

Vaccine and Infectious Disease Organization
-International Vaccine Centre



COVID-19 Research at VIDO-InterVac: Working for Canadians and Canada's Economy

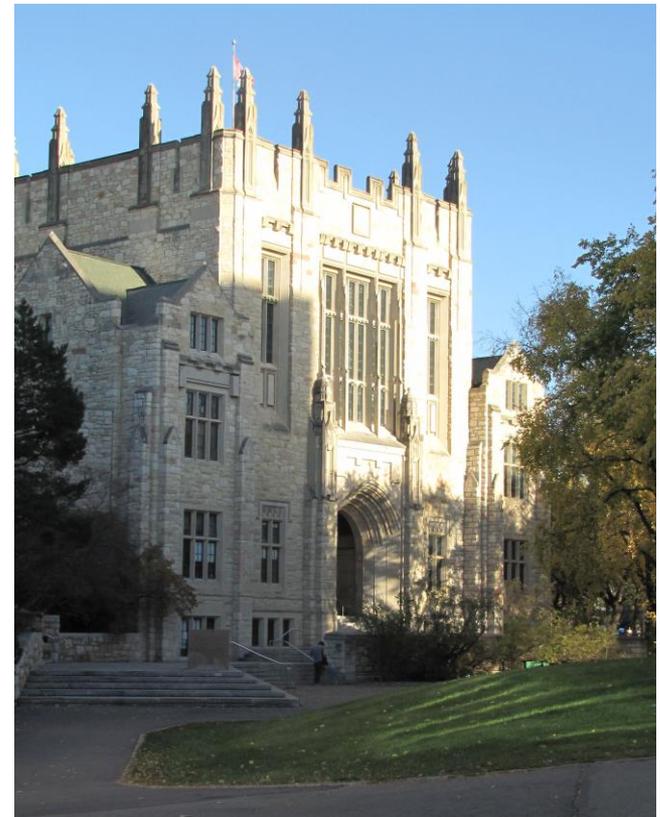
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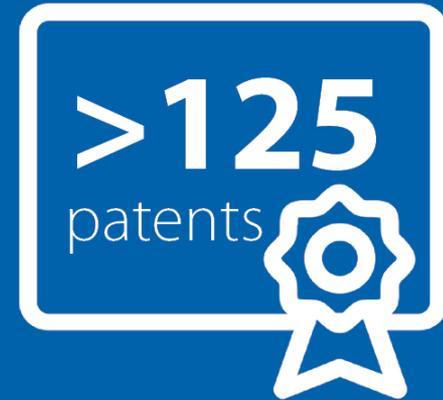
VIDO-InterVac is....

- ▶ A global leader in infectious disease and vaccine research
- ▶ 45 years of expertise in human and animal health.
- ▶ About 150 staff, \$20 Million annual budget
- ▶ Some of the most advanced infrastructure in Canada and world.
- ▶ Research Centre at the University of Saskatchewan.

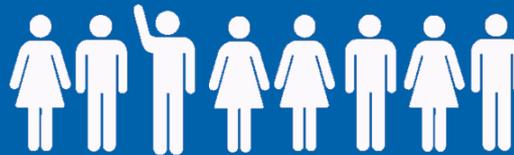




10 commercialized vaccines... **6 world firsts**



4 Spin-off
companies



Trained 500+
graduate students

Certified to
ISO 9001



> \$200M
in biocontainment infrastructure



>1000 published research papers

Economic Impacts



Product	Sector	Application	Disease impact/year
Vicogen™	Cattle	Calf scours	\$ 300 million
Ecolan RC™	Cattle	Bacterial and viral calf scours	\$ 300 million
Hevlan TC™	Poultry	Enteritis in turkeys	\$ 20 million
Pneumo-Star™	Cattle	Pasteurellosis (part of BRD complex)	\$ 1 billion
Somnu-Star™	Cattle	Haemophilosis (part of BRD complex)	\$ 1 billion
Somnu-Star Ph™	Cattle	Pasteurellosis and Haemophilosis	\$ 1 billion
Pleuro-Star 4™	Swine	Porcine Pleuropneumonia	\$ 100 million
Econiche™	Cattle	Food safety - E. coli O157:H7	\$ 100 million
PEDV	Swine	Neonatal diarrhea	\$ 300 million
CBPP	Cattle	Lung Plaque	\$ 100 million

Next vaccines entering clinical phase are COVID-19 and RSV/PI3 vaccines

VIDO-InterVac Board of Directors

Organizations represented:

- Novartis Sandoz, Switzerland
- Canadian Beef Industry
- Canadian Pork Industry
- Dairy Farmers of Canada
- US Department of Health
- Singapore Public Health
- Texas A&M University
- ILRI, Kenya
- Government of Alberta
- Government of Saskatchewan
- University of Saskatchewan



VIDO-INTERVAC 2020-2021 BOARD OF DIRECTORS

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COVID-19 research at VIDO-InterVac

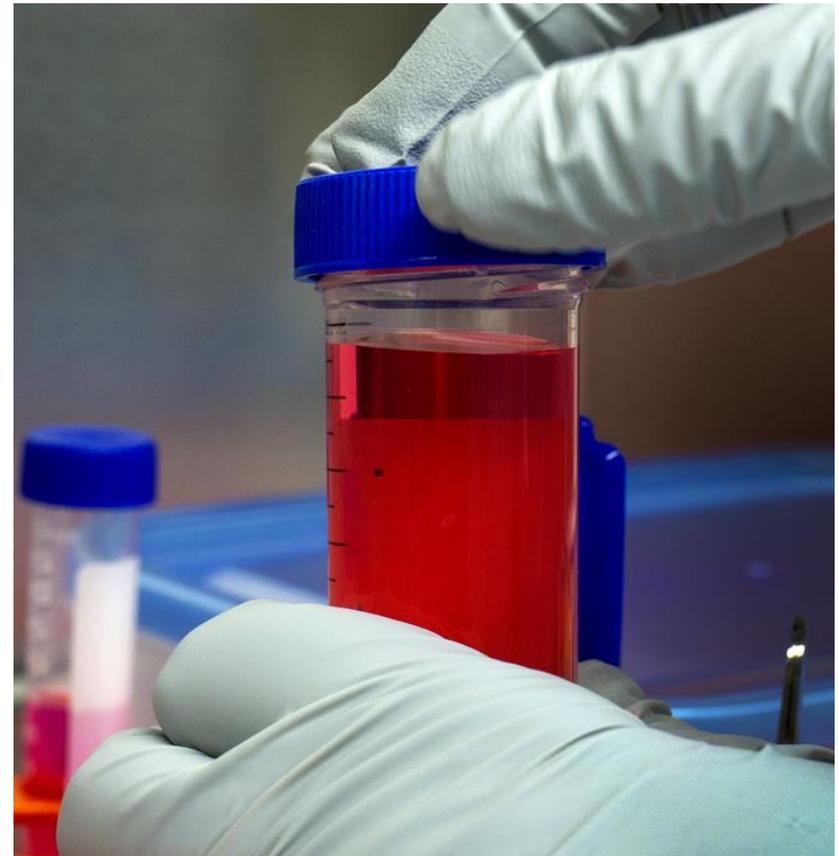
- ▶ 1st in Canada to isolate virus (with Sunnybrook and NML)
- ▶ 1st in Canada to establish ferret and hamster model
- ▶ Vaccine candidate under development
- ▶ Member of 3 World Health Organization (WHO) expert groups
- ▶ **Contract research: > 70 contracts to evaluate candidate antivirals, vaccines and therapeutics**



VIDO-InterVac's COVID-19 Vaccine

- ▶ Vaccine Design completed (Jan. 2020)
- ▶ Produced at lab scale (Jan. - Feb.)
- ▶ Proof-of concept (March - June)
- ▶ GMP Manufacturing (March - November)
- ▶ **Toxicology studies (Sept - November)**
- ▶ Human clinical trials (Dec. - April. 2021)

- ▶ Presentation to Canada's Vaccine Task Force



COVID-19 Contract Research

- ▶ **Total > 70 contracts**
 - 50% Canadian
 - 50% International

- ▶ **Testing of:**
 - novel antivirals
 - therapeutics
 - vaccine candidates

- ▶ ISO 9001, dedicated contract research group, certified project managers, etc.

- ▶ Funded through MSI (CFI) and Gov't of Saskatchewan



Construction of pilot-scale manufacturing facility



Adding to Canada's capacity for biomanufacturing

- ▶ Unique in the world to be able to produce both bacterial and mammalian-based vaccines including biocontainment Level III

- ▶ Animal Health:
 - Full-licensure, commercial manufacturing

- ▶ Human Health:
 - Process Development, material for phase I-III clinical trials
 - Production during pandemics/emergencies

- ▶ Could produce 20-40 million doses per year (depending on vaccine)

Lessons learned.....

- Infectious diseases have significant impact
- **Quick response** is critical
 - Vertically-integrated, in-house
 - Platform technologies
- Establishment of **national centers** focused on emerging diseases

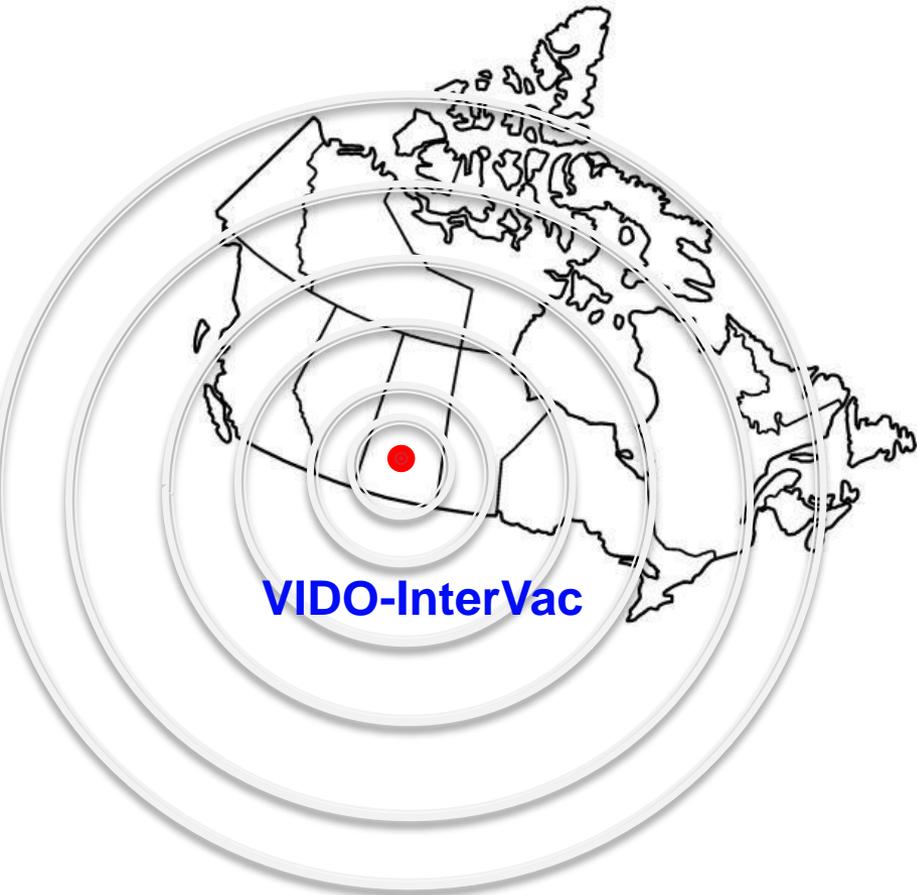
Sept 10th, 2020



Prognosis
Deadly Hog Fever Found in Germany, Europe's Top Pork Producer

- Disease of pigs, humans not susceptible
- Major threat to Canadian Pork industry
- Economic impact \$\$\$ billions
- Trade issue (other countries immediately stop trading of live pigs or meat products)
- No vaccines available

VIDO-InterVac: Canada's "Centre for Pandemic Research"



- **In place:**
 - Canada's largest high containment laboratory
 - Manufacturing facility
 - Collaboration with NML and CFIA in Winnipeg

- **Needed:**
 - New animal facility: Ability to work with wide range of animals, exotic species, insects etc.
 - Upgrade to containment level IV

Rapid response is critical....

Zika virus



MERS-CoV



PEDV (pigs)



African Swine Fever (pigs)



- ▶ **1st in the world** to develop model in pregnant pigs (6 months). Used by industry to evaluate vaccines and therapeutics

- ▶ **1st in the world** to develop “One Health Vaccine” (16 months). Partnered with Saudi Govt. and companies in UAE

- ▶ **1st in Canada** to develop vaccine for pigs (16 months). Licensed to pharma industry

- ▶ **1st non-Government lab in Canada** permitted to work with virus. Vaccine development under way



Proposal to establish “Centre for Pandemic Research”

- Partnership private, industry and all levels of government
 - Gov’t of Canada (ongoing)
 - Gov’t of Saskatchewan (committed)
 - Fundraising campaign underway (ongoing)
- Seeking funding for:
 - **Infrastructure and equipment:**
 - Build new animal facility,
 - Upgrade existing facility to containment level 4
 - **Experts:**
 - Recruit global international experts
 - Train next generation of decision makers
 - Help to “build back better” - prepare Canada for next disease