VIDO-InterVac

Vaccine and Infectious Disease Organization
– International Vaccine Centre

35 YEARS OF RESEARCH SUCCESS

2009-2010 Annual Report

A Research Organization of the
University of Saskatchewan

1975

Founded in 1975 as the Veterinary Infectious Disease Organization, VIDO was primarily focused on infectious disease research of food animals and development of livestock vaccines.

2003

In 2003, research goals and infrastructure were expanded to include infectious diseases affecting both animal and human health and VIDO was renamed to the Vaccine and Infectious Disease Organization.

2010

Construction of the International Vaccine Centre which began in 2009 prompted a name change to VIDO-InterVac, reflecting an expansion that will include Containment Level 3 capabilities.

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OUR VISION

Protecting the world from infectious diseases

OUR MISSION

To be a pre-eminent research institute investigating the pathogenesis of infectious diseases and the development of effective therapeutic and prophylactic methods to control infectious diseases of humans and animals

DIRECTORS

1975 – 1984
Dr. Chris Bigland

1984 - 1993
Dr. Stephen Acres

1993 – 2007
Dr. Lorne Babiuk

2007 to present
Dr. Andy Potter

BUILDING ON 35 YEARS OF VACCINE DEVELOPMENT SUCCESS

Andrew Potter, PhD, Director and CEO

As we look back on 35 years at the Vaccine and Infectious Disease Organization, there is much to celebrate, from our start in 1975 as the Veterinary Infectious Disease Organization to our current status as VIDO-InterVac. The Organization's history is typified by individuals willing to act outside of the constraints imposed by convention and structure, by partnerships, and by high quality, targeted research activities.

The founding Director, Dr. Chris Bigland, envisioned an organization that would go beyond provincial boundaries to build inter-provincial partnerships, some that exist to this day. In many ways, the recent announcement of the New West Partnership by three of the Western Provinces reflects what has gone on for 35 years in the infectious disease field. Following the establishment of VIDO by Dr. Bigland, Dr. Steven Acres developed and grew the organization during the 1980s. As the third Director, Dr. Lorne Babiuk took VIDO to new levels on the international stage and set the stage for future growth with plans for a new containment level III facility, InterVac, that is set to open in 2011. More than ever, this new facility is all about partnerships of a national and international scale.

VIDO-InterVac's infrastructure has changed dramatically from its start in ATCO trailers in 1975. Construction of the first building to house VIDO research and staff was completed in 1978 and was followed by renovations and the addition of the research farm located outside of the City of Saskatoon in the 1980s and 1990s. These renovations and additions resulted from successful public-private partnerships, an unheard of approach that took two decades to gain popularity in other circles. By the late 1990s, it was obvious that the existing facilities could not be further modified and, thus 70,000 sq.ft. of laboratory space was added with funding from the Federal Government and the Provinces of Saskatchewan and Alberta. Indeed, the original partnerships had remained intact after 25 years!

This past decade has seen the emergence of new and re-emerging infectious diseases that threaten the animals and humans around the world. This includes diseases like SARS, avian/swine influenza, prion diseases (bovine spongiform encephalopathy, chronic wasting disease) and West Nile Virus which share two very important features: they are transmitted from animals to humans and specially designed containment level III facilities are needed to study them. The current global shortage of specialized containment facilities hampers research and response to these diseases but this will be addressed once InterVac is completed.

A Containment Level 3 (CL3) facility of unparalleled scope and design, InterVac is a facility that will be open to researchers worldwide. Through collaborations and partnerships, InterVac will be a valuable tool in mitigating the economic and social costs of infectious diseases.

Infrastructure has been important but VIDO-InterVac's success is also a reflection of the wealth and value of staff contributions over the past 35 years. Each day as I walk out of my office, I go by two striking sights – one is the collection of photographs of staff with 5, 10, 15, 20, or 25 years of experience, and the second is the display that holds 27 flags representing the different origins of VIDO personnel. Together, these two sights are daily reminders that people come from all over the world to have a career at VIDO-InterVac, not just a job. These individuals contribute diversity in terms of perspectives, scientific approaches, and problem solving techniques to the research and innovation conducted at VIDO-InterVac. Diversity is one of the key reasons for VIDO-InterVac's success in producing many world-firsts in the vaccine field, whether it be licensed products or information communicated to the scientific and producer communities.

Our vaccines have saved millions of dollars for the agricultural industry, making Canada more competitive internationally and enhancing global trade. Our research is also driving the discovery of new vaccines that are transforming the future of public health.

The external scientific review that we undertook last year provided confirmation of the scientific excellence of the Organization and its people, and provided recommendations for re-structuring of our activities to build for the future. We look forward to acting on this sage advice during the coming year when we build on the past 35 years and gear up for the launch of InterVac in 2011.

VIDO-InterVac's successful research history has positioned us well, as we launch this new phase of growth and development. It is a history that we are celebrating and using as a tool to guide our evolution so that we can meet our stakeholders' needs over the next 35 years.

Excellence in research

Since 1975, VIDO-InterVac research collaborations have resulted in over 80 U.S. patents and eight commercialized vaccines, six which were world firsts:

Vicogen™
Ecolan RC ™
Hevlan TC™
Pneumo-Star™
Somnu-Star™
Somnu-Star PH™
Pleuro-Star 4™
Econiche™

Research that makes a difference

Vicogen, VIDO's first commercially produced vaccine.

CELEBRATING RESEARCH EXCELLENCE

Bill Ballantyne – Chair, VIDO-InterVac Board of Directors

In world class institutions, change must occur continually. At VIDO-InterVac, this is driven by leadership, quality research, affiliation with the University and ongoing development of outstanding facilities.

It has been an honour for me to be the Chair of the Board of Directors for 2009/2010. As Board members come to understand, VIDO-InterVac is a unique entity, ideally situated to provide focus on the vibrantly active subject of infectious disease research.

In world class institutions, change must occur continually. At VIDO-InterVac, this is driven by leadership, quality research, affiliation with the University, and ongoing development of outstanding facilities.

Most importantly, a great organization is built by great people. VIDO-InterVac personnel are widely recognized in the vaccine research field, and their activities are increasingly raising the prominence of the Organization. InterVac, with its ability to handle large scale projects with large animals, will continue to highlight abilities and capabilities seen in very few other organizations around the world.

Recognition must be given to those involved in refining the functional relationships of the Board and the University of Saskatchewan. The new Constitution lays the path for strong integration with all colleges within the University, yet allows VIDO-InterVac to retain the special attributes needed for retaining highly skilled staff and attracting leading world talent.

Funding is always a challenging issue and since this work can go unnoticed, the Board wants to recognize the excellent work of Dr. Potter and key staff. Success requires dedication, tenacity and considerable time on the road and their efforts are greatly appreciated.

The ability to safely study and mitigate animal diseases that may be broadly destructive and deadly for farm animals is critical for industry and society. The increasing realization that most new human diseases are zoonotic and originate from animals adds a pressing urgency to research ongoing with VIDO-InterVac and its partners.

I envy new Board members and their continued involvement in the exciting and critical times ahead for VIDO-InterVac.

2009/2010 VIDO-INTERVAC BOARD OF DIRECTORS

Dr. Bill Ballantyne - Alberta
(Chair 2009-2010)

Dr. Luis Barreto - Ontario

Dr. Karen Chad - Saskatchewan

Dr. Robert Clarke - Ontario

Dr. Alastar Cribb - Alberta

Mr. Chris Dekker - Saskatchewan

Mr. David Gordon - Ontario

Mr. Walter Heuser - Quebec

Mr. John LaClare - Saskatchewan

Mr. Terry Manning - Ontario
(Chair 2008/09)

Dr. Larry Milligan - Ontario

Dr. Chuck Rhodes - Saskatchewan

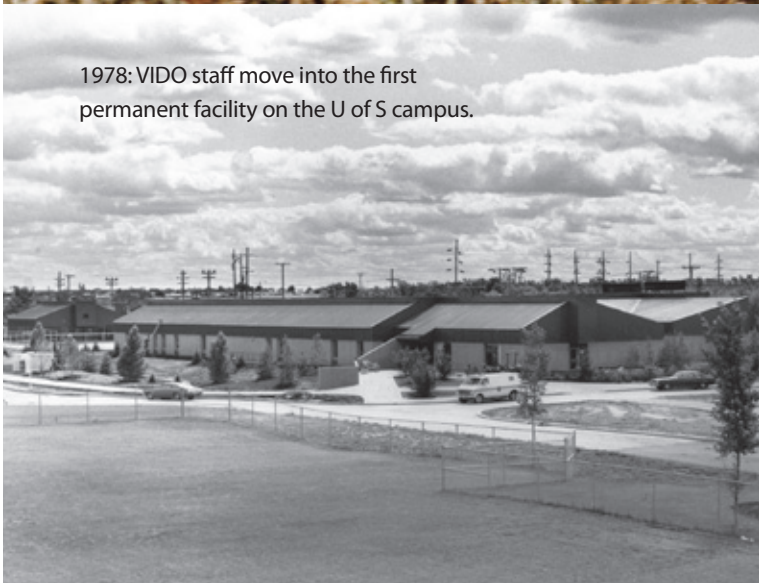
Mr. Don Wilson - Alberta

The early years

1975: VIDO is created with five employees, two trailers and a $100,000 budget.

Dr. Chris Bigland, VIDO Founder and First Director at sod turning for a permanent building in 1975.

1978: VIDO staff move into the first permanent facility on the U of S campus.



INTERNATIONAL VACCINE CENTRE – INTERVAC

Most emerging diseases of humans and animals are classified as Risk Group Level 3, meaning their handling requires specialized Containment Level (CL3) facilities like InterVac. "Containment" is used to describe safety measures and equipment needed to minimize release of infectious organisms into the laboratory and surrounding environment. In the U.S.A. the term used to describe this is "biosafety." CL3 organisms may be transmitted through the air and can cause serious or life-threatening diseases.

THE NUMBERS

SIZE: 145,000 sq ft, with 18 rooms for animal housing and 6 laboratories

CONTAINMENT LEVELS: 2 and 3

CONSTRUCTION COST: $140 million

EQUIPMENT-COST: $8 million

THE FUNDERS:

GOVERNMENT OF CANADA
CANADA FOUNDATION FOR INNOVATION
GOVERNMENT OF SASKATCHEWAN
UNIVERSITY OF SASKATCHEWAN
CITY OF SASKATOON

AIR QUALITY AND FLOW

Exhaust air will pass through double sets of high efficiency particulate air (known as HEPA) filters to capture pollutants and particles. A complex and state-of-the-art building control management system will monitor and control the directional airflows within the facility and InterVac's robotic scanning systems will monitor HEPA filters 24/7.

FAIL SAFE SYSTEMS

InterVac's mechanical systems will operate non-stop to ensure containment is maintained. Built with redundant capacity, a malfunction would automatically trigger increased function in other units, or the start of backup equipment.

REGULATORY ASSESSMENT

A finely controlled facility, InterVac will be monitored by highly trained personnel and the building's control system.

BIOSAFETY TRAINING AND PERSONAL PROTECTIVE EQUIPMENT (PPE)

The InterVac Biosafety Officer will ensure personnel are trained and certified prior to working in InterVac, and will verify work is conducted according to approved standard operating procedures. Workers will be protected by wearing PPE that is appropriate for the materials being handled. Consideration will be given to exposure risks, tasks being performed and disease transmission when choosing PPE.

WASTE DECONTAMINATION

All wastes will be decontaminated using heat, pressure and/ or chemicals prior to disposal. InterVac's equipment management system will ensure that sterilizers, tissue digestors and the effluent decontamination system are functioning properly.

Starting with the End in Mind

Architectural rendering of the new International Vaccine Centre

Sod Turning Celebration

In 2004 and 2005, VIDO received $60 Million from the Canada Foundation for Innovation and Government of Canada for design and construction of InterVac, Canada's largest containment level 3 facility. In 2007, groundbreaking took place and the three year construction project commenced.

His Worship Don Atchison, Saskatoon Mayor
Brad Trost, MP Saskatoon - Humboldt
Dr. Lorne Babiuk, Farmer, VIDO Director,
Dr. Andy Potter, Director and CEO, VIDO - Intervac

Taking Shape

After two years of construction, the final form of InterVac takes shape and the physical link to existing facilities is built.

IMPROVING GLOBAL HEALTH FOR ANIMALS AND HUMANS

Volker Gerdts, DVM, Associate Director – Research

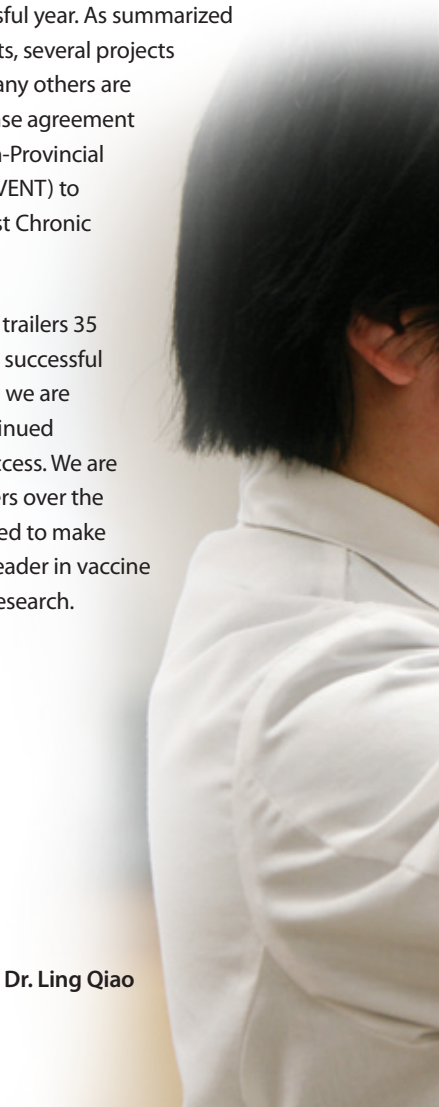
Since its foundation 35 years ago, VIDO-InterVac has strived for world-class research that would meet the needs of our stakeholders and their industries, as well as be at the forefront of discovery research. Starting in two trailers with less than a handful of staff, VIDO-InterVac's research quickly became nationally and internationally recognized for its innovation and its quality, making it a world leader in vaccine and infectious disease research.

VIDO-InterVac's mandate has been to serve the needs of our stakeholders and their industries, and this mandate has not changed. Serving the livestock and poultry industry has been and will always be an important part of our mandate and several of today's livestock vaccines were developed at VIDO. Due to an increasing globalization and urbanization, however, the interface between humans and animals has become more and more important as new diseases continue to emerge between the two. The recent pandemic influenza outbreak, falsely proclaimed as "swine flu", was a prominent example of a disease that originated in this interface. To remain successful, our research needs to continue to focus on both human and animal health and the boundary between them. InterVac will take this research to the next level.

To ensure that VIDO-InterVac's research activities remain innovative and relevant, an external scientific review was held in November 2009. The review panel was comprised of world renowned leaders from industry, academia and government research. The panel recognized that VIDO-InterVac's strength lies at the animal-human interface and that the quality of our science remains very good, with excellent and relevant projects. Several helpful suggestions to improve our research were made and will be implemented with the help of our Board of Directors over the next few months.

Thanks to the dedication of our staff, VIDO-InterVac has had another successful year. As summarized in the research highlights, several projects were completed and many others are progressing well. A license agreement was signed with the Pan-Provincial Vaccine Enterprise (PREVENT) to develop vaccines against Chronic Wasting Disease in elk.

What has started in two trailers 35 years ago has become a successful research enterprise, and we are looking forward to continued world-class research success. We are grateful to our supporters over the years, as they have helped to make VIDO-InterVac a world leader in vaccine and infectious disease research.



VIDO research scientist Dr. Ling Qiao

RESEARCH HIGHLIGHTS

■ **Protein misfolding disorders belong to the most severe group of neurological diseases in humans and animals.** Prominent examples include Creutzfeld-Jakob Disease, Alzheimer's and Bovine Spongiform Encephalopath (BSE) and chronic Wasting Disease(CWD). An important disease of cervids, CWD is responsible for significant losses in domestic and wild cervid populations and is prevalent in many parts of North America. VIDO-InterVac has signed an agreement with the Pan Provincial Vaccine Enterprise (PREVENT) to develop a vaccine against Chronic Wasting Disease , a new concept in preventing protein misfolding disorders. The vaccine, based on research performed by the groups of Drs. Napper, Griebel and Potter at VIDO-InterVac and Dr. Cashman at the University of British Columbia, is expected to be available to Saskatchewan producers within three years.

■ **One of the most important diseases in infants and young children is caused by infections with Respiratory Syncytial Virus** (RSV). The disease is responsible for hundreds of thousands of hospitalizations and deaths around the world. Vaccines against RSV are currently not available. The research at VIDO-InterVac aims at testing a vaccine candidate developed by Dr. Sylvia van den Hurk and her group. The antigen is combined with an adjuvant platform developed by our neonatal vaccine research group. This adjuvant platform has proven highly effective against pertussis, another important childhood disease. As part of the neonatal immunization group, Dr. Heather Wilson and her group are looking at novel ways to immunize pregnant animals and mothers to enhance immunity in neonates.

■ Dr. Yan Zhou and her group are using reverse genetic approaches to develop novel vaccines against **influenza** infections in humans and pigs. They have generated two elastase-dependent H1N1 mutant viruses which grow in cell culture but fail to replicate in animals (attenuated live vaccines). These vaccines induced strong immunity in pigs and provided protection against homologous H1N1 and partial protection against heterologous H3N2 infection, demonstrating that elastase-dependent swine influenza virus mutants can be used as live-virus vaccines in pigs. Current research is focused on developing vaccines against avian influenza. The group has also identified some of the molecular mechanisms used by influenza viruses to regulate apoptosis in infected cells.

■ Drs. van den Hurk, Qiang Liu and Joyce Wilson are investigating novel means of intervention including novel vaccine strategies and therapeutics against **hepatitis C virus**. Dr. van den Hurk is testing dendritic cell-based vaccines, a fairly new approach that has demonstrated highly promising results in animal studies. Dendritic cells are

important components of the immune system and are crucial in the initiation of an immune response. Vaccination experiments using loaded dendritic cells are currently underway. The use of microRNA as a therapeutic might offer an alternative approach for treating this important disease. Dr. Wilson's group is studying the interaction between viral and host proteins that are involved in RNA interference and miRNA pathways. The group has confirmed transient HCV replication in several previously non-permissive cell lines. Dr. Liu's research is focused on liver steatosis, the most devastating clinical manifestation of this condition. His group examined the contribution of viral proteins in the development of an abnormal lipid metabolism, and determined that the PI3K-Akt-2 pathway is involved. Kinome analysis is currently applied to identify additional signal transduction pathways involved in HCV replication and pathogenesis.

■ **Food-borne diseases** affect millions of people every year, with the majority of these infections caused by *Escherichia coli*, *Campylobacter jejuni* and *Salmonella* species. Vaccination represents an effective approach to reduce colonization in animals and subsequent contamination of food products. The research groups of Drs. Andrew Potter, Wolfgang Koester, Brenda Allan and Aaron White are currently developing vaccines against these bacteria in both cattle and poultry. The world's first vaccine against *E.coli* O:157 was developed two years ago in collaboration with Bioniche, the University of British Columbia and the Alberta Research Council and is now commercially available to Canadian producers. Subunit as well as vector-based vaccines are being developed against *Salmonella enteritidis* and *Campylobacter jejuni* in poultry. Promising vaccines candidates are currently being evaluated in chickens.

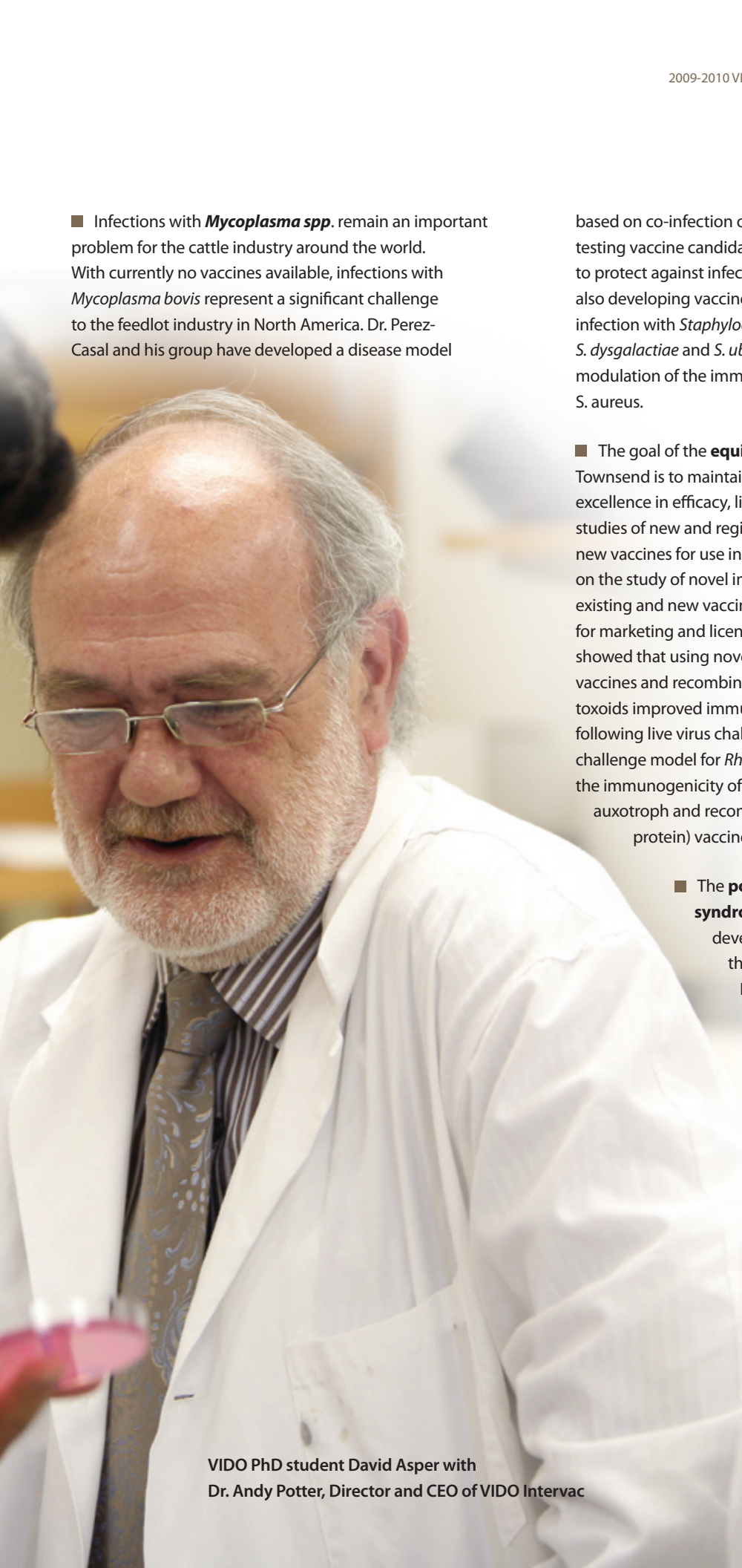
■ **Johne's disease,** caused by infection with *Mycobacterium paratuberculosis***,** is responsible for serious losses to the dairy and beef industries and may be associated with Crohn's disease in humans. Drs. Scott Napper, Philip Griebel and Andrew Potter are studying the interactions in the intestine between the pathogen and the host to develop novel intervention strategies that control this devastating disease. Kinome analysis, a relatively simple technology adaptable to a wide variety of species and capable of providing significant insight into innate immune regulation, has revealed that establishment of chronic infections by *M. paratuberculosis* depends on its ability to subvert host immune responses. This includes blocking the ability of infected cells to be activated by interferons, an important effector mechanism for the rational design of more effective vaccines and/or therapeutics. Current studies in intestinal loops are designed to further characterize the host-pathogen interactions and develop potential vaccine candidates.

■ Infections with ***Mycoplasma spp***. remain an important problem for the cattle industry around the world. With currently no vaccines available, infections with *Mycoplasma bovis* represent a significant challenge to the feedlot industry in North America. Dr. Perez-Casal and his group have developed a disease model based on co-infection of BHV-1 and *M. bovis* and are currently testing vaccine candidates and formulations for their ability to protect against infection. Drs. Potter and Perez-Casal are also developing vaccines against mastitis in cattle, caused by infection with *Staphylococcus aureus, Streptococcus agalactiae, S. dysgalactiae* and *S. uberis*. The research is also looking at the modulation of the immune response by the SEC enterotoxin of S. aureus.

■ The goal of the **equine vaccines project** led by Dr. Townsend is to maintain an industry wide reputation for excellence in efficacy, licensing and marketing (post-licensing) studies of new and registered equine vaccines and to develop new vaccines for use in horses. The project currently focuses on the study of novel immune modulators as adjuvants for existing and new vaccines as well as respond to industry needs for marketing and licensing studies. For example, the group showed that using novel adjuvants for inactivated influenza vaccines and recombinant *C. tetanus* and *C. botulinum* toxoids improved immune responses and clinical protection following live virus challenge. The group also developed a challenge model for *Rhodococcus equi* in foals and assessed the immunogenicity of two experimental vaccines, a riboflavin auxotroph and recombinant VapA (virulence associated protein) vaccine in neonatal foals.

■ The **porcine respiratory and reproductive syndrome virus (PRRSV)** project aims at the development of novel vaccines against this important viral disease of pigs. Dr. Zakhartchouk and his group are currently studying the interaction between the host and the virus as well as testing a number of attenuated vaccines for their ability to provide protections against this important disease.

■ The **vectored vaccines** program led by Dr. Tikoo has successfully developed a number of viral vector technologies that are based on bovine, porcine and turkey adenoviruses. These vectors provide a number of advantages such as safety, delivery and improved immunogenicity and are currently being tested for both human and



VIDO PhD student David Asper with Dr. Andy Potter, Director and CEO of VIDO Intervac

livestock vaccines. In collaboration with Defense Research and Development Canada the group has constructed vectors containing different versions of E1-E2 genes of Western Equine Encephalitis virus. Modifications in the knob region of BAV-1 fiber resulted in altered tropism to gut associated mucosal epithelium, as required by an oral vaccine. To target specifically M cells in Peyer's patches, the group developed a recombinant BAV-3 virus that specifically targets M cells in the gut, important sites for the induction of mucosal immune responses in the gut.

■ The **immune modulation** program focuses on the development of novel vaccine formulations and delivery strategies including polyphosphazenes, carbon nanotubes and microparticles for mucosal vaccine delivery. Polyphosphazenes are synthetic polymers which are quite versatile in drug and vaccine delivery applications. We are exploring their potential as vaccine adjuvants and as delivery systems for adjuvants. Interestingly, polyphosphazenes themselves are highly effective as mucosal adjuvants and can be formulated into microparticles. As part of this program Dr. Arshud Dar and his group are developing a vaccine against **inclusion body hepatitis** in chickens. This disease is of significant importance to the poultry industry. The overall goal is to understand the disease pathogenesis and to develop a vaccine formulation consisting of a novel adjuvants for poultry including host defense peptides. Dr. Heather Wilson is studying the role of host defense peptides, against bacterial infections in poultry. Her group is testing the potential of host defense peptides against avian cellulitis, a leading cause of meat condemnation and a substantial economic burden to the Canadian poultry industry.

■ The **functional pathogenomics of mucosal immunity** project involving VIDO-InterVac, University of British Columbia and the Sanger Institute has ended with the successful generation of several mouse strains that are deficient in certain aspects of their innate immune responses to mucosal pathogens. These strains allow detailed analysis of the innate immune mechanisms at the intestinal mucosa and have been made available to the scientific community. Furthermore, studies to compare the development and functional differences of mucosal dendritic cells were completed in cattle and will provide the basis for future studies of dendritic cell phenotype and function in the presence or absence of enteric infections.

Sod turning for the new wing, with Dr. Lorne Babiuk

Research success prompts a substantial expansion

By 2001, growth of VIDO's research programs and reputation prompted the Canada Foundation for Innovation and the Governments of Saskatchewan and Alberta to commit $14.2Million for a facility expansion. By the time the new wing was opened in 2003, VIDO had been been awarded 62 U.S. patents (with 27 patents pending), had 125 employees and had $10Million operating budget.

The new wing opened in October 2003

ENHANCED CAPABILITIES, STRONGER PARTNERSHIPS

Paul D. Hodgson, PhD, MBA, Associate Director – Business Development

With the economy showing signs of recovery, and mergers and acquisitions between human and animal health companies becoming finalized, a more focused market is emerging and corporate interest in InterVac is growing.

As one of the largest and most advanced containment level 3 facilities of its kind in the world, InterVac will enhance our partners' capacity to fight infectious diseases of both humans and animals globally. To ensure our partners are aware of these capabilities, we redesigned our website, updated marketing materials, and initiated the publication of a quarterly online newsletter targeted at industry, government and other stakeholders. We're proud to say we were also featured in several publications, including the cover story 'Beating the Bugs' for BioBusiness (January 2010) which described VIDO-InterVac's enhanced capabilities for mitigating emerging infectious disease threats.

We continue to support efforts of the VIDO-InterVac Swine and Beef Industry Technical groups, and have produced publications on Johne's disease and on production issues faced by swine operations during tough economic times. The work of both groups will be presented at major producer conferences this coming year.

We are focused on developing our vaccine technologies via licensing and collaborative development agreements. Our most recent event from this perspective was a license and collaborative development contract with the Pan-Provincial Vaccine Enterprise Incorporated (PREVENT) to develop a vaccine for prion diseases including chronic wasting disease (CWD). We're also expanding our collaborations with organizations in the Midwest United States, including Minnesota, Colorado and Kansas – home to the world's largest concentration of the animal health industries and we continue to look for opportunities with India and China.

The year, however, was not without challenges. The Canadian HIV Vaccine Initiative, an $88 million grant to construct a pilot scale vaccine plant, was cancelled. This curtailed the massive effort that the partners put into preparing an outstanding application to this initiative. On a positive note the money was reallocated to vaccine research, so opportunities for VIDO and its partners to apply for these funds still exist.

From a quality management perspective, we reviewed our key operational processes and have determined that a quality management system in alignment with ISO 9000, an internationally recognized standard, will improve our operational efficiencies and set the stage for external validation of our research practices. This, followed by third party certification of our quality management system will send a clear message to stakeholders regarding our commitment to international caliber research and will, in turn, increase our competitive advantage and expand our base of potential research partners. We're currently assessing the most efficient way to implement an ISO 9000-based system when InterVac is fully operational.

By this time next year the bulk of the human and animal health company mergers will be completed, coinciding well with the commissioning of InterVac. We look forward to the infrastructure that InterVac will provide as an additional backbone for corporate collaborations in vaccine research and development.

Once these mergers are complete, the top two companies will control about 50% of the animal health market. This will provide operational challenges to both the human and animal health companies as corporate cultures and products are aligned.

VISION TO REALITY

Joyce Sander, Associate Director – Human Resources

"The success of VIDO-InterVac lies in the diversity of our research projects, our worldwide reputation in addressing global infectious disease challenges, continued success in obtaining research funding and the ability to engage, educate and train our students and staff to their fullest potential."

VIDO-InterVac's existence has always been tied to a vision. This started on August 29, 1974 when Dr. Chris Bigland submitted a research brief to the "Calgary Initiative", describing a veterinary microbiology research institute that would attract outstanding international scientists on sabbatical leaves, post doctoral fellows and graduate students. The "Calgary Initiative" was the "Devonian Foundation" which joined other philanthropic foundations as the "Devonian Group of Charitable Foundations of Calgary", and combined funding with the Governments of Saskatchewan and Alberta and the University of Saskatchewan to create a research organization called the Veterinary Infectious Disease Organization (VIDO) on September 25, 1975.

That original vision is being advanced with construction of InterVac. InterVac started as the extraordinary dream of former Director and CEO, Dr. Lorne Babiuk, who envisioned a facility that would allow researchers from around the world the opportunity to work on containment level 3 pathogens. Lorne took this vision to the University, to the governments and successfully secured funding needed to start construction.

The current Director and CEO, Dr. Andrew Potter, continues the vision as he seeks out additional infrastructure funding that will help make the dream a reality. With his leadership, VIDO-InterVac continues to strive for a balance of stability, evolution and growth – a heavy responsibility in the hands of its senior management, the Board of Directors, the University of Saskatchewan, and the Federal and Provincial Governments. Senior management is devoted to VIDO-InterVac's primary objective of serving the human and livestock industry through research on common infectious diseases. The people of VIDO-InterVac are driven by their pursuit of knowledge and technology that will improve the health and wellbeing of both humans and animals.

As part of the Senior Management Team since 1994, I've witnessed our ability to attract top notch students, post doctoral fellows and scientists and know this will be strengthened with InterVac. To meet future needs, we will continue to develop leaders, showing our stakeholders that we're ready to meet future requirements. We will also be adapting the way that we communicate, promote ourselves and recruit staff and students as talent management continues to be critical for our success and future viability. As some would say, *the only company asset that truly appreciates in value is its people.*

ACHIEVING RESULTS WITH RESEARCH FOCUS AND RESPONSIBLE FISCAL MANAGEMENT

Carol Martel, Associate Director – Finance

A decade ago we celebrated 25 years of research success, broke ground for our new wing and generated $5.7 million in revenue. The additional capacity of the second wing led to a doubling of our revenue to $11.2 million, and when the International Vaccine Centre (InterVac) opens, we anticipate the revenue for VIDO-InterVac will again double.

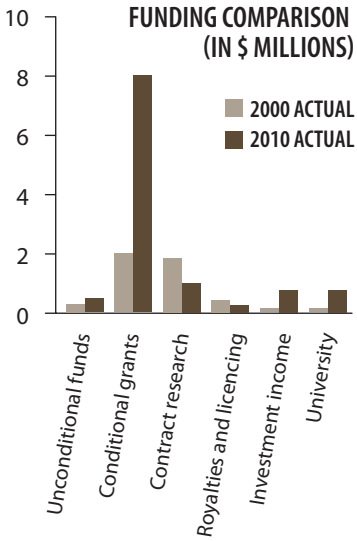
As would be expected, strong growth like this is not without challenges. Like other organizations, we've had to adjust to the uncertain economic climate by demonstrating flexibility and research credibility. This, in turn, has been rewarded with support from a diverse collection of funding partners and continued support for the construction of InterVac.

VIDO-InterVac, a non-profit organization owned by the University of Saskatchewan, operates with a Constitution allowing for a Board of Directors appointed and empowered by the President of the University of Saskatchewan. The Directors provide oversight on governance, funding, research activities and policies of VIDO-InterVac. Working with Senior Management, the Board assures our stakeholders that we continue to operate with sound fiscal management and accountability, setting goals and monitoring progress toward these goals.

In 2000, we identified a goal to expand and establish a critical mass of scientific expertise and equipment so that we could further capitalize on vaccine development opportunities against human and animal diseases. The chart to the right illustrates the increase we achieved over ten years.

In Canada, most funding agencies cover the direct costs of research but not the costs associated with salaries and facility operations. As a result only a portion of our available funds can be used for indirect costs of research and with the opening of InterVac, this will increase our financial burden. We are hopeful that Federal and Provincial funding agencies across Canada will recognize this funding challenge and will step forward with investments that address indirect research operating costs. With investments like this, we will be able to expand our pool of scientific expertise and capacity, and enhance our contributions within Canada and globally.

A significant investment into equipment in the last 10 years was necessary to maintain a cutting-edge advantage and assist VIDO-InterVac research staff in meeting the challenges in an ever changing research arena. As InterVac comes into operation, considerable investments in equipment will be needed to ensure the facility is fully functional and competitive at the international level.



We recognize that the success of our organization is related to the people within our organization. Our staff complement of 144 people has remained consistent over the past three years, an increase of 60 staff from our level in 2000. Over the next three years, we will be increasing our staff levels with 20 additional staff equipped with the specialized skill sets required by InterVac. Our standard operating procedures and training programs will be enhanced to handle the challenges of working in a Containment Level 3 facility.

We thank our supporters in the livestock industry, government, private industry and the University for their contributions over the past decade and look forward to continued successful relationships with our stakeholders and collaborators over the decade to come.

UNIVERSITY OF SASKATCHEWAN
VACCINE & INFECTIOUS DISEASE ORGANIZATION –
INTERNATIONAL VACCINE CENTRE

BALANCE SHEET

AS AT APRIL 30,2010

ASSETS	2010	2009
CURRENT ASSETS		
Funds held - University of Saskatchewan	$ 6,392,228	$ 7,797,058
Accounts receivable	2,167	14,892
Inventories	147,242	172,692
	6,541,637	7,984,642
INVESTMENTS	10,992,977	9,261,087
CAPITAL ASSETS	15,563,724	16,722,200
	$ 33,098,338	$ 33,967,929
LIABILITIES		
CURRENT LIABILITIES	$ 149,808	$ 127,355
Accrued vacation pay	454,146	556,255
	603,954	683,610
EQUITY		
EXTERNALLY RESTRICTED FUNDS	$ 5,492,457	$ 6,298,181
INTERNALLY RESTRICTED FUNDS	11,438,203	10,263,938
INVESTMENT IN CAPITAL ASSETS	15,563,724	16,722,200
	32,494,384	33,284,319
	$ 33,098,338	$ 33,967,929

Unaudited

UNIVERSITY OF SASKATCHEWAN
VACCINE & INFECTIOUS DISEASE ORGANIZATION –
INTERNATIONAL VACCINE CENTRE

STATEMENT OF INCOME AND EXPENDITURE

FOR THE YEAR ENDED APRIL 30, 2010

	2010	2009
INCOME		
Conditional grants	$ 8,927,261	$ 10,829,897
Commercial contract research	794,911	897,896
Royalties and Licensing Fees	160,229	85,750
Investment income	491,929	510,906
Unconditional revenue	298,100	297,207
University of Saskatchewan	549,705	322,864
Gain (loss) on disposal of capital assets	12,468	(2,138)
	11,234,603	12,942,382
EXPENDITURE		
Salaries and benefits	7,378,509	7,590,573
Materials and supplies	2,140,557	2,765,791
Equipment repair and service agreements	142,695	146,832
Sub-contract research	500,279	369,014
Travel and recruiting	312,603	324,251
Patents and legal fees	153,486	292,966
Amortization	1,346,834	1,443,826
Other expenditures	49,575	41,989
	12,024,538	12,975,242
EXCESS OF EXPENDITURE OVER INCOME	(789,935)	(32,860)
FUND BALANCES, BEGINNING OF YEAR	33,284,319	33,317,179
FUND BALANCES, END OF YEAR	$ 32,494,384	$ 33,284,319
EXTERNALLY RESTRICTED FUNDS	$ 5,492,457	$ 6,298,181
INTERNALLY RESTRICTED FUNDS	11,438,203	10,263,938
INVESTMENT IN CAPITAL ASSETS	15,563,724	16,722,200
	$ 32,494,384	$ 33,284,319

Unaudited

UNIVERSITY OF SASKATCHEWAN

DIVISION OF AUDIT SERVICES

REVIEW ENGAGEMENT REPORT

To the Board of Directors of
Vaccine & Infectious Disease Organization – International Vaccine Centre

We have reviewed the balance sheet of Vaccine & Infectious Disease Organization – International Vaccine Centre as at April 30, 2010 and the statement of income, expenditure and fund balances for the year then ended. These financial statements were prepared exclusively for the use of the board of directors, management and contributors of the organization. The basis of accounting used in these financial statements follows Canadian generally accepted accounting principles for not-for-profit organizations except as follows:

- Restricted contributions are recorded as they are received, not on an accrual basis.
- These financial statements do not include a statement of cash flow nor notes to the financial statements.

These financial statements are prepared from financial information supplied by the University of Saskatchewan and are the responsibility of the organization's management.

Our review was made in accordance with Canadian generally accepted standards for review engagements and accordingly consisted primarily of enquiry, analytical procedures and discussion related to information supplied to us by the company. A review does not constitute an audit and consequently, we do not express an audit opinion on these financial statements.

Based on our review, nothing has come to our attention that causes us to believe that these financial statements are not, in all material respects, in accordance with the basis of accounting described above.

These financial statements which have been prepared in accordance with Canadian generally accepted accounting principles, except as noted above, are solely for the information and use of the board of directors, management and contributors of Vaccine & Infectious Disease Organization – International Vaccine Centre. The financial statements are not intended to be, and should not be, used by anyone other than the specified users or for any other purpose.

Douglas Tuomi, CA

Saskatoon SK
August 18, 2010

Douglas Tuomi, CA
DIVISION OF AUDIT SERVICES

VIDO-InterVac

Vaccine and Infectious Disease Organization
– International Vaccine Centre

PROTECTING THE WORLD FROM INFECTIOUS DISEASES

CONTRIBUTORS

Advancing Canadian Agriculture and Agrifood Alberta
Agriculture and Agri-Food Canada
Agriculture and Food Council of Alberta
Alberta Agricultural Research Institute
Alberta Beef Producers
Alberta Chicken Producers
Alberta Livestock and Meat Agency
Alberta Livestock Industry Development Fund
BC Cattlemen's Association
Beef Cattle Research Council
Bill & Melinda Gates Foundation
Bioniche Life Sciences Inc.
Boehringer Ingelheim Vetmedica Inc.
Canadian Bovine Mastitis Research Network
Canadian Institutes of Health Research
Cattle Industry Development Council
Genome BC
Government of Alberta Ministry of Advanced Education and Technology
Government of British Columbia Ministry of Agriculture and Lands
Government of Canada Department of National Defense
Government of Manitoba Department of Agriculture, Food and Rural Initiatives
Government of Saskatchewan Department of Advanced Education, Employment and Labour
Government of Saskatchewan Department of Agriculture and Food
Horton Feedlots, Inc.
Intervet Inc.
Jarislowsky Chair in Biotechnology Management
Kamloops Stockmen's Association
Krembil Foundation
Maple Leaf Foods Inc.
Merial Limited
National Veterinary Research and Quarantine Service
Natural Sciences & Engineering Research Council of Canada
Novartis Animal Health Canada Inc.
Novartis Animal Health U.S.,Inc.
Ontario Cattlemen's Association
Pan-Provincial Vaccine Enterprise Inc. (PREVENT)
Poultry Industry Council
Prevtec Microbia Inc.
PrioNet Canada
Sanofi Pasteur
Saponin, Inc.
Saskatchewan BeeKeepers's Association
Saskatchewan Cattle Marketing Deductions Fund
Saskatchewan Chicken Industry Development Fund
Saskatchewan Health Research Foundation
Saskatchewan Horned Cattle Trust Fund
Synbiotics Corporation
University of Alberta
University of Calgary
ViRexx Medical Corp.
Valorisation-Recherche, S.E.C.

A Research Organization of the
University of Saskatchewan

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