



Department of Pathology

Annual Report

2016

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

For the period including
January 1, 2016 — December 31, 2016

1. Statement from the Chair

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

1. education of medical students, residents, faculty, and clinicians
2. longitudinal development and quality improvement of the curriculum
3. research in medical education, clinical science, and translational science
4. 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, residents, and peer faculty. We strive to develop habits of intellectual curiosity, self-directed inquiry and critical thinking in our students—essential characteristics of competent physicians. We strive to model those habits while facilitating collaborative learning among students and faculty. We have developed expertise in the creation of self-directed learning resources, modules of interactive instruction, management of entire courses, and assessment tools that measure both knowledge and professional behavior. These activities depend on close cooperation with basic science and clinical faculty, modeling an interdisciplinary approach to medical education. An experienced group of four additional full-time faculty and 32 clinically affiliated faculty enhance the breadth and depth of education in both required foundational science courses and elective experiences.

Development of Curriculum

The design and implementation of our new WrightCurriculum, launching in July, 2017, has occupied a large amount of our creative energy over the last three years (2014-2016). Drs. Krishnamurthy, Miller, and Koles have served in leadership and supportive roles throughout this process. We will continue our commitment to the continuous improvement of the new curriculum.

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 mainly on clinical and medical education research, often accomplished in collaboration with students, residents, or clinical faculty. Our scholarship in medical education is driven by evidence-based analysis of quantitative and qualitative data.

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. Miller), 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, development of medical devices
Emily S. Dudley, DVM Assistant Professor of Pathology	Laboratory animal medicine	Education in animal model research, including safety and ethics
Paul G. Koles, MD Associate Professor of Pathology and Surgery	Autopsy pathology	Medical education; clinical pathology; supportive role in translational science
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 4010 animal physiology, introduction to immunology; Psy 4020, methods in animal research;

Dr. Boivin:

Bio 370 bioethics, use of animals in research

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

Dr. Boivin:

Graduate thesis committee, Mahesh Kodali MS 2015

Dr. Dudley:

Microbiology Seminar, M&I 8000; Lecture: Scientific Misconduct in Animal Research

Dr. Koles:

Graduate thesis committee, 2015-present, Denise Kramer, MS, 2015-2016, candidate for PhD

Undergraduate medical education [medical school]

Dr. Dudley:

Principles of Disease (MS1); Zoonotic Diseases, Human Parasitology

Dr. Krishnamurthy:

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

Dr. Miller:

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

Dr. Mirkin:

Elective in pediatric pathology (MS4).

Dr. Koles:

Principles of Disease (MS1), Pathobiology and Therapeutics, Medical Neuroscience, Mind (behavioral science), Hematology, 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 Colon and Anus with Clinical Correlations. Dept. of Surgery
Grand Rounds, Boonshoft School of Medicine, Dayton, Ohio, February 20, 2016.

Other education

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.

5. Scholarly Activity

FUNDED GRANTS

Boivin G, PI: GLAS: Comparison of Physiologic Responses to Different Mouse Euthanasia
Methods 7/1/15-6/15/17) Total Direct: \$22,783

Boivin G, PI: Devicor Mammotome Biopsy Study 11/1/10-10/31/19. Total Direct: \$210,000
(contract)

PUBLICATIONS

PAPERS IN REFEREED JOURNALS, 2016 ONLY

Dr. Boivin:

Otaño-Rivera, Boayke, A, Grobe N, Almutairi MM, Kursan S, Mattis LK, Castrop H, Elased KM,
Boivin GP, Di Fulvio M. A highly efficient strategy to determine genotypes of genetically
engineered mice using genomic DNA purified from hair roots. *Laboratory Animals*. 5-9-2016,
doi:10.1177/0023677216646088 PMID:27166392.

Dudley ES, Johnson R, French D, **Boivin GP**. Effects of topical anesthetics on behavior, plasma
corticosterone, and blood glucose levels after tail biopsy of C57BL/6NHSD mice. *J Am Assoc Lab
Anim Sci* 55(4):443-450, 2016 PMID: 27423152.

Boivin GP, Bottomley MA, Grobe N. Responses of male C57BL/6N mice to observing the
euthanasia of other mice. *J Am Assoc Lab Anim Sci*. 55(4):406-411, 2016 PMID:27423146.

Boivin GP, Wyatt C, Dudley ES, Bottomley MA, Grobe N. Physiological, behavioral, and
histological responses of male C57BL/6N mice to different CO₂ chamber replacement rates. *J Am
Assoc Lab Anim Sci* 55(4):451-461, 2016 PMID: 27423153.

Mcilhatton MA, **Boivin GP**, Groden J. Manipulation of DNA Repair Proficiency in Mouse Models
of Colorectal Cancer. *Biomed Res Int*. Article ID 1414383,
<http://dx.doi.org/10.1155/2016/1414383>, 2016 PMID: 27413734.

Boivin GP, Markert RJ. Factors affecting the laboratory animal personnel calling for their work. *J Am Assoc Lab Anim Sci*, 55(6):769-774. 2016. PMID: 27931315.

Boivin JT, Dudley ES, **Boivin GP**. Chamber temperature changes during CO₂ euthanasia. *Lab Anim Sci Pro*, 4(4):33-35, Dec 2016.

Boivin GP. Obtaining certifications may yield tangible benefits. *Lab Anim Sci Pro*, 4(4):24-25, Dec 2016.

Allen MJ, Hankenson KD, Goodrich L, **Boivin GP**, von Rechenberg B. Ethical use of animal models in musculoskeletal research. *J Orth Res* 2016. doi: 10.1002/jor.23485 PMID:27864887.

Dr. Dudley:

Boivin JT, **Dudley ES**, Boivin GP. (2016) Chamber temperature changes during CO₂ euthanasia. *Laboratory Animal Science Professional*.

Dudley ES, Johnson RA, French DC, Boivin GP. (2016) Effects of topical anesthetics on behavior, plasma corticosterone, and blood glucose levels after tail biopsy of C57/BL/6NHSD Mice (*Mus musculus*). *Journal of the American Association of Laboratory Animal Science* 55(4):443-450.

Boivin GP, Grobe N, Bottomley M, **Dudley ES**, Wyatt CN, Grobe N. (2016) 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* 55(4):451-461.

Dr. Lauf:

Kahle CT, Khanna AR, Alper SL, Adragna NC, **Lauf PK**, Sun D, Delpire E (2015). K-Cl cotransporters, cell volume homeostasis, and neurologic disease. *Trends Mol Med* 21(8):513-523. Doi:10.1016/j.molmed.2015.05.008

Dr. Miller

Lai KK, Goynes HE, Hernandez-Gonzalo D, **Miller KA**, Tuohy M, Procop GW, Lamps LW, Patil DT (2016). *Cystoisospora belli* Infection of the Gallbladder in Immunocompetent Patients: A Clinicopathologic Review of 18 cases. *Am J Surg Pathol*. Aug;40(8):1070-4. doi: 10.1097/PAS.0000000000000660.

PUBLISHED ABSTRACTS

Dr. Boivin:

Boivin GP*, Markert RJ. Factors Affecting the Vocational Calling of Laboratory Animal Care and Research Employees. AALAS Oct 30-Nov 3, 2016.

Boivin GP*, Bottomley MA, Schiml PA, Goss L, Grobe N. Physiological, Behavioral, and Histological Responses to Different Euthanasia Methods in C57BL/6NTac Male Mice. AALAS Oct 30-Nov 3, 2016.

Dr. Krishnamurthy

Weir NM, **Krishnamurthy S**. Inflammatory linear verrucous epidermal nevus: hamartoma or linear psoriasis. *Am J Dermatopathol*. August 2016;38(8):e98-e105 (ABSTRACT). Poster presented at March 2016 International Society of Dermatopathology Meeting in Arlington, VA.

Tabb E, McCalip B, **Krishnamurthy S**. Giant solitary trichoepithelioma on the knee: case report and literature review. *Am J Dermatopathol*. August 2016;38(8):e98-e105 (ABSTRACT). Poster presented at March 2016 International Society of Dermatopathology Meeting in Arlington, VA.

Scholtz J, Sullivan M, **Krishnamurthy S**. Are standardized patient exams with melanoma moulages a more accurate reflection of medical student concept mastery than standard multiple-choice exams? JAAD. May 2016. 74(5), supplement 1: AB110. (ABSTRACT). Poster presented at the 2016 annual American Academy of Dermatology Meeting in Washington, DC

Dr. Lauf:

Maharjan CK, Heiny J, Adragna NC, **Lauf PK**. Pig Renal Na/K ATPase and Bcl-2 Proteins: A Co-Immuno-Precipitation Study. Society of Experimental Biology, April 2017, San Diego, California

SIGNIFICANT PRESENTATIONS

Dr. Boivin:

AVMA CO₂ Guidelines: Under Review. CBAALAS Midwest Conference. August 19, 2016.
Mouse euthanasia: a critical review of current practice. AALAS Webinar, August 23, 2016.

Dr. Dudley:

Tail Biopsy in Mice: Best Practices for Optimal Welfare. District 5, American Association of Laboratory Animal Science Annual Meeting, Cincinnati, OH, May 2016

Dr. Lauf:

Invited Lecture: Role of Bcl-2 Proteins and the Na/K Pump ATPase in the Cell's Fate. February 12, 2016, 6th Annual Conference of the Puerto Rico Physiological Society, University of Puerto Rico Medical Sciences Campus.

Invited Lecture: The Na/K ATPase Pump/Bcl-2 Protein Conundrum. 11th International Symposium on Cell Volume Regulation, August 15-18, 2016, Chicago, Illinois.

Dr. Koles:

Designing a TBL Module and Creating Effective Application Exercises; faculty development workshops (6 hours). United Arab Emirates University, Sept. 28-29, 2016, Al Ain, United Arab Emirates.

Designing Effect Modules for Team-Based Learning; Facilitation Skills for Team-Based Learning. Faculty development workshops, 6 hours, College of Osteopathic Medicine, Touro University, June 1-2, 2016, Vallejo, California

Cook S, Frost R, Goedde R, Ofstad W, **Koles P**: Becoming a Trainer-Consultant in Team-Based Learning, 6 hour workshop. Team-Based Learning Collaborative 15th annual conference, March 3-5, 2016, Albuquerque, New Mexico.

Koles P, Burns C: Peer Feedback and Evaluation: All About Accountability, 2 hour workshop. Team-Based Learning Collaborative 15th annual conference, March 3-5, 2016, Albuquerque, New Mexico.

6. Summary of Service Activities

STUDENT ADVISING

Dr. Krishnamurthy

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

Dr. Koles

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

Dr. Miller

- academic counseling and study strategies, years 1 and 2
- planning intramural and extramural electives, residency/career in pathology

COMMITTEE MEMBERSHIP/OFFICER

A. Boonshoft School of Medicine

Dr. Boivin

Research Committee, chair, 2014-current

Dr. Koles:

<u>Boonshoft SOM Committee</u>	<u>Position</u>	<u>Dates</u>
Wright Curriculum Steering Committee	voting member	2011-present
Foundations Clinical Medicine subcommittee	co-chair	2014-2015
Student Promotions Committee	voting member	2012-2016
Faculty Curriculum Committee	voting member	2010-2016
Executive Committee	voting member	2009-present
Origins I Module Steering Committee, WCSC	member	2015-present
Assessment and Evaluation Committee, WCSC	member	2016-present

Dr. Krishnamurthy

Faculty Curriculum Committee, 10/2014-present

Student Promotions Committee, 2016-present

Staying Alive Cardiovascular, Pulmonary, Renal Module Committee, 6/2015-present

Problem Based Learning Case Writing Committee, 8/2015-present

LCME Self-Study Subcommittee 6, Co-Chair, 12/2015-2016

Dr. Mirkin:

Admissions Committee, 2010-present

B. 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

C. Wright State Physicians

Dr. Koles:

Board of Directors, voting member, 2010-present

D. Hospital or Affiliated Institution

Dr. Dudley:

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

E. 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

Editorial Board: Journal of 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, member 2011-2014
- Co-chair, Pathology and Genetics Item Writing Committee, 2015-2016
- Item Review Committee, Step 1 USMLE exam, 2015-2016

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

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)

8. Honors and awards [Faculty or staff]

Dr. Dudley:

Board certification, American College of Animal Welfare, 2016

Dr. Krishnamurthy:

Certification, trainer-consultant in team-based learning, Team-Based Learning Collaborative, March, 2016

Dr. Koles:

Teaching Excellence in Pre-Clinical Curriculum, 2016, Boonshoft School of Medicine
Faculty Mentor Award, 2016, Boonshoft School of Medicine

9. Hosted events [CME, etc.]

Fourth Annual Visiting Professorship in Pathology: John R Goldblum, MD, Chair of Anatomic Pathology, Cleveland Clinic Foundation. Ancillary Diagnostic Techniques in the Diagnosis of Soft Tissue Tumors: A Pattern-Based Approach (afternoon lecture). Inflammatory Bowel Disease and IBD-Related Dysplasia: One Pathologist's Perspective (evening lecture). April 19, 2016.