Continuing Education Courses

Tuesday, September 15

Please note that participation in the Continuing Education course requires attendees to register for the courses. Please visit the Registration Desk if you wish to sign up for a CE Course on-site.

Morning Courses: CE(1), CE(2), CE(3), CE(4)

Morning Courses include a continental breakfast and refreshments during the break. (For AM sessions only.)
8:00 Courses in Session
12:00 Courses Concludes
Each CE Course Book has a detailed agenda.

Afternoon Courses: CE(5), CE(6), CE(7), CE(8)

Afternoon Courses include a box lunch that can be picked up in the respective meeting room at 12:30 and refreshments during the break. Afternoon Course Schedule (may vary depending on course).
14:00 Courses in Session
18:00 Courses Concludes
Each CE Course Book has a detailed agenda.

18:30 Welcoming Reception—EVERYONE INVITED!!!!
19:30 All SPS Hosted Functions Adjourn

Scientific Sessions and Other Events

Wednesday, September 16

9:00 Welcome and Announcements
Rick Briscoe, PhD, President of the Safety Pharmacology Society
Auditorium Schweitzer

9:15 Keynote Address: Risk Assessment, Perception and Communication
Speaker: Ragnar Löfstedt, PhD, King’s College, London, United Kingdom
Auditorium Schweitzer

10:30 Break
Exhibit Area

11:00 Chronobiology and the Implications for Safety Assessment
Session Co-Chair and Tract Leader: Brian Guth, PhD and Co-Chair Maxim Soleviev, MD, PhD
Speaker: Björn Lemmer, Dr. med., Dr. h.c., Management Board EMEA; Institute of Pharmacology and Toxicology, Ruprecht-Karls University, Heidelberg, Germany
Auditorium Schweitzer

12:00 Lunch Break (Exhibit Area) Stand-up Buffet Provided
Visit Vendors and Poster Viewing
12:30–13:15 Posters 9–25 (except 21) attended by presenter
13:15–14:00 Posters 26–42 (except 32, 36) attended by presenter
13:00–14:00 Jr./Student Scientists Posters 1–8, 21, 32, 36, 50–52, 59, 84, 86, 89, 90–92, and 150 attended for judging

14:00

A. Translational: The Animal Model Framework

Session Chair: Paul C. Harrison, PhD
Schuman

Session presentations will focus on the predictive value of preclinical CNS models to observed effects or adverse events associated with drugs which have progressed into the clinic.

Using the Animal Model Framework to Explore Translation of Safety Pharmacology Cardiovascular Data to Phase I Clinical Trials
Speaker: Rob Wallis, PhD, Pfizer Inc., United Kingdom

Can the Animal Model Framework be Applied to Non-Cardiovascular Safety Pharmacology Models?
Speaker: Lorna Ewart, PhD, AstraZeneca, United Kingdom

B. Emerging Technologies

Session Co-Chairs: Mike Hawk, PhD and Anthony Bahinski, PhD
Tivoli 2

This session will highlight the emerging trends within safety testing to investigate direct (drug related) and in-direct (non drug related) effects upon the cardiovascular system.
Particularly alterations in cardiovascular homeostasis with respect to changes in ambient temperature of the animal housing rooms and the interaction of test articles and the body’s homeostatic mechanisms influencing the QT interval indirectly will be covered.

**Cool Mammals: Cardiovascular Adaptations under Varied Housing Temperatures**

*Speaker: Steven J. Swoap, PhD, Williams College, Massachusetts, United States*

**The Impact of Glucose Homeostasis on the QTc Interval**

*Speaker: Derek Leishman, PhD, Eli Lilly & Co., Indianapolis, Indiana, United States*

### C. Technology: In Silico

*Session Chair: Lothar Meister, MS*

**Salle Tivoli**

This is the first of two sessions that will address the key aspects in lead identification and optimization is the selection of molecules with appropriate physicochemical and ADMET properties in order to reduce the risk of failure at later stages. Reducing the rate of attrition of new molecules comes up at a key goal not only in larger pharmaceutical companies but is critical in the small biotechnology and virtual companies. In the past 10 years many studies on the prediction of ADMET characteristics of NCEs (new chemical entities) have been published. This session will address various *in silico* tools available for early safety assessment within the discovery phase.

**Inherently Safe Chemicals: Assessment and Design**

*Speaker: Klaus Kuemmerer, PhD, University of Freiburg, Germany*

**An Expert System Approach to the Assessment of Cardiotoxic Potential**

*Speaker: Laura Gibson, MChem, Lhasa Limited, Leeds, United Kingdom*

**16:30**

**A. Invited Oral Communications 1**

*Session Chair: Mike Gill, PhD*

**Schuman**

- **16:30** Assessment of Sensitivity of Three ECG Recording Methods Used in Dog Toxicology and Safety Pharmacology Studies  
  Pierre Laine, et al
- **17:00** An Integrated Cardiovascular and Neurobehavioural Functions Assessment in the Conscious Telemetered Cynomolgus Monkey  
  Elena Moscardo, et al
- **17:15** Non-Pharmacological Characterization of a Novel Quantitative Respiratory Monitoring Model in Cynomolgus Monkeys Using Implantable Telemetry  
  Boyce Moon, et al
- **17:30** Translational Medicine: Can We Use Publicly Available Data in Correlating Preclinical and Clinical Studies  
  Ard Teisman, et al

**B. Invited Oral Communications 2**

*Session Chair: Helen Prior, PhD*

**Tivoli 1**

- **16:30** Adaptation of Safety Pharmacology Cardiovascular and Respiratory Methodology for Use in Juvenile Toxicity Studies  
  Kevin Norton, et al
- **17:00** TBD
- **17:15** The Use of Whole Body Plethysmography to Evaluate Drug-Induced Changes in Respiratory Disorders: Sleep Apneas, Cough and Bronchospasm  
  Eric Delpy, et al
- **17:30** TBD
### C. Invited Oral Communications 3

**Session Chair: Claudio Arrigoni, PhD**

**Tivoli 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter(s)</th>
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<tbody>
<tr>
<td>16:30</td>
<td>Using the Conscious Telemetered Rat for Early In Vivo ECG Safety Studies: QT Interval Measurement and Correction</td>
<td>Oladipupo Adeyemi, et al</td>
</tr>
<tr>
<td>17:00</td>
<td>Comparison of External (JET™-BP System) Vs Invasive (DSI®) Telemetry in Cynomolgus Monkeys: Effects of Circadian Changes on CV Parameters</td>
<td>Frederick Sannajust, et al</td>
</tr>
<tr>
<td>17:15</td>
<td>QT Interval Response: Comparison of the Telemetered Guinea Pig, Dog and Monkey</td>
<td>Ying-Ying Zhou, et al</td>
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### D. Invited Oral Communications 4

**Session Chair: Tony Bahinski, PhD**

**Schuman**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter(s)</th>
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</thead>
<tbody>
<tr>
<td>17:30</td>
<td>In Vitro Rat Hippocampal Slice Model for Pro-Convulsion Liability Assessment</td>
<td>Xian Chen, et al</td>
</tr>
<tr>
<td>18:00</td>
<td>Induced Pluripotent Stem Cell Derived Cardiomyocytes and Multivariate Analysis for Detection of Potential QT Perturbation</td>
<td>Blake D. Anson, et al</td>
</tr>
<tr>
<td>18:30</td>
<td>Plug and Play for the Patch Clamp Technology: Frozen Instant Cells in Direct Comparison to Permanently Cultured Cells</td>
<td>Andrea van Bergen, et al</td>
</tr>
</tbody>
</table>

### E. Invited Oral Communications 5

**Session Chair: Greet Teuns, PhD**

**Tivoli 1**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter(s)</th>
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<tbody>
<tr>
<td>17:30</td>
<td>EEG in Monkey, But not Rat Identifies Seizure Potential of a Pharmaceutical Development Candidate</td>
<td>Carrie Markgraf, et al</td>
</tr>
<tr>
<td>18:15</td>
<td>Validation of Echocardiography Assessment of Cardiac Function in Conscious Beagle Dogs with Propanolol</td>
<td>Xing Cheng, et al</td>
</tr>
<tr>
<td>18:30</td>
<td>Motor Co-Ordination Using Gait Analysis: Comparison With Beam-Walking, Rotarod and Landing Foot Splay in Rats</td>
<td>Claire Draper, et al</td>
</tr>
</tbody>
</table>

### F. Invited Oral Communications 6

**Session Chair: Frederick Sannajust, PhD**

**Tivoli 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:30</td>
<td>Orofacial Dyskinesia Monitored by Telemetric Electromyographic Monitoring in the Rat, Using Yawning Behavior As a Marker</td>
<td>Virgine V. Roger, et al</td>
</tr>
<tr>
<td>18:00</td>
<td>Zebrafish Hair Cell Model for Assessing Ototoxicity</td>
<td>Wen Lin Seng, et al</td>
</tr>
<tr>
<td>18:15</td>
<td>Early and Delayed Emesis Assessed by EMG and Abdominal Pressure by Telemetry in Ferrets</td>
<td>Sandra Picard, et al</td>
</tr>
<tr>
<td>18:30</td>
<td>Reproducibility of Data Following a Reduced Fasting Period in the Charcoal Meal Gastrointestinal (GI) Study in Rats</td>
<td>Helen Prior, et al</td>
</tr>
<tr>
<td>18:30</td>
<td>Adjourn SPS Annual Meeting Day 1 Ancillary Events Begin</td>
<td></td>
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</table>
Thursday, September 17

9:00

A. Translation: Juvenile Medicine, Disease Animal Models and Combination Drug Therapy Safety Assessment

Session Co-Chairs: Eric Rieux and Sharon Rowton, PhD

Schuman

How does the personalization of medicine affect how we conduct Safety pharmacology studies? Should pediatric medicines be tested using juvenile animals, and if so is it possible to interpret the data in a meaningful way. Do fixed combination medicines require a different approach to safety testing in order to investigate potential synergistic effects? How differently do medicines act in people who are obese compared to those of an average weight? Are there occasions when safety pharmacology studies be conducted in disease models.

Safety Pharmacology Testing in Juvenile Animals—A Reality or a Nightmare?

Speaker: Paul Baldrick, PhD, Scientific & Regulatory Consulting, Covance Laboratories Ltd., United Kingdom

Diseased Animal Models in Human Pharmaceuticals Safety Assessment

Speaker: Eric Martel, PhD, Centre de Recherches Biologiques (CERB), France

Drug Combinations: Regulatory and Experimental Aspects in Safety Pharmacology As a Basis for Safety Assessment

Speaker: Jean-Michel Guillon, Pharm D, sanofi-aventis, France

B. Emerging Strategies—Toxicokinetics and Early Safety Assessment

Session Co-Chair and Tract Leader, Brian Roche, PhD and Co-Chair, Steve Hachtman, PhD

Tivoli 1

Session Overview

A general approach of toxicokinetics and pharmacokinetics applied to safety pharmacology studies. Can cardiovascular data be successfully collected simultaneously with PK sampling in safety pharmacology studies? This session will also contain data from rodent studies utilizing an automated blood collection and dosing unit.

Toxicokinetics: General Approach and Bridging to Safety Pharmacology Studies

Speaker: Karl-Heinz Lehr, PhD, sanofi-aventis, Germany

Front Loading—The Development Process to Make Decisions Earlier: Combining Automated PK with Telemetry in Rats

Speaker: Russell Bialecki, PhD, AstraZeneca Pharmaceuticals, Delaware, United States

C. Technology—Imaging Techniques for Cardiovascular Safety Assessment

Session Co-Chairs: Andrea Mitchell, DMV, PhD and Christian Freichel, DVM, PhD

Tivoli 2

This session will examine two new imaging techniques which could find application in safety pharmacology studies. The HDO technique enables real time measurements of pulse waves that can be viewed on a computer screen to determine blood pressure and pulse rate. Measurements are considerably faster (up to 15 sec) than conventional cuff methods and the assay sensitivity allows detection of arrhythmias. Following an overview a case report will be presented to discuss the application of HDO and results in a dog model study conducted at Roche, Basel. ECGI is a novel, noninvasive tool for imaging cardiac arrhythmia and defining electrophysiologic properties. Applications of ECGI could include risk stratification, precise diagnosis and determination of arrhythmia mechanisms, guidance of therapy and follow-up on outcome.

HD Oscillometry—Techniques, Pros/Cons, Model Design

Speaker: Beate Egner, DMV, Independent Consultant with Focus on Cardiology and Hemodynamics, Germany

HD Oscillometry Case Presentation

Speaker: Andrea Greiter-Wilke, DVM, PhD, F Hoffmann-La Roche Ltd., Basel, Switzerland
Noninvasive ECG Imaging (ECGI) of Cardiac Electrophysiology and Arrhythmia

**Speaker:** Yoram Rudy, PhD, F.A.H.A., F.H.R.S., Washington University-St. Louis, Missouri, United States

10:30 Break
10:30–11:00 Posters 93–105 attended by presenter
11:00 Safety Pharmacology Society Annual Meeting & Awards—EVERYONE INVITED!!!

Schuman
Announcement of Jr./Student Poster Competition winners, Jr./Student Travel Award Winners, and Distinguished Scientist Awardees’ Presentation

12:30 Lunch Break (Exhibit Area) Stand-Up Buffet Provided
Visit Vendors and Poster Viewing
13:00–13:45 Posters 106–125 attended by presenter
13:45–14:30 Posters 126–141 attended by presenter
Ancillary Luncheon Presentations

14:30

A. Translational: How Predictive are Preclinical Cardiovascular Endpoints to the Clinic?

**Session Co-Chair and Tract Leader:** JoAnne Saye, PhD and Co-Chair, George Thomas, PhD

Schuman
Preclinical animal experiments are to be done only if there is a reasonable expectation that the results will answer a relevant clinical question. As Zbinden has rightly pointed out, it should not be ‘just because we can, just because it has always been done, or just because others do so’. While introduction of new preclinical models and technology dictate what can be done to evaluate cardiac adverse effects of potential new drugs, it is essential to assess their appropriateness for identifying the risk to patients. Inadequate understanding of the mechanism of torsadogenesis makes the selection of appropriate preclinical models for QT prolongation and Torsade de Pointes all the more difficult. This session is aimed at examining the appropriateness of commonly used preclinical animal models and discussing their ability to predict incidences of adverse events related to QT prolongation and cardiac contractility.

QRS Duration, Contractility, and Na+/Ca2+ Currents: What is the Relevance of These Biomarkers in the Clinic?

**Speaker:** Wilhelm Haverkamp, MD, Charite Clinic, Berlin, Germany

A Preliminary Evaluation of the Predictive Value of Nonclinical Data for Drug-Induced QT Prolongation

**Speaker:** Syril Pettit, M.E.M, ILSI Health and Environmental Sciences Institute, Washington, D.C., United States; Elena Trepakova, PhD, Merck Research Laboratories, Pennsylvania, United States; and Jean-Pierre Valentin, PhD, AstraZeneca Pharmaceutical, United Kingdom.

Panel Discussion: Predictive Value of Nonclinical Data for Drug-Induced QT Prolongation and Increased QRS Duration

Panel of Speakers: Syril Pettit, M.E.M, ILSI Health and Environmental Sciences Institute, Washington, D.C., United States; Elena Trepakova, PhD, Merck Research Laboratories, Pennsylvania, United States; Jean-Pierre Valentin, PhD, AstraZeneca Pharmaceutical, United Kingdom; and Wilhelm Haverkamp, MD, Charite Clinic, Berlin, Germany

B. Emerging Strategies

**Session Co-Chairs:** Niels Christian Ganderup, and Alain Stricker-Krongrad, PhD

Tivoli 1
This session will target emerging trends in safety pharmacology that are reflective across the different species typically used for preclinical safety assessment. Topics covered will include; body temperature change and the effect on the QT interval in canine, EEG assessment of non-human primates, cardiovascular techniques utilizing Zebrafish, and the use of minipigs as a cardiovascular model.

Minipig ECG and Cardiovascular Parameters

**Speaker:** Michael Markert, PhD, Boehringer Ingelheim, Germany

Effects of Body Temperature on QT Interval in Beagle Dogs

**Speaker:** Phillip Atterson, PhD, WIL Research Laboratories, LLC, Ashland, Ohio, United States
EEG in Primates  
**Speaker:** Imad Ghorayeb, MD, Service des Explorations, Fonctionneles du Système Nerveux Hôpital Pellegrim, Bordeaux, France

Use of the Zebrafish in Safety Pharmacology  
**Speaker:** Will Redfern, PhD, AstraZeneca, United Kingdom

**C. Abuse Liability**

**Session Co-Chairs:** Maxim Soloviev, MD, PhD and Rob Wallis, PhD

**Tivoli 2**

Current revision of Guidance on Nonclinical Safety Studies for the Conduct of Human Clinical Trials and Marketing Authorization for Pharmaceuticals M3 (R2) calls for nonclinical drug abuse liability and recommends that “nonclinical data collected early in the drug development process can be useful in identification of early indicators of abuse potential. These early indicators would typically be available prior to first human dose and include the PK/PD profile to identify duration of action, similarity of chemical structure to known drugs of abuse, receptor binding profile, and behavioral pharmacology/clinical signs from in vivo nonclinical studies.” Industry experts will discuss basic pathways of drug dependence, regulatory and legal issues of drug abuse in different countries.

**From Early Identification of Abuse Liability to Regulatory Compliance**  
**Speaker:** Paul Moser, PhD, Porsolt & Partners, France

Translation from Animal to Man for Abuse Liability Studies  
**Speaker:** Andy Mead, PhD, Pfizer, United Kingdom

Abuse Liability Assessment—Scientific, Clinical, and Legal Issues  
**Speaker:** Gerald Schaefer, PhD, JD, The Cleveland Clinic Foundation, Ohio, United States

16:30 Break  
16:30–17:00 Posters 142–156 (Except 150) attended by presenter

17:00

**A. Translation from Discovery to Safety Assessment**

**Session Co-Chairs:** Michael Markert, PhD and Franz Hock, PhD

**Schuman**

One of the key aspects in lead identification and optimization is the selection of molecules with appropriate physicochemical and ADMET properties in order to reduce the risk of failure at later stages. The application of validated in silico models for multiple of these properties is useful to assist in multidimensional compound optimization. Building relevant models is possible, if a mechanistic understanding of the biological phenomenon and preferably single mechanism data are available for training and validation. In the past 10 years many studies on the prediction of ADMET characteristics of NCEs (new chemical entities) have been published. One of the most prominent approaches among several techniques is QSAR (Quantitative Structure Activity Relationship). Models are derived from activity profiles and structural features (i.e., fragment and descriptor information) of the corresponding molecules. In these talks the development and application of global and project specific in silico models will be discussed and applications in library design and lead optimization will be shown. Furthermore, it will be shown how the predictions can be implemented in a screening strategy which could streamline the drug discovery process.

**Computational Approaches towards the Prediction of ADMET Properties and Anti-Target Binding**  
**Speaker:** Hans Matter, PhD, sanofi-aventis, Germany

**In Silico ADME Modeling in Drug Research: Concepts and Strategies**  
**Speakers:** Jan Kriegl, PhD and Stefan Scheuerer, PhD, Boehringer Ingelheim Pharma, Germany
B. Emerging Strategies—Transgenic Mice

Session Co-Chairs: Jean-Gerard Napoleoni, PhD and Andreau Greiter-Wilke, DMV, PhD

Tivoli 1

Strasbourg France is home to the Mouse Clinical Institute, a facility that specializes in providing studies utilizing transgenic and mutagenic mice to offer new opportunities to investigate the function of genes and their encoded proteins. This session will focus on the established methods and models utilized at the Institute and the use of these valuable models in toxicology and safety pharmacology.

Transgenic Mouse Research in Early Safety Assessment

Speaker: Laurent Monassier, PhD, Laboratoire de Neurobiologie et de Pharmacologie Cardiovasculaire, Strasbourg, France

Phenotyping of Genetically Engineered Mouse Models for Drug Target Validation

Speaker: Jean-Louis Mandel, PhD, Mouse Clinic, Strasbourg, France

C. Technology—New Respiratory Techniques

Session Co-Chairs: Lothar Meister, MS and Mark Deurinck, DVM, DMV

Tivoli 2

This session will focus on two emerging techniques which could have utility in respiratory evaluation in safety pharmacology. The first technique described will be an in vitro model which may be an alternative to more traditional in vivo models examining lung irritation and inflammation. The second is a technique which could allow respiratory rate and volume information to be recorded from conscious animals with telemetry implants whilst also recording other safety pharmacology endpoints.

Ex Vivo Lung Function Measurements in Precision-Cut Lung Slices (PCLS) from Chemical Allergen-Sensitized Mice Represent a Suitable Alternative to In Vivo Studies

Speakers: Katherina Sewald, PhD, Fraunhofer Institute of Toxicology and Experimental Medicine, Hannover, Germany

Impedance Measurements for Respiratory Assessment by Telemetry

Speaker: L. Boyce Moon, Jr., BS, Data Sciences International, St. Paul, Minnesota, United States

18:30 Adjourn SPS Annual Meeting Day 2 Ancillary Events Begin

Friday, September 18

9:00

Schuman

EU Animal Regulations and Animal Welfare

Session Co-Chairs: Rick Briscoe, PhD and Kristy D. Bruse, PhD, Vice President

Speaker: Tim Hammond, Safety Assessment, United Kingdom, AstraZeneca, 2007 SPS Distinguished Scientist Awardee

Dr. Hammond will provide an overview of the Directive and the co-decision process in the development of EU Animal Regulations and Animal Welfare. This presentation will address what the new Directive covers, what will change, what areas have been contentious and where they are currently positioned and finally, the impact of the changes for the pharmaceutical industry in Europe.

Speaker: Rudolf Pfister, DMV, FVH, Preclinical Safety, Novartis

Dr. Pfister will provide an overview of the European animal welfare legislation on Safety Pharmacology. He will address the position of the Directive on use of primates, the impact upon models used in Safety Pharmacology, as well as proposed solutions for some of the concerns that have been raised.

10:30 Break (Coffee available) Schuman Foyer

11:00

Open Forum Discussion: The Growing/Changing Role of Safety Pharmacology

Audience participation requested

Session Co-Chairs: Scott Mittelstadt, PhD, and Pete Siegl, PhD, 2008 SPS Distinguished Scientist Awardee

In the coming year, 2010, the Safety Pharmacology Society and, in some respects, the field of safety pharmacology itself will be celebrating its 10th anniversary. Although the ICH S7A document was officially implemented in July
2001, by 2000 its content was well established and the foundation of safety pharmacology was clearly defined. How has the ICH S7A guidance document and the subsequent ICH S7B guidance document affected drug discovery and development over the past 10 years? Has it achieved the intended goal “to help protect clinical trial participants and patients receiving marketed products from potential adverse effects of pharmaceuticals, while avoiding the unnecessary use of animals and other resources?” Where are we headed and what are the current challenges in this dynamic field? To examine these and related topics, we have invited experts on safety pharmacology, including members of the ICH S7A working group, to join in a discussion on safety pharmacology. Dr. Gerd Bode representing EFPIA and Dr. Klaus Olejniczak representing BfARM were members of the ICH S7A working grouping and will be joining us for this discussion. In addition, Dr. Lew Kinter, from AstraZeneca and past-president of the Safety Pharmacology Society will round out the expert panel. The forum will be led by former SPS president, Dr. Scott Mittelstadt.

Come join us for what will certainly be a fascinating discussion which will also include and welcome questions from the audience!

12:15 Closing Remarks by incoming SPS President, Kristy D. Bruse, PhD

12:30 SPS Annual Meeting Adjourns.

See everyone in Boston, Massachusetts, United States in September 2010 for the 10th Annual Safety Pharmacology Society meeting and a celebration of 10 years of Safety Pharmacology!!!