

## **2009 Continuing Education Courses**

### **AM 1: Safety Pharmacology: Introduction, Application, and Interpretation**

**Session Chairs:** Jay Gizzi and Jeff McKee

Safety pharmacology is a relatively new and rapidly growing discipline critical in identifying potential adverse physiological effects and in determining the predictive value and risk associated with those effects in order to terminate programs prudently earlier in the preclinical development and to mitigate failure during clinical development. The document governing safety pharmacology is the ICH Harmonised Tripartite Guideline titled Safety Pharmacology Studies for Human Pharmaceuticals (S7A). This document serves as a guideline and provides recommendations regarding the approach to evaluate therapeutics with respect to core organ systems (cardiovascular, respiratory and central nervous systems), supplemental organ systems (e.g., GI and renal) and follow-up studies to describe effects and mechanisms of action. The objective of this course is to provide a basic, broad overview of safety pharmacology to individuals involved in the development of therapeutics, and therefore, is geared more towards junior scientists in the discipline. The course will include presentations from principal scientists with emphasis on the principles and state-of-the-art methodologies specific to each of the core and supplemental organ systems. These didactic presentations will be followed by a presentation on integrated risk assessment and will conclude with group discussions of selected case studies.

### **AM 2: Intermediate Cardiovascular**

**Session Chairs:** Angela Jenkins and R. Dustan Sarazan

Focusing on the fundamentals of cardiovascular safety pharmacology studies, this course is intended for individuals with previous knowledge of cardiovascular safety pharmacology or for individuals interested in learning more about cardiovascular safety studies. This is an “everything you want to know about cardiovascular system” course. Electrophysiology, electrocardiography, cardiac function, and practical applications used in non-clinical safety assessment studies are some examples of lectures covered in this course. Each lecture will include case studies where participation from the attendees is highly encouraged.

### **AM 3: Safety Pharmacology Study Design and Data Analysis**

**Session Chairs:** George Thomas and John Atkinson

Have you wondered about the right design for a Safety Pharmacology study? Is randomized Latin square design better than dose increment design in a telemetry study? Should I have male and female rats in my Irwin study? My data show statistical significance, but is it really a biologically relevant adverse effect? Should I use rats or guinea-pigs for my respiratory study? Which is the best QTc correction formula for telemetry monkey studies?

This course is designed to provide an overview of regulatory safety pharmacology study designs and analysis. Basic questions arising from the practice of Safety Pharmacology will be addressed. The course will examine various study designs commonly utilized for ICH S7A- and S7B- guided studies such as Modified Irwin, Cardiovascular Telemetry, Pulmonary Function and hERG. Topics discussed will include appropriate test systems, different dosing paradigms, data analysis techniques and importance of biological relevance. Specific questions/suggestions/cases from participants will be addressed / discussed during the last 30 minutes of the course.

### **AM 4: Safety Pharmacology in Early Drug Evaluation and Development. How Can Frontloading Save Time and Money?**

**Session Chairs:** Brad Main and Michael Pugsley

This course examines the practice and philosophy of conducting studies designed to illuminate safety risk earlier in the drug development process (frontloading). Frontloading can be defined as those safety assessments conducted during lead optimization of compounds before selection as a candidate drug for development and before regulatory studies are performed. The goal of early safety assessment or frontloading is to provide quality safety data that can drive development decisions much earlier in the flow scheme. Such studies also save resources by reducing late stage attrition.

The course will examine what methods and processes have been successfully applied at reducing attrition and to provide "no surprises" approach to later stage GLP safety studies. Various practices and philosophy will be discussed by the speakers with adequate time for class discussion.

## **PM 5: CNS Issues in Drug Development: Safety Pharmacology Beyond the Guidelines**

**Session Chairs:** Steve Hachtman and Wael Mohamed

### **Paragraph:**

This intermediate level course examines the issues and concerns that the central nervous system (CNS) factors play in the assessment of safety in the drug development process. Particular emphasis is placed upon practical guidelines and practices for assessment of key nervous system functions that go beyond the core battery requirements. Focus is on the current and new approaches for the measurement and assessment of system markers and dysfunction that translate from preclinical animal models into later clinical concerns.

Looking for early CNS indications of cognition with learning and memory models, addiction dependency using behavior assessment practices, EEG measurement of compound effects on cortical EEG activity, and what direction regulatory issues steer the science will be addressed in presentations as experienced researchers share practical methods and case data from their current research.

This course is targeted at researchers with fundamental knowledge of safety pharmacology that desire to broaden their expertise by understanding more sophisticated approaches for contemporary CNS risk determination. The format will include real data from current research as well as historical background for present work. New methods and techniques will be discussed in detail.

The course will examine the methods and processes that have been successfully applied at advanced laboratories in pharmaceutical and contract research organization settings. Current practices and philosophy will be discussed by the speakers with adequate time for class participation and dialogue will be provided.

## **PM 6: Basic Electrocardiography: ECG Reading and Interpretation**

**Session Chairs:** Alf Botchway and Michael Pugsley

This course will be taught by world leaders in the fields of human and veterinary cardiology. This CE course is designed to help students, technicians and other allied health personnel acquire the skills to analyze and interpret fundamental changes in ECG morphology and identify common arrhythmias. The course will be a combined lecture & workshop, covering topics such as basic electrocardiography including a qualitative and quantitative assessment of the ECG waveforms. By the end of the day, attendees are expected to be able to:

1. Identify the components of a normal ECG
2. Recognize common arrhythmias
3. Perform quantitative measurement of PR, QRS and QT durations and intervals

Sample ECGs will be provided and, following practical, hands on instruction, attendees will be expected to read and interpret a test set. A passing grade will result in presentation of a certificate documenting proficiency and signed by the faculty.

*Participation in the CE course, Intermediate Cardiovascular Safety Pharmacology, is strongly recommended prior to attending this class.*

**PM 7: Reducing Attrition in Pharmaceutical Development: Emerging Models and New Therapies:**

**Session Chairs:** David K. Johnson, Kristy Bruse and Lewis Kinter

Reducing attrition is paramount for improving efficiency and reducing costs in pharmaceutical development. Triage of existing preclinical models (*in silico*, *in vitro*, *in vivo*) is based upon demonstrated predictive ability, introduction of new models having high predictive potential, and rethinking strategies and tactics to deliver critical data for earlier decision-making are key components for existing pharmaceutical classes; new paradigms may better facilitate critical data delivery for decision making for new pharmaceutical classes/technologies. This course will review (briefly) contributions of Safety Pharmacology (SP) to date, explore potential of concepts based upon comparative medicine and patho-physiology to generate new and more predictive models, strategies and tactics to reduce attrition prior to key milestones in pharmaceutical development. In addition, the course will test the relevance of existing and new SP paradigms through discussion of their relevance for new RNA-based pharmaceuticals.

**PM 8: Advanced Topics in SP: Case Studies from Drug Selection to NDA**

**Session Chairs:** Pierre Morissette and Hugo Vargas

This course is designed as an advanced level course and will focus on the results of non-clinical Safety Pharmacology studies and how these studies impact drug selection, clinical development and registration of pharmaceuticals. To realize the most benefit from the course, attendees should have a general Safety Pharmacology background and understand the basic core battery assessments described in ICH S7A and S7B guidelines. A basic understanding of the stages of clinical development would also be useful. A mixture of topics from various stages of drug development will be presented and discussed in the context of how to work through problematic Safety Pharmacology data utilizing follow-up Safety Pharmacology and/or clinical studies. Scenarios in cardiovascular, respiratory and central nervous systems will be discussed. The intent of this course is as an interactive facilitated discussion. The course instructors will present scenarios and facilitate the discussion with course participants. Course participants are encouraged to submit brief cases (3 to 4 PowerPoint slides) to the course facilitators prior to the meeting to allow broader experiences for the discussion.