

Friday, October 16

6:00 PM–8:00 PM **Registration**

Saturday, October 17

7:00 AM–7:00 PM **Registration**

12:00 Noon–7:00 PM **Speaker Ready Room**

STP Pre-Meeting CE Course 1

(Registration required)

8:00 AM–12:00 Noon

All Eyes Focused on Ocular Toxicology and Pathology

Co-Chairs: Brian J. Christian, PhD, DABT, Covance Labs, Inc., Madison, WI; and Margarita M. Gruebbel, DVM, PhD, DACVP, EPL, Inc., Research Triangle Park, NC

The eye is often a target organ in toxicology studies. In order to determine the toxicological significance of effects in the eye, it is important to understand the basic structure and function of ocular tissues. Designing protocols for ocular toxicology studies also requires knowledge of differences among the common laboratory species as well as current methods for evaluation of ocular structures and functions. This session includes detailed reviews of anterior and posterior segments of the eye of common laboratory species; different tools used to determine treatment-related effects in ocular structures; and spontaneous and induced changes observed in each segment of the eye.

Comparative Anatomy and Histology of the Eye of Laboratory Animals

Margarita M. Gruebbel, DVM, PhD, DACVP, EPL, Inc., Research Triangle Park, NC

“Clinical” Assessment of the Anterior Segment in Laboratory Animals

Robert J. Munger, DVM, DACVO, Animal Ophthalmology Clinic, Dallas, TX

Evaluation of the Anterior and Posterior Chambers and Iridocorneal Angle

Leandro Teixeira, DVM, MS, DACVP, University of Wisconsin, Madison, WI

Examination and Evaluation of the Posterior Segment in Toxicology Studies—Retina

Steven D. Sorden, DVM, PhD, DACVP, Covance Laboratories, Inc., Madison, WI

ACVP Primate Pathology Pre-Meeting Workshop

(Registration required)

8:00 AM–5:00 PM

Non-human Primate Genetics and Geography: Impact on Study Design, Interpretation, and Results

Chair: Vito Sasseville, DVM, PhD, DACVP, Novartis Institutes for Biomedical Research, Cambridge, MA

Registrants will receive online access to all case presentation materials, including clinical history and scanned slide images, prior to the meeting.

Welcome and Program Overview

Vito Sasseville, DVM, PhD, DACVP, Novartis Institutes for Biomedical Research, Cambridge, MA

DNA-based Ancestry Determination of Rhesus (*Macaca mulatta*) and Cynomolgus Macaques (*Macaca fascicularis*)

Sree Kanthaswamy, BS(HONS), MPhil, PhD, School of Mathematical and Natural Sciences, Arizona State University, Glendale, AZ

Cynomolgus Monkey Origin: Clinical Pathology and Immunotoxicology Considerations

Nancy E. Everds, DVM, DACVP, Amgen, Inc., South San Francisco, CA

Retrospective Program Analysis

Karyn Colman, BVetMed, MRCVS, Novartis Institutes for Biomedical Research, East Hanover, NJ

Comparison of Background Histopathology Findings in Asian and Mauritius Cynomolgus Macaques

Jagannatha Mysore, MVSc, PhD, DACVP, Bristol-Myers Squibb, New Brunswick, NJ

Macaque Species Susceptibility to Simian Immunodeficiency Virus

Joseph Mankowski, DVM, PhD, DACVP, Johns Hopkins University School of Medicine, Baltimore, MD

Background Infections and Molecular Detection of Etiologic Agents

Keith Mansfield, DVM, DACVP, Novartis Institutes for Biomedical Research, Cambridge, MA

Case Presentations

ASVCP and STP CPIG Combined Pre-Meeting Workshop

(Registration required)

8:00 AM–5:00 PM

Application of New Renal and Hemostatic Biomarkers in Veterinary Medicine and Preclinical Safety: What Can We Learn from Each Other?

Co-chairs: Kirstin Barnhart, DVM, PhD, DACVP, AbbVie, Inc., North Chicago, IL; and Bill Reagan, DVM, PhD, DACVP, Pfizer, Inc., Groton, CT

Boxed lunches will be provided for registered attendees.

Welcome

Kirstin Barnhart, DVM, PhD, DACVP, AbbVie, Inc., North Chicago, IL; and Bill Reagan, DVM, PhD, DACVP, Pfizer, Inc., Groton, CT

Morning Session: Renal Biomarkers

Qualification of New Translational Kidney Safety Biomarkers for Drug Development

Warren Glaab, PhD, Merck, West Point, PA

Recent Developments in Canine Urinary Biomarkers

Mary Nabity, DVM, PhD, DACVP, Texas A&M University, College Station, TX

Assessing Immune Complex Glomerulopathy with Morphology and Biomarkers in Non-human Primate Kidneys during Preclinical Safety Testing of Biologics

Tom P. Brown, DVM, MS, PhD, DACVP, Pfizer, Inc., Groton, CT

Early Detection of AKI and CKD in Dogs and the Role of IRIS Guidelines

Mary Nabity, DVM, PhD, DACVP, Texas A&M University, College Station, TX

An Integrated Approach to Assessing Kidney Injury

Rachel Cianciolo, DVM, PhD, DACVP, The Ohio State University, Columbus, OH

Afternoon Session: Hemostasis Biomarkers

Hemostasis Gaps in Preclinical and Clinical Studies—Biomarkers for Procoagulant States

A. Eric Schultze, DVM, PhD, FIATP, DACVP, Eli Lilly & Company, Indianapolis, IN

Comparative Hemostasis Testing: Beyond APTT and PT

Marjory Brooks, DVM, DACVIM, Cornell University, Ithaca, NY

Monitoring Hypercoagulability in Pro-thrombotic Conditions and Hypocoagulability in Hemophilic Models, in Non-human Primates

Florence Poitout, DVM, DECVCP, DACVP, Charles River Laboratories, Senneville, Quebec, Canada

Platelet Function Testing in Non-human Primates

Kelly Metcalf Pate, DVM, PhD, DACLAM, Johns Hopkins University School of Medicine, Baltimore, MD

Platelet Isolation Techniques in Laboratory Animals and Platelet Function Testing in Dogs

Adam Aulbach, DVM, DACVP, MPI Research, Mattawan, MI

Buccal Mucosal Bleeding Time: Application in Pre-clinical Safety

Kirstin Barnhart, DVM, PhD, DACVP, AbbVie, Inc., North Chicago, IL

C.L. Davis Foundation Pre-Meeting Workshop

(Registration required)

8:00 AM–5:00 PM

The Life Aquatic

Co-Chairs: Jeffrey C. Wolf, DVM, DACVP, EPL, Inc., Sterling, VA; and Judy St. Leger, DVM, DACVP, SeaWorld Parks and Entertainment, San Diego, CA

This full-day course will cover topics from normal anatomy and histology to classic and important pathology in aquatic species. Species covered will include fish, amphibians, reptiles, birds, and marine mammals. The tag-team faculty will present material in a step-wise manner so that pathologists will be both engaged and educated. The workshop will focus on the identification of both normal anatomy and common diseases of these species including gross and histologic appearance, salient diagnostic features, and differential diagnosis. This exciting course should be of interest to both clinical and anatomic veterinary pathologists, pathology residents, and diagnosticians working with animals.

NTP Satellite Symposium

(Free event; Registration required)

9:00 AM–4:30 PM

Pathology Potpourri

Chair: Susan A. Elmore, MS, DVM, DABT, FIATP, DACVP, NTP and NIEHS, Research Triangle Park, NC

Welcome and Introductory Remarks

Susan A. Elmore, MS, DVM, DABT, FIATP, DACVP, NTP and NIEHS, Research Triangle Park, NC

It's Not a Tumor?

David E. Malarkey, DVM, PhD, DACVP, NTP, NIEHS, Research Triangle Park, NC

Cardiomyopathy Shuffle

Rick Hailey, DVM, Covance, Inc., Chantilly, VA

Queries from the Zoo

Patricia A. Pesavento, DVM, PhD, DACVP, School of Veterinary Medicine, University of California, Davis, CA

An Exigent Pancreatic Tumor?

Ramesh C. Kovi, BVSc&AH, MVSc, PhD, DACVP, EPL, Inc., Research Triangle Park, NC

Intracranial Conundrums I

James P. Morrison, DVM, DACVP, Charles River Laboratories Pathology Associates, Durham, NC

Mammary Gland Development: The "Whole" Story

Erin Quist, DVM, MS, DACVP, NTP, NIEHS, Research Triangle Park, NC

Canine and Rodent Pulmonary Pathology: Are They the Same or Different?

Kathleen A. Szabo, DVM, MS, DACVP, Charles River Laboratories Pathology Associates, Durham, NC

Imprints, Smears, and Preps —Oh My!

Jennifer Neel, DVM, DACVP, North Carolina State University, Raleigh, NC

Neuropathology Texas-Style

Brian F. Porter, DVM, DACVP, College of Veterinary Medicine, Texas A&M University, College Station, TX

Intracranial Conundrums II

James P. Morrison, DVM, DACVP, Charles River Laboratories Pathology Associates, Durham, NC

Challenging Cases from the Special Senses INHAND OWG

Cindy A. Farman, DVM, PhD, DACVP, Genentech, Inc., South San Francisco, CA; and Leandro Teixeira, DVM, MS, DACVP, University of Wisconsin, Madison, WI

STP Pre-Meeting CE Course 2

(Registration required)

1:30 PM–5:30 PM

The Use of Pigs in Biomedical Research

Co-Chairs: Lydia Andrews-Jones, DVM, PhD, DACVP, Allergan, Lake Forest, CA; and Kristie Mozzachio, DVM, DACVP, WIL Research, Hillsborough, NC

Swine are increasingly being used in biomedical research, both in toxicologic pathology and in medical devices work, including as possible organ donors for humans. This course will review the various strains of pigs used for biomedical research, their unique anatomy, clinical pathology, and

background diseases and lesions. In addition to general toxicology, the use of pigs in dermatologic, ocular, and device work will be reviewed by subject matter experts.

Emergence of the Miniature Swine in Biomedical Research: Do Different Breeds Support Different Needs?

Guy Bouchard, DVM, MS, DACT, Sinclair Research Center, LLC, Columbia, MO

Background and Unique Considerations: Anatomic Pathology

Kristie Mozzachio, DVM, DACVP, WIL Research, Hillsborough, NC

Sexual Maturity in Minipigs

Paul Howroyd, MA, VETMB, MRCVS, FRCPath, WIL Research Europe-Lyon, St Germain sur L'Arbresle, Lyon, France

Pigs in General Toxicology—A European Perspective

Alys Bradley, BSc, BVSc, MAnimSc, DipRCPath, FRIPH, MRCVS, FRCPath, FIATP, Charles River Laboratories, Edinburgh, Scotland, UK

Translational Relevance of the Minipig Model of Human Cardiovascular Disease

James Turk, AB, DVM, PhD, DACVP, Amgen, Inc., Thousand Oaks, CA

The Miniature Swine as a Model in Experimental and Translational Medicine

Alain Stricker-Krongrad, PhD, MSc, Sinclair Research Center, LLC, Columbia, MO

So... How DO You Work with Minipigs?

Kristie Mozzachio, DVM, DACVP, WIL Research, Hillsborough, NC

3:00 PM–8:30 PM

Career Center

ACVP Career Session

5:15 PM–6:15 PM

Job Searching 2.0: Using Social Media and Connections to Find the Right Job

Chair: Heather Jury, IDEXX Laboratories, Westbrook, ME

This interactive session is designed to help attendees get an insider view of job seeking, networking, and strategies to identify the right position and create their career path. Attendees at this session will have the opportunity to learn about "Job Searching 2.0," ask questions and hear candid advice. This program will review definitions of new media/social media, and discuss: what is social media now? How has social media changed the landscape of job searching and networking? Who is using social media to find employees? How do recruiters see you? Why is networking and connecting a critical part of job searching today?

There will be in-depth discussion about the social networking "Big Three:" Facebook, Twitter, and LinkedIn, plus a review of other sites including Instagram, Indeed, Glassdoor, and more. This program will include a discussion about social strategies, privacy settings, etiquette in this new era, as well as tips and "hacks" for effective job seeking. Participants will leave with actions to take now and later to successfully identify their career path.

5:30 PM-7:30 PM **Trainee Mixer**

ASVCP Teaching Clinical Pathology

6:00 PM-8:00 PM

Clinical Pathology in the DVM Curriculum

Chair: Carolyn Grimes, DVM, DACVP, Université de Montréal Faculté de Médecine Vétérinaire, St-Hyacinthe, Quebec, Canada

7:00 PM-8:30 PM **Opening Reception, Exhibits, Silent Auction**

Sunday, October 18

7:00 AM-5:00 PM **Registration**

7:00 AM-6:00 PM **Speaker Ready Room**

ACVP, ASVCP, and STP Combined Career Development Session

(Free event; Registration required)

8:00 AM-12:00 Noon

Visualizing Pathology Data

Co-Chairs: Danielle L. Brown, DVM, DACVP, WIL Research, Hillsborough, NC; and Nancy E. Everds, DVM, DACVP, Amgen, Inc., South San Francisco, CA

The assessment of quantitative and qualitative pathology data can be challenging. Large data sets can be cumbersome, and even quantitative data can be subject to bias. The goal of this session is to provide attendees with tips and tools for quickly managing quantitative and semi-quantitative data sets as well as best practices for study design, data analysis, and presentation. Topics of discussion include general tips and tricks for visualizing numerical data from quantitative studies, a discussion on the pitfalls and biases of image analysis and how to avoid them, advice on how to manage non-pathology data sets such as those resulting from "omics" studies and how to integrate those results with pathology data for toxicology studies, how to approach and apply semiquantitative scoring systems in a research or clinical setting, and how to approach mining of large databases for case series or epidemiologic studies.

Opening Remarks

Tips and Tricks for Visualizing Numerical Data

Nancy E. Everds, DVM, DACVP, Amgen, Inc., South San Francisco, CA

Pitfalls and Unintended Biases in Image Analysis

Michael C. Boyle, DVM, PhD, DABT, DACVP, Amgen, Inc., Thousand Oaks, CA

Integration of Omics Data with Pathology Data: Omics as a Tool for the Investigative Pathologist

Mark J. Hoenerhoff, DVM, PhD, DACVP, University of Michigan, Ann Arbor, MI

Principles for Semi-quantitative Scoring of Tissues

David K. Meyerholz, DVM, PhD, DACVP, University of Iowa Carver College of Medicine, Iowa City, IA

Approaches, Pitfalls, and Best Practices for Mining Large Data Sets

Elizabeth Lund, DVM, MPH, PhD, Banfield Pet Hospital, Portland, OR

ASVCP Education Symposium

8:00 AM-12:00 Noon

Biomarkers in Veterinary Clinical Pathology

Chair: Laura Snyder, DVM, DACVP, Marshfield Labs, Marshfield, WI

Bridging Man and Preclinical Species: The Rainbow of Non-vasoactive Vasculitides

Igor Mikaelian, DVM, DACVP, Abbott Bioresearch Center, Worcester, MA

SDMA as a New Serum Marker of Kidney Function

Mary Nabity, DVM, PhD, DACVP, Texas A&M University, College Station, TX

Biomarkers in Canine Lymphoma

Anne Avery, VMD, PhD, Colorado State University, Fort Collins, CO

Diagnosis of Systemic Mycoses by Use of Biomarkers

Lawrence J. Wheat, MD, MiraVista Diagnostics, Indianapolis, IN

Concurrent Session I

8:00 AM-12:00 Noon

Diagnostic Veterinary Dermatopathology

Co-Chairs: Pauline M. Rakich, DVM, PhD, DACVP, University of Georgia, Athens, GA; and Joanne Mansell, DVM, MRCVS, DACVP, College of Veterinary Medicine, Texas A&M University, College Station, TX

Welcome

Interface Dermatitis

Verena K. Affolter, DrMedVet, PhD, DECVP, University of California, Davis, CA

Interface Dermatitis: The Immunologic and Clinical Perspective

Valerie A. Fadok, DVM, PhD, DACVD, North Houston Veterinary Specialists, Spring, TX

The Hair Follicle and the Yet Unsolved Mystery of Non-inflammatory Alopecia

Monika Welle, Prof DrMedVet, DECVP, Institute of Animal Pathology, Vetsuisse Faculty, University of Bern, Bern, Switzerland

Diagnostic Dermatopathology for General Veterinary Pathologists

Elizabeth A. Mauldin, DVM, DACVD, DACVP, University of Pennsylvania School of Veterinary Medicine, Philadelphia, PA

Natural Disease Focused Scientific Session I

8:00 AM–12:00 Noon

Chair: Andrew D. Miller, DVM, DACVP, Cornell University College of Veterinary Medicine, Ithaca, NY

Pathology of Adverse Reactions to Vaccines

Donal O'Toole, MVB, PhD, MRCVS, DECVP, FRCPath, Wyoming State Veterinary Laboratory, Laramie, WY

The Structural and Molecular Pathology, Chemistry, and Current Diagnostic Techniques of Toxic Plant Induced Disease

Bryan Stegelmeier, DVM, PhD, DACVP, USDA/ARS Poisonous Plant Research Laboratory, Logan, UT

STP and Industrial and Toxicologic Pathology Focused Scientific Session

8:00 AM–12:00 Noon

Chair: Daniela Ennulat, DVM, PhD, DACVP, GlaxoSmithKline, King of Prussia, PA

Methodological Advancements in the Mammary Gland: New Insights for Detecting Mammary Carcinogenesis

Suzanne E. Fenton, PhD, MS, NTP Laboratory, NIEHS, Research Triangle Park, NC

Second Skin: From Marrow to Matrix

Jakub Tolar, MD, PhD, University of Minnesota, Minneapolis, MN

8:00 AM–5:00 PM

Student and Guest Hospitality Room

9:00 AM–5:00 PM

Career Center

9:30 AM–4:30 PM

Exhibits and Silent Auction

9:30 AM–4:30 PM

Focused Scientific Poster Session and ACVP Veterinary Student Posters

12:00 Noon–1:30 PM

Veterinary Pathology Resident/Trainee Luncheon

Emerging Disease Focus Seminar

12:15 PM–1:15 PM

Corona Virus

Chair: Francisco A. Uzal, DVM, MSc, PhD, DACVP, California Animal Health and Food Safety Lab, School of Veterinary Medicine, University of California, Davis, CA

Emergence of Porcine Enteric Corona Viruses in North America: Differential Features and Diagnostic Trends

Eric R. Burroughs, DVM, PhD, Iowa State University, Ames, IA

Pathogenesis and Histopathology of Porcine Epidemic Diarrhea Virus (PEDV) and Porcine Delta Corona Virus (PDCV) in Swine

Jeff Hayes, DVM, MSc, Ohio Department of Agriculture Animal Disease Diagnostic Laboratory, Reynoldsburg, OH

Veterinary Laboratory Professionals Session I

12:30 PM–4:30 PM

Chair: Lynne Shanahan, MT, ASCP, Colorado State University, Ft. Collins, CO

Welcome

Lynne Shanahan, MT, ASCP, Colorado State University, Ft. Collins, CO

Advances in Veterinary Diagnostic and Comparative Hemostatic Testing

Marjory Brooks, DVM, DACVIM, Cornell University, Ithaca, NY

Establishing Reference Intervals

Kristen R. Friedrichs, DVM, DACVP, School of Veterinary Medicine, University of Wisconsin, Madison, WI

Sample Handling and Sources of Pre-analytical Variation in Laboratory Animals

Kirstin Barnhart, DVM, PhD, DACVP, AbbVie, Inc., North Chicago, IL

Clinical Pathology Focused Scientific Session I

1:30 PM-4:30 PM

Chair: Shelley Burton, DVM, MSc, DACVP, University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada

Urinalysis—Getting Specific about Specific Gravity and Other Important Features

Jody Lulich, DVM, PhD, DACVIM, University of Minnesota College of Veterinary Medicine, St. Paul, MN

Diagnostic Pathology Focused Scientific Session I

1:30 PM-5:00 PM

Chair: Stephen Raverty, DVM, PhD, DACVP, British Columbia Ministry of Agriculture and Lands, Abbotsford, British Columbia, Canada

Experimental Disease Focused Scientific Session I

1:30 PM-5:00 PM

Chair: Sébastien Monette, DMV, MVSc, DACVP, Memorial Sloan Kettering Cancer Center, The Rockefeller University, Weill Cornell Medical College, New York, NY

A Pig Model of Renovascular Disease: Development and Evaluation

Lilach Lerman, MD, PhD, Mayo Clinic, Rochester, MN

Comparative Biology of Breast Cancer: Lessons from Human and Nonhuman Primates, Rodents, and Other Species

J. Mark Cline, DVM, PhD, DACVP, Wake Forest University School of Medicine, Winston-Salem, NC

Natural Disease Focused Scientific Session II

1:30 PM-5:00 PM

Chair: Andrew D. Miller, DVM, DACVP, Cornell University College of Veterinary Medicine, Ithaca, NY

Diagnostic Approach to Spontaneous Neuropathic Lysosomal Storage Diseases of Dogs and Cats

Carlo Cantile, DVM, PhD, Università di Pisa, Pisa, Italy

STP Focused Topic Scientific Session 1

1:30 PM-5:00 PM

Functional Anatomy and Physiology of Skin

Co-Chairs: Kelly Diegel, DVM, PhD, DACVP, Boehringer Ingelheim, Ridgefield, CT; and Aaron Sargeant, DVM, PhD, DACVP, Charles River Laboratories Preclinical Services,

Spencerville, OH

This session will provide an overview of skin immunology and comparative and functional anatomy with emphasis on aspects important to toxicologic assessment. The pros and cons of different species will be discussed, including the use of hairless rodent models and models of human disease being used in discovery work to screen compounds for efficacy endpoints. Pitfalls and concerns of study design, especially with regards to rodent versus pig, will be covered. Finally, formulation and pharmacokinetic endpoints will be discussed, including the challenges of delivering a drug to a specific component of the skin, and issues surrounding 1) developing a formulation that will target a specific area, 2) measuring concentrations in different areas without cross contamination, and 3) appropriate endpoints for high throughput screening of compounds *in vitro* and how these endpoints translate *in vivo*.

Skin Deep: The Thick, the Thin, and the Therapeutic Target

Lydia Andrews-Jones, DVM, PhD, DACVP, Allergan, Lake Forest, CA

Dermal Drug Development and Delivery to the Skin

Jon Lenn, MS, PhD, GlaxoSmithKline, Research Triangle Park, NC

Immunology and Skin: A Brief Overview

Suzanne Kanaly, DVM, PhD, DACVP, Allergan, Irvine, CA

Student Presentations

4:30 PM-6:00 PM **ASVCP Business Meeting**

5:15 PM-6:00 PM **ACVP Business Meeting**

Combined ACVP and STP Town Hall Meeting

6:15 PM-7:30 PM

Coordinated by the ACVP/STP Coalition

Veterinary Pathology: Future Directions and Requisite Skill Sets

ACVP-STP Mystery Slide Review Session: Skin

7:30 PM-9:30 PM

Chair: Daniel R. Rissi, DVM, PhD, DACVP, University of Georgia, Athens, GA

Panelists: Dimitry M. Danilenko, DVM, PhD, DACVP, Genentech, Inc., South San Francisco, CA; Kelly Diegel, DVM, PhD, DACVP, Boehringer Ingelheim, Ridgefield, CT; Robert W. Dunstan, DVM, MS, DACVP, Biogen Idec, Cambridge, MA; Joanne Mansell, DVM, MRCVS, DACVP, College of Veterinary Medicine, Texas A&M University,

College Station, TX; Elizabeth A. Mauldin, DVM, DACVD, DACVP, University of Pennsylvania School of Veterinary Medicine, Philadelphia, PA; Kim Newkirk, DVM, PhD, DACVP, College of Veterinary Medicine, University of Tennessee, Knoxville, TN

7:30 PM-9:30 PM **Alumni Receptions**

Monday, October 19

7:00 AM-6:00 PM **Speaker Ready Room**

7:30 AM-1:00 PM **Registration**

ACVP/ASVCP/STP Combined Plenary Session: Biomarkers

8:00 AM-12:00 Noon

Co-Chairs: Robert W. Dunstan, DVM, MS, DACVP, Biogen Idec, Cambridge, MA; Elizabeth Howerth, DMV, PhD, DACVP, University of Georgia, Athens, GA; and Anne Provencher, DVM, MSc, DECVP, FIATP, DACVP, Charles River Laboratories, Sherbrooke, Quebec, Canada

For over a decade, the pursuit of biomarkers to diagnose and prognose disease and, more importantly, to predict which patients will respond to targeted therapies, has been a major goal of both FDA and the pharmaceutical industry. However, only a handful of biomarkers have been approved by the Agency. In this session, there will be a discussion of what biomarkers are, the types of biomarkers that are currently being developed and what it takes to validate them for regulatory approval.

Biomarkers: You May Remember Them As...

Michael Bleavins, PhD, DABT, White Crow Innovation, LLC, Dexter, MI

Translational Biomarkers – Integration and Innovation

Dana Walker, DVM, MS, PhD, DACVP, Novartis Institutes for Biomedical Research, Cambridge, MA

Translational, Tomographic Imaging Biomarkers

Jack Hoppin, PhD, inviCRO LLC, Boston, MA

Considerations for the Successful Development of New Biomarkers

Daniela Ennulat, DVM, PhD, DACVP, GlaxoSmithKline, King of Prussia, PA

Questions and Discussion

ASVCP Veterinary Laboratory Professionals Session II

8:00 AM-12:00 Noon

Chair: Lynne Shanahan, MT, ASCP, Colorado State University, Ft. Collins, CO

Comparative Hematology of Laboratory Animals

Kirstin Barnhart, DVM, PhD, DACVP, AbbVie, Inc., North Chicago, IL

Routine Clinical Chemistry, Urinalysis, and Coagulation Testing in Laboratory Animals

Kirstin Barnhart, DVM, PhD, DACVP, AbbVie, Inc., North Chicago, IL

Specialized Biomarkers in Laboratory Animals

Kirstin Barnhart, DVM, PhD, DACVP, AbbVie, Inc., North Chicago, IL

8:00 AM-5:00 PM **Student and Guest Hospitality Room**

9:00 AM-5:00 PM **Career Center**

9:30 AM-1:00 PM **Exhibits and Silent Auction**

9:30 AM-1:00 PM **Focused Scientific Poster Session and ACVP Veterinary Student Posters**

12:15 PM-2:00 PM **Latin Comparative Pathology Group Presents**

ASVCP-STP Case Discussion Session

1:30 PM-3:30 PM

Chair: Tracy Stokol, DVM, PhD, DACVP, College of Veterinary Medicine, Cornell University, Ithaca, NY

1:30 PM-4:30 PM **Community Outreach Activity (CO-Act)**

Meet the Pathologists: A Discussion of Careers in Pathology

(Free event; Registration required)

1:45 PM-3:00 PM

Panelists: Kevin Woolard, DVM, PhD, University of California, Davis, CA ; David E. Malarkey, DVM, PhD, DACVP, NTP, NIEHS, Research Triangle Park, NC; Lila Ramaiah, DVM, PhD, DACVP, Huntingdon Life Sciences, Jersey City, NJ; Stacey Fossey, DVM, PhD, DABT, DACVP, AbbVie, Inc., North Chicago, IL

- 3:00 PM–5:00 PM **Veterinary Student and Resident Forum**
- 5:00 PM–6:30 PM **C.L. Davis Foundation Reception**
- 5:15 PM–6:45 PM **ASVCP Reception**
(All members welcome)
- 5:30 PM–6:30 PM **Reception for New Diplomates**
Sponsored by IDEXX Laboratories
- 6:30 PM–9:30 PM **Alumni Receptions**

Mystery Slide Review and Neuropathology Case Presentations

7:00 PM–9:00 PM
Chair: Jey Koehler, DVM, PhD, DACVP, Auburn College of Veterinary Medicine, Auburn, AL

Tuesday, October 20

- 7:00 AM–5:00 PM **Speaker Ready Room**
- 7:30 AM–5:00 PM **Registration**

Clinical Pathology Focused Scientific Session II

8:00 AM–12:00 Noon
Chair: Shelley Burton, DVM, MSc, DACVP, University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada

Garbage In, Garbage Out: Improving Oncology Care Through Collaboration

Michael Henson, DVM, PhD, DACVIM, University of Minnesota College of Veterinary Medicine, St. Paul, MN

Concurrent Session II:

8:00 AM–12:00 Noon

Genetically Engineered Large Animals

Co-Chairs: David K. Meyerholz, DVM, PhD, DACVP, University of Iowa Carver College of Medicine, Iowa City, IA; and Katherine Gibson-Corley, DVM, PhD, DACVP, University of Iowa, Iowa City, IA

Translational Imaging and Characterization of a TP53 Cancer Model in Yucatan Miniature Pigs

Jessica C. Sieren, PhD, University of Iowa, Iowa City, IA

Congenital Cerebellar Disease in a Porcine Model of Ataxia Telangiectasia

David Pearce, PhD, Sanford Research and Sanford Children's Health Research Center, Sioux Falls, SD

Cystic Fibrosis-related Diabetes in Ferrets
Katherine Gibson-Corley, DVM, PhD, DACVP, University of Iowa, Iowa City, IA

Origins of CF Lung Disease: Insights from a Pig Model
David K. Meyerholz, DVM, PhD, DACVP, University of Iowa Carver College of Medicine, Iowa City, IA

Questions and Discussion

Education Focused Scientific Session

8:00 AM–12:00 Noon

Resident Training*

Chair: Linden Craig, DVM, PhD, DACVP, University of Tennessee College of Veterinary Medicine, Memphis, TN

Introductions and Acknowledgements
Linden Craig, DVM, PhD, DACVP, University of Tennessee College of Veterinary Medicine, Memphis, TN

Combined PhD/Residency Programs
Krista La Perle, DVM, PhD, DACVP, The Ohio State University, Columbus, OH

Recruiting and Retaining a Diverse Residency Program
Susan Williams, DVM, PhD, DACVP, College of Veterinary Medicine, University of Georgia, Athens, GA

Resident Mentoring
Paige Carmichael, DVM, PhD, DACVP, College of Veterinary Medicine, University of Georgia, Athens, GA

Use of Technology in Resident Teaching
Amy Durham, BA, MS, VMD, DACVP, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA

Medical School Training Programs
Nancy D. Kock, BS, DVM, MS, PhD, DACVP, Center for Comparative Medicine Research, Translational Science Institute, Wake Forest University, Winston-Salem, NC

Strategies and Success Stories
Moderator: Paige Carmichael, DVM, PhD, DACVP, Center for Comparative Medicine Research, College of Veterinary Medicine, University of Georgia, Athens, GA

Mock Boards Creation and Use
Kim Newkirk, DVM, PhD, DACVP, College of Veterinary Medicine, University of Tennessee, Knoxville, TN

ACVP Board Examination Update
Elizabeth Howerth, DVM, PhD, DACVP, University of Georgia, Athens, GA

Board Exam Myth-busters
Patricia A. Pesavento, DVM, PhD, DACVP, School of Veterinary Medicine, University of California, Davis, CA

The ACVP Board Examination: Questions, Comments, Concerns

Moderator: Linden Craig, DVM, PhD, DACVP, University of Tennessee College of Veterinary Medicine, Memphis, TN

***Session Disclaimer:** This session is for informational purposes only. The advice, opinions, statements, materials, and other information expressed and contained during the session are solely those of the speakers and do not necessarily reflect the views, policies, or opinions of the ACVP. The ACVP is not responsible for the accuracy, currency, completeness, reliability, or usefulness of any advice, opinions, statements, or content contained in the session. The ACVP makes no claim that the use of the information provided will assure a successful outcome on the certifying examination.

Mini-Symposium:

8:00 AM–12:00 Noon

Forensic Pathology

Co-Chairs: Arno Wuenschmann, DrMedVet, College of Veterinary Medicine, University of Minnesota, St. Paul, MN; and Sean P. McDonough, DVM, PhD, DACVP, Cornell University, Ithaca, NY

Traumatic Head Injuries: Mechanisms and Pathological Findings in Humans and Animals

Mary E. Case, MD, St. Louis University Health Sciences Center, St. Louis, MO

Forensic Pathology of Organized Dog Fighting

Jodie Gerdin, DVM, DACVP, Antech Diagnostics, Albany, NY

Survey Results on Attitudes of ACVP Diplomates on Forensic Pathology

Beverly McEwan, DVM, MSc, PhD, DACVP, University of Guelph, Guelph, Ontario, Canada

Gunshot Wounds

Andrew Baker, MD, Hennepin County Medical Examiner's Office, Minneapolis, MN

Demystifying the Courtroom: the Role of Veterinary Fact and Expert Witnesses in Animal Cruelty Trials

Reese Frederickson, JD, MBA, BS, Pine County Attorney's Office, Pine City, MN

STP Focused Topic Scientific Session 2

8:00 AM–12:00 Noon

Pathology and Mechanisms of Skin Injury

Co-Chairs: Dimitry M. Danilenko, DVM, PhD, DACVP, Genentech, Inc., South San Francisco, CA; and Sebastian Brennan, DVM, MVSc, DAVCP, Novartis Pharmaceuticals Corporation, East Hanover, NJ

The skin, like other organ systems, has a relatively limited range of responses to injury regardless of the specific mechanism underlying the insult. Despite this, there is still a great deal that can be ascertained from the different morphologic, physiologic, and molecular alterations that

arise in response to injury. One of the skin's primary functions is to serve as a physical and physiologic protective barrier against injury from the external environment in order to prevent the loss of water and solutes from the body. When the skin is exposed to irritants that disrupt this barrier, it mounts an inflammatory and proliferative response in an effort to restore these essential functions. The epidermis, particularly epidermal keratinocytes and dendritic cells, are central to the initiation of the skin's response, triggering an immunologic cascade tailored to cope with a wide range of injurious stimuli and leading to the stereotypic morphologic responses that we encounter as pathologists.

This session will cover the pathology and mechanisms of cutaneous injury, beginning with an overview of our current understanding of immune-mediated mechanisms, both the adaptive and innate that underlie the pathogenesis of cutaneous injury. Following this introduction, we will present relevant applications for utilization of the delayed-type hypersensitivity response in nonclinical studies that support biotherapeutic drug development programs in cynomolgus monkeys, followed by a presentation on the cutaneous phototoxicity pathologic changes caused by two phototoxins and the relationship of these findings with clinical observations. The final presentation will discuss exciting new data on how UV-induced chemical reactions can excite electrons to high energies and the importance of this process in cutaneous malignant melanoma and in other diseases.

An Overview of the Pathogenesis and Lesions of Immune-mediated Skin Injury

Dimitry M. Danilenko, DVM, PhD, DACVP, Genentech, Inc., South San Francisco, CA

An In Vivo Delayed-type Hypersensitivity (DTH) Model in Non-human Primates and Applications in Nonclinical Studies Supporting Biotherapeutic Drug Development

Christina M. Satterwhite, PhD, Charles River Laboratories Preclinical Services, Reno, NV

Assessment of Cutaneous Phototoxicity for Regulatory Submission: Does Microscopic Evaluation Enhance Visual Evaluations?

Douglas B. Learn, PhD, Charles River Laboratories Preclinical Services, Horsham, PA

UV-induced Melanin Chemiexcitation: A New Mode of Melanoma Pathogenesis

Douglas E. Brash, PhD, Yale University, New Haven, CT

8:00 AM–5:00 PM

Student and Guest Hospitality Room

ASVCP Veterinary Laboratory Professionals Session III

8:15 AM-12:00 Noon

Chair: Lynne Shanahan, MT, ASCP, Colorado State University, Ft. Collins, CO

Comparative Erythrology

Deanna Schaefer, DVM, MS, MT (ASCP), DACVP, University of Tennessee, Knoxville, TN

Update on Novel Urine Biomarkers for Detection of Glomerular and Tubular Damage in Dogs and Cats

Jessica Hokamp, DVM, Texas A&M University, College Station, TX

Roundtable Discussions: Staffing Demands in the Clinical Laboratory

9:00 AM-5:00 PM

Career Center

9:30 AM-3:30 PM

Exhibits and Silent Auction

9:30 AM-3:30 PM

Focused Scientific Poster Session and ACVP Veterinary Student Posters

ASVCP and STP Mystery Slide Case Session

1:30 PM-5:00 PM

Chair: Tracy Stokol, DVM, PhD, DACVP, College of Veterinary Medicine, Cornell University, Ithaca, NY

Diagnostic Pathology Focused Scientific Session II

1:30 PM-5:00 PM

Chair: Stephen Raverty, DVM, PhD, DACVP, British Columbia Ministry of Agriculture and Lands, Abbotsford, British Columbia, Canada

Experimental Disease Focused Scientific Session II

1:30 PM-5:00 PM

Chair: Sébastien Monette, DMV, MVSc, DACVP, Memorial Sloan Kettering Cancer Center, The Rockefeller University, Weill Cornell Medical College, New York, NY

Holoprosencephaly, Cleft Lip, and Cleft Palate Result from Acute Hedgehog Signaling Inhibition in the Mouse: Timing is Everything

Robert J. Lipinski, PhD, School of Veterinary Medicine, University of Wisconsin, Madison, WI

Modeling the Natural History of Pelizaeus Merzbacher Disease in a Canine X-Linked Disorder

Ian D. Duncan, BVMS, PhD, FRCPath, FRSE, School of Veterinary Medicine, University of Wisconsin, Madison, WI

STP Focused Topic Scientific Session 3

1:30 PM-5:00 PM

Models of Skin Disease

Co-Chairs: Robert W. Dunstan, DVM, MS, DACVP, Biogen Idec, Cambridge, MA; and Elizabeth A. Mauldin, DVM, DACVD, DACVP, University of Pennsylvania School of Veterinary Medicine, Philadelphia, PA

The objective of this session will be to describe the diversity of animal models available to investigate skin diseases. A secondary goal will be to provide a session that will be of interest to both STP and ACVP attendees. This will start with a discussion of *in vitro* models followed by presentations on the epidermis, the hair follicle, and the dermis. At the end, the attendees should have a better understanding of both dermatopathology and diseases affecting the major structural complements of the skin.

In Vitro Epidermal Models and Their Predictability to Define Normal and Disease Biology, Pharmacology, and Toxicity

Dimitry M. Danilenko, DVM, PhD, DACVP, Genentech, Inc., South San Francisco, CA

Spontaneous Animal Models for the Study of Epidermal Diseases

Elizabeth A. Mauldin, DVM, DACVD, DACVP, University of Pennsylvania School of Veterinary Medicine, Philadelphia, PA

The Hair Follicle: A Fascinating Mini-organ

Monika Welle, Prof DrMedVet, DECVP, Institute of Animal Pathology, Vetsuisse Faculty, University of Bern, Bern, Switzerland

Scleroderma as a Model for the Dilemma of Fibrosing Diseases: Where Do We Go when Molecular Biology and Animal Surrogates Inadequately Inform?

Robert W. Dunstan, DVM, MS, DACVP, Biogen Idec, Cambridge, MA

5:15 PM-6:00 PM **STP Business Meeting**

6:15 PM-7:30 PM **ACVP and STP Combined Awards and Recognition Event**

7:35 PM-9:30 PM **Presidents' Reception**

Wednesday, October 21

- 7:00 AM-11:00 AM **Speaker Ready Room**
- 8:00 AM-11:00 AM **Student and Guest Hospitality Area**
- 8:00 AM-1:00 PM **Registration**

Concurrent Session III

8:00 AM-12:00 Noon

Pathology of Avian/Exotics

Chairs: Nancy Stedman, DVM, PhD, Busch Gardens/SeaWorld Parks and Entertainment, Tampa, FL; and Rita McManamon, DVM, University of Georgia, Athens, GA

Select Emerging, Infectious, and Poorly Understood Disease Entities of Reptiles

Mike Garner, DVM, DACVP, Northwest ZooPath, Monroe, WA

Selected Topics in Avian Pathology

Nancy Stedman, DVM, PhD, Busch Gardens/SeaWorld Parks and Entertainment, Tampa, FL

Selected Topics in Small Mammal Pathology

Rita McManamon, DVM, University of Georgia, Athens, GA

Current/Selected Topics in Wildlife Pathology

Valerie Shearn-Bochsler, DVM, MPH, USGS National Wildlife Health Center, Madison, WI

Emerging Zoonotic Diseases: Critical Role of Pathology in Identification and Discovery

Sherif Zaki, MD, PhD, National Center for Emerging and Zoonotic Diseases, Centers for Disease Control and Prevention, Atlanta, GA

Questions and Discussion

Concurrent Session IV

8:00 AM-12:00 Noon

Flow Cytometry and Clonality Assays in Diagnostic Hematopathology

Chairs: Dorothee Bienzle, DVM, PhD, DACVP, University of Guelph, Guelph, Ontario, Canada; and Mary Jo Burkhard, DVM, PhD, DACVP, College of Veterinary Medicine, Ohio State University, Columbus, OH

Introduction

Dorothee Bienzle, DVM, PhD, DACVP, University of Guelph, Guelph, Ontario, Canada; and Mary Jo Burkhard, DVM, PhD, DACVP, College of Veterinary Medicine, Ohio State University, Columbus, OH

Principles of Flow Cytometry of Human Non-Hodgkin Lymphoma and Applications to Comparative Pathology

Michael Linden, MD, PhD, DABP, University of Minnesota, Minneapolis, MN

Concepts and Conundrums of Clinical Flow Cytometry

Mary Jo Burkhard, DVM, PhD, DACVP, College of Veterinary Medicine, Ohio State University, Columbus, OH

Principles, Potential, and Pitfalls of Clonality Testing

Stefan M. Keller, DVM, DrMedVet, PhD, DECVP, University of Guelph, Guelph, Ontario, Canada

Current Status of Proficiency Testing and Consensus Effort

Dorothee Bienzle, DVM, PhD, DACVP, University of Guelph, Guelph, Ontario, Canada

Flow Cytometry and Clonality Cases to Demonstrate Diagnostic Challenges and Rewards

Melinda Wilkerson, DVM, PhD, DACVP, College of Veterinary Medicine, Kansas State University, Manhattan, KS; Stefan M. Keller, DVM, DrMedVet, PhD, DECVP, University of Guelph, Guelph, Ontario, Canada; Dorothee Bienzle, DVM, PhD, DACVP, University of Guelph, Guelph, Ontario, Canada; Tracy Stokol, DVM, PhD, DACVP, College of Veterinary Medicine, Cornell University, Ithaca, NY; and Mary Jo Burkhard, DVM, PhD, DACVP, College of Veterinary Medicine, Ohio State University, Columbus, OH

Mini-Symposium II

8:00 AM-12:00 Noon

Medical Device Pathology

Chairs: Laura E. Leigh Perkins, DVM, PhD, DACVP, Abbott Vascular, Mattaponi, VA; and Marian K. Rippey, DVM, PhD, DACVP, Rippey Pathology Solutions, Inc., Woodbury, MN

Welcome: Medical Devices and the Pathologist

Laura E. Leigh Perkins, DVM, PhD, DACVP, Abbott Vascular, Mattaponi, VA

Handling, Processing, and Evaluation of Medical Devices

Serge D. Rousselle, DVM, DACVP, Alizée Pathology, LLC, Thurmont, MD

Medical Device Regulatory Considerations and Biocompatibility

Victoria Hampshire, VMD, Capital Preclinical Scientific Regulatory Consulting, LLC, Bethesda, MD

Medical Device Imaging and the Pathologist

Amit Vasanji, PhD, Image IQ, Inc., Cleveland, OH

Cardiovascular and Combination Devices

Marian K. Rippey, DVM, PhD, DACVP, Rippey Pathology Solutions, Inc., Woodbury, MN

Morphologic Evaluation of Nervous System Devices

Mark T. Butt, DVM, DACVP, Tox Path Specialists, LLC, Frederick, MD

Preparation and Analysis of Orthopedic Devices

Madeline Chagnon, DVM, MSc, AccelLAB, Boisbriand, Quebec, Canada

Staying in the Game: Evaluation of Safety and Efficacy of Orthopedic Devices

Joan Wicks, DVM, PhD, DACVP, Alizée Pathology, LLC, Thurmont, MD

Questions and Discussion

STP Focused Topic Scientific Session 4

8:00 AM-12:00 Noon

Case Studies of Cutaneous Toxicity, Direct and Systemic

Co-Chairs: Zbigniew Wojcinski, DVM, DVSc, DABT, DACVP, Drug Development Preclinical Services, LLC, Ann Arbor, MI; and Duane Belote, DVM, DACVP, Covance Laboratories, Inc., Chantilly, VA

During development of compounds intended to treat skin diseases, manifestations of cutaneous toxicity may occur after topical application or systemic administration. Many factors, including selection of the appropriate animal model and parameters for evaluation, must be taken into consideration in designing nonclinical safety strategies to support initiation of clinical trials with potential therapeutic compounds.

This session will cover the unique challenges of drug development of compounds intended to treat dermal disease conditions from technical and pathology perspectives. The first presentation in this session will include the use of pigs in toxicity testing with respect to the influence of differences in metabolism and background findings; a review of a systematic approach to assessing adverse drug reactions manifested as cutaneous drug eruptions in non-human primates; and a case study of drug-induced cutaneous toxicity in cynomolgus monkeys including strategies for investigation of the mechanism of toxicity.

Pragmatic Issues in Dermal Toxicity Studies: Expected and Unexpected

Christine L. Merrill, DVM, PhD, DACVP, GlaxoSmithKline, Research Triangle Park, NC

Pigs in Toxicology: Differences in Metabolism and Background Findings

Kristi L. Helke, DVM, PhD, DACVP, Medical University of South Carolina, Charleston, SC

Cutaneous Toxicity in Non-human Primates

Annette Romeike, DMV, DACVP, Covance Laboratories SAS, Porcheville, France

A Case of Drug-induced Cutaneous Toxicity Observed in Cynomolgus Monkeys

Rie Kikkawa, DVM, PhD, DABT, DJCVP, DJSOT, DACVP, Novartis Institutes for Biomedical Research, East Hanover, NJ

12:00 Noon Meeting Adjourned

ACVP/ASVCP/STP Post-Meeting Workshop I

(Registration required)

1:00 PM-5:00 PM

Case-based Molecular Pathology: State-of-the-Art

Co-Chairs: David E. Malarkey, DVM, PhD, DACVP, NTP, NIEHS, Research Triangle Park, NC; and Gerry O'Sullivan, MVB, MSc, PhD, DECVP, DACVP, University of Minnesota College of Veterinary Medicine, St. Paul, MN

Overview of Workshop

David Malarkey, DVM, PhD, DACVP, NTP, NIEHS, Research Triangle Park, NC; and Gerry O'Sullivan, MVB, MSc, PhD, DECVP, DACVP, University of Minnesota College of Veterinary Medicine, St. Paul, MN

Case #1: Utility of Clonality Assays in the Diagnosis of Malignant Lymphoma

Anne Avery, VMD, PhD, Colorado State University, Fort Collins, CO

Case #2: Application of Cytogeneomics for the Diagnosis and Prognosis of Canine Neoplasms

Matthew Breen, PhD, CBiol, FSB, College of Veterinary Medicine, North Carolina State University, Raleigh, NC

Case #3: Molecular Biomarkers in Determining the Prognosis of Canine Mast Cell Tumors

Matti Kiupel, DrVetMed, BS, MS, PhD, DACVP, College of Veterinary Medicine, Michigan State University, Lansing, MI

Case #4: Genomics of Rat Liver Cancer: Origin and Evolution of Hepatoblastomas in the Mouse

Arun K. Pandiri, BVSc&AH, MS, PhD, DABT, DACVP, EPL, Inc./NTP, Research Triangle Park, NC

Case #5: Predictive Gene Profiling of Liver Toxicants and Carcinogens

Scott S. Auerbach, PhD, DABT, NTP/NIEHS, Research Triangle Park, NC

Case #6: Diagnosis of Porcine Epidemic Diarrhea: Which is the Latest New Important Disease in Swine

Stephanie Rossow, DVM, PhD, University of Minnesota, Minneapolis, MN

Case #7: Fulfilling Koch's Postulate: The Role of Molecular Biology in Establishing Illnesses Caused By Bartonellosis

Ricardo G. Maggi, MS, PhD, North Carolina State University, and Galaxy Diagnostics, Raleigh, NC

Panel Discussion with Workshop Faculty

Questions and Discussion

Post-Meeting Workshop II

(Registration required)

1:00 PM–5:00 PM

Mouse Central Nervous System Neuropathology

Co-Chairs: Jerrold M. Ward, DVM, PhD, DACVP, Global Vet Pathology, Montgomery Village, MD; and Caroline Zeiss, BVSc, PhD, DACLAM, DACVP, Yale University School of Medicine, New Haven, CT

Mouse Brain Evaluation: How and Where to Look—An Overview of Mouse Neuroanatomy

Deepa B. Rao, BVSc, MS, PhD, DABT, DACVP, FDA, Silver Spring, MD

An Overview of Mouse Neuropathology: Spontaneous Lesions and Artifacts

Ingrid D. Pardo, DVM, MS, DACVP, Pfizer, Inc., Groton, CT

Mouse Brain Tumors: GEM and Preclinical Models

Jerrold M. Ward, DVM, PhD, DACVP, Global Vet Pathology, Montgomery Village, MD

Translational Preclinical CNS Mouse Models I—Discovery

Caroline Zeiss, BVSc, PhD, DACLAM, DACVP, Yale University School of Medicine, New Haven, CT

Translational Preclinical CNS Mouse Models II—Safety

Ingrid D. Pardo, DVM, MS, DACVP, Pfizer, Inc., Groton, CT