Monday, June 20

Toxicologic Pathology and the Immune System

Scientific Sessions

Co-Chairs: Susan Elmore, DVM, MS, DACVP, DABT, National Toxicology Program, National Institute of Environmental Health Sciences, Research Triangle Park, NC, Patrick J. Haley, DVM, PhD, DACVP, Incyte Corporation, Wilmington, DE, and Jerrold M. Ward, DVM, PhD, DACVP, Global VetPathology, Montgomery Village, MD

The Society of Toxicologic Pathology (STP) will host a symposium on the fundamentals and recent innovations in the field of toxicologic pathology and the immune system. The focus of this international meeting is to correlate advances in the morphologic evaluation and interpretation of immunopathology findings with functional, cellular, and molecular knowledge in a series of plenary and poster sessions.

The major goal of the meeting is to provide an interactive program that allows for discussion of the current state of knowledge of immunopathology evaluations in conventional toxicology and specialized immunopathology studies. Foundational sessions will include fundamentals of Immune System Biology, including Basic Immunology, Functional Tests and Toxicologic Immunopathology; Innate Immunity; Acquired Immunity; Developmental Immunology; Challenges of Therapeutic Immunomodulation; and Issues and Observations Concerning Environmental Exposure to immunotoxicants.

The presentations will focus on a mix of standardized and contemporary pathology methods for immunopathology investigations. The meeting will also provide a unique forum to review the progress in the application of best practices for routine and specialized pathology evaluations of the immune system across the pharmaceutical, chemical, and academic worlds of pathology. An interactive panel discussion will explore the issues associated with differentiation of stress effects and immunotoxicity.

The traditional NTP Satellite Symposium, entitled Pathology Potpourri, in advance of the symposium will focus on the customary presentations of challenging lesions but will also include a presentation on proposed INHAND lymphoid nomenclature. Four continuing education sessions will be held on Sunday before the general sessions begin; Interacting with Regulatory Authorities: What to Do and What Not to Do; Biomarker Discovery, Qualification, and Application in Drug Development: What’s New, and What You Need to Know; Ultrastructural Analysis and Toxicologic Pathology; and Histopathology of the Rodent Lymphoid and Hematopoietic Systems. A half-day Career Development Workshop: “A Consultant’s Calling Workshop: Do You Have What It Takes to Be a Consultant in Toxicologic Pathology?” will also be held on Sunday and the Career Development Lunchtime Series Monday will provide guidance on the use of professional networking in career development.

The immune system and its responses is one of the more complex and challenging arenas of toxicologic inquiry and regulatory concern, and this congress promises to be an opportunity to review and expand your knowledge in this important field. We hope you will join us for this exciting program in Denver.

Monday Morning

8:10 AM–9:10 AM

Keynote Address:
TCDD: An Environmental Immunotoxicant Reveals a Novel Pathway of Immunoregulation

Nancy Kerkvliet, PhD, Oregon State University, Corvallis, OR

Session 1
9:10 AM–12:00 NOON

Immune System Biology: Immunology, Functional Tests and Toxicologic Pathology

Co-Chairs: Susan Elmore, DVM, MS, DACVP, National Toxicology Program, National Institute of Environmental Health Sciences, Research Triangle Park, NC and Jerry Ward, DVM, PhD, DACVP, Global VetPathology, Montgomery Village, MD

Various aspects of the normal anatomy, histology, immunology, and general toxicologic pathology of the immune system will be reviewed. The overview will include basic immunology, tests of immune function, and enhanced histopathology of the immune system. Subsequent Symposium sessions will delve into more detail of these aspects of the immune system.

9:10 AM–9:15 AM

Introduction
Jerrold M. Ward, DVM, PhD, DACVP, Global VetPathology, Montgomery Village, MD

9:15 AM–10:00 AM

Immunology for the Toxicologic Pathologist
Paul Snyder, DVM, PhD, DACVP, Purdue University, West Lafayette, IN

10:00 AM–10:40 AM

Break
Session 2
1:30 PM–5:00 PM

Innate Immunity

**Co-Chairs:** Paul Snyder, DVM, PhD, DACVP, Purdue University, West Lafayette, IN and Peter Ward, MD, University of Michigan, Ann Arbor, MI

This session will focus on aspects of Innate (non-specific) immunity relevant to pathogenesis of disease, including recognition molecules, cells and effector mechanisms. Specific topics to be covered include: protective and harmful innate immune responses in sepsis mediated by IL-17A; evidence for cross talk between the complement system and toll-like receptors (TLR) during inflammation and; the role of dendritic cells at the interface between non-specific immunity and specific immunity. In each presentation, morphological and functional aspects of the innate immune responses will be covered.

1:30 PM–1:35 PM

**Introduction**
Paul Snyder, DVM, PhD, DACVP, Purdue University, West Lafayette, IN

1:35 PM–2:15 PM

**Anatomy of Innate Immunity**
Braedon McDonald, MD, PhD, University of Calgary, Calgary, AB, Canada

2:15 PM–2:55 PM

**Role of IL-17A in Sepsis**
Peter Ward, MD, University of Michigan, Ann Arbor, MI

2:55 PM–3:25 PM

**Break**

3:25 PM–4:20 PM

**Student Speaker**

3:40 PM–4:20 PM

**Crosstalk between Complement and TLRs**
Wenchao Song, PhD, University of Pennsylvania School of Medicine, Philadelphia, PA

4:20 PM–5:00 PM

**Cellular Regulation of the Inflammatory Response**
Peter Henson, PhD, University of Colorado Health Sciences Center, Denver, CO
Tuesday Morning

Session 3
8:00 AM–12:00 NOON

Acquired Immunity

Co-Chairs: JoAnn Schuh, DVM, PhD, DACVP, Applied Veterinary Pathobiology, Bainbridge Island, WA and Gail Pearse, BVM&S, DACVP, GlaxoSmithKline, Ware, UK

Acquired immunity goes beyond innate immunity to provide controlled recognition and memory for specific antigenic challenges. Predominately involving activation of T and B cells, the resulting cellular- and secretory-mediated activity provides immediate and long-term host defenses. This session will highlight the biological advances in control of acquired immunity through T regulatory cells, the pathophysiology of effector cells and regulatory molecules in immunosuppression and hypersensitivity and allergy, and dysregulation that leads to loss of tolerance and autoimmune diseases.

8:00 AM–8:05 AM
Introduction
JoAnn Schuh, DVM, PhD, DACVP, Applied Veterinary Pathobiology, Bainbridge Island, WA

8:05 AM–8:40 AM
Regulatory T-cells: Diverse Phenotypes Integral to Immune Homeostasis and Suppression
Rich Peterson, DVM, PhD, DACVP, GlaxoSmithKline, Research Triangle Park, NC

8:40 AM–9:15 AM
Immunosuppression: Upsetting the Balance
Curtis Maier, PhD, GlaxoSmithKline, Research Triangle Park, NC

9:15 AM–9:50 AM
Cytokine Pathways in Allergic Inflammatory Disease
Cara M. M. Williams, PhD, Wyeth Discovery Research, Cambridge, MA

9:50 AM–10:05 AM
Student Speaker

10:05 AM–10:40 AM
Break

10:40 AM–11:15 AM
Pyrrhic Victory through Total War: Immune Responses in Autoimmune Disease
Brad Bolon, DVM, MS, PhD, DACVP, GEMpath, Inc., Longmont, CO

11:15 AM–12:00 NOON
Panel Discussion: Stress Effects vs. Immunotoxicity
Paul Snyder, DVM, PhD, DACVP, Purdue University, West Lafayette, IN

Tuesday Afternoon
Free Time

Wednesday, June 22

Wednesday Morning

Session 4
8:00 AM–12:00 NOON

The Immune System throughout Life

Co-Chairs: George Parker, DVM, PhD, DACVP, WIL Research Laboratories, Ashland, OH and Frieke Kuper, PhD, TNO, Zeist, Netherlands

The immune system is not a fixed entity, but instead goes through a progression of anatomical and functional changes starting with the fetus and newborn, progressing through adolescence and adulthood, and culminating in senescence. The basic anatomy and physiology of the immune system are genetically determined and depend heavily on endocrine and neural functioning. For example, life changes such as pregnancy and lactation have a significant impact on the immune system. Therefore, the effects of environmental factors and the efficacy of drugs differ with age/life stage and condition.

8:00 AM–8:10 AM
Introduction
George Parker, DVM, PhD, DACVP, WIL Research Laboratories, Ashland, OH

8:10 AM–9:00 AM
Development and Aging of Lymphoid Organs
TBD
pathways is required, as are more astute and contemporary methods for detecting and measuring changes to those pathways. The speakers in this session will attempt to define the risks and benefits of targeted immunomodulation as they apply to both large protein biologics and small molecules and how regulatory guidances may serve to guide researchers in the decision process.

1:30 PM–1:35 PM
Introduction
Michael W. Leach, DVM, PhD, DACVP, Pfizer Inc., Andover, MA

1:35 PM–2:20 PM
How Do We Apply Regulatory Guidances for Immunotoxicity to Immunomodulatory Drugs?
Thomas T. Kawabata, PhD, Pfizer Inc., Groton, CT

2:20 PM–3:00 PM
Small Molecule Immunomodulatory Drugs: Challenges and Approaches for Balancing Efficacy with Toxicity
Patrick Haley, DVM, PhD, DACVP, Incyte Corporation, Wilmington, DE

3:00 PM–3:40 PM
Break

3:40 PM–4:20 PM
Establishing the Carcinogenic Risk of Immunomodulatory Drugs
James Weaver, PhD, Center for Drug Evaluation and Research, Food and Drug Administration, Silver Spring, MD

4:20 PM–5:00 PM
Challenges and Approaches for Balancing Efficacy with Toxicity
Christopher Horvath, DVM, MS, DACVP, Taligen Therapeutics, Cambridge, MA
Thursday, June 23

Thursday Morning

Session 6
8:00 AM–12:00 NOON

Environmental Toxicologic Pathology
Chair: Douglas C. Wolf, DVM, PhD, FIATP, ATS, U.S. Environmental Protection Agency, Research Triangle Park, NC.

This session will focus on the impacts of environmental contaminants on the immune system and how they can affect public health and ecological systems. The first talk will overview the development and implementation of alternative cell-based, high throughput, evaluation systems for hazard identification and testing prioritization. The second talk will examine perfluorinated chemicals (PFCs), which are persistent in the environment and have been found in ground and surface waters. Epidemiologic studies suggest immune effects in humans and animal studies indicate PFCs target immune function and inflammatory responses. The third presentation will describe how air pollutants such as diesel exhaust particles, residual oil fly ash or its constitutive metals, can cause lung injury, inflammation, and potentiate allergic airway responses. The final presentation will describe the Deep Water Horizon spill, the largest oil spill and response action in U.S. history, with over 200 million gallons of crude oil released, and nearly 2 million gallons of dispersants applied. A diversity of biota were exposed, from deep ocean communities to coastal wildlife. A summary of the events of the spill, exposure pathways, and effects on wildlife including immune, endocrine, and population impacts will be presented.

8:00 AM–8:10 AM

Introduction
Douglas C. Wolf, DVM, PhD, FIATP, ATS, U.S. Environmental Protection Agency, Research Triangle Park, NC.

8:10 AM–8:55 AM

Immunotoxicant Screening and Prioritization in the 21st Century
Robert Luebke, PhD, U.S. Environmental Protection Agency, Research Triangle Park, NC.

8:55 AM–9:40 AM

The Immunotoxicity of Perfluorinated Compounds
Dori Germolec, PhD, National Institute of Environmental Health Sciences, Research Triangle Park, NC.

9:40 AM–10:20 AM

Break

10:20 AM–11:10 AM

Lung Immunotoxicity and Health Effects of Particulate Matter
Ian Gilmour, PhD, U.S. Environmental Protection Agency, Research Triangle Park, NC.

11:10 AM–12:00 NOON

Ecotoxicology of the Gulf Oil Spill
Mace Barron, PhD, U.S. Environmental Protection Agency, Gulf Breeze, FL.