

Discovery Theme proposal moves forward!

Emerging and Re-emerging Infectious Disease Detection, Treatment, and Prevention

The Discovery Themes will leverage Ohio State's breadth of expertise to address complicated issues that define our world today. Through individual and clusters of faculty research hires in key interdisciplinary areas, OSU intends to spur transformation breakthroughs in the areas of health and wellness, energy and the environment, and food production and security.

Veterinary Biosciences and the College of Veterinary Medicine helped lead development of a proposal for the second Discovery Theme RFP. The proposal, entitled Emerging and Re-emerging Infectious Disease Detection, Treatment, and Prevention was an initiative of the Public Health Preparedness in Infectious Disease (PHPID) program and ***was one of six proposals selected to move forward*** from 33 submissions, involving over 625 individuals and all 14 colleges.

The proposal builds on interdisciplinary strengths of PHPID and other OSU and community partners to detect, treat, and prevent infectious diseases by better understanding disease interactions (host, pathogen, environment) including drivers of pathogen diversity/host range, antimicrobial resistance, host immunity, animal reservoirs and impacts of infectious diseases on a sustainable food supply. The next step will be working with the Discovery Theme Initiative Executive Team to refine and implement the plan – including the recruitment of new faculty. Thirty new faculty positions in synergistic focus areas across the University, including areas within the College, are proposed to fill critical programmatic gaps.

Proposal working group:
Team Lead: Mike Oglesbee
Pharmacy:

- Karl Werbovetz

Medicine:

- Kurt Stevenson
- Joanne Turner
- Thomas Terndrup
- Dan Wozniak

Veterinary Medicine:

- Linda Saif
- Mike Oglesbee

Arts and Sciences

- John Casterline
- Dave Bisaro
- Vicki Wysocki

Engineering:

- Keith Gooch

PHPID Program Director:

- Kat Marriott

Focus areas:

Emerging & Re-emerging Infectious Disease Detection, Treatment, & Prevention

- Vaccines and Immunotherapeutics
- Antimicrobial Optimization
- Surveillance and Predictive Modeling
- Interspecies Modeling

Spotlights: Discovery and Scholarship

***Publication spotlight:* Measles virotherapy as an oncolytic tool**

The lab of Dr. Stefan Niewiesk investigated the potential of measles virus to be used as an oncolytic treatment against adult T cell leukemia. They found that the oncolytic susceptibility of neoplastic T cells was reduced in cells that produced type I interferons. As part of the innate immune response, type I interferons play a significant role in the antiviral state thus impairing viral replication by interfering with transcription and translation. These findings indicate a need to screen patients for interferon expression as a strategy for selecting candidate patients for oncolytic virotherapy with measles virus anticancer vaccines. <http://www.ncbi.nlm.nih.gov/pubmed/24911240>

***Grant spotlight:* The role of cellular factors in HIV-1 replication**

Dr. Li Wu is partnering with Drs Musier-Forsyth (PI) and Frietas (Co-I) to study the cellular factors critical for the initiation of HIV-1 reverse transcription. HIV-1 replication requires host cell factors tRNA^{Lys3} and lysyl-tRNA synthetase. The tRNA serves to initiate reverse transcription of the viral RNA genome into DNA, allowing integration into the human genome. The funded project will investigate the interactions of these cellular factors with HIV-1 genomic RNA and elucidate the 3-D structure of these interactions, as well as the structure of the reverse transcriptase initiation complex. Understanding the mechanism of essential host cell recruitment into HIV-1 particles will provide new therapeutic targets to combat AIDS.

***Publication spotlight:* Small molecule inhibitors in veterinary oncology practice**

Dr. Cheryl London authored a review on the current use and ongoing development of small molecule inhibitors for use in veterinary oncology patients. These inhibitors primarily work by disrupting critical cellular pathways in cancer cells resulting in cell death or reduced viability. Dr. London and colleagues help to advance the options for veterinary oncologists and their patients through the study of small molecule inhibitors in clinical trials. <http://www.ncbi.nlm.nih.gov/pubmed/25174906>

***Publication spotlight:* Development of a canine prostate cancer cell line**

Dr. Tom Rosol and laboratory have developed canine prostate cancer cell line that can be used to investigate the mechanisms of prostate cancer pathogenesis. This novel cell line also produces bone metastasis – an important feature in late stage human disease – and will allow additional study of the mechanisms of metastasis. <http://www.ncbi.nlm.nih.gov/pubmed/25043424>

*If you don't know where you are going, any road will get you there.
- Cheshire Cat's conversation with Alice*

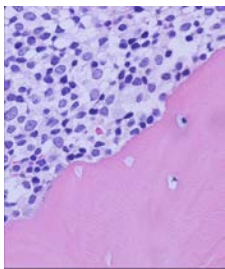
Figuring out how life works ...new grants!

- Wnt signaling in prostate cancer bone metastases. PI: [Jessica Simmons](#); Co-I: [Tom Rosol](#). Army Medical Research Acquisition Activity
- Novel role of SAMHD1 as a tumor suppressor in cutaneous T-cell lymphomas. PI: [Li Wu](#); Co-I: Anjali Mishra, Xiaokui Mo, Pierluigi Porcu, Henry Keung Wong. National Cancer Institute
- Cellular factors critical for initiation of HIV-1 reverse transcription. PI: Karin Musier-Forsyth; Co-I: Michael Freitas, [Li Wu](#). National Institute of General Medical Sciences
- Beyond cellular senescence: defining the meaning of p16INK4a in vivo. PI: Christin Burd; Co-I: [Krista La Perle](#), Jianying Zhang. American Federation for Aging Research, Inc
- Risk assessment and management strategies to prevent transmission of infectious disease in dogs. PI: Jason Stull; Co-I: [Mary Jo Burkhard](#), Armando Hoet, Jeanette O'Quin. American Kennel Club Canine Health Foundation
- The pathogenesis and characterization of porcine epidemic diarrhea virus (PEDV) and porcine enteric deltacoronavirus (PEdCV) in neonatal gnotobiotic swine. PI: [Mike Oglesbee](#); Co-I: [Jianrong Li](#), Andy Niehaus. National Pork Board
- Prospective placebo controlled study of masitinib in grade 2-3 non-resectable canine mast cell tumors. PI: [Cheryl London](#); Co-I: Bill Kisseberth. AB Science
- A phase I dose escalation study evaluating the safety and efficacy of RV1001, an isoform selective PI3K inhibitor, in dogs with hematologic malignancies. PI: [Cheryl London](#); Co-I: Bill Kisseberth. Rhizen Pharmaceuticals S. A.
- Enhancing the incretin effect through modification of gut microbiota in cats. PI: Chen Gilor; Co-I: [Prosper Boyaka](#), Josh Daniels, Valerie Parker. Nestle Purina Petcare Co
- Phase I safety evaluation of STA-12-8960 in dogs with spontaneous tumors. PI: [Cheryl London](#); Co-I: Bill Kisseberth. Synta Pharmaceuticals Corp
- Molecular assays for tick-borne zoonotic bacteria. PI: [Yasuko Rikihisa](#); Co-I: [Mingquin Lin](#). Battelle Memorial Institute
- Circovirus isolation and characterization in vitro. PI: [Tracey Papenfuss](#). Intervet/Schering-Plough
- OSU/MD Anderson Cancer Center Thyroid Cancer SPORE. PI: Matthew Rengel; Co-I: [Tom Rosol](#). National Cancer Institute.

No pessimist ever discovered the secret of the stars, or sailed to an uncharted land, or opened a new doorway for the human spirit. – Helen Keller

Training the next generation!

Dr. Eason Hildreth III was recognized as one of the Young Investigator Award winning presentations at the American Veterinary Medical Foundation's competition during the Meril-NIH Veterinary Scholars Symposium held at Cornell University, July 31-August 3. Dr. Hildreth is mentored by Drs. Rosol and Toribio and presented a portion of his graduate work titled: *Deletion of the nuclear localization sequence and C-terminus of PTHrP decreases osteogenesis and chondrogenesis but increases adipogenesis and myogenesis in mesenchymal stem cells.*



Clinical Pathology residents Drs. Sally Henderson and Nina Zitzer attended the Bone Marrow Workshop taught by Drs. Rose Raskin and Joanne Messick hosted at Purdue University on August 2-3. They will be using the information learned to present cases and seminars at the college. Resident registration and travel for this event was made possible through generous donor support for clinical pathology residency education!

Anatomic pathology residents Drs. Bonnie Harrington, Chris Koivisto, Joshua Lorbach, & Lauren Himmel (L to R) at the 33rd Annual Meeting of the Midwest Association of Veterinary Pathologists. The conference, held at the University of Wisconsin Arboretum in Madison, WI July 30 - August 1, was jointly hosted by the Society of Toxicologic Pathology and featured a talk by Dr. Brett Saladino entitled "Toxicology of Major Drug Classes Used in Human Medicine" jointly hosted by the Society of Toxicologic Pathology.



Drs. Harrington, Himmel, & Koivisto were also selected for the following platform case presentations:

- Dr. Harrington: Pulmonary vascular malformation in an alpaca
- Dr. Koivisto: Adrenal histoplasmosis in a North American raccoon
- Dr. Himmell: *Parelaphostrongylus tenuis* myelitis in an alpaca

*I skate where the puck is going to be, not where it has been.
– Wayne Gretzky*

In the news



Alumni spotlight

Dr. Laura Rush appointed as Executive Director of the Clinical and Translational Research Unit at Ohio University

Dr. Laura Rush (alumna of our combined Anatomic Pathology/PhD program), former vice president of scientific strategy and associate medical director for the medical marketing firm, GSW Worldwide, has been recruited by Ohio University in Athens, Ohio to lead the newly formed Clinical and Translational Research Unit (CTRU) in the Heritage College of Osteopathic Medicine. The CRTU has been formed to promote the advancement of clinical research in the medical college. The CRTU will manage clinical studies, research facilities and equipment, staff, scientists, and biostatisticians to enhance the research mission of the faculty.

New patent! Dr. Yasuko Rikihisa has been granted a patent titled Ehrlichia Ewingii proteins, nucleic acids, and methods of their use. Dr. Rikihisa is recognized as one of the leading authorities on tick-borne ehrlichial diseases of animals and people. Since joining OSU in 1986, Dr. Rikihisa has established an impressive record of translating basic research findings into relevant and diagnostic tools that are recognized as the standard of care for animal health care. Revenues from the licensure of her laboratory findings have helped the College of Veterinary Medicine lead Ohio State in commercialization for over 5 years!

Building International Connections:

Drs. Tom Rosol & Steve Weisbrode presented lectures at the combined European Pathology Meetings in Berlin held August 25-30, 2014 in Berlin. This joint congress included the European Society of Veterinary Pathology (ESVP), the European Society of Toxicologic Pathology (ESTP), the European College of Veterinary Pathology (ECVP), and the European Division of the CL Davis Foundation. Dr. Rosol presented the plenary lecture entitled, 'Endocrine Pathology: Lessons from Art, History, and the Microscope' as well as five additional lectures on endocrine pathology while Dr. Weisbrode presented a full day of lectures on bone pathology.

*To change, we need to stop thinking like mechanics and to start acting like gardeners.
Alan M. Webber*

Sharing new knowledge

- Efanov A, Zanesi N, Coppola V, Nuovo G, **Bolon B**, Wernicle-Jameson D, Lagana A, Hansjuerg A, Pichiorri F, Croce CM. Human HMGA2 protein overexpressed in mice induces precursor T-cell lymphoblastic leukemia. *Blood Cancer J* <http://www.ncbi.nlm.nih.gov/pubmed/25014774>
- Lachiewicz AM, **Cianciolo R**, Miller MB, Derebail VK. Adenovirus causing fever, upper respiratory infection, and allograft nephritis complicated by persistent asymptomatic viremia. *Transpl Infect Dis* <http://www.ncbi.nlm.nih.gov/pubmed/24966111>
- **Cianciolo RE**, Brown CA, Mohr FC, Spangler WL, Aresu L, van der Lugt JJ, Jansen JH, James C, Clubb FJ, Lees GE. Pathologic evaluation of canine renal biopsies: methods for identifying features that differentiate immune-mediated glomerulonephritides from other categories of glomerular diseases. *J Vet Intern Med* <http://www.ncbi.nlm.nih.gov/pubmed/24635375>
- Schneider SM, **Cianciolo RE**, Nabity MB, Clubb FJ Jr, Brown CA, Lees GE. Prevalence of immune-complex glomerulonephritides in dogs biopsied for suspected glomerular disease: 501 cases (2007-2012). *J Vet Intern Med* <http://www.ncbi.nlm.nih.gov/pubmed/24635383>
- **Hicks M**, Hu Q, Macrae E, **DeWille J**. JUNB promotes the survival of Flavopiridol treated human breast cancer cells. *Biochem Biophys Res Commun* <http://www.ncbi.nlm.nih.gov/pubmed/24858691>
- Ellis J, Rhodes C, Lacoste S, **Krakowka S**. Antibody responses to Bordetella bronchiseptica in vaccinated and infected dogs. *Can Vet J*. <http://www.ncbi.nlm.nih.gov/pubmed/25183893>
- Yang J, Bill MA, Young GS, **La Perle K**, Landesman Y, Shacham S, Kauffman M, Senapedis W, Kashyap T, Saint-Martin JR, Kendra K, Lesinski GB. Novel Small Molecule XPO1/CRM1 Inhibitors Induce Nuclear Accumulation of TP53, Phosphorylated MAPK and Apoptosis in Human Melanoma Cells. *PLoS One* <http://www.ncbi.nlm.nih.gov/pubmed/25057921>
- Sun J, Wei Y, Rauf A, Zhang Y, Ma Y, Zhang X, Shilo K, Yu Q, Saif YM, Lu X, Yu L, **Li J**. Methyltransferase-defective avian metapneumovirus vaccines provide complete protection against challenge with homologous Colorado strain and heterologous Minnesota strain. *J Virol* <http://www.ncbi.nlm.nih.gov/pubmed/25122790>
- Zhang D, Liu J, Gao J, Shahzad M, Han Z, Wang Z, **Li J**, Sjölander H. Zinc Supplementation Protects against Cadmium Accumulation and Cytotoxicity in Madin-Darby Bovine Kidney Cells. *PLoS One* <http://www.ncbi.nlm.nih.gov/pubmed/25105504>
- Zhang Y, Wei Y, Zhang X, Cai H, **Niewiesk S**, **Li J**. Rational design of human metapneumovirus live attenuated vaccine candidates by inhibiting viral messenger RNA cap methyltransferase. *J Virol* <http://www.ncbi.nlm.nih.gov/pubmed/25056882>
- **London CA**. Small Molecule Inhibitors in Veterinary Oncology Practice. *Vet Clin North Am Small Anim Pract* <http://www.ncbi.nlm.nih.gov/pubmed/25174906>
- Breit MN, Kisseberth WC, Bear MD, Landesman Y, Kashyap T, McCauley D, Kauffman MG, Shacham S, **London CA**. Biologic activity of the novel orally bioavailable selective inhibitor of nuclear export (SINE) KPT-335 against canine melanoma cell lines. *BMC Vet Res* <http://www.ncbi.nlm.nih.gov/pubmed/25022346>
- M Parrula MC, Fernandez SA, **Landes K**, **Huey D**, Lairmore M, **Niewiesk S**. Success of measles virotherapy in ATL depends on type I interferon secretion and responsiveness. *Virus Res* <http://www.ncbi.nlm.nih.gov/pubmed/24911240>
- Schneider CP, Ishihara A, Adams TP, Zekas LJ, **Oglesbee M**, Bertone AL. Analgesic effects of intraneural injection of ethyl alcohol or formaldehyde in the palmar digital nerves of horses. *Am J Vet Res* <http://www.ncbi.nlm.nih.gov/pubmed/25157881>
- **Simmons JK**, **Dirksen WP**, **Hildreth BE 3rd**, Dorr C, Williams C, Thomas R, Breen M, Toribio RE, **Rosol TJ**. Canine prostate cancer cell line (Probasco) produces osteoblastic metastases in vivo. *Prostate* <http://www.ncbi.nlm.nih.gov/pubmed/25043424>
- Irom S, Sherding R, Johnson S, **Stromberg P**. Gastrointestinal Perforation Associated With Endoscopy in Cats and Dogs. *J Am Anim Hosp Assoc* <http://www.ncbi.nlm.nih.gov/pubmed/25028434>
- Gemensky-Metzler AJ, Wilkie DA, **Weisbrode SE**, Kuhn SE. The location of sites and effect of semiconductor diode trans-scleral cyclophotocoagulation on the buphthalmic equine globe. *Vet Ophthalmol* <http://www.ncbi.nlm.nih.gov/pubmed/24697980>
- St Gelais C, de Silva S, Hach JC, White TE, Diaz-Griffero F, Yount JS, **Wu L**. Identification of Cellular Proteins Interacting with the Retroviral Restriction Factor SAMHD1. *J Virol* <http://www.ncbi.nlm.nih.gov/pubmed/24895091>

*Originality is the essence of true scholarship.
Creativity is the soul of the true scholar.
- Nnamdi Azikiwe*

ACVP Council

Drs. Maxey Wellman and Krista La Perle are representing Ohio State through their service on ACVP Council including travel to Ames for a concurrent meeting with the administration of the ACVP Certifying Exam (Dr. Wellman notes this is her 13th trip to Ames, Iowa!). Dr. Wellman is in her final year on the Executive Board as immediate Past President of ACVP and Dr. La Perle is currently in her 2nd year of a 4 year term as Councilor.

Council is the governing body of ACVP and is comprised of elected members. Currently, Council is working with numerous ACVP Committees to accomplish the strategic goals and actions outlined in their 2012-2017 Strategic Plan. These include:

1. Uphold the high standards of veterinary pathology by advancing ACVP certification as the premier credential in the field of veterinary pathology.
2. Support and create opportunities for life-long learning.
3. Promote a uniformly high-level of training on the broad range of veterinary pathology competencies, including those that are tested and those that are non-testable.
4. Foster domestic and international strategic partnerships.
5. Enhance communications to engage membership and to improve visibility and impact of the College and veterinary pathology within the profession, scientific community, and the public.

To accomplish this work, Council has three face-to-face meeting each year and meets by teleconference each month. Recent work includes changes to the ACVP Certification Exam including the multiple choice format, passing point determination, and a two phase exam starting in 2015!

Have something to contribute to BIOS

Do you have an interesting update? Do you know of someone we should highlight? A good quote or kudos you'd like to share? Please contact Robyn Luce at luce.73@osu.edu

I can't change the direction of the wind, but I can adjust my sails to always reach my destination.

– Jimmy Dean

mentoring, teaching, coaching, advising

The art of mentoring and coaching

We all have people that we can point to as having had significant impact on our lives. We call these people mentors, teachers, coaches, and/or advisors. Although each role has unique components, the definitions clearly overlap.

The best in these roles don't usually fit any specific category and yet they seem to do all aspects seamlessly. They transfer new knowledge, share experiences, provide perspective, help us get through the knotty problems that life throws at us and all the while guiding us to achieve our goals.

Sometimes we choose our mentors.
Sometimes they choose us.

Connecting with a good mentor

Identify the areas that you would like to grow in and begin to look at those around you to see who has the skill set attitude or experiences that you would like to have or to improve. Sometimes this is driven through self-awareness (I need to get better at this!) but often it happens serendipitously when you see someone perform a skill or interact in a way that truly resonates with you.

In either case – connect. This can be as formal as asking them to be a mentor or as informal as studying how they do something from a distance. You may meet with them regularly or chat once over a cup of coffee. Family and friends may influence how you do things at work. And work colleagues may influence how you do things at home. There's not one perfect formula. And in fact, most people use a combination of the above.

Tips for being a good mentor

- Inspire people to achieve their goals. Don't let them simply copy your style.
- Make fewer statements and ask more questions. Coach more than advise.
- Be genuinely interested in the individual. Cultivate their strengths.
- Be authentic. Share what went well – but also share what didn't. The best learning is often in our mistakes.
- Be accessible.
- Don't always wait to be asked. Reach out to others.
- Seek mentoring for yourself. Model self awareness and learning.

*Things do not change
We change
- Thoreau*