Providing focus and leadership for research, education, and knowledge dissemination in animal-related aspects of public health
Welcome to the 2011 Annual Review for the Centre for Public Health and Zoonoses!

A major initiative for this year has been the creation of dedicated laboratory space for public health research under CPHAZ. This was funded by the Canadian Foundation for Innovation and the Ontario Ministry of Economic Development and Innovation. The space consists of wet laboratories and 2 new computer laboratories – further details are provided in this report.

CPHAZ members continue to be involved in a wide range of research and knowledge dissemination activities, often in collaboration with government scientists and collaborators from other academic institutions. In this years annual report, we also have featured the work of CPHAZ members in antimicrobial use and resistance, as well as highlighting the work of CPHAZ post doctoral fellows. Additional information is available on our website. We hope that you enjoy this report and we look forward to continuing our efforts and to further building our networks and collaborations.

Sincerely,

Jan M. Sargeant
Director, CPHAZ

VISION

Through our engagement in research, education, and knowledge dissemination, members of CPHAZ will identify and solve problems and implement solutions in public health at the human-animal-environmental interface, contribute to rapid response to new and emerging zoonotic diseases, and highlight the societal relevance of veterinary medicine in public health. CPHAZ will create and support productive and effective working relationships between researchers in diverse fields, advance education related to zoonoses and public health and will forge new relationships with human public health activities.
DVM Curriculum Workshop

CPHAZ hosted a workshop focusing on the training of DVM students in public health and regulatory medicine in Canadian Veterinary Colleges. This workshop was funded by the Canadian Regulatory Veterinary Epidemiology Network (CRVE-Net). Faculty from all five Canadian veterinary colleges and representatives from the Canadian Food Inspection Agency (CFIA), Public Health Agency of Canada (PHAC), Public Health Ontario and Ontario Ministry of Health and Long Term Care met to discuss the core competencies for public health and regulatory medicine within the curriculum as well as identifying opportunities for collaboration, resource sharing and ideas for enhancing veterinary education in these areas.

MPH Public Health Day

In November, CPHAZ participated in the 3rd annual Public Health Forum, that had over 90 participants and featured 20 presenters from the Master of Public Health Program. Students presented on their practicum placement projects and prepared posters in support of their research. The day was kicked off by Dr. Ray Copes presenting on risk assessment in public health.

One Health Modeling Course

CPHAZ members and other scientists with an interest in mathematical modelling meet regularly. The group focuses on modelling the spread of disease in humans and animals using a variety of modelling platforms, including Excel, Stata, R, @Risk and AnyLogic. The group plans on meeting biweekly throughout 2012 and all CPHAZ members are welcome to join.

Risk Assessment Panel

The Council of Canadian Academies (CCA) recently published a report, “Healthy Animals, Healthy Canada”, on animal health risk assessment in Canada. This panel session focused on the implications and opportunities arising from this report, particularly as it pertains to assessments with public health implications. Tim Krywulak from the CCA and Jan Sargeant gave an overview of the report findings. Nancy Rheault (CFIA) and Anna Lammerding (PHAC) presented their thoughts on the report from a federal government perspective. This was followed by an open discussion.

ADED Rounds

CPHAZ participates regularly in the Animal Determinants of Emerging Disease Zoonoses Rounds, a teleconference where presenters discuss their research on vast aspects of emerging diseases. CPHAZ has had two members present this year including Drs. Doug Chapman and Lisa Werden.

CPHAZ Symposium

In June, CPHAZ hosted it’s second scientific symposium. With close to 170 people in attendance and almost 30 posters on display, great discussions and networking filled the day. Guest speakers, Dr. Ted Leighton from the Canadian Cooperative Wildlife Health Centre, Rebecca Irwin (PHAC) and Scott Weese (U of G) began and ended the day. In between was a concurrent session format where 20 speakers presented their research from the many aspects of public health to the eager crowd. Congratulations to Jason Stull, Lisa Werden and Shiona Glass who won the graduate student poster awards.
**Opening Celebrations**

The Centre for Public Health and Zoonoses Research Laboratories have officially opened! In December, MPP Liz Sandals, Associate Vice President of Research, Rich Moccia, the Dean of the OVC, Elizabeth Stone, and the Director of CPHAZ, Jan Sargeant as well as close to 40 other University of Guelph faculty, staff and research collaborators gathered for the opening ceremony and tours. This facility is the product of a one million dollar grant from Canada Foundation for Innovation, with matching funds from the Ontario Research Fund under the Ministry of Economic Development and Innovation.

**The Facility**

The facility includes laboratories for bacterial and molecular characterization, computer laboratories for disease modeling and surveillance research as well as a zoonotic disease isolate biobank, sample processing and space for field collection equipment storage. Culture facilities will provide basic equipment as well as a Sensititre MIC system to determine antimicrobial resistance.

Separate molecular labs are available for different procedures including initial sample handling, pulsed field gel electrophoresis, DNA/RNA extraction, and PCR assembly and running. The available equipment includes high throughput, instrumentation such as the MagnaPure DNA/RNA extraction system, LightCycler 480 systems and microarray equipment. The Roche Flex Jr and Qiagen Pyromark Q96 ID systems are available for short and long base pair sequencing.

Two complementary computer laboratories are part of the new infrastructure. One of the laboratories is located in the Department of Mathematics and Statistics and will focus on infectious disease modeling. The other computer laboratory, located in the new CPHAZ lab area, will focus on quantitative analysis of molecular data and surveillance data. A variety of specialty software will be available in both laboratories, including Applied Maths BioNumerics, Palisade Decision Tools, Mathworks MATLAB and XJ technologies Anylogic.

The new facilities will include cryostorage to allow researchers to begin to build a bank of zoonotic disease isolates and samples. Isolates of zoonotic disease agents can be used to identify virulence factors, conduct molecular studies, develop and validate diagnostic tests, and develop vaccines. This information in turn will build the foundation for the conceptualization of new applied research studies. As isolates are characterized by new methodological testing, the continued addition of this information to an isolate database will create, over time, a unique and innovative resource that can be used to address new research questions.

The new CPHAZ facility is open for use by CPHAZ members, their graduate students and collaborators. We encourage cross-disciplinary research and look forward to research in public health and the prevention and control of zoonotic diseases through this facility. We are purely a research facility and not a diagnostic service (any diagnostic service requests will be directed to the Animal Health Laboratory). If you are interested in the CPHAZ facility for your research please contact us at cphaz@uoguelph.ca or visit our website for more information, www.ovc.uoguelph.ca/cphaz.
Masters of Public Health Graduates

The second cohort of 14 Master of Public Health students graduated in 2011. Some of these students are continuing with their education, while others are employed with local public health agencies, consulting firms, provincial agencies, industry associations and the University of Guelph.

In May 2011, graduate MPH student, Trace Mackay, was invited to conduct a session, “Veterinary Issues in Public Health” at the Society of Rural Physicians of Canada at their “Rural and Remote Medicine Course” held in Collingwood, ON. This led to discussions on zoonotic diseases of public health interest, shared environmental risks to animals and humans, increased collaboration between physicians and veterinary practitioners to strengthen Canada's public health infrastructure and the health benefits of the human-animal bond.

As part of her MPH practicum placement with the Ministry of Health and Long Term Care, Yolanda Sheppard studied case reports of intestinal toxemia botulism, the first reported cases of adult colonization botulism in Canada. She published a case series article, which was chosen by Emerging Infectious Diseases to be used as a Medscape Continuing Medical Education credit. The article provides further information on diagnosis and treatment, epidemiology, and public health and laboratory investigation for this disease.

Graduate Student Research

CPHAZ has over 100 graduate student members, who are actively researching or working in all aspects of public health. Some of their research includes:

PhD student Erin Leonard is working as a veterinary epidemiologist with the Environmental Issues Division, Centre for Foodborne, Environmental and Zoonotic Infectious Diseases, at PHAC in Ottawa. Her main focus is One Health, but she has also been involved in projects related to biosecurity, science-policy integration, food safety and antimicrobial resistance.

Erin’s PhD (advisor: David Pearl) is investigating zoonotic infections in pets. Her recent publications include:


● Factors related to Campylobacter spp. carriage in client-owned dogs visiting veterinary clinics in a region of Ontario, Canada. (Epidemiology and Infection)

MSc student Shannon Meadows is determining the seroprevalence of Q fever (Coxiella burnetii) in Ontario sheep flocks, goat herds, and farm workers. The results will fill the knowledge gap for prevalence estimates and specific risk and protective factors, and will be used to develop protocols to mitigate future risk to both humans and animals. (Advisor: Paula Menzies)

Jason Stull, a PhD student, is investigating the role of pets in the transmission of zoonotic pathogens to people. He is utilizing survey and laboratory methods to determine the Canadian public's animal-associated disease knowledge, attitudes, practices and disease risks. Working with collaborators at the Children's Hospital of Eastern Ontario, he is targeting families with immunocompromised children. Results from his research will assist in clarifying the role of pets in human disease and is important for human and veterinary healthcare providers in promoting safe pet ownership. (Advisor Scott Weese)

PhD student Mai Pham (advisor Scott McEwen, and Andrijana Rajic (PHAC)) is conducting a scoping review to identify and characterize the extent, range and nature of scoping reviews in the published literature. The results of this study will contribute to the development of a methodological framework for conducting scoping studies addressing agri-food public health-related topics. The aim of the framework is to provide a tool that will enhance the capacity for knowledge translation and transfer in agri-food public health.

We were saddened to learn of the death of a graduated MPH student Lisa Montanera. Our condolences go out to her family.
The use of antimicrobial agents in human medicine, veterinary medicine, and agriculture has selected over time for resistant bacteria. This has become a problem in both human and veterinary medicine, as resistance to antimicrobial agents used in therapy and prevention has started to appear and accumulate in bacterial pathogens. The problem is compounded by the transmissible nature of antimicrobial resistance (AMR), which can jump from innocuous bacteria to pathogens. The epidemiology of AMR is not only the epidemiology of resistant pathogens, but a much broader issue dealing with global epidemiology of bacteria and AMR determinants in complex ecosystems, encompassing human, animals, and the environment. As AMR frequency has increased, therapeutic options have become more restricted, therapy failures have become more frequent, treatment modalities have become increasingly complex, and treatment costs have increased. The development of new antimicrobial agents has not kept up with the speed of AMR development, leaving us with fewer tools to fight increasingly complex and difficult situations. This has left the medical world facing a dire future, that some already call the ‘post-antibiotic era’.

As seen by their extensive list of publications on the topic, CPHAZ members and associated researchers have a long history of research and collaborations on AMR. This includes, but is not restricted to AMR in important zoonotic agents such as Salmonella, Campylobacter, and methicillin-resistant Staphylococcus aureus. CPHAZ researchers are also involved in the organization of local, national, and international symposia and conferences on AMR in bacteria from animals, food, and the environment. Several are part of national and international/intergovernmental working groups dedicated to the control of AMR.

**CPHAZ members involved in a Conference on Antimicrobial Stewardship in Canadian Agriculture and Veterinary Medicine**

Members of CPHAZ participated with others in organizing or speaking at the Antimicrobial Stewardship in Canadian Agriculture and Veterinary Medicine Conference, held in Toronto, October 30th to November 2nd. Over 200 participants attended the meeting, representing primary producers, the pharmaceutical and feed industries, veterinary practitioners and service providers, academia, medical doctors and government regulators.

Meeting presentations outlined the scope and complexity of antimicrobial resistance in both human and veterinary medicine in Canada, as well as the international dimension. It was agreed that there was no one solution to resistance but a need for everyone to work together on the multiple approaches required. CPHAZ members contributing to the conference included conference co-chair John Prescott (Pathobiology), Patrick Boerlin (Pathobiology) who spoke on antimicrobial resistance in companion animals and horses, and Scott Weese (Pathobiology) who addressed the state of antimicrobial stewardship in Canada. Scott McEwen (Population Medicine) discussed lessons learned from Europe and the United States about antimicrobial stewardship in animal agriculture. Paula Menzies (Population Medicine) co-chaired a Concurrent Session on small ruminants, as part of the discussions on improving stewardship in animals in Canada, and Durda Slavic (Animal Health Laboratory) led a session on the role of Canadian veterinary diagnostic laboratories in stewardship.

In his concluding remarks John Prescott advised, “The conference served to further build trust within the medical, veterinary and agricultural communities. The conference focus on stewardship has moved work on antimicrobial resistance in Canada from being passive to being active. Canada can make great strides in this area by teamwork and addressing the issues that stand in the way of a ‘Gold’, just as Olympian [and Keynote Speaker] Beckie Scott did”.

A summary report will be published in the Canadian Veterinary Journal and is available on the conference web site (www.antimicrobialcanada.com). The report identifies next steps and who has responsibility in moving antimicrobial stewardship forward in veterinary medicine and agriculture.
2011 Publications on antimicrobial use and resistance involving CPHAZ members

Comparison of antimicrobial resistance patterns of Salmonella spp. and Escherichia coli recovered from pet dogs from volunteer households in Ontario (2005-06).

Antimicrobial resistance in Escherichia coli isolated from retail milk-fed veal meat from Southern Ontario, Canada.

Antimicrobial resistance in Campylobacter, Salmonella, and Escherichia coli isolated from retail grain-fed veal meat from Southern Ontario, Canada.

The prevalence of Methicillin-Resistant Staphylococcus aureus colonization in feedlot cattle.

Rates and determinants of antimicrobial use, including extra-label, on Ontario sheep farms.

Clostridium difficile and methicillin-resistant Staphylococcus aureus shedding by slaughter-age pigs.


Antimicrobial resistance and small ruminant veterinary practice.

Characterization of blaCMY-2 plasmids in Salmonella and E. coli from food animals in Canada.

Antimicrobial resistance in generic Escherichia coli isolates from wild small mammals living in swine farm, residential, landfill, and natural environments in southern Ontario, Canada.

Antimicrobial susceptibility of Clostridium perfringens isolates of bovine, chicken, porcine, and turkey origin from Ontario.


Longitudinal investigation of methicillin-resistant Staphylococcus aureus in piglets.

The Canadian Integrated Program for Antimicrobial Resistance Surveillance Public Health Partnership; the Canadian Public Health Laboratory Network. Integrated surveillance and potential sources of Salmonella Enteritidis in human cases in Canada from 2003 to 2009.
RESEARCH by CPHAZ members encompasses a number of key thematic areas in animal-related aspects of public health. In 2011, CPHAZ members published over 65 articles spanning these themes. Examples include:

Michele Guerin and PhD student Tara Roberts are identifying knowledge gaps in understanding the epidemiology of antimicrobial resistance in the broiler sector. This will assist the industry in developing antimicrobial resistance (AMR) control measures at the hatchery and broiler farm levels, thereby improving microbial safety of chicken products in Ontario. Surveillance of the AMR enteric bacteria levels in AMR-free, organic and conventional broiler farms is ongoing.

Olaf Berke, Zvonimir Poljak and Bimal Chhetrie are conducting research on the impact of diagnostic misclassification on spatial epidemiological methods through an OMAFRA Emergency Management grant. Special emphasis is given to influenza in Ontario swine herds and disease cluster identification. Imperfect diagnostic tests might result in neglecting emerging problems or contrarily generate phantom clusters. This could assist with an early warning system for emerging diseases of swine in Ontario.

Rob Deardon and his research group have published a number of papers on statistical modelling of infectious diseases. These include, dealing with the problem of spatial measurement error when modelling disease spread over time and space (useful for agricultural disease studies where farm, but not animal locations are recorded), methods of assessing goodness-of-fit of spatial infectious disease models (important if models are used to influence policy), and development of a new infectious disease model based on stochastic graphs used to model the 2001 UK foot-and-mouth epidemic.

Karen Morrison is actively involved in research and training in ecohealth, working with the Canadian Community of Practice in Ecosystem Approaches to Health and the International Association for Ecology and Health. She conducts research on watersheds as settings for health, and is developing research on anthropogenic eutrophication as a determinant of (one) health. Karen continues her involvement with the Caribbean Ecohealth Programme and had two students placed in the region this summer. Through her teaching in the MPH program, and her work with the Ecohealth Club, she is developing a research agenda focused on One Health Communication.


Scott McEwen, and Claire Jardine collaborated with the Ministry of Natural Resources and the Public Health Agency of Canada to investigate salmonella in raccoons (*Procyon lotor*) in Southern Ontario. The goal was to learn more about the racoons’ potential long-term role in maintaining *Salmonella* infections.

Catherine Carstairs is developing biographies of two health food activists: Gayelord Hauser and Adelle Davis. Catherine received a SSHRC Standard Research Grant to further her work on the history of fluoridation in the United States and Canada.
Patrick Boerlin and collaborators investigate the molecular epidemiology of antimicrobial resistance in bacteria from animals and zoonotic agents. Major projects include studies on extended-spectrum cephalosporin resistance, molecular epidemiology of integrons and of cephamicynases, and extended-spectrum beta-lactamases in *Enterobacteriaceae* from farm animals, molecular epidemiology of *Salmonella Enteritidis* in animals and humans, and development of new molecular tools for the surveillance of antimicrobial resistance. He also collaborates with the Canadian Integrated Program for Antimicrobial Resistance Surveillance (PHAC) and with researchers from USDA, FDA, and CDC on surveillance and targeted research projects on antimicrobial resistance in farm animals.

Scott Weese co-wrote and published “Companion Animal Zoonoses”, with chapters written by Jason Stull, Andrew Peregrine, and Maureen Anderson.

Chris Bauch evaluated cervical screening programs in the new era of human papillomavirus vaccination. The research used a mathematical model to project future cervical cancer burden under various alternative vaccine programs and cervical screening (Pap smear) recommendations. Bauch and colleagues found that simultaneously delaying the age of screening initiation to the age of 25 while expanding vaccine coverage in the same group of women through public health catch-up programs would save both money and lives in Ontario.

Michele Guerin is working with the Ontario Multi-Agency *Salmonella Enteritidis* (SE) working group to complete a baseline study of the prevalence of SE in chicken meat.

Olaf Berke, Paula Menzies and Jue Tang together with researchers from the Canadian Food Inspection Agency (CFIA) and Scrapie Canada are investigating the prevalence of scrapie in the national sheep flock. Although scrapie is not considered a zoonotic disease, a recent study in the journal Emerging Infectious Diseases found that “Bovine Spongiform Encephalopathy (BSE) can infect small ruminants under natural conditions and could be misdiagnosed as scrapie”. Therefore the national scrapie prevalence should be of public health concern with respect to the BSE-vCJD link.

Claire Jardine, Davor Ojkic, and John Prescott conducted a longitudinal study on the seroprevalence of Avian Influenza, Leptospirosis, and Tularemia in urban populations of raccoons (*Procyon lotor*) within Ontario.

Scott Weese chaired the International Society for Companion Animal Infectious Diseases (ISCAID) antimicrobial guideline working group, which is developing clinical practice guidelines for antimicrobial use in companion animals. The first guidelines (on urinary tract infections) were published in Veterinary Medicine International, and the group is actively developing more.

Scott Weese also chaired a Science Teachers of Ontario committee that developed hand hygiene guidelines for schools. This was published in the Winter 2011 edition of the Canadian Journal of Infectious Diseases.

Remember to check out the Worms and Germs Blog as an educational resource for your public health questions and concerns, www.wormsandgermsblog.com.
Post doctoral fellows working with CPHAZ faculty members study many interesting public health topics. Here is a highlight of their work:

Vahab Farzan is working on a number of research projects focusing on epidemiology, control, and prevention of food- and waterborne pathogens and antimicrobial resistance related to swine. Vahab also received the Mitacs-Elevate Industrial Fellowship to develop a live Salmonella typhimurium vaccine to control Salmonella in swine at pre-harvest level. (Faculty mentor: Bob Friendship)

Prithy Rupa is investigating allergen-specific T-cell epitopes as targets for immunotherapeutic interventions in allergic diseases, in the Department of Food Science. She recently completed a study to investigate oral immunotherapy with T-cell epitope peptides of the dominant egg-white allergen Ovomucoid (Ovm) in a Balb/c mouse model of egg allergy. The study demonstrated OIT with SP and MP comprising the immunodominant regions of Ovm was safe and significantly reduced subsequent frequency of allergy to Ovm. (Faculty mentor: Yoshinori Mine)

Lee Wisener is using systematic review and meta-analysis methodology to compare results from challenge trials to field trials in the pre-harvest food safety literature. This study assesses the level of evidence from challenge trials compared to field trials based on trial sequence, quality of reporting, and outcome effect size. Three preharvest interventions are included in this study: probiotics in cattle against E. coli 0157:H7, vaccines in cattle against E. coli 0157:H7, and vaccines against Salmonella in swine. The findings will help researchers to be more efficient in their use of animals and resources for investigating pre-harvest food safety interventions. (Faculty mentor: Jan Sargeant)

Ian Young is conducting research to identify and characterize methods and tools that can be used to support knowledge translation and transfer (KTT) for policy- and decision-making in agri-food public health. Key KTT methods and tools are being identified using a mixed-method review approach, and are being summarized and evaluated in a series of focus groups and workshops with agri-food public health stakeholders. The goal of this project is to use the review results and stakeholder feedback to develop a handbook of the most important and useful methods and tools for KTT in the agri-food public health sector. (Faculty mentor: Scott McEwen, and Andrijana Rajic (PHAC)).

Victoria Ng is investigating the prioritization of zoonotic diseases using a quantitative methodological approach. Her research has included over 3,000 individuals from the general public as well as animal health and human health professionals across Canada and the US. Preliminary results suggest there are differences among groups in both the criteria considered important in prioritizing zoonoses as well as diseases recommended for prioritization. Victoria has recently published a paper on the criteria considered important for prioritizing zoonotic diseases and her research will improve our understanding of how different groups prioritize zoonotic diseases. (Faculty mentor: Jan Sargeant)

Rocio Amezcua completed a project related to the implementation of a swine veterinary-based surveillance system in Ontario. She published articles on the evaluation of this surveillance system, and the use of additional health data sources such as patterns of condemnation rates in relation to disease outbreaks. Rocio has also submitted a manuscript comparing disease trends using active practitioner-based and passive laboratory-based surveillance. Currently, she is conducting a research project evaluating risk factors, assessment techniques and the effect of lameness on productivity and longevity of group and individual gestating sows. (Faculty mentor: Bob Friendship)
**Grace Kwong** trained as a statistician. Her post-doctoral fellowship is sponsored by the Canadian Swine Health Board. Her research projects include Bayesian modelling of infectious disease spread for the PRRS virus and an evaluation of multiple data sources for estimating disease prevalence and trends over time (Faculty mentor: **Zvonimir Poljak**).

**Chika Okafor**'s post-doctoral fellowship research is focused on nutritional epidemiology in companion animals, specifically dogs and cats. With data from millions of pets from over 700 pet hospitals in the United States, his research is supported by Banfield Pet Hospital and will synthesize information from Banfield's proprietary electronic medical records system that collects data from its network of veterinary hospitals. The outcome of this research will advance evidence-based nutritional care in these animals. (Faculty mentor: **Cate Dewey**)

**Kate Snedeker** recently completed a post-doc at CPHAZ (faculty mentor: **Jan Sargeant**). She is now a surveillance epidemiologist with Alberta Health Services in Edmonton, and is also teaching at the University of Alberta School of Public Health and helping to organize an Alberta-wide meeting on One Health surveillance initiatives. She recently published a paper based on her post-doctoral research on the quality of reporting in abstracts in pre-harvest food safety trials, and is collaborating with PHAC on a paper related to post-harvest food safety.

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**2011 Honours and Awards**

- **Nathan Latchowsky** (PhD student) was awarded a Vanier Canada Graduate Scholarship, a Canada Graduate Scholarship Michael Smith Foreign Study Supplement and a Rotary International Ambassadorial Scholarship to conduct HIV prevention research in New Zealand.

- **Olaf Berke** was appointed as Associate Editor for the Open Access journal BMC Veterinary Research.

- **Catherine Carstairs** was a Fulbright Scholar at the UC Davis Humanities Institute in the winter-spring of 2011.

- **Meredith Faires** (PhD student) received the Canadian College of Microbiologist award for her poster on *MRSA* and *Clostridium difficile* contamination in the environment of community hospitals, at the Association of Medical Microbiology and Infectious Disease Canada and the Canadian Association for Clinical Microbiology and Infectious Diseases Conference in 2011.

- **Samantha Allen** won first prize for her poster on her MSc research “Antimicrobial resistance in generic *E. coli* isolated from wildlife living in rural, urban and natural environments” and **Lisa Werden** received an honourable mention for her presentation on “Factors affecting the abundance of blacklegged ticks (*Ixodes scapularis*) and the prevalence of *Borrelia burgdorferi* infection in the 1000 islands region of Ontario” at the Wildlife Disease Association Annual International Meeting in Quebec City.

- **Andrew Peregrine** is now a Charter Diplomate of the American College of Veterinary Microbiologists.

- **Patricia Turner** was awarded the Young Alumnus Award for her contributions as a teacher, mentor and leading researcher in the field of laboratory animal medicine.

- **David Waltner Toews** was featured on CBC’s *The National* discussing concerns about radiation in food.

- **Keith Warriner**’s expertise and research on a new strain of *E. coli* was called upon this year, as he participated in more than a dozen media interviews including a feature in the Globe and Mail and national news programs.

- **Pat Shewen** was recognized for a lifetime achievement in the Science, Technology and Research category at the 2011 YMCA-YWCA of Guelph’s Women of Distinction Awards.
Faculty Members

Lucy M Mutharia  
Molecular and Cellular Biology  
Food Safety

Eva Nagy  
Pathobiology

Lee Niel  
Population Medicine  
Companion Animal

Davor Ojkic  
Animal Health Lab  
Zoonoses: Surveillance and Disease Outbreak

Andrew Papadopoulos  
Population Medicine  
Public Health Policy

Jane Parmley  
Canadian Cooperative Wildlife Health Centre  
Zoonoses: Surveillance and Disease Outbreak

David Pearl  
Population Medicine  
Antimicrobial Resistance, Zoonoses

John Prescott  
Pathobiology  
Antimicrobial Resistance, Zoonoses

Jan Sargeant  
Population Medicine  
Water & Food Safety, Synthesis Research

Shayan Sharif  
Pathobiology  
Food Safety

Durda Slavic  
Animal Health Lab  
Zoonoses

Henry Staempfli  
Clinical Studies  
Zoonoses: Livestock, Companion and Sporting

Patricia Turner  
Pathobiology  
Food Safety

David Waltner-Toews  
Population Medicine  
Water & Food Safety, Environment, Zoonoses

Keith Warriner  
Food Sciences  
Food Safety

Ashley Whiteman  
Centre for Public Health and Zoonoses  
Program Coordinator

Janet Wood  
Molecular and Cellular Biology  
Water & Food Safety

Sarah Wootton  
Pathobiology

Retired CPHAZ members

Ken Leslie  
Population Medicine  
Water & Food Safety, Zoonoses: Livestock

Ian K Barker  
Pathobiology  
Risk Assessment, Zoonoses: Wildlife & Surveillance

Patricia Shewen  
Pathobiology  
Zoonoses: Livestock
Many students request to remain members after their graduation to continue to learn about opportunities and events.

ECOHEALTH CLUB

The Ecohealth Club provides a forum where students from all departments and academic levels can meet to discuss and explore the complex relationships between ecosystems, society, and the health and well-being of animals and humans. Throughout the past year, the club has worked on building its community through hosting informal networking events as well as major speaker presentations on topics including “community health from a designer’s perspective” and “participatory epidemiology”. The club is also engaged with various groups from the University of Guelph and other institutions. This year, we will investigate a diversity of topics such as sustainability and the connections between biodiversity and well-being.

If you are interested in receiving information on future Ecohealth Club events, or would like to assist the club executive in planning and organizing events, please e-mail ehc@uoguelph.ca or visit our website at http://www.uoguelph.ca/~ehc.
Bruce Hunter
August 3, 1950 – October 19, 2011
For more than two decades Bruce Hunter championed a vision of the world that brought together the health of wildlife, farm animals, people, and the ecosystems we share and on which we depend. His vision was never an abstraction, but a way of doing and being, and was reflected in his research, practice and, perhaps his greatest passion, teaching. In 1991, he and several others designed, got funding for, and implemented the world’s first course on ecosystem health, and brought together all of Canada’s veterinary schools in this common venture. The course was field-based, practical, and theoretically sound, and resulted in several other courses, including collaborations with the medical school at the University of Western Ontario.

In 2008, Bruce was the lead Guelph researcher on an initiative to create a Community of Practice for Ecosystem Approaches to Health in Canada (www.Copeh-Canada.org). Copeh-Canada’s founders included the medical school at University of British Columbia and the Centre de recherche interdisciplinaire sur la biologie la santé et l’environnement (UQAM). At Guelph, Bruce went beyond OVC to recruit members of the philosophy department for both graduate and undergraduate courses. It was important not just to know the technical details of public health, animal disease and ecology, but also to ask tough ethical and philosophical questions that this work raised. In 2011, Copeh-Canada was a recipient of the Inaugural Population and Public Health Research Milestone Award, given by CIHR and the CPHA, for its work on ecohealth.

Bruce’s vision was global and practical; in recent years, he poured considerable energy and resources into developing a project with Veterinarians without Borders/ Vétérinaires sans Frontières – Canada to improve the lives and health of poor farmers in northern Ghana. The work that Bruce began continues in the ecohealth courses he developed, in the work of his students and younger colleagues, in the teaching manual that Copeh-Canada is creating for use across Canada and internationally, and in the work in Ghana. Bruce’s humane, intelligent, easy-going, practical, humorous and visionary presence will be deeply missed.

- David Waltner-Toews

**CPHAZ Steering Committee**

Our steering committee members represent a range of interests and expertise in animal-related aspects of public health. Their participation and dedication to CPHAZ is fundamental to our success as part of the public health community.

**Andrew Peregrine** is an associate professor of parasitology in the Department of Pathobiology. His research interests include the epidemiology of parasitic infections and development of parasite control programs to reduce drug resistance.

**Clare Jardine** is an assistant professor in the Department of Pathobiology. Her research interests include rodent and vector borne zoonotic diseases, the ecology of zoonotic diseases in wild animal populations and wildlife health.

**Scott Weese** is an associate professor in the Department of Pathobiology. His research focuses on multi-drug resistant bacteria (particularly mRSA), bacterial gastrointestinal disease, and transmission of infectious agents between animals and humans.

**Zvonimir Poljak** is an assistant professor in the Department of Population Medicine. His research focuses include examining the spread of infectious diseases in swine using a variety of quantitative methods.

**Cate Dewey** is a professor of epidemiology and the Chair of the Department of Population Medicine. Her research interests are in the area of swine production medicine, including field studies of both zoonotic and production-limiting diseases.

**Patrick Boerlin** is an associate professor in the Department of Pathobiology. His research focuses on molecular epidemiology and population diversity of commensal and pathogenic bacteria from animals (mainly *E. coli* and *C. perfringens*) or of agents of zoonoses.
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