



Department of Pathology

Annual Report

2015

Paul G. Koles, MD, Chair Pathology
Associate Professor of Pathology and Surgery

For the period including
January 1, 2015 — December 31, 2015

1. Statement from the Chair

The Boonshoft School of Medicine Department of Pathology serves the university and community in three interwoven domains:

1. education of medical students, residents, faculty, and clinicians
2. research in translational and clinical sciences and medical education
3. diagnostic pathology services for patients and their physicians

Education

Our three pathologist-educators devote over 50% of their time to support the professional development of Boonshoft SOM students and residents. We focus on developing habits of self-directed inquiry and critical thinking skills in our students—essential characteristics of competent physicians. We strive to model and facilitate collaborative learning among students and faculty. Learning resources, modules of instruction, courses, and assessment tools are designed and delivered in cooperation with basic science and clinical faculty in an interdisciplinary manner. An experienced group of four additional full-faculty and 32 clinically affiliated faculty engage our students and residents, enhancing the breadth and depth of education in core courses and elective experiences.

Research

Diverse research and scholarly activities characterize our faculty. Drs. Lauf, Boivin, and Dudley do basic and translational science, the latter two directing the animal research facility that serves all faculty of Wright State University. Our four pathologists focus on clinical and medical education research, often accomplished in collaboration with students and/or residents. Scholarship in medical education supports evidence-based analysis and implementation of best-practice teaching and learning strategies.

Diagnostic Pathology Services

Clinical services are provided by all faculty in the pathology department. Our full-time faculty specialize in dermatopathology (Dr. Krishnamurthy), clinical microbiology (Dr. Miler), pediatric pathology (Dr. Mirkin), and autopsy pathology (Dr. Koles). Our clinically affiliated faculty practice all aspects of anatomic and clinical pathology, including surgical pathology, cytopathology, forensic pathology, hematopathology, molecular diagnostics, transfusion medicine, clinical chemistry, and clinical microbiology.

Paul G. Koles, MD

2. Programs/Divisions

Name of Division or Program	Director	Dates
Laboratory Animal Resources	Greg Boivin, DVM	2008-present

3. Fully Affiliated Faculty

Name and Academic Position	Clinical Interests	Research Interests
Greg P. Boivin, MS, DVM Professor of Pathology and Orthopaedic Surgery	Laboratory animal medicine	Translational science, orthopedics
Emily S. Dudley, DVM Assistant Professor of Pathology	Laboratory animal medicine	Education in animal model research and safety
Paul G. Koles, MD Associate Professor of Pathology and Surgery	Autopsy pathology	Medical education
Smita Krishnamurthy, MD Assistant Professor of Pathology and Dermatology	Dermatopathology	Dermatopathology, medical education
Peter K. Lauf, MD University Professor Professor of Pathology and Pharmacology/Toxicology Professor and Chair Emeritus, Physiology and Biophysics	n/a	Cell membrane physiology and biophysics
Kennon A. Miller, MD Assistant Professor of Pathology	Clinical microbiology	Clinical microbiology, medical education
L. David Mirkin, MD Professor of Pathology and Pediatrics	Pediatric anatomic and clinical pathology	Pediatric pathology

4. Teaching

Baccalaureate [any course for a bachelor's degree]

Dr. Dudley:

Bio 3700 bioethics, use of animals in research; Bio 4010 animal physiology, introduction to immunology; Psy 4020, methods in animal research; faculty mentor for Robert Johnson, BS 2015

Dr. Boivin:

Bio 3700 bioethics, use of animals in research; faculty mentor for Honoree' Brewton and Aliane Kubwimana, 2015 (WSU STREAMS)

Graduate students, including thesis supervision [master's, doctor's post-doctoral]

Dr. Boivin:

PTX 775, integrative pharmacology/toxicology research methods, graduate thesis committee member for Nicole Mason PhD 2008, Amanda Huber PhD 2010, Nathaniel Dymont MS 2010, Hari Somineni MS 2013, Mahesh Kodali MS 2015

Dr. Dudley:

PTX 775, integrative pharmacology/toxicology research methods, aseptic surgery technique, pain and distress in laboratory animals; M&I 8000, graduate microbiology seminar, scientific misconduct in animal research. graduate thesis committee for Amie Schroder, MPH 2007

Dr. Lauf:

graduate thesis committee: Ameet Chimote, Ph.D 2009, Michael Lepera MS 2011 (director), Nagendra Ravilla MS 2013, Neelima Sharma, Ph.D. 2014 (co-advisor)

Dr. Koles:

graduate thesis committee for Nathan Weir PhD 2012

Undergraduate medical education [medical school]

Dr. Boivin:

Principles of Disease (MS1)

Dr. Dudley:

Principles of Disease (MS1)

Dr. Krishnamurthy:

Principles of Disease (MS1); Pathobiology and Therapeutics, Digestive, Musculoskeletal and Integument, Endocrine, Reproductive, Cardiovascular, Respiratory, and Renal Systems (all MS2); elective in dermatopathology (MS4).

Dr. Miller:

Principles of Disease (course director, MS1), Pathobiology and Therapeutics, Hematologic, Digestive, Endocrine, and Cardiovascular Systems (all MS2)

Dr. Mirkin:

elective in pediatric pathology (MS4).

Dr. Koles:

Principles of Disease (MS1), Pathobiology and Therapeutics, Medical Neuroscience, Mind (behavioral science), Hematologic, Digestive, Musculoskeletal and Integument, Endocrine, Reproductive, Cardiovascular, Respiratory, and Renal Systems (all MS2); electives in thyroid cytopathology and medical education research (MS4)

Graduate medical education [residents, fellows]

Dr. Krishnamurthy:

histopathology of skin diseases, BSOM dermatology residency, 2012-present

Dr. Mirkin:

elective in pediatric pathology, BSOM pediatrics residency
Continuing medical education at Childrens Medical Center (grand rounds, teaching conferences)

Dr. Koles:

Surgical Pathology of the Gallbladder and Extrahepatic Bile Ducts with Clinical Correlations.
Dept. of Surgery Grand Rounds, Boonshoft SOM, Dayton, Ohio, February 4, 2015.

Other

Dr. Dudley: Training Provided to Faculty, Staff, and Students (WSU)

Laboratory Animal Techniques Laboratory	2014-present
Aseptic Surgery Technique	2011-present
Pain Assessment in the Rat	2010-present
Pain Assessment in the Mouse	2009-present
Controlled Substance Use in Research Animals	2008-present
Introductory Course in Laboratory Animal Care and Use	2007-present
Anesthesia Monitoring and Record Keeping	2007-present

Dr. Boivin:

Pathway to Health Professions, Annual Invited presentation on Veterinary Medicine Careers,
Wright State University For high school students, 2011-2016.

Dr. Koles:

introduction to pathology career, Horizons in Medicine for Dayton high school students, 2012-present.

5. Scholarly Activity

FUNDED GRANTS

Boivin G, PI: GLAS: Comparison of Physiologic Responses to Different Mouse Euthanasia Methods 7/1/15-12/15/16 (Principal Investigator) Total Direct: \$22,783

Boivin G, PI: Devicor Mammotome Biopsy Study 11/1/10-10/31/16. Total Direct: \$180,000 (contract)

PUBLICATIONS

PAPERS IN REFEREED JOURNALS

Dr. Boivin:

Bertaux-Skeirik N, Feng R, Schumacher MA, Li J, Mahe M, Engevik AC, Javier JE, Peek Jr RM, Ottemann K, Orian-Rousseau V, **Boivin GP**, Helmranth M, Zavros Y. Cd44 plays a functional role in *Helicobacter pylori*-induced epithelial cell proliferation. PLOS Pathogen. 11(2):e1004663. Doi:10.1371/journal.ppat.1004663. 2015. PMID: 25658601

Boivin GP, Na J. The laboratory animal workforce has a calling for their job. Lab Anim Sci Pro. 2(6):35-36, 2015.

McIlhatton MA, Murnan K, Carson D, **Boivin GP**, Croce CM, Groden J. Genetic manipulation of homologous recombination in vivo attenuates intestinal tumorigenesis. *Cancer Prevention Research*. 8(7):650-656, 2015. PMID: 25908507.

Boivin GP, Bottomley M, Grobe N. C57BL/6N mice physiologic response to witnessing euthanasia. *JAALAS In Press*, 2015.

Boivin GP, Wyatt C, Dudley ES, Bottomley M, Grobe N. Physiologic, behavioral, and histologic response to different CO₂ chamber replacement rates in C57BL/6N male mice. *JAALAS In Press*, 2015.

Grobe N, Bottomley M, Dudley ES, Wyatt CN, **Boivin GP**. Physiological, Behavioral, and Histological Responses to Different CO₂ Chamber Replacement Rates in C57BL/6 Male Mice. *Journal of the American Association of Laboratory Animal Science* (in press).

Dr. Dudley:

Dudley ES, Schiml PA, Hennessy MB. (2015) Effects of repeated petting sessions on leukocyte counts, intestinal parasite prevalence, and plasma cortisol concentration of dogs housed in a county animal shelter. *J Am Vet Med Assoc* (in press).

Dr. Krishnamurthy:

Gandhi RK, Ulman CA, Kellawan KK, Olson TG, Trevino JJ, **Krishnamurthy S** **corresponding author**. Chronic cutaneous blastomycosis. *Int J Clin Dermatol Res*. 015;3(4):68-70.

Dr. Lauf:

Peter K. Lauf, Tariq Alqahtani, Karin Flues, Jaroslaw Meller and Norma C. Adragna. Interaction between Na-K-ATPase and Bcl-2 proteins BclXI and Bak. *Am J Physiol Cell Physiol*. 308, C51-60, 2015.

Norma C. Adragna, Nagendra Babu Ravilla, **Peter K. Lauf**, Gulnaz Begum, Arjun Khanna, Dandan Sun, and Kristopher T. Kahle. Regulated phosphorylation of the K-Cl cotransporter KCC3 is a molecular switch of intracellular, potassium content, and cell volume homeostasis. *Frontiers in Cellular Neurosciences*, 9: doi 103389/fncel, 00255- June 2015

Dr. Koles:

Klein J, Baxstrom K, Donnelly S, Feasel P, **Koles P** (2015). A Fatal Twist: Volvulus of the Small Intestine in a 46-Year-Old Woman. *Case Reports in Medicine*, Volume 2015, Article ID 391093, <http://dx.doi.org/10.1155/2015/391093>.

BOOKS, CHAPTERS, REVIEWS

Dr. Boivin:

Boivin GP. Update on transgenic animal technology. *Lab Anim (NY)*. 44(6)209, 2015. PMID: 25989553

Dr. Lauf:

K⁺-Cl⁻ cotransporters, cell volume homeostasis and neurological disease. Kristopher T. Kahle^{1,2#}, Arjun R. Khanna, Seth L. Alper, Norma C. Adragna, **Peter K. Lauf**, Dandan Sun, and Eric Delpire. *Frontiers in Cellular Neurosciences*, 2015, TRMOME

PUBLISHED ABSTRACTS

Dr. Boivin:

Bertaux-Skeirik N, Feng R, Schumacher MA, Li J, Mahe MM, Engevik AC, Peek Jr RM, Ottemann K, Orian-Rousseau V, **Boivin GP**, Helmrath MA, Zavros Y. CD44 Plays a Functional Role in *Helicobacter Pylori*-Induced Epithelial Cell Proliferation. Exp Biol, March, 2015.

Boivin GP*, Roberts R, Maabe I, Hunter SA. Effect of high fat diet and forced exercise on male C57BL/6 Achilles tendon biomechanical properties. Poster #1383. ORS, March 28-31, 2015.

Boivin GP*, Grobe N. Physiologic effects of common husbandry procedures in mice. District V AALAS May 13-15, 2015.

Boivin GP*, Bottomley M, Grobe N. Physiologic response of C57BL/6 mice to different CO₂ euthanasia chamber displacement rates. District V AALAS May 13-15, 2015.

Boivin GP*, Duckro S. Comparison of nesting material use by female C57BL/6 mice. District V AALAS May 13-15, 2015.

Boivin GP*, Grobe N. Physiologic effects of common procedures in male C57BL/6 mice. AALAS Nov 1-5, 2015.

Duckro S, Grunden B, **Boivin GP***. Comparison of nesting material use by female C57BL/6 mice. AALAS Nov 1-5, 2015.

Boivin GP*, Bottomley M, Grobe N. Physiologic, behavioral, and histologic response to different CO₂ chamber replacement rates in C57BL/6N male mice. AALAS Nov 1-5, 2015.

Boivin GP*. Carbon Dioxide (CO₂) euthanasia: Room for refinement? Telemetric, behavioral, and histologic endpoints evaluating various CO₂ flow rates in mice. AALAS Nov 1-5, 2015.

Dr. Lauf:

Peter K Lauf, Tariq Alqahtani, Chandra Maharjan, Norma C Adragna. On the Interaction of the Na/K Pump ATPase with Pro-survival and Pro-apoptotic Bcl-2 Proteins. Exp. Biol. 2015, Boston, MA, Program 669.1

Norma C. Adragna, Nagendra Babu Ravilla, **Peter K. Lauf**, Gulnaz Begum, Arjun Khanna, Dandan Sun, and Kristopher T. Kahle. The Phosphorylation State of KCC3 Encodes a Potent Molecular Switch of Transporter Activity, Cell Volume, and K⁺ Content. Exp. Biol. 2015, Boston, MA, Program 845.19

Chandra Maharjan, Norma C. Adragna and **Peter K Lauf**. Demonstration of the interaction between the Na⁺/K⁺ ATPase pump and Bcl-2 proteins Mcl-1 and Bax by coimmunoprecipitation and immunocytochemical colocalization. 2015, Ohio Valley Society of Toxicology 2015 Summer meeting. Chandra Maharjan, Norma C. Adragna and Peter K Lauf.

SIGNIFICANT PRESENTATIONS

Dr. Boivin:

Brewton H, **Boivin GP**. Alternative Nesting Materials for the Environmental Enrichment of C57BL/6 and BALB/c Mice. Annual Biomedical Research Conference for Minority Students, Nov 11-14, 2015; 5th Annual Mid-Atlantic Consortium Center for Academic Excellence (MACCAE) Conference, Baltimore, MD, November 17, 2015

Dr. Lauf:

Invited Lecture: The Na/K ATPase-Bcl-2 Protein Relationship: Oligomeric Biosensor in the Cell's Destiny? May 18, 2015, University of Cincinnati, Dept. of Molecular and Cellular Physiology.

Dr. Koles:

Koles P: Creating Effective Application Exercises. Faculty development workshop, 3 hours, Liberty University, College of Medicine, Oct. 2, 2015, Lynchburg, Virginia.

Koles P: Invited plenary lecture: Educating for critical thinking skills: too little now but never too late. 2nd SingHealth-Duke-NUS Education Conference, September 25, 2015, Singapore.

Koles P, Tam HT: Creating Effective Application Exercises for Team-Based Learning. 2nd SingHealth-Duke-NUS Education Conference, September 23, 2015, Singapore.

Koles P, Smith A: Facilitation Skills for Team-Based Learning. Faculty development workshop, Unaizah College of Medicine, Qassim University, September 6, 2015, Unaizah, Saudi Arabia

Koles P: Team-Based Learning, How and Why It Works and Designing Effective Modules for Team-Based Learning, faculty development workshops (6 hours). University of Connecticut School of Medicine, June 9, 2015, Farmington, Connecticut.

Feigenbaum G, Goedde R, Ofstad W, Sabina R, Sinclair M, **Koles P:** Becoming a Trainer-Consultant in Team-Based Learning, 6 hour workshop. Team-Based Learning Collaborative 14th annual conference, March 5-7, 2015, St. Petersburg, Florida.

Koles P, Burns C: Peer Feedback and Evaluation: All About Accountability, 2 hour workshop. Team-Based Learning Collaborative 14th annual conference, March 5-7 2015, St. Petersburg, Florida.

Dr. Krishnamurthy:

Schloemer J, Dundon S, **Krishnamurthy S**, Shamma HN, Rubin M. "A case of lymphomatoid papulosis masked by atopic dermatitis." 10/15 at the Ohio Dermatological Association meeting, Columbus, OH.

6. Summary of Service Activities

STUDENT ADVISING

Dr. Krishnamurthy

- academic counseling and study strategies, years 1 and 2
- planning intramural and extramural electives, choosing a residency, careers in pathology
- faculty advisor, pathology career interest group

Dr. Koles

- academic counseling and study strategies, years 1 and 2
- USMLE steps 1 and 2 preparation
- remedial mentoring for students failing USMLE step 1 or step 2
- planning intramural and extramural electives, choosing a residency, careers in pathology

COMMITTEE MEMBERSHIP/OFFICER

– Wright State University Boonshoft School of Medicine

Dr. Koles:

Boonshoft SOM Committee	Position	Dates
Wright Curriculum Steering Committee	voting member	2011-present
Foundations Clinical Medicine subcommittee	co-chair	2014-2015
Student Promotions Committee	voting member	2012-present
Faculty Curriculum Committee	voting member	2010-present
Executive Committee	voting member	2009-present
Biennium 1 subcommittee of FCC	member (appointed)	2002-present

Dr. Krishnamurthy

Faculty Curriculum Committee (10/2014-present)

Staying Alive Cardiovascular, Pulmonary, Renal Integrated Module Leadership Committee
(6/2015-present)

Problem Based Learning Case Writing Committee (8/2015-present)

LCME Self-Study Subcommittee 6, Co-Chair (12/2015-present)

Dr. Mirkin:

Admissions Committee, 2010-present

– Wright State University

Dr. Dudley:

WSU Institutional Animal Care and Use Committee, Alternate Member, 2006-present

WSU Institutional Biosafety Committee, Member, 2007-2009, 2010-present

– Wright State Physicians

Dr. Koles:

voting member, WSP Board of Directors, 2010-present

– Hospital or affiliated institution [name]

Dr. Dudley:

Dayton Veterans Affairs, Institutional Animal Care and Use Committee, Member, 2015 – present

– National

Dr. Dudley:

Ad hoc Manuscript Reviewer, Journal of Applied Animal Welfare Science, 2015

Ad hoc Manuscript Reviewer, Macedonian Veterinary Review, 2015

Dr. Boivin:

Reviewer: Acta Biomaterialia, Physiology & Behavior, Comparative Medicine, Journal of Orthopaedic Research, Journal of the American Association for Laboratory Animal Science, Contemporary Topics in Laboratory Animal Science, PLOS one, Nanomedicine, Journal of Rehabilitation Research & Development.

Editor-in-Chief: Journal of Contemporary Orthopaedic Research 2013-current

Editorial Board: Comparative Medicine 2001-current

American College of Laboratory Animal Medicine Foundation:

Board Member 2000-2015;

Scientific Director 2005-2015;

Chairman 2009-2015;

Editorial Board: Journal of the American Association for Laboratory Animal Science 2001-current

Dr. Lauf:

Editorial Board: Cellular Physiology & Biochemistry. Karger. Switzerland.

Reviewer: Am J Physiology, Cell, BMC Cancer, Acta Physiologica Scandinavica, Toxicon J Membrane Biology, Behavioral Brain Research, PLOS ONE, Medicinal Chemistry, Cytochemistry and Histochemistry

Dr. Koles:

Reviewer: Academic Medicine, Advances in Physiology Education, Teaching and Learning in Medicine, MedEdPortal (AAMC)

National Board of Medical Examiners

- multiple roles, 2009-present
- Pathology and Genetics Item Writing Committee, 2012-present
- Co-chair, Pathology and Genetics Item Writing Committee, 2015-present
- Item Review Committee, Step 1 USMLE exam, 2015-present

Team-Based Learning Collaborative

- multiple roles, 2007-present
- Chair, Training and Certification Committee, 2012-present

International Association of Medical Science Educators

- membership committee, 2012-present

Dr. Krishnamurthy:

Editorial Board Member: International Journal of Clinical Dermatology & Research, SciDoc Publishers, peer reviewed open access journal, 6/2015-present

External Reviewer, AAMC 2015 National Medical Education Meeting Submissions, 4/2015 (5 research and emerging concepts abstracts reviewed)

Peer Reviewer, AAMC 2016 Medical Education Meeting & Central Group on Educational Affairs Regional Meeting, 11/2015-1/2016

Peer Reviewer, MedEdPORTAL publications: AAMC online medical education resource; **4/17/14-present.**

Service to Community

Dr. Boivin:

Pathway to Health Professions, Annual Invited presentation on Veterinary Medicine Careers, 2011-present

Dr. Dudley:

Member, Greene County 4-H Poultry Committee, 2011-present

Secretary, Greene County 4-H Poultry Committee, 2013-present

Judge, Bellbrook Middle School Science Fair

Dr. Koles:

Volunteer, Blessings in a Bag food supplement program for children in Miamisburg City Schools

Dr. Krishnamurthy:

Ohio Responds Medical Reserve Corps Volunteer: 3/2013 to present

American Red Cross, Dayton Chapter, Volunteer, 2/15 to present (2 hours/month)

American Red Cross, Save a Life Saturday, Citizen CPR Instructor, 3/28/15 (3 hours)

8. Honors and awards [Faculty or staff]

Dr. Krishnamurthy:

Teaching Excellence in Pre-Clinical Curriculum, 2015, Boonshoft School of Medicine

Dr. Koles:

Teaching Excellence in Pre-Clinical Curriculum, 2004-2014 (eleven consecutive years), Boonshoft School of Medicine

9. Hosted events [CME, etc.]

3rd Annual Visiting Professorship in Pathology, Clayton A. Wiley, MD, PhD: The Neuropathology of Emergent Infections. Two lectures, March 20, 2015.