capacity spread throughout industry, government and universities.

industry overview

the road ahead

Saskatchewan has the infrastructure and research expertise to make things happen. Worldwide, there is no question: bioscience innovation is needed. There will be more people on the planet and many will enjoy rising incomes. The amount of arable land is decreasing; many resources are less plentiful or more expensive to extract; added to this are challenges presented by climate change.

Bioscience innovations will be essential to feed populations and fuel the need for transportation, energy and industrial materials – in a way that is more sustainable and friendly to the environment. Already a Canadian bioscience leader, Saskatchewan is poised to become a bright spot for innovation.

Top: Dr. Mary Buhr, Dean of the College of Agriculture & Bioresources, University of Saskatchewan.

Middle: Theo Maatman, Technical Officer, Plant Growth Facilities works in a greenhouse occupied by NRC-PBI.

Bottom: The most advanced facility of its kind in the world, VIDO's International Vaccine Centre (InterVac) in Saskatoon, SK will be used to study containment level 3 diseases affecting humans and animals.

When biotech boomed in the early 1990s and early 2000s, a genetics professor with a new discovery could expect millions from investors eager to be part of the next big thing.

Those days are pretty much past, says David Gauthier, CEO of the Entrepreneurial Foundation of Saskatchewan.

"Getting to cash flow is a huge challenge because private equity has moved to later-stage deals. Investors know it's harder to make money during early stages. It takes a long time and there's a high failure rate," says Gauthier, whose organization advises entrepreneurs seeking financing to grow, transition or reach stability.

Gauthier's background gives him unique insight into the ups and downs of bio-business. With a Biology PhD and an MBA, Gauthier once managed a national venture capital fund specializing in agricultural science. He moved to Saskatoon in 2005 to become Regional Director of National Research Council's (NRC) Industrial Research Assistance Program.

Gauthier believes biobusiness has a bright future and Saskatchewan will play a leading role. "The good thing is that because of new research technologies, genomics, screening, marker assisted breeding, we have more capabilities on the research side. We also have more diverse biotech companies in the province using molecular and biotech tools to support different business models," Gauthier says.

Traditional advantages

Saskatchewan's traditional strengths as an agricultural centre also play a role, says Jerome Konecsni, Director General of NRC's Plant Biotechnology Institute.

"Saskatchewan has many advantages, including 40 per cent of Canada's arable land. We have skilled producers and a good distribution system," Konecsni says.

Add to the mix a healthy business atmosphere and one of the lowest tax rates for manufacturers, and the province is more than competitive. But Konecsni notes that skilled personnel are still needed on the processing side of the equation.

"I believe we're on the right track. The province has identified three pillars for innovation strategy, based on natural advantages. Encouraging more industrial investment is an important part of the plan," he says. Konecsni was recently appointed CEO of Innovation Saskatchewan, assuming his new position at the end of September.

Mary Buhr is also confident about Saskatchewan's role in the future bioscience world. Buhr is Dean of the University of Saskatchewan's College of Agriculture and Bioresources, moving from Guelph in 2009 to take the helm at U of S AgBio.

continued next page

As VP Corporate & Business Development for Ag-West Bio, part of Mike Cey's role is to help companies navigate the regulatory maze.

"One of the things that blew me away when I got here, was how incredibly effective and functional the research community is here. There is a lot of collaboration whether you're from the corporate world, university or government," Buhr says.

"Our research park in Saskatoon, and this extends to Regina as well, is second to none in Canada. Where else can you find facilities like the Canadian Light Source, VIDO-Intervac, a nuclear industry, Agriculture and Agri-Food Canada and various federal and provincial facilities, and generally a sense of optimism from people who work in the sector."

What needs to improve, says Buhr, is the actual number of companies "on the ground" bringing research and knowledge to commercial markets.

"We still tend to be people who sell raw- or lightly-processed material for export, and leave the fine details to be done elsewhere. We can't limit ourselves to developing great ideas yet having the products created somewhere else. We lose out."

Need for bio

With plentiful natural resources increasingly in demand, some might think Saskatchewan could enjoy prosperity just relying on its natural bounty. But that would

be a mistake, says Peter Phillips, Professor, Johnson-Shoyama Graduate School of Public Policy at the U of S.

"This is probably the third commodity cycle I've seen during my professional career – what goes up, does come down," cautions Phillips.

"Having a resource is not enough in the 21st century. And the value that can be added to something, whether it's a pound of potash or uranium or canola, the bulk of that value isn't in the resource or even the land and capital infrastructure. The bulk of that value is knowledge, and knowledge is very fluid."

That means a continued investment in creating and sustaining knowledge, and attracting and using the people who create this intellectual capital, says Phillips.

Proof of the concept, he notes, lies in the value now being realized because of strategic investment in Saskatchewan's agrifood cluster in decades past.

"If you look at Canada, every province used to have an agriculture college and federal laboratory. Many now do not. Saskatoon is now extremely competitive because it has these things – if you're a firm looking to do basic research and adapt technologies and products to new production and supply chains, it's not like there are hundreds of candidate cities," Phillips says.

Ag-West Bio could be considered one of those early investments, and Wilf Keller, the organization's President and CEO says it is essential that the public and policy makers understand the potential role of bioscience in economic and human health terms.

"Bioscience is really coming to the fore. You can think of it as the threshold of another era of science. Some people liken it to the computer industry," Keller says.

It's a new era, with the potential for developing new genetic strains in crops and livestock, ensuring adequate food as the climate changes, and allowing a better understanding of the role of food and food ingredients in human health, says Keller. Bioscience will provide new methods of diagnosing or preventing disease, and healthier ways of creating renewable energy and bioproducts, such as plastics and lubricants.

"Our environment, our economy and our health; these are things that matter to all of us."

The Canadian Light Source synchrotron is an example of world-class infrastructure in Saskatchewan.

The basic infrastructure already exists for capturing value from bioscience innovation here at home, but Keller says more direct public investment is needed to foster the critical mass of companies needed for any healthy cluster.

"The pool of venture capital in Saskatchewan, and Canada, is too small and risk-averse. We of course have a number of programs and agencies in place, and Ag-West is one of them, but it would be desirable to see more of these, with more funding, working more closely together," Keller says.

"Companies need to play a key role in the establishment of a vibrant cluster. We have a vision of where we want this cluster to be in Saskatchewan – a critical mass of companies that supply other companies, a critical mass of managers, researchers and well-trained employees."

Governments can also assist by decreasing the regulatory burden that sometimes prevents helpful technologies from ever reaching commercial markets.

"We need to provide the venture capital and remove some of the red tape. If we can do that, I see a very bright future for bioscience in this province," Keller says. ■

It is rewarding to be in a position to assist in the development of Saskatchewan's biotech companies. Ag-West Bio participates from an early stage, facilitating growth and commercialization success.

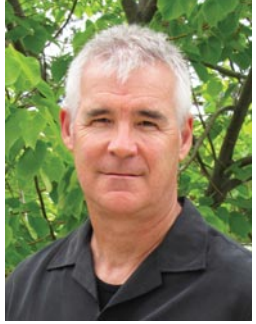
commercialization success
the path less travelled

by Brad Bly, B.S.A, MA, EDFP
Director of Commercialization,
Ag-West Bio

This year saw many success stories:

- Agrisoma Biosciences Inc. secured a commercial global partnership with Dow AgroSciences LLC for application of Agrisoma's technology in food crops, and continues to use its technology for advancing a novel oilseed crop toward sustainable biodiesel and biojet fuel production. The company recently expanded, hiring a VP of Business Development along with additional staff members. Ag-West invested $100K in Agrisoma in 2002 for development of a chromosome based gene delivery technology in plant systems.
- BioExx Specialty Proteins Ltd. commenced commercial food-grade protein operations at its plant in Saskatoon, concluded a product development and sales license agreement with Hormel Foods Corporation and has increased its Saskatoon plant employment to over 50 people. Ag-West invested $300K in BioExx in 2009 for refinement and commercial development of canola protein concentrates and isolates.
- HeadsUp Plant Protectants Inc. finalized a licensing agreement with Bayer CropScience LP for the company's HeadsUp seed treatment. In 2006, Ag-West invested $145.5K for development of this technology.
- Northern Vigor Berries Inc. secured a supply agreement to export Saskatchewan seabuckthorn berries, while advancing its value-added products locally. Ag-West invested $20K in 2010 to finalize value-added product market investigations and facilitate traction into local markets.
- Phenomenome Discoveries Inc.'s colorectal cancer blood test is being licensed for use in Saskatchewan, following a two year SK-based clinical trial. The company also announced a Canadian commercial licensing agreement with CML HealthCare Inc. for diagnostic blood tests that assess an individual's risk of cancer. In 2001, Ag-West invested $100K for development of a metabolic profiling (phenotyping) process proof of concept and scale-up.
- Quantum Genetics Canada Inc. continues to advance its technology research and evaluation agreements with major North American feedlots while increasing its Saskatoon staff to meet the growing demand for its services. During this time it spun out a new company, Quantum Biosciences Inc., to use its existing expertise to quickly jump on a market opportunity: testing for CDC Triffid in flax, while expanding its diagnostics into other products. This led to a combined company employment of 25 staff. Ag-West invested $300K in Quantum in 2007 for commercialization validation of the company's proprietary Quantum Management Protocol.

Ag-West Bio's commercialization assistance takes several forms. We keep abreast of issues and opportunities and inform our members of opportunities that can impact their success; our member companies benefit from the diligent communication and resources we provide and often use us as a sounding board for ideas and concerns. At the same time, we are impressed with the capability and innovation of the companies we work with; we learn as much from them as they do from us.



Creating a road map:

Our formal commercialization assistance takes six main forms:

1. ***Business development:*** Ag-West Bio provided business development and evaluation assistance to more than 25 early-stage companies this past year. Assistance ranged from evaluation of initial commercialization plans to linking more established companies to business opportunities.

2. ***Investment review:*** We provided business planning input and investment due-diligence input for 15 companies. Our input helps start-ups and early-stage companies become investment ready by identifying concerns, risks, and opportunities.

3. ***Financing:*** Financing approvals were provided to six companies, leading to closed investments in three, totalling $620K. The financing approvals were subsequently leveraged for more than $3M in additional public and private funding commitments.

4. ***Partnering events and showcases:*** Ag-West networking events and conferences help stakeholders discover synergies and potential partnerships. Events like the 2011 Plant Bio-Industrial Oils Workshop and the 4th International Biofumigation and Biopesticides Symposium bring together world-class researchers with potential commercial partners, while our Life Science Showcases highlight the efforts of Saskatchewan companies.

5. ***Knowledge transfer:*** Ag-West Bio hosted four commercialization seminars, co-hosted an investment roundtable, and was an integral stakeholder in the AAFC Agri-Investment Symposium held in Saskatoon. Seminar topics included advanced IP strategy, business structures for raising equity capital, and investment brokerage. The roundtable and symposium brought early-stage companies together with investors and stakeholders in an effort to raise capital and address industry issues.

6. ***Mentoring:*** Ag-West is pleased to work with the prestigious Raj Manek Foundation, matching emerging company entrepreneurs with successful mentors to advance knowledge transfer. This year, we linked two emerging bio-entrepreneurs with mentors, resulting in significant commercialization progress – and valuable transfer of wisdom.

Commercializing agbiotech research and technology is challenging. Start-ups and established companies alike are faced with several challenges – most notably, advancing commercialization efforts with limited resources while wading through a plethora of risks and opportunities. Companies are built by identifying, setting, and hitting milestones under tight constraints. I'm pleased to say Ag-West Bio firmly supported many companies in setting and achieving their goals; in so doing, we achieved ours. ■

Left: Steve Fabijanski, president and CEO of Agrisoma Biosciences Inc.

Middle: John Hyshka, co-founder, Chief Financial and Operating Officer of Phenomenome Discoveries Inc.

Right: Wilf Keller, president and CEO of Ag-West Bio, hands an investment cheque to Jay Robinson of Mustard Products and Technologies (MPT).

company profile

AdeTherapeutics

a Saskatchewan leader in biopharmaceuticals

At Ag-West Bio, we are constantly impressed by the resourceful, innovative people that walk through our doors seeking business input or funding. The following articles profile three of the companies we have had the privilege of working with while illustrating the variety of bio-business activity happening in Saskatchewan.

After surgery, many patients worry about the appearance of external scarring. But the chief concern for medical practitioners is internal scar tissue: fibrous, rope-like adhesions that can affect a patient's mobility and organ function, and even complicate future surgeries.

One Saskatoon company has developed and patented a compound that could change all of this. Its first product, in late-stage clinical trials, is a liquid that can be used in open or scope (minimally-invasive) surgeries. Other formulations are in earlier stages of development, including versions for use in spinal surgeries, craniotomies, orthopaedics and cosmetic plastic surgeries.

"Our vision is to be a worldwide leader in products – therapeutics, diagnostics or medical devices – that deal with the complications that happen during, or as a result of surgery," explains Sanj Singh, President and CEO of AdeTherapeutics Inc.

AdeTherapeutics' first products to market will be based on research into oxidative stress and inflammation (which are closely related to scar tissue formation) by Dr. Adebola Obayan, a company co-founder. Obayan is not the only physician on the AdeTherapeutics team: his wife, Dr. Aderonke Obayan, is just now finishing a pediatric residency at the University of Saskatchewan. The company's advisory board includes well-respected individuals such as neurosurgeon Dr. Michael Kelly, and Dr. Roger Pierson, an obstetrics professor and University of Saskatchewan Distinguished Researcher award winner.

"A lot of biotech companies don't have the luxury of a group of physicians on their team. They may have PhD researchers but they don't have the real clinical insight," Singh says.

"We have that insight into what happens in an actual operating room. How things are used or how they're stored, what is happening with the patients and, generally, how surgeons think and what they prefer and consider as real problems."

That insight means AdeTherapeutics' first products will fill a need that is known to exist, and do so in a way that can be easily adopted by

surgeons operating around the world.

"There are 235,000,000 surgeries around the world in developed nations. So the potential market is huge: approximately 93 per cent of gynaecological surgeries, for example, result in scar tissue formation that can lead to chronic pain and other complications," Singh says.

The fact that AdeTherapeutics' solution is founded on good science – and the high calibre of people who can understand and develop it – has placed the small company on the radar screens of major pharmaceutical companies.

"I can pick up the phone and talk to an executive at almost any major pharma company. This industry is based on knowledge and the people who can create it, and we've become known for having that," Singh says.

Larger pharmaceutical partners will be essential to AdeTherapeutics' future plans because of the high cost of clinical trials and regulatory approvals.

"We can bring products into Phase 2 clinical trials, but to run Phase 3 trials you're looking at about $20,000 per patient. Those trials involve hundreds of patients, in different centres and different countries," Singh explains.

By partnering with larger pharmaceutical companies, AdeTherapeutics can bring its technologies to the market and create value by focusing on its core competency – using research and innovation to develop new technologies and products.

With an impressive long-term vision and promising technologies getting closer to the market, Singh is optimistic about AdeTherapeutics and its future in Saskatchewan.

"We may have to look elsewhere to find the technical talent for things like regulatory work and clinical development, but our head office is here. The core talent, the minds that can research and create these technologies and products, is here," he notes.

And companies like AdeTherapeutics are relatively rare in Canada. The fact this one was founded and operates in Saskatoon, Singh says, is testament to the impressive capacity in life sciences and biotech centred around the U of S.

He also credits Ag-West Bio for its belief in AdeTherapeutics, as well as its ability to help forge vital linkages to other organizations, partners and even other markets.

"As a membership organization, Ag-West is the voice of the Saskatchewan bioscience industry as a whole. They take the view that bioscience is a tool for creating new products that add value to the world, and this province. That's a view we share as well." ■

AdeTherapeutics' clinical trials and advisory team members:
From left: Sanj Singh, president & CEO, AdeTherapeutics Inc; Dr. Michael Kelly, Scientific Advisory Board, Neurosurgery; Dr. Donna Chizen, Principal Investigator; Dr. Roger Pierson, SAB, Gynecological and Reproductive Medicine; Dominique Singh, MSc (candidate, Health Sciences), Clinical Research Nurse

company profile

Northern Vigor Berries

creating a seabuckthorn industry for Saskatchewan

Seabuckthorn isn't a household name, but Betty Forbes is working to change that. "All aspects of the seabuckthorn plant are very beneficial – it really does have amazing properties when you compare it to other plants," says Forbes, President of Northern Vigor Berries.

Seabuckthorn's berries, bark and leaves boast some impressive nutrients: almost 200 bioactive components including high levels of Vitamin E, Vitamin C, Beta-carotene, unsaturated fatty acids, Omega 3, 6, 7 and 9, as well as essential amino acids and flavonoids.

Forbes founded her company in 2007 to take advantage of a 13-acre plot of seabuckthorn on her father's Kamsack-area farm. What started as a part-time endeavour for the former mathematics instructor soon became a full-time calling, and her work now revolves around developing her company and the seabuckthorn industry in Saskatchewan.

Seabuckthorn isn't the most common of plants, but it can be found across

the province. The shrub is used in agricultural shelterbelts because of its hardy nature, and gardeners and horticulturalists enjoy the attractive leaves and berries. And small orchards do exist, remnants of an attempt during the 1990s to supply a now-defunct processing plant in Wynyard.

Forbes believes strongly in the potential of this power-packed shrub, and says it can supply many of the components and antioxidants consumers tend to look for in food, nutraceutical and healthcare products.

The berries themselves have a tart, citrus flavour, an attribute which many Saskatchewan residents are known to enjoy. Forbes says the flavour of seabuckthorn berries could be described as tropical, adding that some people have remarked that they taste similar to mango.

At this point in time, the largest market for seabuckthorn is right here in Saskatchewan. Forbes says her company's own seabuckthorn gelato is already very popular, and a growing number of creative chefs in the province are using seabuckthorn in Saskatchewan-themed creations. At the upscale Saskatoon Club, for instance, you can find seabuckthorn being used in a sauce with scallops.

Tea from seabuckthorn leaves is another product generating some significant local interest, and Forbes says customers are already reporting general increases in their health and well-being.

In the near future, Quebec may become the primary destination for Saskatchewan's seabuckthorn products. Thanks to Forbes's marketing efforts and Saskatchewan's reputation for healthy agriculture, Northern Vigor Berries will supply seabuckthorn to Quebec-based companies for use in hair and skin products. In the longer term, Forbes is also working on developing markets and partnerships in the United States, Germany, Sweden and Japan.

Supplying these new markets doesn't come without a few challenges. Harvesting seabuckthorn, for example, is challenging because there is little equipment designed specifically for the task. For the time being, seabuckthorn branches must be hand-cut and then frozen, so the berries can be knocked off.

"So in that sense, we're still in the dark ages and doing things by hand. It's quite challenging because the thorns are long and the berries have small stems, so they hang on tightly," Forbes says.

Yet, the market for seabuckthorn is already big enough to support a number of growers who supply raw product. Northern Vigor Berries harvests berries from 10 grower orchards, and has another six growers who ship to the company. With new markets opening up, Forbes says there will be a need for new growers.

With no seabuckthorn association in Saskatchewan, Forbes has taken a leadership role to move the industry forward. She has set up workshops and information sessions for growers, and is involved at the board level with Local Bounty, the Saskatchewan Fruit Growers Association and Saskatchewan Food Processors Association.

"In the end though, seabuckthorn is unique and is going to require separate marketing," Forbes notes.

While it won't become another canola, Forbes says that seabuckthorn can easily become a small and sustainable industry for this province.

She credits Ag-West Bio for helping support her work developing the fledgling seabuckthorn industry.

"I've been able to look to them for help with creating a sound business plan, with accessing financing, and a financial investment that came at a most needed time in our growth. There's a lot of expertise at Ag-West. We wouldn't be where we are today without them," Forbes says.

company profile

Prevtec Microbia

partnership yields success for all

Prevtec Microbia may be based in Quebec, but it's search for expertise has led to a collaboration that has created a success story for Saskatchewan's bioeconomy.

A University of Montreal spin-off, Prevtec needed to find a partner to produce its Coliprotec F4 vaccine in quantities adequate for commercialization. The search for a partnership led it to one of a very small number of Canadian organizations that possessed the necessary manufacturing capacity in animal biologics: the Saskatchewan Research Council (SRC).

In 2007, after a lengthy approval process, SRC received the go-ahead from the Canadian Food Inspection Agency (CFIA) to produce Coliprotec F4. The vaccine prevents diarrhea in post-weaned piglets, and represents a significant advancement for producers. Post-weaning diarrhea, caused by *E.coli* bacteria, can result in up to 15 per cent mortality in affected herds and was previously controlled through the use of antibiotics.

The partnership between Prevtec and SRC has extended to become "a truly synergistic relationship," says Michael Best, Business Unit Manager for SRC's BioManufacturing Facility.

"Prevtec has been a tremendous supporter of our fermentation and production facility, and we look forward to growing our relationship with them," Best says.

SRC's current manufacturing facilities should be capable of supplying Prevtec with enough vaccine to meet the needs of its Canadian, Brazilian and US markets. And production numbers could increase substantially if the US bans the use of antibiotics as growth promoters. Such a ban is already in place in the European Union.

Internationally, Prevtec is working with Virbac, one of the world's largest animal health pharmaceutical companies, to bring its products to market.

Manufacturing capacity is not the only reason for the successful working relationship between SRC and Prevtec. The other part of the equation is the human expertise at SRC: people knowledgeable in vaccine production, and in navigating the significant licensing and regulatory hurdles that exist before animal vaccines are allowed into the marketplace.

Michel Fortin, president and CEO of Prevtec Microbia

"The regulatory aspect is, without any doubt at all, the most challenging part of bringing these new technologies to the commercial marketplace," says Michel Fortin, Prevtec's President and CEO.

Thanks to SRC's expertise, the organization is now working with Prevtec to bring other new products to market. The Quebec company has vaccines at different stages of development and commercialization, including a new swine vaccine that could be in production by the end of this year.

Prevtec is also refining technology for a combined vaccine that would take care of all *E. coli*-related disease in swine production. This oral swine vaccine would prevent post-weaning diarrhea and edema, two diseases caused by strains of *E.coli*.

A $300,000 investment from Ag-West Bio's Commercialization Fund will help Prevtec bring this revolutionary vaccine to the stage of commercialization. Ag-West's fund invests in

companies with promising technology and a clearly identified pathway for getting that technology to market.

"What makes Prevtec's technology exciting is its innovation, utility and foresight," says Brad Bly, Director of Commercialization for Ag-West Bio. "The technology will be well-poised to be a market leader in the advent of growing bans on antibiotics."

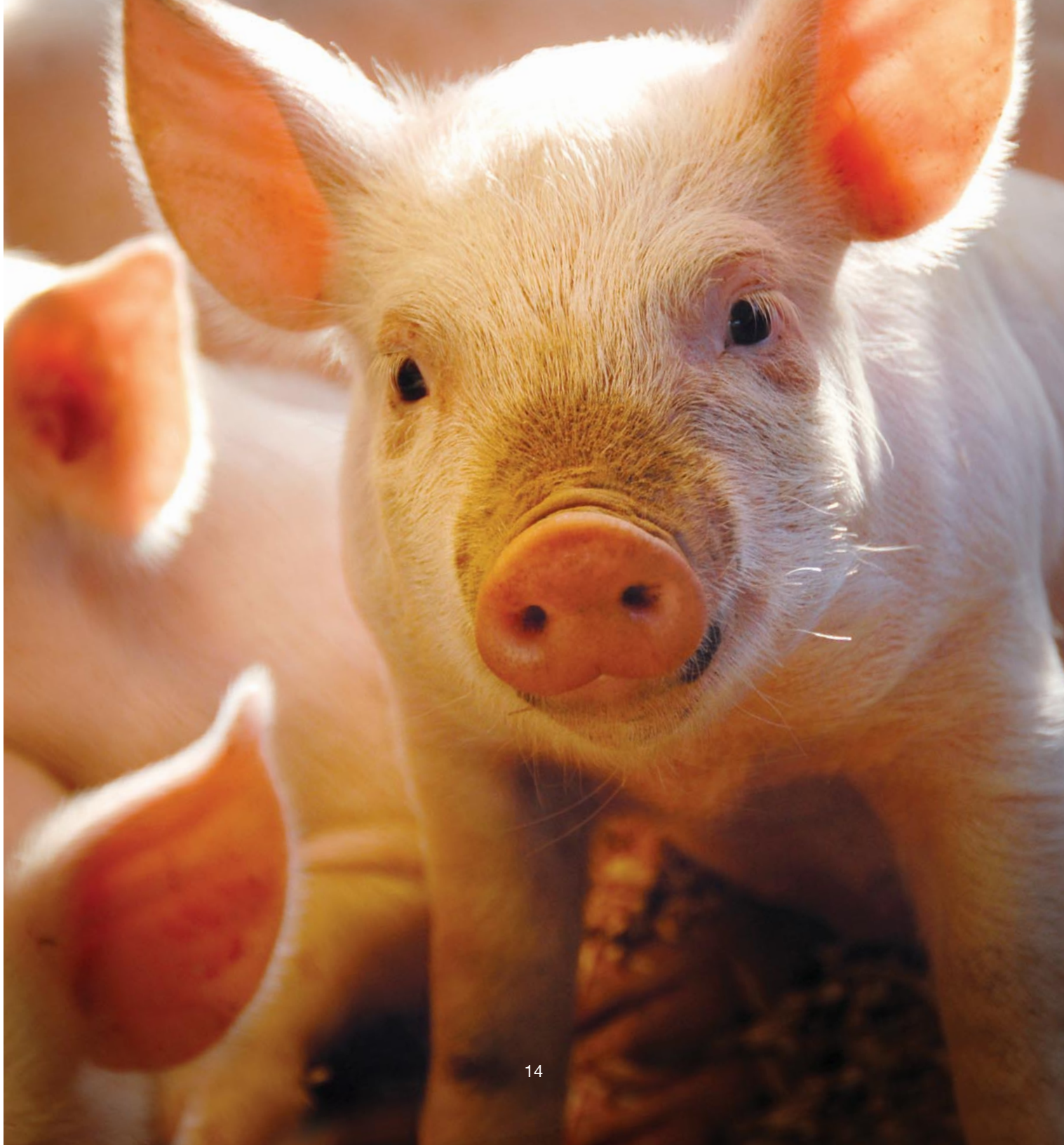
Ag-West's investments are not only based on promising technology and business attributes. Companies must also demonstrate substantial Saskatchewan presence and benefit.

Thanks to the partnership between SRC and Prevtec, the company passed this test with flying colours. To date, Prevtec has already spent more than $500,000 in Saskatchewan – money largely from Quebec sources that has flowed directly to SRC. Prevtec plans to double this expenditure as it develops the new vaccine technology.

Prevtec's success in its home province of Quebec made these benefits to Saskatchewan possible. In fact, Prevtec's success to date puts the company in rare territory in Canada.

"This is, in fact, the first live bacterial vaccine that was fully developed, produced, homologated and sold in Canada," Fortin says.

"We're not Pfizer, we're not Bayer. This is from a young company, and that's not something that happens every day." ■



events & communications

the crossroads of bioscience

Below: Al Sholz, Keith Downey, Kutty Kartha and Red Williams at an Ag-West Bio networking event

Events to feed the mind

Saskatchewan has a vibrant bioscience community and Ag-West Bio is often at the heart of the activity. As always, collaboration is a common theme as we strive to strengthen the cluster here. Ag-West represented Saskatchewan at numerous conferences and meetings in Canada and around the world throughout the year. The following are events in which we were directly involved, either by hosting or organizing and leading delegations:

In December, Ag-West Bio worked with the National Research Council-Plant Biotechnology Institute (NRC-PBI) and Agriculture & Agri-Food Canada (AAFC) to organize the Canola Industry Meeting – with input from Dr. Keith Downey, Saskatchewan's "Father of Canola," one of the scientists credited with developing canola in the '70s. At the meeting, it was announced that the prestigious 14th International Rapeseed Congress would be held in Saskatoon in 2015, with Ag-West taking the lead.

To start 2011 off right, we teamed with Genome Prairie to host a stakeholder reception, "Celebrating Science & Business," at the Sheraton Hotel in Saskatoon.

In February, six members of the House of Commons Standing Committee on Agriculture and Agri-Food came to Saskatoon to participate in hearings on the use of agricultural biotechnology. Following a facilities tour, the committee attended an evening reception at Boffins Club, co-hosted by Ag-West Bio, Genome Prairie, the U of S College of Agriculture and Bioresources, and Innovation Place.

Also in February, we partnered with the Saskatoon Regional Economic Development Authority (SREDA) to host a Business Development and Marketing Seminar at Innovation Place. Topics ranged from branding Saskatoon and working with media, to partnering with the Aboriginal community.

Once again, the Plant Bio-Industrial Oils Workshop was a successful event this spring. The diversity of uses for bio-based industrial oils became clear at this conference. Over 100 delegates listened to plant scientists, agronomists, CEOs and representatives from a variety of industries that use bioproducts, such as the automotive, metal working and aviation industries.

From left: Wilf Keller, Kevin Lynch and Peter Phillips at the networking event following Dr. Lynch's lecture on Canadian Innovation.

Our busy calendar included a multi-sector trade mission to India, Bangladesh and Sri Lanka. Saskatchewan Trade and Export Partnership (STEP), Ag-West Bio and the Saskatchewan Pulse Growers led the delegation, which included 20 life science organizations. A 'Saskatchewan Exposition' workshop was co-hosted by Ag-West Bio and STEP in Pusa, New Delhi. Premier Brad Wall and Deputy Minister of Agriculture Alanna Koch spoke, along with representatives from key organizations in Saskatchewan's life science cluster.

With funding support from Enterprise Saskatchewan, Ag-West Bio led Saskatchewan organizations to the 2011 BIO International Convention in Washington and the World Congress on Industrial Biotechnology and Bioprocessing in Toronto, Ontario. At BIO 2011, the Provinces of Saskatchewan and Manitoba signed a ground-

breaking Letter of Intent (LOI) to Cooperate on Research and Innovation Initiatives.

Creating opportunities for sharing information and networking is one of Ag-West Bio's roles. Over the past year, we hosted numerous events, inviting companies to talk about their business or technology. Each event was followed with a wine and cheese reception, giving guests the opportunity to meet new people and add to their own networks.

At three Life Science Showcases at Innovation Place, guests heard talks by invited speakers Dr. Martin Reaney, CEO of Prairie Tide Chemicals, Joe Holash president and CEO of Milligan Bio-Tech, and Michael Best, Business Unit Manager, BioManufacturing at the Saskatchewan Research Council.

Dr. Josef Hormes, Executive Director of the Canadian Light Source (CLS), was invited to discuss the agri-food applications for Saskatoon's synchrotron facility. He explained how the CLS works to make this powerful tool accessible even for small companies and individual researchers.

Jack Grushcow of Linnaeus Plant Sciences brought a team from his company and spoke about their technology licensing agreement with DuPont, and their work at the National Research Council-Plant Biotechnology Institute, developing *Camelina sativa*, an oilseed crop with good potential for industrial use.

Some of the Saskatchewan delegates during the trade mission to India in March. Back row: Brad Bly (Ag-West Bio), Reno Pontarollo (Genome Prairie), Chad Berg (SREDA), Joe Vidal (Bioriginal Food & Science Corp.) Front row: Phillip Stephan (SRC), Linda Yablonski (Willwood Industries), Al Scholz (A.N. Scholz & Associates Inc.), Nishit Shah (Indo Canadian Business Chamber)

Chances are, your favourite beer was made with Canadian-grown barley. In fact, Harrington barley, a world-standard for malting quality, was a product of the Crop Development Centre at the University of Saskatchewan.

Ag-West Bio partnered with Genome Prairie and the Johnson Shoyama Graduate School of Public Policy to bring the Honourable Kevin Lynch (Vice Chair, BMO Financial Group and former Clerk of the Privy Council and Secretary to the Cabinet) to Saskatoon. A highly respected economist (among his countless achievements, he championed the Canada Research Chairs program) Dr. Lynch discussed his views on Canada's strengths and weaknesses in the global arena.

More to come:

Ag-West Bio continues to be the lead for events in Saskatchewan during National Biotech Week, a BIOTECanada initiative that celebrates biotech advancements across the country. The Honourable Bob Bjornerud, Saskatchewan Minister of Agriculture, proclaimed September 16-23, 2011 Biotech Week in the Province of Saskatchewan. We are also pleased that the Grand Opening of the Vaccine and Infectious Disease Organization's newest facility, the International Vaccine Centre (InterVac) was chosen as the National Launch event for 2011.

Biotech Week activities in Saskatchewan include a lecture by Dr. Pamela Ronald, a plant geneticist from University of California, Davis. Dr. Ronald is the co-author of "Tomorrow's Table: Organic Farming, Genetics and the Future of Food," with her husband Raoul Adamchak, who runs the organic farm program at UC Davis.

The Amazing Biotech Race at Innovation Place is a new event organized by SIAST for post-secondary students. Biotech Blast, with hands-on activities for secondary students, takes place each year at the College of Agriculture and Bioresources, with help from Ag in the Classroom. Ag-West is hosting a commercialization seminar, The Art of Deal Making, and each year we toast the science of biotechnology with Biotech & Beer at Boffins. Biotech Week could not happen without the help of a hard-working committee drawn from our cluster organizations. Learn more about Biotech Week by visiting our website: www.agwest.sk.ca.

Ag-West Bio is currently organizing two major conferences for the benefit of the community: the 4th International Biofumigation & Biopesticides Symposium in Saskatoon (October 18-21), and the Canola Industry Meeting and Canola Genomics Workshop (December 7-8).

Top: Networking is an important part of business development. A chef prepares food at the Stakeholder reception in January.

Middle: The Plant Bio-Industrial Oils Workshop was held at the Delta Bessborough Hotel in Saskatoon.

Bottom: Larry Miller, Chair of the Standing Committee on Agriculture and Agri-food addresses the guests at Boffins.

The Life Science Showcases, and in partnership with the Entrepreneurial Foundation of Saskatchewan, the Investment Seminar Series both continue. Planning for 2012 BIO International Convention and the World Congress on Industrial Biotechnology and Bioprocessing has already begun. Ag-West Bio encourages the Saskatchewan Biosciences community to join the team to showcase Saskatchewan at these important industry events.

Navigating the information highway

Keeping information moving is an important aspect of business development. Researchers need to know what is happening on other benches around the world; entrepreneurs must communicate the potential of their innovations to investors; businesses must stay abreast of market trends and ready to take advantage of opportunities when they arise.

Ag-West has created a fresh, new website to serve as an information portal for the Saskatchewan's bioscience cluster. Integrated into the Ag-West Bio site is the Saskatchewan Biosciences database which lists research and analytical capabilities, funding sources and business assistance available in the province: www.saskatchewanbiosciences.ca

SASKATCHEWAN BIOSCIENCES
YOUR GUIDE TO CLUSTER'S RESOURCES AND INFRASTRUCTURE

Of course, a website is organic in nature – a continual work-in-progress. The events calendar and Twitter are great for quick updates. A new format for the Bio-Bulletin (our online newsletter) will be coming soon, with feature articles and guest blogs from Saskatchewan's industry experts. Learn more about Saskatchewan's bioscience cluster and stay up to date with Ag-West Bio's activities by visiting www.agwest.sk.ca.

Ag-West Bio members

Advance-Tek Consulting Inc.
AGMAR International Marketing Inc.
Agriculture and Agri-Food Canada - Saskatoon Research Centre
Agriculture Council of Saskatchewan Inc. (ACS)
Agriculture in the Classroom
Agrisoma Biosciences Inc.
Bayer CropScience
Becker Underwood, Inc.
Beres Printing and Publishing
BioExx Specialty Proteins Ltd.
Bioriginal Food & Science Corp.
BioTalent Canada
BIOTECanada
Canadian Institute of Food Science and Technology
Canadian Light Source Inc.
CanMar Grain Products Ltd.
College of Agriculture and Bioresources – U of S
Crop Development Centre – U of S
Desai & Desai Inc.
DFAIT - Foreign Affairs and International Trade Canada
EcoLibra Systems Inc.
Edwards School of Business – U of S
Eli Lilly
Emerald Seed Products Ltd.
Enterprise Saskatchewan
Entrepreneurial Foundation of Saskatchewan
Farm Credit Canada
Farmers of North America
Feeds Innovation Institute – U of S
Foragen Technologies Management Inc.
G & D Martin Family Farms
Genome Prairie
Greater Saskatoon Chamber of Commerce
Gowlings Lafleur Henderson LLP
Innovation Place
Industry Liaison Office (ILO) – U of S
Johnson Shoyama Graduate School of Public Policy – U of S
Linnaeus Plant Sciences Inc.
LSAM - Life Science Association of Manitoba
March Consulting Associates Inc.
Metabolix Oilseeds Inc.
Milligan Bio-Tech Inc.
MPT Mustard Products & Technologies Inc.
National Research Council - Plant Biotechnology Institute
Nipawin Biomass Ethanol Corporation
Northern Vigor Berries Inc.
Novozymes Biologicals BioAg
Okanagan Specialty Fruits
Pan-Provincial Enterprise Inc. - PREVENT
Pfizer Canada Inc.
Phenomenome Discoveries Inc.
POS Bio-Sciences
Prairie Agricultural Machinery Institute (PAMI)
Prairie Fire Growth Ventures Inc.
Prairie Plant Systems Inc.
Prevtec Microbia West Canada Inc.
Quantum Genetics Canada Inc.
Raymond James Ltd.
Rx&D
Saskatchewan Advanced Technology Association (SATA)
Saskatchewan Canola Development Commission
Saskatchewan Canola Growers Association
Saskatchewan Environmental Industry and Managers Association (SEIMA)
Saskatchewan Flax Development Commission
Saskatchewan Food Industry Development Centre Inc.
Saskatchewan Food Processors Association
Saskatchewan Fruit Growers Association
Saskatchewan Institute of Applied Science and Technology - Kelsey Campus (SIAST)
Saskatchewan Ministry of Agriculture
Saskatchewan Research Council
Saskatchewan Trade & Export Partnership (STEP)
SaskEnergy
Saskatoon Regional Economic Development Authority (SREDA)
Springboard West Innovations
Syngenta Seeds Canada Inc.
The Saskatoon Colostrum Company Ltd.
Tierra del Sol
Vaccine & Infectious Disease Organization (VIDO)
Western Canadian Functional Food and Nutraceutical Network

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istockphoto.com
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