



ANNUAL REPORT 2019 - 2020

PRAIRIE DIAGNOSTIC SERVICES INC.

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OVERVIEW OF PDS

Prairie Diagnostic Services Inc. (PDS) is a non-profit corporation created by a partnership of the Province of Saskatchewan and the University of Saskatchewan and is located in Saskatoon, Saskatchewan. PDS is dedicated to providing veterinary diagnostic services and is accredited by the Standards Council of Canada (SCC) to the ISO/IEC 17025 standard for specific tests listed on our [Scope of Accreditation](#) and by the American Association of Veterinary Laboratory Diagnosticians (AAVLD) – full accreditation, all species.

Our Vision

A Leader in Veterinary Diagnostic Services.

Our Mission

Provide client focused laboratory services and expertise in diagnostics, surveillance, teaching and research in support of animal health, public health, and environmental health, food safety and market access.

Our Core Values

- Integrity
- Respect
- Teamwork
- Open Communications
- Service Excellence
- Innovation



CHAIR'S MESSAGE

This is my first year as Chair of the PDS Board of Directors, following in the footsteps of Dr. Craig Dorin, who expertly guided the organization during several major transition phases during his tenure. Thanks for your dedicated service, Craig! And I want to also thank Dr. Carl Johnson, our previous Chief Executive Officer, who led the transition of PDS into a new team-building era focusing on collaboration.



This has been a year of major transitions – a new Board, a new CEO and CFO, a newly formed Strategic Direction committee, a new approach to the PDS business, a new approach to Board functioning, and last but not least, a new challenge in the form of a COVID-19 pandemic.

Our Board has expanded to 15 members, drawn from British Columbia to Ontario, each bringing their own special skill set. These new Board members have expanded our regional representation, as well as increasing our expertise in business and financial management, laboratory management, veterinary client relations, and liaison with the WCVN, Government of Saskatchewan and University of Calgary. We have benefitted greatly from a renewed focus on business, service excellence and strategic direction, positioning PDS to be a trusted regional provider of veterinary diagnostic services and health intelligence.

One of the Board's first duties was to appoint Dr. Yanyun Huang from the role of Interim CEO to permanent CEO. As Interim CEO, Yanyun wasted little time to build his leadership team, hire Lionel Diederichs as the new Chief Financial Officer, and actively engage staff in the renewed PDS vision. The Board's confidence in Yanyun was reflected in the unanimous motion to appoint him to the post permanently. Since then, he has had to manage PDS through one of the biggest challenges so far this century – a COVID-19 (coronavirus) pandemic. Yanyun, the leadership team, and staff of PDS are to be commended for their flexibility and dedication to service under trying circumstances, while implementing in the workplace appropriate social distancing and other personal protective measures. COVID-19 briefly interrupted normal diagnostic volumes (and revenues) during the last quarter of the fiscal quarter, but management and staff engaged with clients and adapted lab operations to ensure that PDS essential services continued to be available. That effort paid off. Diagnostic volumes rebounded and the fiscal year ended in the black. Well done!

CHAIR'S MESSAGE *continued*

In this year of change, the make-up and functioning of the Board has evolved as well. In addition to the broad range of expertise now recruited to the Board, some functional efficiencies have been put in place. The Board now meets almost monthly by teleconference or video conference to hear updates from management and to deal with any pressing issues in a timely manner. The COVID pandemic has greatly impacted our ability to meet face-to-face, so we will continue this method until the situation changes.

Finally, the Board's aim is to position PDS not only to respond effectively to the existing needs of its clientele, but also to provide innovative, forward-thinking solutions to veterinary diagnostics and health intelligence needs of the future. The newly formed Strategic Direction committee gives credence to this emphasis. Further, the support of initiatives such as developing rapid, molecular level diagnostic tests, and facilitating the formation of the Western Canadian Animal Health Network (a regional animal health surveillance network similar to those established in Ontario and Quebec) will put PDS on the cutting edge.

As we move past this pandemic, we should not forget that although this has mainly been a human health issue, at the time of writing the current view is this disease originated in wildlife. We must not forget the pivotal role that veterinary diagnostic and surveillance systems have in the early detection of novel infectious agents that can affect both man and animals. PDS is an essential component of a One Health way of thinking that considers the impacts on both human and animal health.

Dr. Wayne Lees

Chair, Board of Directors

Prairie Diagnostic Services Inc.

CEO'S MESSAGE

This is the first time I am writing in PDS's annual report as the pathologist-turned CEO. I am honored by the trust and support from our owners, the Board, and staffs. I came from a place where there are still no coordinated diagnostic services for animals.

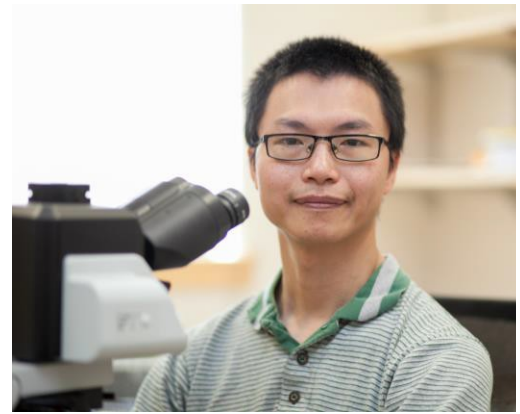
I remember one of the first person I met when I came to Canada in 2005 was Dr. Brendan O'Connor, who was then the head

anatomic pathologist of PDS. He introduced PDS to me. And I remember thinking at that time: "how good it is to work in such an organization!" In 2013, one of my wildest dreams came true and I began to proudly serve in PDS as an anatomic pathologist. Through diagnostic duties, I continued to recognize the potential of this great organization and hoped to contribute to the further success of PDS. Fast forward to 2020, beyond all my imagination, I am trusted to lead PDS.

With the support of our owners, the Board, and the veterinary community, PDS was on the way to finish with a historic year at the beginning of March 2020. As you will see further through this report, in PDS this past year, new tests were developed to satisfy the changing needs in veterinary medicine, surveillance activities were conducted to guard our animal health, prominent research projects were awarded to fuel innovation that would directly benefit stakeholders, significant funding was secured for the upgrade of equipment that keeps PDS at the forefront of diagnostic medicine, and partnerships were built to foster a culture of regional and national collaborations.

With little experience in management, I knew there would be a steep learning curve waiting for me.

What I did not know was that a pandemic was at the corner. Our operation took a hit in March and April when COVID-19 came. We learned from the useful practices from other AAVLD-accredited laboratories and adjusted our operation. Those adjustments brought us through the time when it was not clear where our provincial COVID curve was going to go, and when knowledge about the prevention and control of COVID was still relatively sparse. At the time of writing, I am glad to report that PDS's operation is back to normal, and submission numbers are on par with historic levels.



CEO'S MESSAGE *continued*

The ups and downs in the past year only confirms the great potential and bright future of PDS and showed the resilience of the organization. Although we are still facing uncertainties brought by the pandemic, it is important to design our future NOW. PDS will continue to grow towards our vision of being a leader in veterinary diagnostic services and improve our services through a client-focus mentality, innovation, and strategic partnerships.

I am personally very excited about the future of PDS because of teamwork and the great people in this organization. Most importantly, we are doing good things and right things for the society.

Dr. Yanyun Huang

Chief Executive Officer

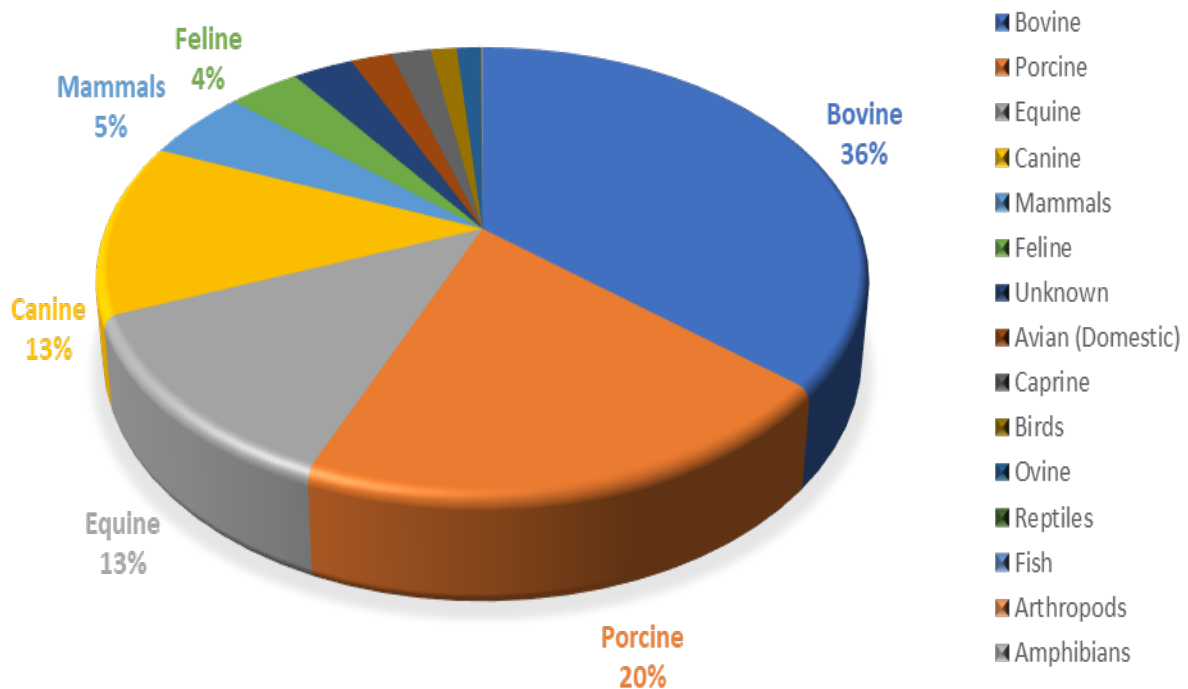
Prairie Diagnostic Services Inc.



DIAGNOSTIC HIGHLIGHTS

In fiscal year 2019-2020, PDS received close to 43,000 cases, which resulted in over 150,000 tests. PDS continues to provide full diagnostic services to veterinary communities. The submissions are mainly from Saskatchewan, Alberta, and Manitoba, which compose 91% of the total submission. PDS is truly a veterinary diagnostic lab for western Canada. By the numbers of samples tested, the top four species we work on are bovine, porcine, equine, and canine, but a whole array of other species are also submitted to PDS, including all agricultural species. The diversity of expertise is one of PDS's strengths.

Tests Breakdown By Species



CONTINUOUS IMPROVEMENT

PDS continued to develop and improve our work processes and tests to meet the changing needs of our clients and industries. The Bacteriology Activities Tracker (BactiTracker) module of the Laboratory Information Management System was fully validated and commissioned into production this year. It allows for a modern paperless bacteriology laboratory workflow to maximize productivity and minimize chances for errors and omissions.

Ten new tests and panels were offered last year. Noteworthy are the development of a PCR for SARS-CoV-2 (the coronavirus that causes COVID-19) for animal use. PDS, working closely with provincial and federal authorities, is prepared to respond if the pandemic affects the animal sector directly. The mycotoxin and ergot tests were significantly improved after the purchase of two LCMS analyzers, funded by Western Economic Diversification. Also improved were the bovine diarrhea panel and ELISA for *Mycoplasma hyopneumoniae*. These show our commitments to continuous improvement through innovation.

New tests and panels
Salmonella Dublin ELISA
African Swine Fever PCR
SARS-CoV-2 PCR
Metagenomic Viral Sequencing
TSE Ramalt IHC
Porcine circovirus 3 PCR
Porcine Diarrhea Panels for neonatal pigs
Porcine Diarrhea Panels for late suckling and early nursery pigs
Porcine Diarrhea Panels for late nursery and finishing pigs
Large Animal Mini Chemistry Panel

SURVEILLANCE

Through routine diagnostic cases, PDS does passive surveillance for all animal diseases, but more importantly, reportable diseases. PDS participated closely in the design of the national African Swine Fever surveillance project, CanSpotASF. Various active surveillance projects such as Porcine Epidemic Diarrhea and Chronic Wasting Disease are also conducted. In the past year, PDS conducted 28,758 tests on provincial and federal reportable diseases, among which, 231 positive events were identified. These reportable diseases can be devastating to our economy, and PDS is the safeguard of our animal industries.

"In the past year, PDS conducted 28,758 tests on provincially and federally reportable diseases... PDS is the safeguard of our animal industries"

One of the significant achievements in surveillance was the establishment of the Western Canadian Animal Health Network (WeCAHN). Animal health is key in linking human health, environmental health, and food safety within the holistic One Health paradigm. The four western provinces are collaborating to build the Western Canadian Animal Health Network (WeCAHN), a regional animal health network in western Canada.

WeCAHN's mission is to provide regional leadership in animal health and welfare surveillance, connect people with animal health data sources, and generate timely actionable information to western Canadian veterinary practitioners, livestock producers, animal owners, and policy-makers regarding on-going or emerging animal health concerns.

WeCAHN, with network coordinator Dr. Barb Wilhelm's lead, is conducting four specific activities:

1. Surveillance: quarterly network conference calls to review and discuss data from provincial diagnostic labs (including selected AMR data), CIPARS, western region CgFARAD, provincial abattoirs, and clinical impressions survey from network practitioners. These calls will also connect stakeholders and strengthen the network.
2. Intelligence gathering: bringing together information on other surveillance activities performed by researchers, government, and eventually industry (e.g. quality assurance data such as uptake of biosecurity practices).

SURVEILLANCE continued

3. Knowledge translation and transfer (KTT): converting 1 and 2 (above) to useful information for practitioners, producers and other stakeholders (e.g. reports, infographics, webinars, podcasts).
4. Communication:
 - Identifying practitioners' and producers' preferred delivery method for information.
 - Making the KTT above available to veterinary practitioners, producers, and the public, available via their preferred delivery methods: WeCAHN website, social media (and potentially practitioners' organization websites (e.g. WCABP)/newsletter/listserv).
 - Contacting western practitioners prior to quarterly network calls, to inquire whether they have seen any novel/unusual cases, for discussion on the call.

The WeCAHN launch has also served as an opportunity to form closer strategic partnership with the other western Canadian veterinary diagnostic laboratories. This collaboration will further facilitate exchange of expertise and knowledge within the region.



APPLIED RESEARCH

PDS is actively involved in applied research activities both as a laboratory service provider to academic research groups as well as a driver for innovation as expected of a world-class animal health laboratory diagnostic centre.

The newly established PDS genomic lab will serve as a sequencing services provider to our research customers and will be instrumental in gradual building of genomics-based diagnostic offering portfolio.

Last year marked an important milestone in PDS history with the Genome Canada award of a prestigious Large-Scale Applied Research Program funding. In partnership with the U of S, U of A, and Lethbridge AAFC Research Station scientists, the “Genomic ASSETS (Antimicrobial Stewardship Systems from Evidence-based Treatment Strategies) for livestock” project team will be working on development and validation of a next-generation metagenomics-based rapid diagnostic platform. The \$5.6 million project is expected to run for the next four years and leverage additional funding for animal health diagnostics applied research activities.

PDS continues to be recognized by the Saskatchewan Agriculture Development fund as an important member of the provincial innovation ecosystem with ongoing and new research funding awarded through their highly competitive process in 2019.

Driven by the PDS professional team, six new research proposals are submitted to various funders. Total funding of these projects exceeds \$6 million.

External funding for applied research activities with PDS involvement in 2019

Genome Canada: Large-Scale Applied Research Program “Genomic ASSETS for livestock” - \$5.6m

ADF: Understanding and controlling influenza D virus in cattle” - \$173k

ADF: “Genomic Epidemiology of livestock production limiting diseases in Saskatchewan” - \$120k

ADF: “Prevalence and AMR profiles of Salmonella serovars isolated from poultry environments in Saskatchewan” - \$227.5k

CIPARS: Farm Feedlot Cattle Respiratory Pathogen Testing - \$22k

OPERATIONS

Personnel

As of April 30, 2020, PDS was staffed by 14 Veterinary professionals, 44 Technologists, Assistants and Clericals and 10 Administrative personnel for a total of 68 persons. PDS continues to address succession planning through a mix of targeted hiring and the provision of opportunities for internal advancement. In March 2020, with the spread of the COVID-19 pandemic in Canada, PDS undertook a series of operational measures to reduce the potential for staff infections. These adaptations continue to evolve.



Equipment

In September 2019, PDS was informed that it was successful in its Western Economic Diversification (WED) equipment grant application in the amount of \$1.33 million. This grant stipulates that the entire grant amount, plus PDS cash contributions, must be spent by March 31, 2020. Total value of the equipment purchased in fiscal 2019-20 was \$1.53 million. The lion's share of the WED grant was used to upgrade the PDS Toxicology equipment, specifically the purchase of two triple quad Liquid Chromatography Mass Spectrometers. This purchase allowed PDS to upgrade its set of 20-year-old equipment. The purchase of this state-of-the-art equipment has allowed PDS to significantly improve its quantification of mycotoxins and ergot toxins and gives PDS the capacity to bring in new testing capabilities.

Facilities

No changes to PDS's overall footprint at WCVM have occurred. Going forward, space limitations are projected to be our primary business constraint. We are continuing our dialogue with WCVM in search of a solution.

QUALITY ASSURANCE & BIOSAFETY

PDS implements a Quality Management System in accordance with the current version of the standard ISO/IEC 17025 *General Requirements for the Competence of Testing and Calibration Laboratories*, Standards Council of Canada, and the current version of the standard *AAVLD Requirements for an Accredited Veterinary Medical Diagnostic Laboratory*, American Association of Veterinary Laboratory Diagnosticians, Inc. The laboratory participates in proficiency test programs, inter-laboratory comparisons, and in-lab assessments to ensure the standard of testing expertise is maintained. The PDS biosafety program is carried out through the implementation of procedures, ongoing training, and the technical support of the Safety Resources, Facilities, University of Saskatchewan. PDS strives for compliance and improvement in both quality assurance and biosafety requirements.



Highlights from the 2019-2020 year include:

- Successful completion of a two-day site visit and audit in January 2020 with the Standards Council of Canada. The laboratory was audited based upon the management and technical requirements of the new 2017 version of the ISO/IEC 17025 standard. Successful re-accreditation of the Prairie Diagnostic Services – Microbiology section was granted and the Scope of Accreditation updated in August 2020.
- PDS received accreditation through the American Association of Veterinary Laboratory Diagnosticians (AAVLD) in late 2018. A follow-up interim site visit was initially planned to occur in June 2020. Due to the COVID-19 pandemic, travel restrictions between the USA and Canada postponed the site visit. In September 2020, the AAVLD team and PDS are conducting a virtual audit, which will be a first for AAVLD and for PDS. Interim site visits are planned for newly accredited laboratories.

PUBLICATIONS

- Munasinghe, Lilani**, Lorraine Bryan, and Chelsea Dillon. "What is your diagnosis? A shoulder mass in a great horned owl." *Veterinary Clinical Pathology* 48.3 (2019): 493-495.
- Zhang, Maodong** et al. "The pulmonary virome, bacteriological and histopathological findings in bovine respiratory disease from western Canada." *Transboundary and Emerging Diseases* 67.2 (2020): 924-934.
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- Jose, D., Allen, AL., **Blakley, B.**, and Al-Dissi, A.N., (2020). Evaluation of Metallothionein and ki-67 Expression in Chronic Cholangiohepatitis, *Canadian Journal of Veterinary Research*, Accepted April 9, 2020.
- Cherewyk, J.E., Parker, S.E., **Blakley, B.R.**, and Al-Dissi, A.N., (2020). Short Communication: Assessment of the Vasoactive Effects of the S-Epimers of Ergot Alkaloids in vitro. *Journal of Animal Science*, 98(7):1-6.
- Cowan, V., **Grusie, T.**, Mckinnon, J., **Blakley, B.**, and Singh, J., (2019). Arterial Responses in Periparturient Beef Cows Following a 9 – Week Exposure To Ergot (*Claviceps purpurea*) in Feed, *Frontiers in Veterinary Science* 2019, 6:262.doi: 10.3389/f vets. 2019.00262, 12 pages.
- Perdrizet, U., **Blakley, B.**, and Al-Dissi, A., (2020). Concentrations and Deficiencies of Minerals in Cattle submitted to a Diagnostic Laboratory in Saskatchewan from 2003-2012: A Retrospective Study, *The Canadian Veterinary Journal*, 61(1):57-62.
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- The Merck Veterinary Manual, Twelfth Online Edition - **Blakley B.**, (2020). Copper Poisoning. Whitehouse Station, New Jersey: Merck & Co. Inc., Accepted for publication, February 2020.

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PRESENTATIONS

Copeland S., (2019). Preconference workshop: a. Necropsy “how-to” demonstration and discussion; b. Test selection and developing diagnostic plans – Abortion; Neurologic, Respiratory and Diarrhea. Annual Conference of Western Canadian Association of Swine Veterinarians. Saskatoon, SK. October 23, 2019.

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BOARD OF DIRECTORS

Dr. Wayne Lees: Chair of the Board - Chief Veterinary Officer of Manitoba (Retired)

Dr. Julie de Moissac: Vice-Chair of the Board - Veterinary Practitioner - Mixed Animal Practice – Bratton Road Vet Holdings

Dr. Barry Blakley: Faculty Member - Department of Veterinary Biomedical Sciences, Western College of Veterinary Medicine

Dr. Susan Cork: Professor - Faculty of Veterinary Medicine, University of Calgary

Dr. Nancy deWith: Animal Health Veterinary Officer – British Columbia, Canadian Food Inspection Agency / Government of Canada

Ms. Rodelle Genoway: Director, Workforce Development - Untapped Potential Business Consulting

Mr. Derek Hoffman: Partner - Miller Thomson LLP

Dr. Grant Maxie: Director - Animal Health Laboratory, Laboratory Services, University of Guelph (Retired)

Dr. William Murphy: Associate Professor – Edwards School of Business, University of Saskatchewan

Mr. Robert Pentland: Director of Financial Services - Saskatchewan Ministry of Agriculture

Mr. Pat Pitka: Chief Financial Officer - Genome Prairie Inc.

Dr. Elemir Simko: Faculty Member - Department of Veterinary Pathology, Western College of Veterinary Medicine

Dr. Trent Wennkamp: Veterinary Practitioner - Mixed Animal Practice – Lloydminster Animal Hospital

Mr. Lee Whittington: CEO, Four Oaks Investments

Mr. Grant Zalinko: Executive Director - Livestock Branch, Saskatchewan Ministry of Agriculture





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