Building on a legacy of trainee excellence

Jessica Simmons receives
2014 Harold W. Casey Scholarship Award

Dr. Jessica Simmons became the most recent trainee from The Ohio State University Combined Veterinary Pathology Residency / Graduate Program to be awarded the Harold W. Casey Scholarship by the American College of Veterinary Pathologists (ACVP). Jessica earned her PhD in the laboratory of Dr. Thomas Rosol this spring where she investigated Wnt signaling in prostate cancer bone metastasis. Soon she will be starting a position with Settle Genetics, Inc. which develops innovative antibody-based therapies for the treatment of cancer. The prestigious Casey award was established in 1993 and has been awarded to 19 outstanding individuals training in the field of pathology. Since its inception, nine Ohio State trainees have been recognized through the Harold W. Casey Scholarship for their excellence in training.

The Department of Veterinary Biosciences (VBS) has long been recognized for its unique role in providing post-DVM trainees with rigorous training in comparative pathology and biomedical research. In 2007, a review of the department by Ohio State’s Office of Academic Affairs noted that graduate training in VBS was “unquestionably recognized as amongst the very best programs of its type at both the national and international levels”. The Combined Pathology Residency / Graduate Program now serves as one of the key components of the college wide graduate program in Comparative and Veterinary Medicine. Since 2001, 42 anatomic pathology residents and 13 clinical pathology residents have matriculated through the program. Of these, 75% have also completed a PhD as part of their combined training program. Over 96% of matriculated trainees have attempted the ACVP Board Certification examination resulting in a cumulative pass rate of 89% with an additional 5% anticipated to sit for the completion of the exam in 2015.

The Combined Pathology Residency / Graduate Program has a nationally and internationally renown track record for training board-certified comparative and translational scientists. This is evidenced by the recruitment of our trainees for faculty & administrative academic appointments and positions within biotechnology & pharmaceutical companies, research contract & support laboratories, and diagnostic laboratories.
A multi-institutional investigative team of the college’s Center for Retrovirus Research and members of the OSU and Washington University Comprehensive Cancer Centers have been awarded a $8.6 million program project grant (PPG) from the National Cancer Institute to investigate retroviral models of cancer (2014-2019). This grant is the third 5-year segment initially funded in 2003, which cumulatively totals more than $29.5 million, making it the largest single grant in the college’s history.

The PPG is designed to foster synergistic interactions between laboratories working to characterize mechanisms that influence the development of cancer. This grant will utilize the human T-cell leukemia virus type 1 (HTLV-1) T-cell immortalization model and the humanized immune system (HIS) mice or Tax transgenic mice to discover how microenvironmental, cellular, and viral factors cooperate to promote development of cancer. The findings will identify unique targets for diagnosis and treatment of human T-cell leukemia virus (HTLV-1) infection and adult T-cell leukemia and related leukemia/lymphoma.

The college’s Center for Retrovirus Research is an international leader in the study of retrovirology, which includes examining the composition, pathogenesis and development of retroviruses as well as analyzing the many issues surrounding the prevention and treatment of retroviral diseases in both humans and animals.

Read more: [http://vet.osu.edu/retrovirus-research/program-project-grant](http://vet.osu.edu/retrovirus-research/program-project-grant)
International Veterinary Renal Pathology Service

The International Veterinary Renal Pathology Service (IVRPS) is a joint collaborative effort between The Ohio State University and Texas A&M University. The mission of the IVRPS is to improve health care for individual patients with kidney disease and generate new knowledge about renal diseases in animals by expertly performing thorough pathologic evaluations of kidney specimens obtained from dogs and cats, as well as other animals.

Co-Directors Drs. Rachel Cianciolo (Ohio State), Mary Nabity (TAMU), and George Lees (TAMU) evaluate over 150 renal biopsies per year, predominantly from small animals with clinical evidence of glomerular disease. All samples are evaluated with a panel of special stains, immunofluorescence to detect immune complex deposits and transmission electron microscopy for identification of deposits and optimal evaluation of podocytes and glomerular basement membrane.

The IVRPS has established a database of their findings to facilitate retrospective and prospective investigations to advance understanding of the causes, treatment, and prevention of renal diseases in dogs, cats, and other animals.

In addition, Dr. Cianciolo has also established a collaborative Nephropathology Rounds that incorporates veterinary pathology residents, medical residents, and faculty colleagues from Ohio State, Texas A&M, North Carolina State and supporting institutions.

Membranoproliferative glomerulonephritis (MPGN) diagnosed in a dog by the IVRPS. Left, PAS stain demonstrates glomerular hypercellularity and thickened capillary wall; right, immunofluorescence for IgG verifies that the histologic lesions are due to immune complex deposition.

You can’t connect the dots looking forward; you can only connect them looking backwards. So you have to trust that the dots will somehow connect in your future.

– Steve Jobs
Spotlights: Discovery and Scholarship

**Publication spotlight: Nucleoside antagonist reduces lung injury in mouse influenza model**

The lab of Dr. Ian Davis has used a mouse model to show that infection with influenza A increases production of adenosine in the lungs resulting in activation of adenosine receptors, recruitment of innate immune cells, and development of acute lung injury. Treatment with an adenosine receptor antagonist reduced the severity of lung injury in these mice. Because antiviral drugs are of limited efficacy in patients hospitalized for influenza virus-induced respiratory failure, further development of treatments to inhibit adenosine generation or receptor activation provide potential for alternative mechanisms for the treatment of patients with influenza. Journal of Virology [http://www.ncbi.nlm.nih.gov/pubmed/24965449](http://www.ncbi.nlm.nih.gov/pubmed/24965449)

**Publication spotlight: Electrical remodeling in right ventricular hypertrophy**

In people, right ventricular hypertrophy (RVH) is associated with high rates of mortality due to pulmonary hypertension and ventricular fibrillation. To better understand the mechanisms of cardiac arrhythmias, the lab of Dr. Robert Hamlin assessed cardiac remodeling and electrical function in rabbits with right ventricular hypertrophy. They identified multiple changes in electrical, functional, and anatomical remodeling including changes in both diastolic and systolic functions, transmural dispersion of repolarization, epicardial monophasic action potentials, and increased expression of hERG mRNA (a potassium channel). Journal of Pharmacological and Toxicological Methods [http://www.ncbi.nlm.nih.gov/pubmed/25305588](http://www.ncbi.nlm.nih.gov/pubmed/25305588)

**Publication spotlight: Maternal antibodies: clinical significance, mechanism of interference with immune responses, and possible vaccination strategies**

Measles virus is a highly contagious virus that, world wide, accounts for nearly 170,000 deaths each year. The disease is of particular concern in young children, particularly in developing countries. Nursing infants often receive maternal antibodies that inhibit the ability of vaccines to establish an immune response. As the infant grows, these antibodies decrease leaving young children susceptible to infection. Similar vaccine inhibition occurs with a number of infectious diseases. Working independently and with collaborators, the lab of Dr. Stefan Niewiesk is uniquely poised to develop vaccine strategies that may be effective against these diseases in infants and neonates. Their studies investigate the transmission of viral infections such as measles virus, examines how human and veterinary vaccines can be inhibited by maternal antibodies, and tests the efficacy of vaccine strategies. Frontiers in Immunology [http://journal.frontiersin.org/journal/10.3389/fimmu.2014.00446/full](http://journal.frontiersin.org/journal/10.3389/fimmu.2014.00446/full)

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*All meaningful & lasting change starts first in your imagination and then works its way out. Imagination is more important than knowledge.*

- Albert Einstein
Sharing new knowledge


*We don’t accomplish anything in this world alone …. and whatever happens is the result of the whole tapestry of one’s life and all the weavings of individual threads from one to another that creates something.* – Sandra Day O’Connor
In the news

Alumni and faculty spotlight!

Three VBS alumni (2 of which are current faculty members) attended and participated in the 7th Research Triangle Park Rodent Pathology Course September 21-23, 2014. This year the course focused on fundamental and emerging issues of rodent endocrine pathology including the pituitary, pineal, thyroid, parathyroid and adrenal glands, as well as the pancreatic islets and the gastrointestinal neuroendocrine system.

Dr. Thomas J. Rosol was the keynote speaker, delivering a presentation entitled *Endocrine Pathology of Calcium Regulating Hormones: From Metabolism to Bone Metastasis*.

Dr. Rosol also spoke about *Pathology and Chemically-Induced Lesions of the Rodent Pituitary Gland*.

Dr. Richard Peterson II, a 2003 alumnus of our Combined Pathology Residency/PhD program is currently the Director of Regulatory and Discovery Pathology at GlaxoSmithKline. Dr. Peterson served as Program Co-Chair and gave a talk entitled *Pathophysiology and Toxiologic Pathology of the Endocrine Pancreas*.

Interactive case presentations were also delivered by:

**Dr. Krista La Perle**: *Subcapsular proliferative lesions of type A and B cells in the mouse adrenal gland*

**Dr. Richard Peterson**: *Chemically-induced thyroid follicular lesions*

In the networking world, it is not who you know. It’s who knows you.
Robyn Henderson
Did you know?

*Veterinary Pathology* has instituted a new feature of podcasts for select articles to increase interest in the journal and its manuscripts. The laboratory of Dr. Thomas Rosol recently had the manuscript, *Tumor microenvironment regulates metastasis and metastasis genes of mouse MMTV-PymT mammary cancer cells in vivo*, accepted for publication and chosen for one of the inaugural podcasts. The lead author was Jillian Werbeck, PhD, recent graduate from the Comparative and Veterinary Medicine graduate program at Ohio State. Dr. Rosol was interviewed by the podcast editor Dr. Leah Schutt and a representative of Sage publishers. You can find more information and a list of currently available podcasts at [http://vet.sagepub.com/site//misc/Index/Podcasts.xhtml](http://vet.sagepub.com/site//misc/Index/Podcasts.xhtml)

**Beyond the classroom!**

Introducing future veterinarians to our areas of the profession occurs in and out of the curriculum! Some recent efforts include:

**Dr. Krista La Perle** was invited to present to the Student Chapter of the American College of Veterinary Pathologists at her alma mater, North Carolina State University. Her talk, entitled *Inside the Pathologists Studio with an NCSU Alumna*, covered her experiences before, during and after veterinary school en route to her career as an academic laboratory animal pathologist and Director of the Comparative Pathology & Mouse Phenotyping Shared Resource.

**Dr. Duncan Russell** returned to Ohio State for a brief visit and was invited to present the *State of the Union: diagNOstic Pathology in the Pacific Northwest* to the Pathology Club.

**Dr. Nong Inpanbutr** was invited to present a lunch lecture on *the human-animal bond between elephants and their mahouts* to the Human-Animal Bond Club.

**Dr. Mary Jo Burkhard** was invited to present case rounds entitled *Hyperadrenocorticism and species differences* to members of Omega Tau Sigma.

**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

*What you leave behind is not what is engraved in stone monuments, but what is woven into the lives of others.*

– Pericles
how doctors think

How Doctors Think – is a good read by Dr. Jerome Groopman, the Dina and Raphael Recanati Chair of Medicine at Harvard Medical School, Chief of Experimental Medicine at Beth Israel Deaconess Medical Center, and staff writer for the New Yorker magazine. Dr. Groopman’s research has primarily focused on cancer and AIDS.

The concept for the book ‘How Doctors Think’ arose as Dr. Groopman began to recognize differences in how his generation was trained and approached diagnostic assessment compared to current trainees. The book goes further to examine the question of what goes on in the minds of doctors as they examine a patient, establish a diagnosis, and begin treatment.

As Dr. Groopman describes it, his generation ‘was never explicitly taught how to think as clinicians’. While rare clinicians might explain the thought process that led to their diagnosis or treatment plan, the majority of learning came by observing senior clinicians and trying to assimilate and model their approach.

In contrast, and likely in response to the previous ‘catch as you can’ model, current teaching methods have established a more structured approach using algorithms, decision trees, and evidence based medicine using statistically proven data.

Dr. Groopman argues that while a uniform approach for certain diagnostic tests and treatments may be helpful, rigidly relying on evidence-based medicine and algorithms risks removing the medically trained scientific mind from the decision process.

Statistics focus on the population, not the individual. However, except for outbreaks and population health initiatives, patients tend to arrive as individuals. While, evidence-based data should complement medical knowledge & personal experience, identifying the treatment that best fits the needs of the patient (and the client in our profession) requires additional effort.

Dr. James E. Lock, chief of cardiology at Boston Children’s Hospital describes it well: “There are aspects to biology & physiology that you just can’t predict. Deductive reasoning doesn’t work for every case. Sherlock Holmes is a model detective, but biology is not a theft or a murder where all the clues can add up neatly.”

Through a number of stories about diagnostic and treatment challenges, Dr. Groopman makes the case that there will be (or should be) a certain level of uncertainty of the experts.

So, what are some of the things we should be thinking in our assessment, diagnosis, and treatment of patients. In the box are a couple of key questions asked throughout the book that are useful reminders.

**Diagnostic questions to ask:**

- What else could it be?
- Is there anything that doesn’t fit?
- Is it possible there is more than one problem?

Be the change you wish to see in the world.

- Gandhi