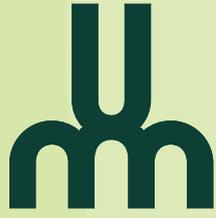


20 YEARS
OF HISTORY

GROUPE DE RECHERCHE EN
ÉPIDÉMIOLOGIE DES ZONNOSES
ET SANTÉ PUBLIQUE



Université 
de Montréal

POUR la santé publique de demain



20 YEARS OF HISTORY

This text outlines not only the history, but also the concepts on which was based the creation of this public health research group within a faculty of

veterinary medicine. This idea came from the almost complete lack of interest in public health, which started in the 70s when doctors and veterinarians were swept by the therapeutic and clinical aspects of medicine. This regression came after a period during which preventive medicine and public health, then called “hygiene”, played a crucial role in the public’s health between the turn of the century and the late 60s. During most of that period, antibiotics were nonexistent or scarcely available, which explains the necessary role that played hygiene. Thanks to many inspection and education efforts, and even some coercion, preventive medicine has helped control the sanitary quality of milk and food, as well as the hygiene of human living conditions.

This writing describes the resumption of concrete epidemiology and public health efforts by the Faculty of Veterinary Medicine (FVM). It is a joint exercise for all the partners who have played a role in the functioning of the Groupe de recherche en épidémiologie des zoonoses et santé publique / Research Group on Epidemiology of Zoonoses and Public Health (GREZOSP). The authors are identified at the beginning of each section and present their vision and insight of the last 20 years. The group’s concept

is to serve as an organization and a meeting place so that different public health partners may discuss and work together to bring back and further preventive medicine and public health. Here is the 20-year history of a public health research group.

THE CONTEXT OF VETERINARY PUBLIC HEALTH AND THE FOUNDATION OF GREZOSP

By Denise Bélanger et Michel Bigras-Poulin
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Founding members

GREZOSP is a scientific infrastructure that was developed to address the complex issues relating to public health and, from a unique health vision, relating at once to humans, animals and the environment. Stemming from a partnership between professors from the University of Montréal's Faculty of Veterinary Medicine (FVM) and researchers from the Public Health Agency of Canada (PHAC), this research infrastructure is based on the disciplinary lines of veterinary public health as well as the realization of the increasingly evident limitations of reductionist and unidisciplinary approaches.

Historically, veterinary public health first received recognition from Dr. Rudolf Virchow, an advocate for comparative medicine. This vision of medicine lies in the concept of one medicine, in other words, the fact that medicine of any kind of animal species includes more similarities than differences. And as such, what we can learn by conducting medical research on animals can be largely applied to humans (who are mammals after all), from a biochemical, physiological, pathological and even anatomical standpoint. According to the current designation, this concept could be known as "One Medicine". Dr. Calvin Schwabe of the University of California wrote a magnificent book on veterinary public health and comparative medicine ¹.



Drs. Michel Bigras-Poulin, Pascal Michel and Denise Bélanger, founding members

¹ *Veterinary Medicine and Human Health, 3e édition, Williams & Wilkins Company, 1984, 680 p.*

THE CONTEXT OF VETERINARY PUBLIC HEALTH AND THE FOUNDATION OF GREZOSP

Another conceptual evolution of medicine is the development of the ecosystem concept. This concept led to the vision of life on this planet as a whole, a large living planetary system divided into various ecosystems. Humans, house pets and wildlife are part of this planetary system. Dr. Waltner-Toews from Guelph University has focused much of his work on the “Ecosystem Health” concept. With the advancement of knowledge relating to infectious diseases, we realized that humans share with animals many diseases called zoonoses, which are transmitted from animals to humans, and vice versa. These transmission cycles take on their full meaning when they are interpreted according to the ecosystem concept. All of this has led to the current “One World, One Health” designation.

In the late 1990s, the FVM’s epidemiology sector was limited to two epidemiologists. For its part, the public health sector consisted of only one veterinary doctor, who was employed by the Canadian Food Inspection Agency (CFIA) and also held a position at the FVM where he would hold short training sessions on food inspection. All the wonderful work accomplished by public health veterinary doctors between 1890 and 1970 was being overlooked.

During his studies, Dr. Michel Bigras-Poulin had the opportunity of meeting Dr. Maurice Panisset, who had documented all this wonderful work. During a public health internship, Michel also had the chance of meeting Dr. Troalen, who recounted all the work carried out by veterinary doctors at the beginning of the century at the City of Montréal. Additionally, in the early 70s, Dr. Roger Ruppner, at the Province’s request, established a program that led to a diploma in preventive veterinary medicine (DPVM), to which many veterinary doctors employed by the provincial and federal governments registered.

This program focused on the monitoring and control activities of infectious animal diseases, including zoonoses. In 1977, the FVM included only Dr. Roger Ruppner and Dr. Benjamin Simard for the DPVM program, and Dr. Marcel Bourrassa for the food safety management service.

THE EARLY YEARS

As veterinary public health was gradually disappearing from the FVM's syllabus, Dr. Michel Bigras-Poulin and Dr. Denise Bélanger started thinking about a way to remedy this situation. In 1998, a meeting with Dr. Pascal Michel, who at the time was working at the Laboratory for Foodborne Zoonoses in Guelph, Ontario, helps initiate a discussion. Dr. Michel's interest is instantaneous. The following year, the discussion comes to fruition when Dean Dr. Raymond Roy invites Dr. Michel to take up an office at the FVM in the epidemiology sector, which turns out to be retired Dr. Benjamin Simard's office. And so begins the adventure to rekindle a modern and broader vision of veterinary public health. Much work needs to be done; despite the important role of veterinary public health in the 20th century, the tendency in 1999 is to limit veterinary public health to the inspection of meat in slaughterhouses and processing plants.

The trio agrees on a development plan for the research group by establishing it at the FVM and using a strategy focused on both administrative actions and scientific initiatives. One of the first challenges is to mobilize, within an academic setting, various stakeholders, which include Health Canada (from which was created PHAC in 2004), the National Institute of Public Health of Quebec (INSPQ), the FVM, CFIA and the Quebec Department of Agriculture, Fisheries and Food. To understand the relationship between all these potential partners in Canada, we have to keep in mind that Canada's Confederation, through the division of powers between federal and provincial governments, led to some challenges since international affairs and some health aspects lie within the federal jurisdiction while the field aspect of health is regulated provincially. Additionally, municipalities fall under provincial purview. The business strategy in this context is to position the university as a neutral meeting place for other stakeholders included as partners in the research group. To illustrate the situation, we can imagine a wheel where the spokes are the organizations taking part in the research group and the hub is the FVM. This strategy allows partners to work together without any conflicts of jurisdiction. The first task is to develop the group's by-laws to meet the collaboration objectives. Once the by-laws are identified, administrative agreements are developed between all partners and the FVM.



THE EARLY YEARS

The research strategy presents itself since public health issues are plentiful. In 1998, the West Nile virus makes its way to New York City and cases are reported. In Quebec, the situation is closely monitored as the disease is likely to make its way North – and quickly does -, given the presence of mosquitoes that can act as a vector. In May 2000, an enteric waterborne disease epidemic affects the population of Walkerton, Ontario. Many fall ill while six individuals die from this E. coli O157H7 infection. Dr. Michel was called to intervene during this epidemic.

As a result of this event, the group decides to develop a research axis focused on the relationship between agricultural activities and the risks to humans living nearby. The contamination origin of the Walkerton water system turns out to be surrounding cattle farms. In 2001, the group welcomes a doctoral student who works on the mathematical modelling of the West Nile virus transmission. Mathematical modelling would become one of the group's research themes over the years. The disease hits Quebec in 2002 and the group is ready. Dr. Michel and Dr. Bigras-Poulin are invited to join an advisory committee that recommends a multi-criteria approach to manage INSPQ's monitoring and entomological control efforts. Quebec's health and social services department (MSSS) is responsible for field activities.

In 2000, a first prior agreement is signed at PHAC. This agreement basically states that PHAC is considering developing a formal collaboration agreement with the FVM, which would include a financial component to promote the group's research activities. A name must be chosen for this group. At the same time, a request for recognition is presented to the pathology and microbiology department, which is responsible for the epidemiology sector (which at the time includes only two long-standing professors, Dr. Bélanger and Dr. Bigras-Poulin). This step is easily completed. The following step takes a bit more time as it involves the group's recognition by the Faculty Council, followed by a request for recognition by the University of Montréal's Vice-Rectorate of Research.

The group's name leads to long discussions on whether or not to include the term “public health”, the challenge being the openness to the wider world of public health, the concepts of one medicine (comparative medicine) and of one world, one health (the global ecosystem's health). In the end, the group is named Groupe de recherche en épidémiologie des zoonoses et santé publique (GREZOSP). This name helps to circumvent the perception of focusing solely on veterinary science, which would go against the group's founding principle.



THE EARLY YEARS

In research, a master's student carries out the development of an agri-environmental index. Dr. Michel is very proactive with PHAC to promote the group's development and as a result, Dr. André Ravel is hired by PHAC and joins the group. Dr. Antoinette Ludwig is working on the West Nile virus transmission model. Collaboration with INSPQ intensifies on this matter. The arrival of postdoctoral student Dr. Nicholas Ogden, subsidized by PHAC, leads to an interest in the presence of borreliosis – Lyme disease – which at that time is only considered endemic in certain areas of Ontario and British Columbia, but not in Quebec given the absence of the vector tick. A mathematical model of the tick's life cycle in relation with Lyme disease is being developed. Its goal is to explore whether climate change can lead to the increased presence of ticks in Quebec and elsewhere in Canada. The model suggests that the more southerly regions of Quebec already have a tick-prone climate. A field study, carried out in collaboration with INSPQ in Southern Quebec, reveals the first signs of a tick invasion, which serve as an early indication of Lyme disease's emergence in Canada. This study slowly leads to a collaboration between GREZOSP, INSPQ as well as doctors studying zoonoses and located in Longueuil, Montérégie's regional centre.

From an administrative standpoint, Dean Dr. Raymond Roy is interested by this public health development and considers the possibility of a new building being acquired by the FVM to serve as a public health pavilion. This is great news for the researchers as there is not enough office space available for the group's newcomers. This possible project is included in negotiations with PHAC, and a research agreement is signed while waiting for the conclusion of a broader agreement that would include a leasing agreement to officially move a group of PHAC employees to the FVM.

This agreement is signed in 2003 and the Veterinary Public Health Pavilion starts taking form. Through the agreement with INSPQ, two doctors can now have a pied-à-terre for all things relating to zoonoses. The strategy of having two parallel development paths proves to be fruitful. GREZOSP is officially recognized by the University of Montréal's Vice-Rectorate of Research: the group officially exists. Additionally, a chair in mammary gland health of dairy cattle is financed by the Fédération des producteurs de lait du Québec (Quebec's federation of milk producers); this has an impact on the group since participation in various meetings over the years has helped prove that this research chair should be located at the FVM and managed by a veterinary epidemiologist.

And so, the hiring process for two professors in the field of epidemiology is launched. It is decided that the chair will not be included in GREZOSP to guarantee its visibility; however, the director will be a member of the research group. The second research professor will be integrated into GREZOSP and veterinary public health.



THE EARLY YEARS

In research, newly graduated epidemiology student Philippe Berthiaume is hired by PHAC to research environmental issues and continues the work on the geomatics-related environmental index. This research is financed by the Ministry of Agriculture, Fisheries and Food. Dr. Ogden is hired by PHAC to continue his research on Lyme disease. The group starts thinking about a research project on Crohn's disease, which is potentially related to agricultural production, and its influence on the environment. During this reflection process, the group notices that the prevalence and impact of Crohn's disease are unknown in Quebec. Therefore, an assessment of health statistics must be included in the project.

Many discussions are held with health researchers from McGill University about collaborating on a project that focuses on Crohn's disease and health geomatics. Discussions are also held with a professor/researcher from the University of Montréal's geography department who also works in the field of geomatics. A doctoral student undertakes a research program to develop a surveillance theory. This project involves a computer analysis using random sampling of documents produced by different governments to describe their health surveillance activities. This analysis helps to compare activities among themselves and with the proposed theory. GREZOSP is now involved in a multitude of research related to public health.



Collaboration with PHAC paves the way for projects with Ouranos researchers, of which the University of Montréal is unfortunately not a member. These collaborations also lead to projects with ArcticNet, a network of Centres of Excellence of Canada. Dr. Michel encourages geographers in the field of geomatics to work in GREZOSP offices.

A joint research is undertaken with CFIA's Dr. Christine Power and Dr. Susan Wilson to analyze data on the avian influenza epidemic that took place in British Columbia. This collaboration opens the way for the work of Dr. André Vallières who wishes to conclude a leasing and research agreement with GREZOSP at the Veterinary Public Health Pavilion based on the FVM-PHAC model.



THE EARLY YEARS

From an administrative standpoint, an agreement with PHAC is concluded and includes a leasing component and a research support component. The leasing agreement includes installation fees, which help the Dean strike an agreement with the University of Montréal's property management so that GREZOSP can occupy the second floor of the building located at the corner of Dessaulles and des Vétérinaires. This building would become the FVM's Veterinary Public Health Pavilion.

Originally, our population medicine colleagues, with whom researchers from our group were working closely, were supposed to move to the main floor. However, a different group, the Groupe de recherche en salubrité des aliments (GRESA – research group on food safety) moved in instead. The new facilities allow the agreement concluded with INSPQ to include offices for two doctors interested in zoonoses. The negotiation of a leasing agreement is also possible since space is available at the Pavilion. As per the goal of the initial project, GREZOSP can now be considered a meeting place and the link between PHAC, INSPQ and CFIA. The time has now come to explore possible collaborations with the University of Montréal's new public health school, whose implementation is being discussed. Possible collaborations must also be explored with the Ministry of Agriculture, Fisheries and Food, which would close the loop between veterinary medicine and public health. Thus, GREZOSP focuses on epidemiology, population medicine, geomatics and mathematical modelling.

In research, it is observed that raccoon rabies is making its way up to Quebec from the United States, just as the West Nile virus had; obviously, the movement pattern is not the same. Through a collaboration with ArcticNet, a project is launched with a doctoral student on toxoplasmosis in Northern Hudson Bay communities. Research projects on the West Nile virus, Lyme disease, the environmental index and the surveillance theory continue. As part of the environmental index, a research project on Crohn's disease is initiated. Many collaborations are created with epidemiology and microbiology doctors from McGill University. A medical student interested in gastroenterology is hired for the summer. He joins the research team and data is painstakingly obtained from RAMQ. This data covers the diagnosis of endemic diseases over a twelve-month period (Crohn's disease can develop over many years and last for a long period of time, even remaining active throughout the patient's lifetime). Twelve years worth of data will prove sufficient to assess the disease's incidence and prevalence in Quebec. The project identifies cases as well as the location of individuals within the territory. The overall goal of this research is to find out if the disease is more present in the agricultural regions for which the Ministry of Agriculture, Fisheries and Food was able to provide us with an estimate concerning the prevalence of paratuberculosis in cattle. These two diseases are linked to Mycobacterium paratuberculosis, a causal agent of cattle disease that may potentially promote or cause disease in humans as well. This project would last several years and provide the first incidence and prevalence estimates of disease in humans, as well as an estimate of the geographical correlation between both diseases. This project is a great example of compared medicine and of collaboration between doctors and veterinary doctors. A student obtained her master's degree following this project.

From an administrative standpoint, the group's statutes are now in effect. Relationships are being built with the University of Montréal's École de santé publique (ESPUM – public health school) and the University of Montréal's Institut de recherche en santé publique (IRSPUM – public health research institute). Dr. Denise Bélanger chairs the provincial committee for the control and prevention of raccoon rabies. This chair establishes a link between various ministries and the “zoonosis” group from the Centre de santé et des services sociaux de la Montérégie (Montérégie's health and social services centre).

Many projects are implemented to model the progression of rabies within the territory as well as the economic advantages of this control. A collaboration is established to use Ontario's rabies transmission model. The goal of these research efforts is to support the surveillance of rabies progression and vaccination. As chair from 2007 to 2017, Dr. Bélanger oversees the creation of an online surveillance database, to which various ministries involved in the surveillance of raccoon rabies are given access. This project is a great example of a tool being developed to support the interinstitutional management of an issue. This database was subsequently managed by the Quebec Ministry of Natural Resources and Wildlife and adapted to wildlife diseases in general.



Public Health Agency of Canada team in St. Hyacinthe (November 2011)

Between 2009 and 2011, Dr. Bélanger and UQAM Professor Jean-Philippe Waaub are co-researchers as part of a project called “Information for the adaptation to risks due to vector-borne diseases.” Professor Waaub specializes in multi-criteria approaches as decision-support tools, which at the time are not well known in veterinary medicine and public health. Dr. Bélanger sits on a committee that includes four FVM members and one PHAC member. Its mandate is to create a graduate training program in veterinary public health. In 2012, two innovative microprograms, unique in Canada, are launched at the FVM. They promote work within interdisciplinary and multi-agency teams to solve issues at the human-animal-environment interface (One Health). The new microprograms are intended for individuals from various fields.

Discussions with CFIA bear fruit and an agreement mainly focusing on leasing is about to be signed with the FVM. This agreement will allow many CFIA epidemiologists to be present at the FVM's Veterinary Public Health Pavilion and collaborate with GREZOSP. In 2008, Dr. Bigras-Poulin, the group's Director since its foundation in 1999, retires from the University of Montréal. The torch is passed on to Dr. Nicholas Ogden who becomes acting Director from October 2008 to April 2009. Since Dr. Ogden is appointed Director of PHAC's Environmental Issues Division, he is unable to assume both roles at once. Dr. Jean-Pierre Vaillancourt is appointed Director of GREZOSP.

THE PILLARS OF GREZOSP

By Pascal Michel
Public Health Agency of Canada
Founding member

With a little hindsight, the creation of GREZOSP at the end of the 90s was the result of a temporal conjunction between three evolutionary forces. The first is the growing acknowledgement of epidemiology, not only as front-line support from a clinical, statistical analysis and outbreak management standpoint, but also as a rigorous scientific discipline that proves to be relevant in studying diseases in a population context and able to support the planning of health programs and the development of public policies.

The second force stems from the public health professionals' growing interest in conceptualizing the health dynamics of humans within a unified context that includes the health of animals and of different natural ecosystems; we then move from the development of various One Health models to the implementation of more concerted actions between the different sectors involved.

The third evolutionary force is the explosive growth of vector-borne zoonoses throughout Quebec and Canada. If the 80s and 90s wake us up to the significance of the non-food transmission of certain enteric diseases (Walkerton crisis in Ontario; bacterial pollution of agricultural origin in Quebec), the end of the 90s presents new challenges concerning the impact of zoonotic and vector-borne diseases (West Nile virus crisis, the rise of Lyme disease, the upsurge of rabies in Southern Quebec). While the notion of zoonoses did not change, the full sense of the word was becoming a reality, not only for public health authorities but also for society. In this regard, we can see the birth of GREZOSP as not only a powerful disciplinary statement focused on epidemiology, but also as a statement of maturity from public health and veterinary public health professionals towards a common and shared reality (One Health), and as an urgent need to take action to better grasp the dramatic increase of non-food zoonotic diseases in a changing environment.



However, things do not just happen by themselves; despite the significance of these three forces, key stakeholders still had to be mobilized and changes had to be made to the organizational culture. At the beginning, substantial efforts were made to engage provincial public health experts. Following a proposition concerning veterinary public health, we received a reply that left us quite puzzled; in a nutshell it said: “veterinary public health is a non-suit: public health relates to human beings and is managed by the health field; since the veterinary field relates to animals, it is therefore not relevant for public health (...)”.



We also remember the efforts that were made to develop a collaboration with the Government of Quebec in terms of geomatics. After establishing promising relationships on a technical level, a senior manager explicitly told us: “You know, here, we don’t really deal with the Federal Government (...)”.

This last anecdote is the catalyst that pushes us to address a less visible albeit very important dimension of GREZOSP. If GREZOSP is a disciplinary and professional statement, as well as an assertion of action regarding public health, GREZOSP is also at its very core the expression of a socio-political imperative. The important public health issues that are emerging in the 90s and 2000s don’t mind about political and administrative boundaries. GREZOSP will have to remain connected and unifying, a neutral platform and a dynamic interface. We must also understand that GREZOSP conveys a Francophone reality. While this reality represents both a social assertion and a strategic asset, it can also lead to communication and integration challenges within other Canadian organizations.

Some of GREZOSP’s founding principles were progressive and are today, in Canada, the pillars of a new vision of science. Through this vision, the Government of Canada promotes and invests in the renewal of research infrastructure based on the following: the co-location of partners to drive innovation; cross-sectoral collaboration to maximize efforts; and the research teams’ agility and vigour to handle new issues affecting the population. GREZOSP is a very current model of this vision.

Finally, for many, GREZOSP is also a place to meet and over the last 20 years, numerous individuals have left their mark: passionate directors, devoted professors, innovative researchers, inspiring students, caring colleagues, reliable partners, mentors, cheerful companions and many more.



Veterinary Public Health Pavilion inaugural on May 2nd, 2008 with representatives from the FVM, Laboratoire d'épidémiologie animale du Québec/MAPAQ, UofM's Vice-rectorate of Graduate Studies and Faculty of Graduate and Postdoctoral Studies, Public Health Agency of Canada, City of Saint-Hyacinthe, Ordre des médecins vétérinaires du Québec, Canadian Food Inspection Agency as well as Québec's Ministry of Health and Social Services.

GREZOSP, MONTÉRÉGIE'S DSPM AND INSPQ

By François Milord
Direction de santé publique - CISSS Montérégie-Centre
and Pierre Gosselin
Centre de recherche du CHU de Québec

Problems relating to zoonoses are not new to the Montérégie region. Animal rabies has long been a concern, first with foxes and then with raccoons. Since the 90s, the Direction de la santé publique de la Montérégie (DSPM – Montérégie's public health branch) has been involved in the fight against rabies, given its infectious disease surveillance, control and prevention mandate, and has long been collaborating with the Canadian Food Inspection Agency (CFIA) on this matter. After the creation of the Institut national de santé publique du Québec (INSPQ) in 1998, it became obvious that a provincial expertise relating to zoonoses was needed to support human public health interventions. The outbreak of the Q fever related to Easter farms, the outbreak of the West Nile virus in America and the anticipated arrival of diseases such as Lyme disease and hantavirus infections were also highlighting the need for such an expertise.

In July 2000, the implementation project of a zoonoses team was submitted to INSPQ by DSPM. This document recommended the creation of a core of zoonoses expertise that would include two doctors and one or two professional resources. Namely, the team would answer requests for expertise submitted to INSPQ and discuss an affiliation with the Faculty of Veterinary Medicine (FVM).

Even if no recurring funding was granted, DSPM provided the Ministry of Health and Social Services (MSSS) and the regions with zoonosis-related advisory and support services until 2010-2011. It undertook larger scale projects on a contractual basis and created links with the FVM through joint teaching activities and by taking part in GREZOSP.

From the very beginning, the team's doctors (Dr. Louise Lambert and Dr. François Milord) had some apprehension about working closely with animal health experts. For this reason, three individuals with a veterinary medicine training were hired successively as planning, programming and research officers with DSPM: Philippe Kone, Soulyvane Nguon and Annie Doucet.





Between 2000 and 2008, collaborations with the FVM and GREZOSP took various forms: joint public health teaching activities for University of Sherbrooke's veterinary medicine students and medicine students, joint scientific conferences and joint research activities. The main themes addressed were rabies, West Nile virus infection and Lyme disease. During that time, a DSPM doctor took part in the Chaire de recherche en salubrité des viandes' Scientific Committee.

Québec's 2006-2012 Climate Change Action Plan (CCAP) gave these collaborations a new drive. In 2008, Dr. Pierre Gosselin recommended that CCAP actions relating to zoonoses and vector-borne diseases be carried out at the FMV. The 2008-2012 agreement between INSPQ and the University of Montréal had three components: hiring a research officer, funding masters and doctoral scholarships and supporting team activities, as well as providing four workspaces, two of which were closed offices. Cécile Ferrouillet, hired as a research officer in 2009, worked under the joint supervision of the FVM and INSPQ.

This first agreement coincided with Dr. François Milord's study and research leave at the FVM between August 2008 and July 2009, which strengthened ties between the two partner organizations.

Activities carried out or financially supported through this agreement included the following:

- › A three-year scholarship awarded to Catherine Bouchard for her doctorate on Lyme disease's ecoepidemiology;
- › The co-management of doctorates (Julie Arsenault, Valérie Hongoh) and a collaboration for an access to human data with respect to notifiable diseases;
- › A training session entitled "Humans and animals: maintaining health through interdisciplinarity", held during the 13th edition of the Journées annuelles en santé publique (JASP – annual public health days);
- › A webinar on tele-epidemiology and Pascal Michel's workshop on Space Technology for Public Health Actions in the Context of Climate Change Adaptation;
- › Various reports on the surveillance of zoonoses in Quebec, including a consultation on the current state of zoonosis surveillance and the comparison of Lyme disease's surveillance indicators;
- › Research activities, including a study on the knowledge and practices of Southern Quebec doctors relating to Lyme disease, and a study on *Coxiella burnetii* (Q fever) from a climate change perspective.



The collaboration model was reviewed during the second CCAP edition (2013-2020). The budget available through the current CCAP helped finance research projects and provided start-up funds for the development of grant applications. Many individuals linked to the FVM and GREZOSP benefited from these resources.

These partnerships fostered the development of other projects funded by MSSS and INSPQ. As an example, we can mention the funding granted to Patrick Leighton and his collaborators for the active surveillance of ticks, which has been ongoing since 2015 in 10 regions across Quebec.

Finally, the CCAP also approved the creation of the Observatoire multipartite québécois sur les zoonoses et l'adaptation aux changements climatiques (Quebec's multiparty observatory on zoonoses and climate change adaptation). This network and collaboration structure brings together human health, animal health and environmental science. It has strengthened ties with Ouranos for its contributions to climatology and climate scenarios.

According to the description on its website, the observatory «constitutes a unique space to share knowledge and consult with public policy decision-makers and scientists in order to foresee zoonoses issues in Quebec and adapt to climate change, by supporting risk management in terms of surveillance, prevention, control and research.” The observatory is overseen through a partnership between INSPQ and the FVM (GREZOSP more specifically). The observatory's different groups of experts (mosquito-borne diseases, tick-borne diseases, enteric diseases) promote collaboration between human health and animal health professionals.

INTERIM MANAGEMENT

By Nick Ogden
Public Health Agency of Canada

I first joined GREZOSP as a postdoctoral researcher in 2003, after which I became a scientist with the Public Health Agency of Canada (PHAC), and then Director of the agency's Zoonoses Division. I have held many positions within GREZOSP: member, chair of the Scientific Committee and acting director before Dr. Vaillancourt's appointment. I am now Director of the Public Health Risk Sciences Division of PHAC's National Microbiology Laboratory (NML). I am PHAC's senior representative for GREZOSP and a member of its board of directors.

Over the last 17 years, I have witnessed many changes within GREZOSP. I have experienced periods of uncertainty: is GREZOSP productive enough in the eyes of the University of Montréal to justify its interest and support; does it produce the scientific data PHAC needs, wants or expects in order to pursue funding? However, I have to say that I am now more confident than ever in the future of GREZOSP and am proud to have taken part in its growth. The group now includes 42 research and regular members, 49 associate members and more than 40 graduate students. In 2019-2020, more than 80 research projects on zoonoses and public health are underway and more than 80 scientific articles and reports have been published.

GREZOSP's visibility has also been growing. Experts from the World Organisation for Animal Health (OIE) visited the Faculty of Veterinary Medicine (FVM) in 2017 as part of the organization's assessment of veterinary services in Canada. During this visit, OIE experts met with GREZOSP's director and other members. These experts were pleasantly surprised to learn of the existence of a research group that brings closely together public health, animal health and a veterinary medicine faculty. Over the last three years, many PHAC senior managers have also visited GREZOSP, including NML's Director General (to whom I report), the Infectious Disease Prevention and Control Branch's Vice-President, PHAC's current President Mrs. Tina Namiesniowski and her predecessor Dr. Siddika Mithani who is CFIA's current President; both are deputy ministers. These senior executives were all impressed with the quality, scope and depth of GREZOSP's research. They clearly understand and support the work that we do, so much so that the group is regarded as a model on how federal departments and university departments can productively work together in everyone's mutual interest.

I congratulate all my GREZOSP colleagues for their achievements, I applaud the leadership of GREZOSP founders, Dr. Pascal Michel, Dr. Michel Bigras-Poulin and Dr. Denise Bélanger, and I thank the University of Montréal's FVM for its continued support and enthusiasm.



A NEW DIRECTOR TAKES OVER

By Jean-Pierre Vaillancourt
Faculty of Veterinary Medicine, Université de Montréal
Director from 2009 to 2016

*«...Between animal and human medicine there are no dividing lines—nor should there be. The object is different but the experience obtained constitutes the basis of all medicine.»
Rudolf Virchow, 1867*

At the end of 2009, a changing of the guard occurs when Jean-Pierre Vaillancourt is appointed Director of GREZOSP. With the group's foundation solidly laid, priority was given to improving the workplace. An impressive number of documents and material from completed projects were stored in a enclosed area. The employee lounge was reconfigured with large windows that let natural light in; this lounge ultimately became the Agora, the GREZOSP's weekly meeting space from 2010 to 2018. Additional offices were created, as well as rooms that were used by students and provided space to include two offices for professors.

In fact, two veterinary public health microprograms were established thanks to the creation of two epidemiology professor positions (Dr. Patrick Leighton and Dr. André Ravel). A social committee was also put together to help organize events and promote gatherings among the growing number of members.



In 2011, the World Health Organization (WHO), the World Organisation for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (UN) concluded a collaboration agreement with the following vision: “A world capable of preventing, detecting, containing, eliminating, and responding to animal and public health risks attributable to zoonoses and animal diseases with an impact on food security through multi-sectoral cooperation and strong partnerships.”

GREZOSP has been executing this vision since 1999, well before this agreement took place between these main health organizations, by carrying out projects focused on the relation between humans, animals and the environment, and by training professionals who contribute to the “One Health” concept.



A NEW DIRECTOR TAKES OVER

The year 2011 was marked by two tragedies: the sudden passing of Dr. Maude Arseneau, a recent veterinary medicine graduate who was set to start her master's degree with GREZOSP, followed a few days later by the sudden passing of Dr. Lucie Dutil, a greatly appreciated PHAC research colleague. We immediately felt the need to preserve her memory by creating the Lucie-Dutil Award. This award is presented to a GREZOSP graduate student or postdoctoral fellow in recognition of their remarkable contribution to GREZOSP through exceptional human qualities, including outstanding listening skills, commitment and respect for others. Lucie embodied these human qualities. This award was granted for the first time in 2013.

Also in 2013, in order to achieve its mission of providing a research infrastructure and recognized scientific activities, GREZOSP, armed with its veterinary public health microprograms, helped to organize the first Colloque en santé publique vétérinaire (veterinary public health symposium), while continuing to develop other training opportunities such as workshops.

In 2015, the partnership agreement between GREZOSP and the Public Health Agency of Canada (PHAC) was renewed. Such a partnership was crucial to the group's development and led to an agreement with the Canadian Food Inspection Agency (CFIA).

In 2016, another partnership agreement was signed, this time with the Institut national de santé publique du Québec (INSPQ), for the development of the Observatoire multipartite québécois sur les zoonoses et l'adaptation aux changements climatiques (Quebec's multiparty observatory on zoonoses and climate change adaptation). These agreements created a unique environment that gave way to a successful cooperation between various collaborators.





2014-2015 Activity Report



The creation of the University of Montréal's Public Health School in 2013 and the strategic plan of the Institut de recherche en santé publique (IRSPUM) on the Montréal campus in 2015 led to collaboration opportunities that promote public health as one medicine for humans, animals and the environment. With Dr. Jean-Pierre Vaillancourt at the head of GREZOSP and as IRSPUM's Deputy Director, discussions take place between GREZOSP, IRSPUM and the École de santé publique (ESPUM), and some GREZOSP members and members of the Faculty of Veterinary Medicine (FVM) are even given the opportunity of hosting seminars on the Montréal campus.

IRSPUM's financial challenges hindered the short-term achievement of a formal collaboration; however, bilateral exchanges initiated in 2014 helped position GREZOSP and the FVM as part of IRSPUM's transition to the Centre de recherche en santé publique (CReSP – public health research centre).

In 2015, GREZOSP published its first activity report in French and English to gain recognition within the University of Montréal and promote the group externally. Since then, the annual activity report has been included in the group's communication strategy. In fact, to highlight the importance of communication, GREZOSP created a committee in 2015 focused on communication initiatives.

GREZOSP AND THE CANADIAN FOOD INSPECTION AGENCY

By André Vallières
Canadian Food Inspection Agency

The Canadian Food Inspection Agency (CFIA) and previously, Agriculture and Agri-Food Canada (AAFC)'s veterinary service, have maintained relationships with the Faculty of Veterinary Medicine (FVM) for decades. At the end of the 70s, a veterinary doctor working for the federal government is appointed to the Saint-Hyacinthe campus. His main responsibilities are to help promote the activities of AAFC - and CFIA after its creation in 1996 - in the field of food inspection and animal health in Quebec, and to provide FVM students with internships within federal veterinary services, while recruiting young veterinary doctors.

Throughout the 80s and the years that followed, AAFC, aware of the importance of maintaining an expertise in the field of veterinary epidemiology, supports the development of its veterinary doctors by allowing many of them to pursue extended field epidemiology training. At the time, the diploma in preventive veterinary medicine (DPVM) and the professional master's degree in epidemiology are offered at the FVM. External epidemiologists with research training (PhD and M.Sc.) are integrated into CFIA's Science Branch. New units are created to better equip the national veterinary authority and help it meet evolving international standards. And so, the unit for the surveillance of animal diseases and the unit for the analysis of animal health risks are created. Employees are located in Ottawa.



Scientific expertise requirements continue to grow within CFIA. At the beginning of the 2000s, CFIA is trying to increase the number of veterinary epidemiologists to support its mandate. Discussions take place with veterinary schools across the country to create a national network. This would lead to the creation of the Canadian Regulatory Veterinary Epidemiology Network (CRVE-Net).

It is in this context that three CFIA epidemiologists join the units for the surveillance of terrestrial (2) and aquatic (1) animals in 2005 and 2006. In 2008, a fourth epidemiologist joins in, right after completing work on the surveillance theory at the FVM. The mandate of these four experts is to update the regulated surveillance methods of animal diseases that take into account the World Organisation for Animal Health (OIE)'s new standards, from a market support perspective. One of the epidemiologists is also appointed as OIE's key person in charge of compiling and disseminating animal health information for Canada. CFIA's Science Branch, to which they are affiliated, is open to the idea of decentralizing these employees outside of Ottawa. Exploratory meetings are held between FVM's Dr. Michel Bigras-Poulin and CFIA's Dr. Christine Power and Dr. André Vallières. The upcoming opening of the FVM' new Veterinary Public Health Pavilion and the presence of GREZOSP in this pavilion seem like a good opportunity to be seized.



In October 2017, CFIA signs a leasing agreement for offices located on the ground floor of the Veterinary Public Health Pavilion; Dr. Julie Paré, Dr. Pascale Nérette, Dr. Farouk El Allaki and Dr. André Vallières, along with a data technician, settle in. Dr. Manon Racicot, biosafety and food safety expert, joins the team in 2011.

Through this relocation, CFIA sees the opportunity to:

- › Bring together under one roof veterinary epidemiologists from Quebec who work for CFIA and have a national animal disease surveillance mandate;
- › Allow these experts to develop relationships and collaborate with epidemiologists and experts from other organizations, from a “One world, one health” perspective, which CFIA endorses;
- › Be on the lookout for and/or participate in the development of new methods that could be integrated into the new surveillance methods being developed: geospatial analysis, mathematical modelling, vector surveillance, surveillance assessment, multi-criteria approach, etc., methods that already seem well implemented in GREZOSP activities;
- › Promote CFIA’s mandate and work, as well as animal health issues relating to public health;
- › Provide FVM students with national and international internship and project opportunities.

The inauguration of the FVM’s Veterinary Public Health Pavilion is held on May 2, 2008 and is attended by some dignitaries, including Dr. Brian Evans, Chief Veterinary Officer of Canada and CFIA’s Executive Vice-President.

Even if the initial agreement pertains only to office occupancy, discussions are promptly initiated to put together an administrative agreement like the one between CFIA and the FVM. However, discussions drag on and GREZOSP receives funding only in 2011 as part of the Federal Assistance Program.

Following the SARS crisis in 2008, Canada’s Auditor General indicates the following in her report: “To improve their ability to anticipate and control zoonotic diseases, the Public Health Agency of Canada and the Canadian Food Inspection Agency should jointly assess the possible risks to human and animal health, clarify how the responsibilities will be divided, and act on joint surveillance objectives and priorities.”

This report leads to multiple discussions between the two federal organizations. Within GREZOSP, discussions focus on the implementation of a joint crisis management centre, which does not come to fruition. Recommendations are also made to develop surveillance prioritization and assessment tools, but it always seems challenging to attune the federal organizations’ priorities. CFIA has reduced its commitment over the last years in the field of non-food zoonoses (ex.: rabies, anthrax), but is still involved in the surveillance of certain animal diseases with a zoonotic potential and susceptible of having a big impact on international markets (ex.: avian flu, BSE, tuberculosis, brucellosis).



Defining veterinary public health remains a challenge and maybe a barrier to a full collaboration between actors. Some will limit the definition of veterinary public health to issues with a direct impact on human physical health. For others, it seems important to broaden this concept and include all elements with the potential of having an impact on the general well-being and food safety of human populations, while still relating to animal health.

CFIA's presence at the Veterinary Public Health Pavilion has enabled the following:

- › Better understanding of CFIA's mandate, thus fostering potential collaborations and partnerships;
- › Participation of CFIA professionals in FVM's epidemiology training;
- › Supervision or co-supervision of graduate student committees, as well as participation in these committees to review students' work in fields relating directly to CFIA's mandates and goals;
- › Participation in postgraduate student committees;
- › Active participation (as of February 2014) in GREZOSP's Scientific Committee through a CFIA-appointed representative;
- › Execution of some projects on the assessment of animal health surveillance programs (ex.: bovine tuberculosis of farmed cervids).

Additionally, various training workshops, conferences and trade fairs captured the interest of all members, including CFIA employees.

However, this story remains unfinished.

GREZOSP'S GROWTH AND RECOGNITION

By **André Ravel**
Faculty of Veterinary Medicine, Université de Montréal
Director from January 2017 to August 2020

On the verge of its 20th anniversary, GREZOSP has bolstered its growth, outreach, involvement in the fields of epidemiology, zoonoses and public health in Quebec and Canada, and finally, its recognition. The following elements depict and explain this growth and recognition.

The number of GREZOSP members has continuously increased over time in all categories: research members, regular members, student members and associate members. As for the University of Montréal, four epidemiology professors (Dr. Julie Arsenault, Dr. André Ravel, Dr. Patrick Leighton and Dr. Simon Dufour) were all promoted to a higher rank and are all more active in terms of research and teaching graduate students, while the involvement of new epidemiology professors (Dr. Cécile Aenishaenslin as assistant professor in May 2018 and Dr. Hélène Carabin as full professor hired for a Tier 1 Chair funded by the Canadian Institutes of Health Research in September 2018) decidedly strengthens epidemiology expertise and increases the scope and interest in research.



As for the Public Health Agency of Canada (PHAC), the team located at the Veterinary Public Health Pavilion is joined by many new and highly trained professionals, many of whom have obtained and still maintain their title as associate professors with the Faculty of Veterinary Medicine (FVM)'s Pathology and Microbiology Department. As a result of this increase in experts and interest in research, the number of graduate students and postdoctoral interns leaped from 24 in 2016 to 42 in 2020. Finally, the number of associate members has also gone from 27 to 42 during that same period. All in all, the number of members grew to over 100 in 2018. On the other hand, some members left GREZOSP, due to retirement or relocation. For instance, Dr. Pascal Michel was appointed as PHAC's Chief Scientific Advisor and moved to Ottawa, all the while remaining an associate member of GREZOSP. Dr. Denise Bélanger retired in June 2018, followed by Dr. André Vallières in 2019. With these departures, the group's founders are less and less present, and the spirit of GREZOSP is being passed on to younger members.



GREZOSP'S GROWTH AND RECOGNITION

Research topics, including themes and methodological issues, have diversified. Topics of interest identified at the beginning of GREZOSP, such as mosquito vector-borne zoonoses, rabies and agri-environmental zoonoses, are ongoing and have even been the subject of new research. Interest in vector-borne zoonoses has also grown with the arrival and expansion of tick-transmitted zoonoses. Other public health concerns at the human-animal interface have also been addressed, such as parasitic zoonoses, antibiotic use surveillance, and physical, mental and social issues at the human-dog interface in Aboriginal communities in Northern Canada. Climate change and its impact on zoonoses have also been researched, such as Arctic fox rabies, the expansion of mosquito vector-borne zoonoses in Northern Quebec and Canada, and decision support relating to the prevention of these impacts.

Of course, the One Health approach has also been put at the forefront, especially with Dr. H  l  ne Carabin, Canada's Epidemiology Research and One Health Chair. Collaborations and sources of funding for all these research projects have also been largely diversified. GREZOSP's annual reports identify all these achievements. In terms of the group's funding, we must highlight the ongoing partnerships with PHAC, CFIA and INSPQ. An interesting achievement should also be noted: the agreement with INSPQ focuses on the co-ordination – with INSPQ – of the Observatoire multipartite qu  b  cois sur les zoonoses et l'adaptation aux changements climatiques (Quebec's multiparty observatory on zoonoses and climate change adaptation), which includes many GREZOSP members. This is a clear indicator of the group's and its members' recognition relating to zoonoses from a public health perspective.

Many research graduates, professional master's graduates or PhD graduates who were supervised by GREZOSP members found employment with the group's partners or collaborators. For example, Salima Gasmi (professional M.Sc. in veterinary public health) works for PHAC at the Veterinary Public Health Pavilion, while Val  rie Hongoh (PhD in epidemiology) previously worked for PHAC; Marion Ripoche (PhD in veterinary epidemiology), Roxane Pelletier (professional M.Sc. in veterinary public health) and Danaelle Page (master's degree in public health, One Health option) all work for INSPQ while G  raldine-G. Gouin (M.Sc. in veterinary epidemiology research) works for the Nunavik Research Centre. These few examples highlight the significance of these professionals, their supervisors and their training programs, and further strengthen relationships between GREZOSP and its partners and collaborators.

This growth and diversification within GREZOSP demonstrate not only the group's place in the public health universe, but also its importance in Quebec and Canada. They are also a proof of the group's success and dynamism. On the other hand, such a growth and generation change among members raise the challenge of maintaining cohesion within the group. With this goal in mind, GREZOSP carried out a strategic planning exercise. The 2019-2021 strategic plan is underway. One of the actions identified is an in-depth review of the group's by-laws in order to update the group's mission, goals and operation.



GREZOSP'S GROWTH AND RECOGNITION

Of course, GREZOSP is rooted in a very dynamic environment. In the public health universe, the One Health approach has become more and more trendy over the last few years. In terms of research, the Centre de recherche en santé publique (CReSP – public health research centre) was launched in 2019, with one of its axes being One world health, and to which many GREZOSP research members are a part of. Unfortunately, the definition of the One Health approach and its underlying concepts vary from one person or organization to the next. This inconsistency muddles GREZOSP's position. The group should take advantage of this positive trend surrounding the One Health approach; however, it should also confirm its own definition of the One Health approach to preserve the group's identity.

Created at the beginning of the third millennium in the wake of various zoonoses outbreaks and eruptions, GREZOSP had planned events to celebrate its 20th anniversary in 2020. The outbreak and searing expansion of the coronavirus responsible for COVID-19 completely disrupted these plans. On the other hand, this crisis has shed light on epidemiology, public health, emerging diseases such as zoonoses, and the One Health approach. This is very beneficial for GREZOSP as there will be other emerging zoonoses, not to mention those already known globally – which we more or less handle, and none of which have been eradicated .

Over the last 20 years, GREZOSP has been able to grow, expand and take its place in the public health universe. The context allows the group to solidify and continue its development; in the coming years, its challenge will be to continue to grow and maintain its identity in the absence of its founding members.



² “56 zoonoses are responsible for an estimated 2.7 human million deaths and around 2.5 billion cases of human illness a year” according to the [Mapping of poverty and likely zoonoses hotspots](#) report. Published by International Livestock Research Institute, Institute of Zoology, Hanoi School of Public Health, 2012.

