

NEW OPPORTUNITIES

in infectious disease research

VIDO-InterVac
2010-2011 Annual Report



VIDO-InterVac

Vaccine and Infectious Disease Organization -
International Vaccine Centre



**UNIVERSITY OF
SASKATCHEWAN**



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Senior Management Team (left to right):
Lorne Vanin, Paul Hodgson, Cam Ewart, Joyce Sander, Andrew Potter, Volker Gerdts.

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

VIDO's evolution has spanned 36 years, during which time it has become one of Canada's premier research institutes in the vaccine field. Over time, the scope of the organization's activities has changed from

Message from the **DIRECTOR AND CEO**

Adding critical research infrastructure **TO MEET GLOBAL NEEDS**



Dr. Andrew Potter, Director and CEO

an initial focus on diseases affecting Western Canada to diseases of global importance. The original focus of VIDO on animal health has also been broadened and now includes research against infectious diseases of both animals and humans. Throughout these changes, the underlying vision of the organization has remained unchanged.

Infectious diseases, however, have changed significantly over 36 years in terms of their nature as well as their impact. Globalization has played a key role in the rapid spread of disease, and the merging of rural and urban communities has resulted in many new disease threats. Pathogens have always been present, but the mixing of populations has resulted in greater risks to both animal and human health. International trade has also become a driving force in infectious disease research. One needs only look at the impact on producers of a small number of cases of BSE or chronic wasting disease to see the enormity of the social and economic upheaval caused by infectious disease.

We have entered an era where management of infectious disease research must include actual and perceived risks. A higher level of biological containment is required for many emerging or re-emerging disease threats to humans and animals, but containment facilities like these aren't typically found in research laboratories. Through the vision of Dr. Lorne Babiuk, former director of VIDO, this gap will soon be closed. When operational, the International Vaccine Centre, or InterVac, will allow researchers across the country to address infectious disease threats in existence today, as well as diseases of the future.

InterVac will fill a scientific gap and a gap in the area of public policy, and will facilitate managing disease threats in a rational science-based manner. As part of this, VIDO-InterVac's partnership with PrioNet will be taken to a new level with our ability to conduct experiments in relevant animal species to alleviate animal suffering and to mitigate the impact of diseases on rural populations.

Despite the importance of the facility, InterVac is just a structure of bricks and mortar. The key to realizing the full potential of InterVac in meeting VIDO-InterVac's mandate is its personnel - the researchers and all staff within the organization. During the past year, we have attracted new scientific and administrative talent to VIDO-InterVac. Mr. Lorne Vanin, our new Associate Director (Finance), has filled the gap left by the retirement of Ms. Carol Martel, and Mr. Cam Ewart is the new Associate Director (Operations & Maintenance) for VIDO-InterVac. The leadership provided by these individuals as well as scientists currently being recruited will serve us well in moving forward.

“Globalization has played a key role in the rapid spread of disease, and the merging of rural and urban communities has resulted in **MANY NEW DISEASE THREATS.**”



Given the international nature of infectious diseases and their global impact, we have also been aggressively pursuing collaborative research opportunities around the world. New partnerships have been established in China, India, Eastern Europe, and Africa, and existing partnerships are being expanded. These linkages have been critical in filling gaps in our research expertise as well as personnel.

As we move into the next phase of our evolution, we are confident that the challenges we face can be met through the dedication of our staff and the leadership provided by our Board of Directors. The original vision of Dr. Chris Bigland has not changed significantly over the decades, only the tools we use to work towards it. ♦



In 1975, VIDO started as a very modestly-sized organization of five staff, a \$100,000 budget and temporary housing in trailers – but they had big dreams for the future. During my time on the Board of Directors, I've seen those

Saskatchewan and the City of Saskatoon for their foresight and \$140 million in construction funding. Research conducted within InterVac will lead to solutions against emerging and re-emerging infectious diseases such as tuberculosis, pandemic influenza and many others.

Message from the **BOARD CHAIR**

Evolving with dedication **AND FORESIGHT**



Dr. Luis Barreto,
Chair of VIDO-InterVac Board of Directors

2010/2011 VIDO-InterVac **BOARD OF DIRECTORS**

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

Dr. Luis Barreto – Ontario (Chair 2010-2011)

Dr. Karen Chad – Saskatchewan

Dr. Robert Clarke – Ontario

Dr. Alastair Cribb – Alberta

Mr. Chris Dekker – Saskatchewan

Dr. Douglas Freeman - Saskatchewan

Mr. David Gordon – Ontario

Dr. Walter Heuser – Quebec

Mr. John Laclare – Saskatchewan

Mr. Terry Manning – Ontario

Dr. Larry Milligan – Ontario

Dr. Don Wilson - Alberta

dreams continue to evolve with construction of InterVac. An outstanding vision and design feat, InterVac is a world class 140,000 sq ft, \$140 million containment level 3 facility that will firmly establish Canada as a global leader in vaccine research and development.

InterVac has been realized through the vision and dedication of two key individuals, Dr. Andrew Potter and Dr. Lorne Babiuk. As leaders with incredible vision and tenacity, they have worked tirelessly with their teams to develop support and obtain funding for construction of the one of the most advanced containment level 3 facilities for animal and human vaccine research and development in the world.

The tireless efforts of Cam Ewart, VIDO-InterVac's newest addition to the senior management team, must also be recognized. Under the watchful oversight of Cam and his team, InterVac has entered the final phase of construction, and is being readied for the important commissioning and certification phase ahead.

Construction of this unique containment level 3 facility will provide critical research infrastructure for the world, and the Board salutes the Government of Canada, Canada Foundation for Innovation, Government of

InterVac also provides a booster shot for the human and animal vaccine industry. Rebounding from the economic downturn, the animal and human vaccine industry is re-emerging as an important and profitable sector of the economy, with growth estimated in the range of \$20 billion plus for human vaccines alone.

Although InterVac is a construction triumph, success will be achieved by attracting top caliber researchers, students and partnerships from around the world. Their passion for innovation, together with the expertise of VIDO-InterVac's scientific teams will lead to research solutions against some of the world's most challenging infectious diseases.

Serving as the Chair of the Board of Directors for 2010-2011 has been an immense privilege for me. The Board has appreciated this opportunity to strategically help shape the field of infectious disease research and development with Dr. Andrew Potter and his management team. On behalf of the Board I would like to acknowledge and thank all the people who have helped make the vision of VIDO-InterVac come true. As Abraham Lincoln once said, "The best way to predict your future is to create it!" I believe VIDO-InterVac is creating the future. ♦

A handwritten signature in blue ink, appearing to read 'Luis Barreto', with a diamond symbol at the end.



“Success will be achieved by attracting **TOP CALIBER RESEARCHERS,** students and partnerships from around the world.”

This year has been marked by strategic discussions and planning to address future opportunities and challenges arising from the addition of InterVac and ongoing changes in the global human and animal health industries. As recommended by the 2009 external

continue to respond to our stakeholders and their industries, and will ensure VIDO-InterVac remains a leading research organization.

As summarized in the research highlights below, we have made great progress in many research activities and we are excited about the new opportunities that will arise with InterVac.

STRATEGIC RESEARCH TO IMPROVE GLOBAL HEALTH for humans and animals

RESEARCH HIGHLIGHTS

Infections with **respiratory syncytial virus** (RSV) are the most common cause of respiratory illness in young children, causing hundreds of thousands of hospitalizations and deaths every year. Vaccines against RSV are currently not available. Funded by the Krembil Foundation and in collaboration with the Pan Provincial Vaccine Enterprise (PREVENT), VIDO-InterVac is developing a novel vaccine for RSV. Dr. Sylvia van den Hurk and her group are testing a recombinant subunit vaccine in combination with an adjuvant platform, developed through the Gates Grand Challenges project, in preclinical studies.

Dr. Yan Zhou and her group are using reverse genetic approaches to develop novel vaccines against **influenza** infections in humans and pigs. The group successfully developed live-attenuated viruses and was able to confirm that vaccination with these viruses provided protection against both homologous and heterologous infection with swine influenza virus. Furthermore, the group has described the interaction between influenza A viruses and cellular pathways.

Protein folding disorders belong to the most severe group of neurological diseases in humans and animals. Prominent examples include Creutzfeldt-Jakob disease (CJD), Alzheimer's, bovine spongiform

scientific review of the organization, we have streamlined our research activities and changed several internal processes and structures. The most obvious change has been the reduction of the number of research programs, from nine to five. These programs not only represent our research priorities, but also the intent to serve our stakeholders and clients even better. For example, the addition of the "Core Research and Contract Group", managed by Dr. Hugh Townsend will allow us to bundle our core activities into one program and allow better interactions with our industry partners and collaborators. Our research activities are now organized into three programs: "Viral Vaccine Development" managed by Dr. Sylvia van den Hurk, "Bacterial Vaccine Development" managed by Dr. Jose Perez-Casal, and "Vaccine Formulation and Delivery" managed by Dr. George Mutwiri. These programs are supported by our "Clinical Research and GMP Program" managed by Dr. Don Wilson. Some of our research projects will also be discontinued, and others will be started or strengthened as appropriate. Together, these changes will allow us to



Dr. Volker Gerdts,
Associate Director (Research)

“ Respiratory syncytial virus (RSV) is the most common cause of respiratory illness in young children, resulting in hundreds of thousands of hospitalizations and deaths every year.

VIDO-INTERVAC IS DEVELOPING A NOVEL VACCINE.”

encephalopathies (BSE) and chronic wasting disease (CWD). Together with the Pan-Provincial Vaccine Enterprise Inc., VIDO-InterVac is developing a vaccine against 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. Drs. Napper, Griebel and Potter are assessing novel vaccine candidates for prion diseases including CWD and scrapie in clinical studies.

Infections with **Mycobacterium spp.** cause devastating human and animal diseases, including human or bovine tuberculosis. VIDO-InterVac will be using reverse vaccinology to develop improved vaccines for bovine and human tuberculosis. Another prominent example is Johne's disease in cattle, an important disease caused by infection with *Mycobacterium paratuberculosis*. The disease is responsible for serious losses to the dairy and beef industries. Drs. Napper, Griebel and Potter and their groups are studying the host-pathogen interactions in the intestine to develop novel intervention strategies to control this devastating disease. Drs. Napper and Griebel have developed kinome arrays to detect post-translational changes in cell enzymes, important cell molecules involved in most cell functions including innate immune regulation.

Hepatitis C remains one the most important



diseases of humans, and its complex pathogenesis continues to challenge development of novel vaccines. Drs. Sylvia van den Hurk, Qiang Liu and Joyce Wilson are investigating strategies for prevention and control of this disease. Dr. van den Hurk is assessing the interaction between the virus and dendritic cells, key players of the immune system, to overcome immune suppression and eventually develop dendritic cell-based vaccines. The use of microRNA as a therapeutic might offer an alternative approach for treating this important disease. Dr. Wilson's group is studying how the virus interacts with

host proteins involved in RNA interference and miRNA pathways. The group has confirmed transient HCV replication in several previously non-permissive cell lines, marking the first time that transient HCV replication has been detected in a cell line other than Huh7.5 or Huh7. Dr. Liu's research is focused on elucidating mechanisms involved in liver steatosis, the most devastating clinical manifestation of this condition. His group successfully demonstrated that the PI3K-Akt-2 pathway plays an important role in HCV replication and pathogenesis, and potentially could form a target for intervention.



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. VIDO-InterVac is developing vaccines against these bacteria in both cattle and poultry. Subunit vaccines and vector-based vaccines are being developed by Drs. Koester, Potter and Allan against *Salmonella enteritidis*, *E coli* and *Campylobacter jejuni*. Promising vaccine candidates are being evaluated in clinical studies. Dr. Aaron White is studying the survival of *Salmonella* in the environment, including biofilms, and has identified genes that facilitate survival under very challenging conditions.

Mycoplasma bovis continues to cause significant losses to the beef industry. With no vaccine currently available, antibiotic treatment remains

the only option. Using a novel disease model developed by Dr. Perez-Casal and his group, VIDO-InterVac is testing vaccine candidates and formulations for their ability to protect against this important disease. Mycoplasma infections are also responsible for significant economic losses around the world and we expect the development of novel vaccine strategies will be very impactful.

The porcine respiratory and reproductive syndrome virus (PRRSV) is the single most important disease of pigs. Dr. Alexander Zakhartchouk and his group are studying the interaction between the host and the virus as well as testing attenuated vaccines for their ability to provide protection against this important disease. Dr. Gerdtts and his group are using novel adjuvants to improve PRRSV vaccines and overcome the suppression of the immune system by the virus.

The goal of the **equine vaccines** project led by Dr. Hugh 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 horses. The project focuses on the study of

“ Dr. Yan Zhou and her group are using reverse genetic approaches to develop **NOVEL VACCINES AGAINST INFLUENZA INFECTIONS IN HUMANS AND PIGS.** ”





“**TOGETHER WITH PREVENT, VIDO-INTERVAC IS DEVELOPING A VACCINE AGAINST CHRONIC WASTING DISEASE,**

an important disease responsible for significant losses in domestic and wild cervids in North America.”

novel immune modulators as adjuvants for existing and new vaccines, and responds to industry needs for marketing and licensing studies. The group 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 **vectored vaccines** program led by Dr. Suresh Tikoo has developed a number of technologies based on bovine, porcine and turkey adenoviruses. These vectors provide advantages such as safety, delivery and improved immunogenicity and are being tested for both human and livestock vaccines. For example, this includes the development of vectors for oral application by targeting Peyer's patches in the intestine.

Adjuvants and novel delivery strategies are important aspects of our vaccine development research. Several platform technologies have been developed including a combination adjuvant platform consisting of three innate immune stimulators. In collaboration with Dr. Bob Hancock at the University of British Columbia, Dr. Scott Halperin at Dalhousie University and Dr. Mi-Na Kweon at the International Vaccine Institute in South Korea, a novel platform for neonatal vaccines was developed by the Neonatal Immunization group. This includes research on polyphosphazenes, synthetic polymers which are quite versatile in drug and vaccine delivery applications. We are exploring their potential as vaccine adjuvants in a number of species and diseases. Dr. Mutwiri is

“**Vaccination effectively reduces colonization in animals, subsequently reducing contamination of food products.**

VIDO-INTERVAC IS DEVELOPING VACCINES AGAINST FOOD-BORNE BACTERIA IN BOTH CATTLE AND POULTRY.”



investigating the mechanism of action of this potent adjuvant. These molecules are further optimized by Dr. Sam Attah-Poku and the chemistry group, who have modified this class of molecules to enhance their potential as a vaccine adjuvant. Dr. Heather Wilson and her group are using novel innate immune

“ With no vaccine currently available, *Mycoplasma bovis* causes significant losses to the beef industry. Using a novel disease model developed by Dr. Perez-Casal and his group, VIDO-INTERVAC IS CURRENTLY TESTING VACCINE CANDIDATES AND FORMULATIONS. ”

modulators to overcome immune tolerance early in life, a critical aspect for developing neonatal vaccines, and she is developing strategies for mucosal immunization in neonates. The group headed by Dr. Gerdtz has developed a novel adjuvant platform for single-immunization vaccines in neonates, testing it with various diseases including pertussis. Dr. Arshud Dar and his group have used adjuvants to improve an experimental vaccine against inclusion body hepatitis in chickens, a significant disease for the poultry industry. The overall goal is to understand the disease pathogenesis and to develop a vaccine formulation consisting of novel adjuvants for poultry including host defense peptides.

The research group headed by Dr. Jo-Anne Dillon has primarily focused on approaches to understanding the spread and mechanisms of antimicrobial resistance and the molecular epidemiology of sexually transmitted diseases, particularly *Neisseria gonorrhoeae*. The past year's strategies are focused on combating

antimicrobial resistance now that *N. gonorrhoeae* is approaching super bug status. Activities have included basic research on cell division to develop new antimicrobial targets and vaccines, and translational research for the development of public health policy. One approach to understanding antimicrobial resistance has been to study the evolution of strains of *N. gonorrhoeae* resistant to various antibiotics in Saskatchewan by multilocus sequence typing coupled with an analysis that reveals relationships among closely related genotypes. This analysis was extended to the study of *Staphylococcus aureus* strains from Iran. Studies on cell division mutants of *N. gonorrhoeae* and enterohemorrhagic *Escherichia coli* indicated that they were impaired in adherence to and invasion of urethral epithelial cells and that signaling in these cells differed. ♦



Preparing for future OPPORTUNITIES



Ms. Joyce Sander,
Associate Director (Human Resources)

“THERE IS VALUE IN
INVESTING IN RESEARCH,
even in uncertain times.”

Employment opportunities in the science sector at VIDO-InterVac are continually growing; however there are challenges in attracting, training and retaining qualified individuals that include:

- Securing sustainable operational funding
- Remaining competitive with salaries
- Overcoming international challenges and barriers such as skill certification, immigration, language and collaboration

VIDO-InterVac's vision is “protecting the world from infectious disease” and its mission statement is “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 disease of humans and animals”. VIDO-InterVac's culture and philosophy shape the way we think and the way we carry out our research; and we remain constantly aware of how important it is that those thoughts and actions provide a



positive influence on others. VIDO-InterVac's strong core values and unique identity enable us to provide excellent science, and with that excellence comes confidence in our ability to greatly improve the lives of humans and animals.

Sustainable success for VIDO-InterVac includes developing vaccines with social and economic benefits, research excellence with our partners, fulfilment of our responsibility to society and assurance of the safety, health and well-being of our employees. With the addition of InterVac, a state-of-the-art Level 3 containment facility, we will enhance those abilities and continue to be leaders of innovation. We strongly believe we will have a significant impact on infectious diseases, and will quickly address new and highly virulent infectious diseases as they emerge.

VIDO-InterVac has the capabilities to:

1. Proceed with international growth plans by investing in global scientific talent nationally and internationally
2. Forge strong partnerships to address global health concerns that directly affect our stakeholders
3. Contribute to the economic growth of our province and to Canada

Continued financial support from the Governments of Canada and Saskatchewan, the City of Saskatoon and the University of Saskatchewan allows VIDO-InterVac to maintain a world-class calibre research organization. VIDO-InterVac's Board of Directors, management teams and employees have all firmly set their sights on sustaining and growing VIDO-InterVac's reputation as a world leader in addressing infectious diseases of humans and animals. ◆

Construction of a unique and complex facility like InterVac is a monumental task, and challenges are to be expected. Over the four year construction period, vigilant oversight and tenacity have been required to overcome challenges encountered, many of which were

construction, road paving and the remaining landscaping will proceed when the steam tunnel is completed.

The process of final building commissioning is underway. This includes the testing and verification of all building systems and provides documentation necessary for certification of InterVac. Proper operation of the main building hydronics systems (steam heat, chilled water, hot and cold water) must be verified, and any shortcomings identified will require rework by the mechanical contractor.

Once commissioning has been completed, InterVac will enter the certification phase with the Canadian Food Inspection Agency (CFIA) and the Public Health Agency of Canada (PHAC). CFIA and PHAC have been an integral part of the project from the beginning of the project, including review of the building's drawings and specifications prior to the start of construction. They also conducted an interim review of standard operating procedures being developed, and performed an official site inspection during construction. The certification process will examine the completed building, all test reports and validation, and the standard operating procedures for the facility. Presently we are evaluating potential advantages of having two separate certification inspections, one for each half of InterVac as this may lessen the impact of the delays on certification.

The process of certification, the one aspect of the project that is outside of VIDO's control, will likely take approximately three months. This is dependent, however, upon the agencies performing their work without delay and with adequate personnel. The construction process has been exciting and certification is in sight. ♦

Leading the world IN CONTAINMENT LEVEL 3 RESEARCH CAPABILITY



Mr. Cam Ewart,

Associate Director (Operations & Maintenance)

“Once commissioning has been completed, INTERVAC WILL ENTER THE CERTIFICATION PHASE.”

related to shortages of skilled manpower in the construction industry.

Although this has delayed the project, construction is almost complete and we are working closely with the various sub-contractors to eliminate outstanding deficiencies.

In terms of construction, the retrofit of the exterior wall panels was successfully completed in September at no cost to the project. Final landscaping has been completed on two sides of the facility and the majority of the furnishings are now installed. The U of S Information Technology Services will be installing the data and VOIP telephone systems in the very near future, and this will provide electronic connection between InterVac and the remainder of the U of S campus. Multimedia installations will be completed in the near future and interior building signage will be installed before the end of the year.

Work on the steam tunnel project to the south of the facility is on-going. Sidewalk



The bridge link to InterVac has been completed and security systems activated.



Containment level 3 lab.



Containment level 2 lab.



Above: Construction related to the exterior is complete. Final landscaping will proceed after work on the steam tunnel is completed.

As the construction of the International Vaccine Centre nears completion and we prepare for the commissioning and certification stage, we are experiencing increased interest from many sectors

collaborative opportunities that would be mutually beneficial.

The increased national and international interest in InterVac by both media and user groups validates the importance of the facility and the opportunities that this new capacity will provide for scientists to advance infectious disease research and vaccine development for humans and animals. Review and enhancement of our core operational processes and procedures through the implementation of international standards (ISO) and the creation of a business organizational unit to specifically interact with external companies will bolster our efficiencies and our reputation. These will be fundamental to securing our competitive advantage in the future.

No doubt there will be some challenges as InterVac enters its commissioning and certification stage, but challenges always come with rewards and InterVac will significantly enhance VIDO's and Canada's competitiveness in vaccine development for the world's emerging disease challenges. ♦

Enhanced capabilities **STRONGER PARTNERSHIPS**

including biotechnology and pharmaceutical companies, livestock producer groups, non-profit companies and foundations as well as academic users. In part, this interest has been stimulated by exposure of InterVac's capacity in several forms of media. Most recently we have secured exposure in BIOTECCanada's Insights magazine – Canada's primary publication at BIO2011 the world's largest biotechnology conference, to be held in Washington this June. We have continued to gain the international exposure for the facility by visits to India, China, the United States and several European countries focusing on



Dr. Paul D. Hodgson,
Associate Director (Business Development)

**“ WE HAVE CONTINUED
TO GAIN INTERNATIONAL
EXPOSURE FOR THE FACILITY
with visits to India, China, the USA and
several European countries.”**



Managing resources with **PRUDENCE AND ACCOUNTABILITY**



Mr. Lorne Vanin,
Associate Director (Finance)

This marks my first year at VIDO-InterVac, having joined the organization in April 2011. I was honored to accept the Associate Director (Finance) position because I felt it was a rare opportunity to be a part of an organization that truly benefits the entire world.

I also feel very fortunate to have joined the organization at such an exciting time. With InterVac opening as a Containment Level 3 facility in the near future, VIDO-InterVac is entering an amazing new chapter in an already impressive history.

The finance department I manage at VIDO-InterVac continues to support the efforts of the organization by helping to manage its resources with prudence and accountability. Expenses in 2010-2011 have decreased by almost 7%. This is due mainly to a reduction in salary and material costs, which was the result of a conscious effort by management to appropriately match expense levels to the current levels of research activity. The other expenses have remained consistent with the prior year or decreased slightly.

We receive funding from a wide variety of sources, including federal and provincial governments, livestock industry councils and

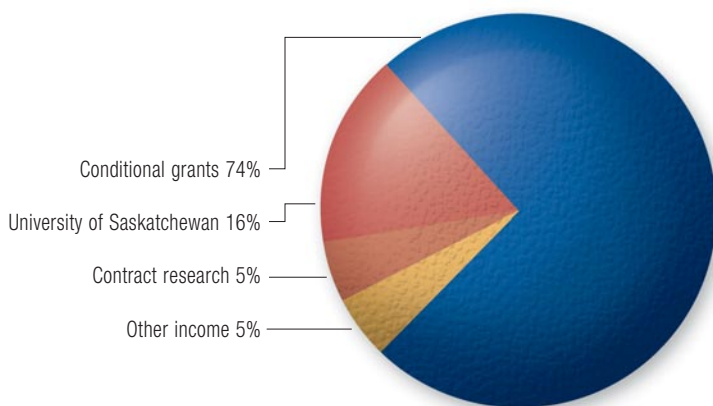
“Expenses in 2010-2011 have decreased **BY ALMOST 7%.**”

agencies, foundations and pharmaceutical companies (see graph). VIDO-InterVac is financially accountable to these organizations and continues to meet their various reporting requirements which ensure that all funding is appropriately managed.

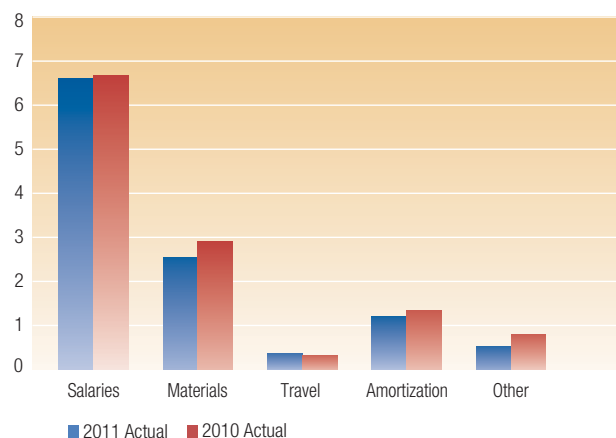
Our accounts are examined annually as a part of the Province of Saskatchewan's audit of the University of Saskatchewan. In addition, on an annual basis VIDO-InterVac's accounts are internally reviewed by a department of the University of Saskatchewan. These various reports and reviews confirm that resources of VIDO-InterVac are used wisely to achieve the organization's objectives.

Next year will be a very eventful and exciting time for us, both operationally and financially. During this time, the finance department will continue to support the management of the organization to help ensure its continued success. ♦

Sources of **REVENUE**



Annual Expense Comparison (in millions)



UNIVERSITY OF SASKATCHEWAN
 VACCINE & INFECTIOUS DISEASE ORGANIZATION-INTERNATIONAL VACCINE CENTRE
STATEMENT OF FINANCIAL POSITION
 AS AT APRIL 30, 2011

| | 2011 | Restated 2010 |
|---|---------------|------------------|
| ASSETS | | |
| CURRENT ASSETS | | |
| Funds held - University of Saskatchewan | \$ 8,631,931 | \$ 7,343,063 |
| Accounts receivable | 6,711,329 | 5,953,323 |
| Inventories | 117,007 | 147,242 |
| INVESTMENTS | 15,460,267 | 13,443,628 |
| CAPITAL ASSETS | 10,917,044 | 10,992,977 |
| | 14,492,078 | 15,563,724 |
| | \$ 40,869,389 | \$ 40,000,329 |
| LIABILITIES | | |
| CURRENT LIABILITIES | | |
| Accounts payable | \$ 105,937 | \$ 149,808 |
| Accrued vacation pay | 472,142 | 454,146 |
| | 578,079 | 603,954 |
| UNEARNED REVENUE | 12,569,722 | 11,781,376 |
| | 13,147,801 | 12,385,330 |
| EQUITY | | |
| INTERNALLY RESTRICTED FUNDS | \$ 13,229,510 | \$ 12,051,275 |
| INVESTMENT IN CAPITAL ASSETS | 14,492,078 | 15,563,724 |
| | 27,721,588 | 27,614,999 |
| | \$ 40,869,389 | \$ 40,000,329 |

Unaudited

UNIVERSITY OF SASKATCHEWAN
 VACCINE & INFECTIOUS DISEASE ORGANIZATION-INTERNATIONAL VACCINE CENTRE
STATEMENT OF OPERATIONS
 FOR THE YEAR ENDED APRIL 30, 2011

| | 2011 | Restated 2010 |
|---|---------------|------------------|
| INCOME | | |
| Conditional grants | \$ 8,365,113 | \$ 9,140,913 |
| Commercial contract research | 522,460 | 852,098 |
| Royalties and Licensing Fees | 75,079 | 160,229 |
| Investment income | 503,549 | 531,019 |
| Unconditional revenue | 31,000 | 308,100 |
| University of Saskatchewan | 1,831,139 | 549,705 |
| Miscellaneous Income | 7,750 | - |
| Gain (loss) on disposal of capital assets | (6,134) | 12,468 |
| | 11,329,956 | 11,554,532 |
| EXPENDITURE | | |
| Salaries and benefits | 6,600,922 | 6,671,941 |
| Materials and supplies | 2,537,232 | 2,909,351 |
| Equipment repair and service agreements | 144,851 | 97,050 |
| Sub-contract research | 299,315 | 500,279 |
| Travel and recruiting | 355,907 | 309,981 |
| Patents and legal fees | 47,283 | 153,486 |
| Amortization | 1,202,537 | 1,346,834 |
| Other expenditures | 35,320 | 35,617 |
| | 11,223,367 | 12,024,538 |
| EXCESS OF EXPENDITURE OVER INCOME | 106,589 | (470,006) |
| FUND BALANCES, BEGINNING OF YEAR | 27,614,999 | 28,085,005 |
| FUND BALANCES, END OF YEAR | \$ 27,721,588 | \$ 27,614,999 |
| EXTERNALLY RESTRICTED FUNDS | \$ - | \$ - |
| INTERNALLY RESTRICTED FUNDS | 13,229,510 | 12,051,275 |
| INVESTMENT IN CAPITAL ASSETS | 14,492,078 | 15,563,724 |
| | \$ 27,721,588 | \$ 27,614,999 |

Unaudited

Review STATEMENT

September 16, 2011

The University of Saskatchewan's Financial Reporting Department has examined the Financial Statements as prepared by VIDO and have found that the figures presented therein reconcile to the University's financial records. In addition, Financial Reporting has reviewed the adjusting transactions and have concluded that the adjustments are reasonable and accurate. Therefore, the University of Saskatchewan can confirm that the statements as presented by VIDO are accurate and in accordance with the University's financial policies.

Financial statement users are cautioned that these statements have not been audited or reviewed for purposes other than those described.



Rob Forrester, BComm., CA
Financial Analyst, Financial Reporting
Financial Services Division, University of Saskatchewan

VIDO-InterVac CONTRIBUTORS

Advancing Canadian Agriculture and Agrifood
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
Bill & Melinda Gates Foundation
Bioniche Life Sciences Inc.
Boehringer Ingelheim Vetmedica Inc.
Canada Foundation for Innovation
Canadian Institutes of Health Research
Canadian Poultry Research Council
Canadian Swine Health Board
Cangene Corporation
Cattle Industry Development Council
CEVA Sante Animale
Genome Alberta

Genome BC
Government of Canada
Department of National Defence
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
Guardian Biotechnologies
Jarislowsky Chair in Biotechnology Management
Kamloops Stockmen's Association
Krembil Foundation
Maple Leaf Foods Inc.
Meadow Ridge Enterprises
Meril Limited
National Veterinary Research and Quarantine Service- Korea
Natural Sciences & Engineering Research Council of Canada
Novartis Animal Health Canada Inc.
Novartis Animal Health U.S., Inc.
Ontario Cattlemen's Association

Ontario Ministry of Agriculture Food and Rural Affairs
Pan-Provincial Vaccine Enterprise Inc. (PREVENT)
Poultry Industry Council
Prevtec microbia Inc.
PrioNet Canada
Sanofi Pasteur
Saponin, Inc.
Saskatchewan Beekeepers's Association
Saskatchewan Chicken Industry Development Fund
Saskatchewan Health Research Foundation
Saskatchewan Horned Cattle Trust Fund
Synbiotics Corporation
University of Alberta
University of British Columbia
University of Calgary
Valorisation-Recherche, S.E.C.
World Health Organization



VIDO-InterVac

Vaccine and Infectious Disease Organization -
International Vaccine Centre



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