

LEADING vaccine
DISCOVERY

2012-2013 Annual Report
VIDO-InterVac



VIDO-InterVac

Vaccine and Infectious Disease Organization -
International Vaccine Centre



**UNIVERSITY OF
SASKATCHEWAN**



Board of Directors: L to R: John LaClare, Leonard Edwards, Andrew Potter, Rainer Engelhardt, Bob Clarke, Bill Ballantyne, Luis Barreto, Alastair Cribb, Karen Chad, Doug Freeman.
Missing: Jerome Konecsni, Terrance Oleksyn, Paul Kitching

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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

Our Vision

Protecting the world from infectious diseases



Kimberley Doig, Research Technician

Message from the Board Chair

Canada moves to forefront of INFECTIOUS DISEASE RESEARCH



Jose Perez-Casal, Program Manager,
Bacterial Vaccine Development

The certification of the International Vaccine Centre (InterVac) this year was another milestone in the long range plan to build increased infectious disease research capacity in Canada.

This achievement will allow VIDO-InterVac to combine a world class research team with a state-of-the-art containment 3 facility, placing Canada at the forefront of infectious disease research.

This is timely, as the risks from infectious diseases represent an increasing threat to our global community. We must not only be ready to respond to new and emerging pathogens, but also to find better strategies to ensure that illness from traditional communicable diseases are prevented. In addition, we are challenged by the rising numbers of immune-compromised individuals who will need novel approaches to prevent their susceptibility to infections.

The fight against infectious disease is global in nature and therefore the Board of Directors has been actively working with VIDO-InterVac staff to expand linkages and outreach to the international community. This has recently taken the form of meetings held at the Canadian Embassy in Washington with key partners in the industrial and government sectors of the United States and numerous other partnerships world-wide.

The fight against infectious disease is global in nature and therefore the Board has been working to expand linkages and outreach to the international community

The Board has also been working with the management team to develop close linkages with the community liaison committee and provincial officials to ensure that our local communities and citizens from across Canada understand and have input into our forward direction.

In addition to the many innovations and discoveries, we are extremely proud of the role VIDO-InterVac has played in the development and training of students and young scientists. In partnership with our university colleagues we will continue to provide a critically important environment to foster the growth of our science capacity so that Canada will have a strong next generation of talent to continue the fight against infectious diseases.

On behalf of the Board of Directors, I would like to thank Dr. Andrew Potter and the VIDO-InterVac staff for their continued leadership and dedication to protecting Canadians and our global community. ♦



Dr. Robert Clarke; Board Chair

2012/2013 VIDO-InterVac BOARD OF DIRECTORS

- Robert Clarke** – Ontario
- John LaClare** – Saskatchewan
- Bill Ballantyne** – Alberta
- Luis Barreto** – Ontario
- Alastair Cribb** – Alberta
- Karen Chad** – Saskatchewan
- Leonard Edwards** – Ontario
- F. Rainer Engelhardt** – Ontario
- Douglas Freeman** – Saskatchewan
- Paul Kitching** – British Columbia
- Jerome Konecsni** – Saskatchewan
- Terrance Oleksyn** – Saskatchewan
- Chris Dekker (term ended)** – Saskatchewan
- David Gordon (term ended)** – Ontario
- Larry Milligan (term ended)** – Ontario
- Deborah Stark (term ended)** – Ontario
- Don Wilson (term ended)** – Alberta

Robert Clarke



Message from the Director and CEO

a global leader in vaccine **DISCOVERY & DEVELOPMENT**

Musa Mulongo, Post-Doctoral Fellow

Emerging infectious diseases continue to occupy a high profile with both the public as well as health officials.

During the past year, as usually happens at the time when our Annual Report is being prepared, we have witnessed two new threats; H7N9 Influenza in China and the MERS Coronavirus in the Middle East. While both viruses have proven to be lethal, neither has been capable of widespread transmission and yet we focus considerable resources on them in a very reactive fashion. Arguably, what is needed to mitigate threats such as these is a concerted effort in the area of vaccine discovery research, something that researchers at VIDO-InterVac and elsewhere strive to accomplish on a day to day basis. "Discovery" means different things to different people, especially when discussing research, but whichever definition one chooses, all involve shedding light on a problem for the first time. With six of VIDO-InterVac's eight commercialized vaccines being world-firsts, clearly the organization has played a leading role in vaccine discovery for pathogen-specific research and the development of new platform technologies. Our research programs have historically integrated both of these areas, resulting in significant synergies which would not be achievable if problems were studied in isolation. The certification of the International Vaccine Centre, or InterVac, in April 2013 will add yet another dimension to our continued evolution in this area.

VIDO-InterVac's activities have also continued to expand on an international level,

with new partnerships in China and Africa, to name but two. Our Board of Directors has also taken on an international flavor with the appointment of its first member from outside of Canada, Dr. Craig Vanderwagen from the United States. This, combined with VIDO-InterVac staff representing over 23 different countries, means VIDO-InterVac has a more global view not only on research but on governance of the Organization.

Playing a leadership role in vaccine discovery takes more than infrastructure; it is the collective group of individuals working at VIDO-InterVac that has always ensured its success and continues to do so. Recruitment and retention of researchers continues to be a challenge for the Organization, although the support of both the Provincial and Federal Governments has made my job much easier.

As we continue to seek new solutions to the threat of infectious diseases, whether they be emerging or persisting, one must never lose track of the fact that vaccination has proven to be the most effective means of sustainable disease control in both animals and humans. What is required in the area of vaccine discovery is a change in how these marvelous products are used so that they can reach their full potential. VIDO-InterVac is committed to ensuring that its research programs address this issue through novel vaccine formulations and alternative routes of delivery of vaccines for both humans and animals. ♦

vaccination
has proven to
be the most
effective
means of
sustainable
disease
control



Dr. Andrew Potter



cutting edge
biosafety level 3 facility **READY FOR RESEARCH**

by Volker Gerdts: Associate Director of Research

Elaine Van Moorlehem, Research Technician

We have long anticipated the certification of the International Vaccine Centre (InterVac) and it is now ready for research.

As one of the most advanced Biosafety Level 3 (BSL3) facilities in the world, research at InterVac will greatly benefit Canada and internationally as new pathogens continue to emerge and threaten the health and welfare of people and animals. Diseases that have recently emerged, such as Middle East Respiratory Syndrome Coronavirus (MERS-CoV), H7N9 influenza, or the Schmallenberg virus in Germany's cattle, represent considerable social and economic threats. Globally, an average of three new pathogens emerge every year and most of these are able to infect humans and animals. Few of these become full-blown pandemics, but approximately every three years the world is faced with a new disease of global impact. Research to understand the pathogenesis and transmission of these new diseases helps us develop strategies for their prevention and control. VIDO-InterVac provides us with world-class infrastructure to engage in this research.

While new outbreaks attract media attention, many diseases of social and economic significance are from well-known pathogens. These include tuberculosis, hepatitis, pertussis and respiratory syncytial virus. These diseases continue to have a significant impact on the health care system in Canada and many other countries. Vaccines are either not available or are

ineffective due to the evolving nature of the pathogens. Similarly, the livestock industry continues to face significant losses due to bacterial and viral infections including Mycobacterium, Mycoplasma, and Porcine Reproductive and Respiratory Syndrome Virus (PRRSV). These diseases affect our ability to export animals or animal products, and significantly affect global trade. Developing technologies to distinguish vaccinated from infected animals is urgently needed. VIDO-

many significant diseases are from well-known pathogens like tuberculosis, hepatitis, and pertussis

InterVac has made great progress in developing new vaccines for some of these diseases which are highlighted below.

As expressed in our vision, VIDO-InterVac strives to control infectious diseases around the globe. Consequently, much of our research is focused on general aspects of infectious diseases including host-pathogen

interactions, disease pathogenesis and transmission, and the development of platform technologies for vaccine formulation and delivery. All of this research is important for the development of novel vaccine candidates. While not specifically highlighted below, the work and effort that goes into this research is equally as important making VIDO-InterVac a truly unique environment in which to work.

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Dr. Volker Gerdtz



Above: Andrew Potter, CEO and Director, VIDO-InterVac, shaking hands with Prof. Zhong Nanshan, Director, Guangzhou Institute of Respiratory Diseases (GIRD) in China.

in some children, RSV causes severe pneumonia and/or bronchiolitis, often requiring hospitalization.



The dedication and tremendous efforts of our people are what enable us to achieve our goals and vision.

A vaccine against respiratory syncytial virus

Respiratory syncytial virus is the most common respiratory pathogen in infants and children under two years of age. Many children experience mild infection of the upper respiratory tract, such as rhinitis, pharyngitis, and/or bronchitis, and subsequently develop an immune response that resolves the infection within days or weeks. In other children, RSV causes severe disease which manifests itself as severe pneumonia and/or bronchiolitis, often necessitating hospitalization. An increased incidence of asthma has been associated with these more severe lower

respiratory tract infections. As vaccines for this important disease are not available, VIDO-InterVac, in partnership with Pan-Provincial Vaccine Enterprise, has developed a novel vaccine candidate for RSV. Dr. Sylvia van den Hurk and her team have formulated an RSV protein with a novel adjuvant developed at VIDO-InterVac. The vaccine was safe and effective in preclinical studies inducing long lasting immune responses that were effective even in the presence of high levels of maternal antibodies. The RSV vaccine is expected to enter clinical trials in 2014.

A vaccine for protein misfolding diseases

Protein misfolding diseases such as prions have garnered much attention with the emergence of Chronic Wasting Disease (CWD) which threatens wild and farmed elk and deer populations. CWD has devastated the farmed elk industry and the ongoing spread through wild populations threatens a natural resource of considerable economic benefit and national pride. Of great concern is if the disease should enter a migratory herd such as caribou. It is essential that we act to control the spread of this disease, but the lessons provided by regions having faced similar challenges are not encouraging. In an effort to provide novel tools for disease management, the VIDO-InterVac team led by Dr. Scott Napper has developed an injectable CWD vaccine candidate for farmed deer and elk that targets regions of the protein that are specifically exposed upon disease-associated misfolding. The vaccine induces immune responses that are specific for the pathological form of the prion, which is significant from both safety and regulatory perspectives. In collaboration with the Pan-Provincial Vaccine Enterprise, the vaccine is being evaluated for





Ryan Taschuk, Ph.D candidate, currently involved in a project to develop a CWD vaccine for deer and elk.

immunogenicity and efficacy in elk. The team has also explored delivering the vaccine orally for wild animals; a similar strategy has been effective for the rabies wildlife vaccine. The oral vaccine will be evaluated in deer this summer.

A novel swine influenza vaccine

In addition to being a human public health concern, swine influenza virus (SIV) infections continue to cause significant production-based losses to the pig industry. The primary method to control SIV is through vaccination. Currently most SIV vaccines contain a killed virus and must be closely matched to the virus causing disease. As a result, their protection efficiency is limited. In contrast, live attenuated influenza vaccines provide strong, long-lived, cell mediated and humoral immunity against different influenza subtypes without need for antigen matching. By modifying the genome

of SIV, the VIDO-InterVac team led by Dr. Yan Zhou has generated a new live attenuated chimeric vaccine for pigs. The vaccine conferred complete protection to both H1 and H3 SIV subtypes infection in pigs.

Vaccines for food security and the developing world

Contagious Bovine Pleuropneumonia (CBPP) is considered one of the most economically important livestock diseases in Africa. The disease, caused by *Mycoplasma mycoides* subspecies *mycoides*, kills 10-15% of infected animals when newly introduced into a herd. This disease affects approximately 26 low income countries with an economic impact estimated to exceed 2 billion dollars. Traditional methods for disease control, which includes changes in management practices, culling infected animals, and vaccinations have been largely ineffective, leaving the most vulnerable

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By modifying the genome of SIV, we have generated a **new live attenuated** chimeric vaccine for pigs





animals susceptible to the disease. In a project funded by the Canadian International Food Security Research Fund, VIDO-InterVac has joined forces with the Kenyan Agriculture Research Institute and the International Livestock Research Institute to develop a novel vaccine against CBPP. Using reverse vaccinology, the groups of Drs. Andrew Potter and Jose Perez-Casal have identified approximately 80 protein targets which are now being tested and further selected in animal trials in Kenya.

Salmonella virulence, transmission and vaccine development

Supported by the Jarislowsky Chair in Biotechnology, Dr. Aaron White and his group are investigating the virulence and transmission of Salmonella, an important human bacterium responsible for over 50 million cases of human infection and one hundred thousand deaths each year. It is known that disease-causing Salmonella can survive for long periods of time both inside and outside the human body by forming 'biofilms'. Research at VIDO-InterVac is focused on understanding how these 'biofilms' are related to Salmonella transmission and virulence and eventually how these can be used for vaccine development. 'Biofilm'-forming cells are adapted for survival and persistence in the environment, which plays an important role in transmission, and are able to maintain an infectious dose despite environmental conditions. A comparison of



Above left: VIDO-InterVac is working with the Kenyan Agriculture Research Institute and the International Livestock Research Institute to develop a novel vaccine against CBPP.

Above right: VIDO-InterVac is testing novel components purified from Salmonella enterica serovar Typhimurium 'biofilms' for the development of a vaccine against Salmonella food poisoning.

'biofilm'-forming and non-'biofilm' forming bacteria using next-generation sequencing technology has identified more than 500 targets that may block Salmonella 'biofilm' formation. We are currently testing novel components purified from Salmonella enterica serovar Typhimurium 'biofilms' for the development of a traveler's vaccine against Salmonella food poisoning.

Development of a novel animal model for sexually transmitted diseases

Our newest scientist, Dr. Francois Meurens was trained in Belgium and worked at the National Agricultural Research Institute (INRA) in France before joining VIDO-InterVac in 2012. In collaboration with Dr. Jo-Anne Dillon and other researchers at VIDO-InterVac, Dr. Meurens is developing animal models for sexually transmitted diseases such as chlamydia and gonorrhoea. Sexually transmitted

diseases continue to be a major health concern worldwide due to their potential to cause infertility. However, these infections have also been shown to increase the risk for co-infections with human immunodeficiency virus (HIV). Several strains of Neisseria gonorrhoeae which are resistant to all antibiotics have already been identified, posing a serious threat to communities where the disease is endemic. Vaccines are not available, and the development of effective vaccines is complicated by the lack of good animal models. The group currently uses a combination of in vitro (cell cultures), ex vivo (tissue cultures), and in vivo approaches (directly in the target species) to establish a chlamydia model in pigs. The model will allow us to gain further insights into the pathogenesis of the disease and will enable development and testing of new treatments and vaccine candidates.

In summary, our scientists have contributed significantly to the development of new vaccines. Their ability to access to one of the most advanced containment facilities in the world will further enhance our research competitiveness and allow us to continue to perform world-class research. ◆

investing in people LEADS TO INNOVATION

by Joyce Sander: Associate Director of Human Resources



Joyce Sander

Continued investment in our people is one of the primary mechanisms we use to help lead vaccine discovery.

We provide a positive work environment to ensure we attract and retain skilled people who are flexible, and adapt quickly when opportunities for challenging research arise. We have established strong, long-term collaborations with organizations and our cross discipline approaches and the coordination among researchers and funders has strengthened our

The right people are the key to our success in leading discovery

ability and commitment to vaccine discovery.

Vaccine discovery is a continuum of innovative research. We move ideas from the concept stage to the partnering stage. Our drive for advancing animal and human health is evident in the breadth and depth of the research projects being conducted at VIDO-InterVac. We have the people who identify current needs, generate ideas, and rapidly put those ideas into action. Our people hold the important key to innovation.

VIDO-InterVac leads vaccine discovery because we engage people intellectually and emotionally. They are passionate about their research. The greater their commitment is to our mission, the more successful VIDO-InterVac becomes in fulfilling our vision.

The right people will always be the key to our continued success in leading vaccine discovery. People tend to view the end result of a creative idea with awe, but what they don't always appreciate is the hard work and persistence behind the scenes that turn a vision into reality.

As we pursue opportunities to develop new vaccines for human and animal infectious diseases, and as we discover new innovative ways to deliver vaccines we will first and foremost continue to pay close attention to our people doing this important work. ♦



Left: George Wong, Research Technician; Mingmin Liao, Project Manager; Shirley Lam, Research Technician



Above: Taseen Desin, Post-Doctoral Fellow



regulatory agencies
fully certify VIDO-INTERVAC

by Cam Ewart: Associate Director of
Operations and Maintenance

The official letter granting certification to the International Vaccine Centre (InterVac) was received on April 22, 2013, capping a full 11 months of regulatory approval work by all members of the certification team. This milestone allows InterVac to host the research for which it was constructed.

During the completion of the certification process our staff worked closely with representatives from the two regulatory agencies responsible for the administration of containment facilities; the Canadian Food Inspection Agency (CFIA) and the Public Health Agency of Canada

Left: Stacy Strom, Research Technician

Below: Class III Biological Safety Cabinet

(PHAC). As a short example to provide some context, the certification began with the submission of the final architectural drawings so CFIA and PHAC could review the layout of the facility, examine specific details of construction and plan their site visit. The certification ended with a main site review in October with an on-site visit by 10 regulatory personnel working with InterVac staff to ensure the building functioned under simulated building failures and other adverse conditions. The site visit was an in-depth experience which ultimately resulted in the facility being fully certified.

This is an exciting time for our organization and we are already experiencing the growth InterVac brings to VIDO. Our goal will be to ensure we utilize its full capacity for our ongoing contribution towards human and animal health. ◆



Cam Ewart



a new era begins STRATEGIC GROWTH

by Dr. Paul D. Hodgson: Associate Director of Business Development



Dr. Paul D. Hodgson

Almost a decade ago VIDO initiated the planning and construction of one of the largest and most advanced containment level 3 facilities in the world - the International Vaccine Centre, (InterVac) to ensure we continued our leadership in the vaccine and infectious disease field.

I am pleased to state that InterVac was certified as fully operational in April this year. This significant milestone adds to VIDO's internationally recognized expertise and provides an avenue for our next stage of strategic growth. Infectious diseases remain a worldwide social and economic challenge. Outbreaks and their consequences are reported annually. For example, in the past year alone we have witnessed a new influenza (H7N9), a new corona virus (Middle East respiratory syndrome coronavirus) and reports of existing

diseases re-emerging including a new gonorrhoea 'super bug' that has reached North America.

As infectious disease outbreaks continue to occur throughout the world and the international landscape continues to evolve, the research and vaccine development at VIDO-InterVac is increasingly important to the

This significant milestone adds to VIDO's internationally recognized expertise

welfare of the world. As part of this we continue to pursue global partnerships to ensure the greatest impact of the academic research and commercial development conducted at our facility. A notable trip in the last year was a mission to China led by the Premier of Saskatchewan. The event provided VIDO-InterVac with new introductions to Chinese firms

and reinforced the importance of international collaborations as part of our strategic growth.

One of the ways we are ensuring the organization is operating at internationally recognized standards is the implementation of an ISO9001 compliant management system. By operating at internationally recognized quality standards we will increase internal efficiencies, provide consistency and ultimately increase business opportunities. This certification is expected to be achieved in the next fiscal year.

As the next year dawns and InterVac is fully utilized we will leverage our partnerships to help further define our role to the benefit of society. ♦

Below: Andrew Potter, President and CEO, VIDO-InterVac; and Gerry Brown, Marketing and Commercialization, Pan-Provincial Vaccine Enterprise, touring South China United Vaccine Institute



Above, left to right: Danya Kordan (Innovation SK), Wilf Keller (CEO AgWest Bio), Gary Goodyear (Minister of State for Science and Technology), and Paul Hodgson (VIDO-InterVac) at Bio2013 in Chicago.

certification of InterVac affects EXPENSES & FUNDING



Lorne Vanin

by Lorne Vanin: Associate Director of Finance

The past year has seen a significant increase in financial activity for our organization coinciding with the certification of InterVac late in the fiscal period.

This excellent milestone for VIDO, brings the increased challenge of ensuring adequate funding for the combined operations of VIDO-InterVac

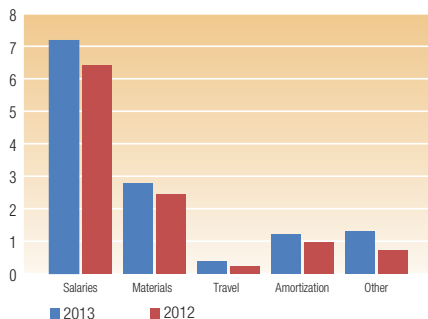
As expected, the addition of InterVac has considerably increased expenses (approximately 27.4%), with utility costs being the largest expense increase to date. All other VIDO-InterVac expenses remained consistent with the prior year (see graph).

To ensure sustained operations our team has continued to pursue funding from a variety of sources, including governments, livestock industry, foundations and human and animal health companies. We were successful in increasing our revenue by 11%, with the Government of Saskatchewan being a major contributor. VIDO-InterVac is extremely grateful to all of our funders and other stakeholders as they are critical for the ongoing success of the organization.

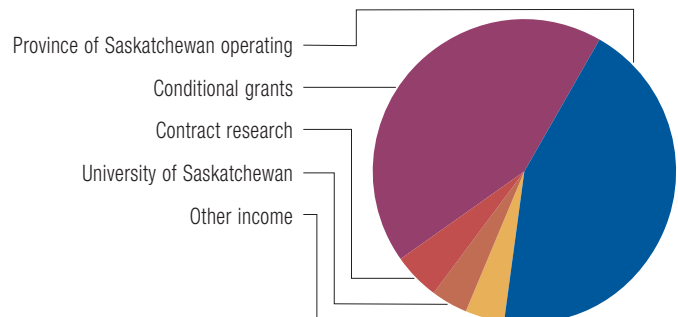
As part of our increased revenue our cash balance also increased substantially, primarily due to an unearned revenue liability – essentially funds we received for research projects and other activities that will be conducted in the future. The majority of this is a Canada Foundation for Innovation (CFI) grant to fund the initial operations of InterVac. While this grant is considerable, it is a one-time funding opportunity and the funds are expected to be spent over the next two fiscal years. VIDO-InterVac will pursue additional funding from CFI through the Major Science Initiatives (MSI) program. If successful this could provide up to 40% of the cost of operations, easing the financial impact of InterVac on our financial statements.

The future will be an interesting and important time for VIDO-InterVac. The ongoing task of maintaining positive cash flow for operations is a prominent matter and controlling expenses will be a vital part of our growth. As always, the finance department will support the management of the organization to help ensure its future success. ♦

ANNUAL EXPENSE COMPARISON (in millions)



SOURCES OF REVENUE



STATEMENT OF FINANCIAL POSITION

AS AT APRIL 30, 2013

	2013	2012
ASSETS		
CURRENT ASSETS		
Funds held - University of Saskatchewan	\$ 18,963,346	\$ 11,222,033
Accounts receivable	7,440,407	6,334,189
Inventories	107,006	137,960
	26,510,759	17,694,182
LONG TERM ASSETS		
Long Term Accounts Receivable	91,207	245,663
Investments	11,583,258	11,075,644
Capital Assets	15,489,481	15,665,241
	\$ 53,674,706	\$ 44,680,730
LIABILITIES		
CURRENT LIABILITIES		
Accounts payable	\$ 206,696	\$ 427,476
Accrued vacation pay	592,418	546,697
	799,114	974,173
UNEARNED REVENUE	23,164,227	14,186,464
	23,963,341	15,160,637
EQUITY		
INTERNALLY RESTRICTED FUNDS	\$ 14,221,884	\$ 13,854,852
INVESTMENT IN CAPITAL ASSETS	15,489,481	15,665,241
	29,711,365	29,520,093
	\$ 53,674,706	\$ 44,680,730

Unaudited

STATEMENT OF OPERATIONS

FOR THE YEAR ENDED APRIL 30, 2013

	2013	2012
INCOME		
Conditional grants	\$ 2,018,909	\$ 1,459,164
Government of Canada	8,037,542	7,050,623
Provincial	629,533	701,365
Other Governments	1,471,291	577,287
Non-Government	678,061	552,740
Commercial contract research	101,924	195,307
Royalties and Licensing Fees	404,412	415,014
Investment income	16,200	16,200
Unconditional revenue	573,442	1,613,860
University of Saskatchewan	4,500	9,484
Miscellaneous Income	1,890	(3,688)
Gain (loss) on disposal of capital assets	13,937,703	11,329,956
EXPENDITURE		
Salaries and benefits	7,179,093	6,407,298
Materials and supplies	2,787,682	2,448,057
Maintenance	629,905	339,698
Utilities	887,068	10,660
Sub-contract research	543,165	312,007
Travel and recruiting	376,169	238,249
Patents and legal fees	103,083	42,646
Amortization	1,217,896	974,638
Other expenditures	22,370	15,598
	13,746,431	10,788,851

EXCESS OF EXPENDITURE OVER INCOME

FUND BALANCES, BEGINNING OF YEAR

FUND BALANCES, END OF YEAR

INTERNALLY RESTRICTED FUNDS

INVESTMENT IN CAPITAL ASSETS

Unaudited

Review STATEMENT

August 27, 2013

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 above.

Dustin Bertsch, 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 Egg Producers
Alberta Food Council
Alberta Innovates-Bio Solutions
Alberta Livestock and Meat Agency
Alberta Livestock Industry
Development Fund
Alberta Milk Production
Alberta Prion Research Institute
Association of Universities
and College of Canada
Becker-Underwood Inc.
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
Chicken Farmers of Saskatchewan

Danone Research
DeNovaMed Inc.
Elanco Animal Health
Genome Alberta
Genome British Columbia
Genome Prairie
Government of Canada
Department of Foreign Affairs
and International Trade
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
Government of Saskatchewan
Enterprise and Innovation
Health Sciences North
International Development
Research Centre
Jarislowsky Chair
in Biotechnology Management
Kamloops Stockmen's Association
Krembil Foundation
Maple Leaf Foods Inc.
Meadow Ridge Enterprises
Merck Animal Health
Meril Limited
National CIHR Research
Training Program
National Pork Board

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
Ontario Pork
Pan-Provincial Vaccine Enterprise
Pfizer Canada Inc.
Poultry Industry Council
Prevtec Microbia Inc.
PrioNet Canada
Public Health Agency of Canada
Qatar University
Saskatchewan BeeKeepers's
Association
Saskatchewan Chicken Industry
Development Fund
Saskatchewan Health
Research Foundation
Saskatchewan Horned
Cattle Trust Fund
Shastri Indo-Canadian Institute
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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