### Saturday, October 18

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM–4:30 PM</td>
<td>Diplomate in Safety Pharmacology (DSP) Certification Exam</td>
<td>Wilson A Room</td>
</tr>
</tbody>
</table>

### Sunday, October 19

**MORNING CONTINUING EDUCATION COURSES**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 AM–8:00 AM</td>
<td>Continental Breakfast</td>
<td>Thurgood Marshall Southeast Ballroom</td>
</tr>
<tr>
<td>8:00 AM–12:00 Noon</td>
<td>Courses in Session AM—Cardiac Electrophysiology: The Biophysics of Ion Channels for the Safety Pharmacologist</td>
<td>Wilson Room</td>
</tr>
<tr>
<td></td>
<td>AM2—Excelling in EEG</td>
<td>Coolidge Room</td>
</tr>
<tr>
<td></td>
<td>AM3—Translational Medicine: Case Studies for the Application of Safety Pharmacology to Clinical Development</td>
<td>Harding Room</td>
</tr>
</tbody>
</table>

**AFTERNOON CONTINUING EDUCATION COURSES**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:15 PM–2:00 PM</td>
<td>Welcome Reception and Exhibition Opening</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td></td>
<td>(for afternoon course participants) Lunch for afternoon courses will be located outside the course rooms.</td>
<td></td>
</tr>
</tbody>
</table>

### Monday, October 20

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:15 AM–8:15 AM</td>
<td>Exhibitor Sponsored Presentations</td>
<td>Thurgood Marshall Southeast Ballroom</td>
</tr>
<tr>
<td>8:15 AM–8:30 AM</td>
<td>Welcome and Announcements</td>
<td>Thurgood Marshall Southeast Ballroom</td>
</tr>
<tr>
<td>9:00 AM–5:00 PM</td>
<td>Exhibits/Posters Open</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>9:30 AM–10:00 AM</td>
<td>Break</td>
<td>Exhibit Hall</td>
</tr>
</tbody>
</table>
| 10:00 AM–12:00 Noon | Morning Track Sessions  
A: Cardiovascular 1—Models for Cardiac Assessment  
B: Central Nervous System | Thurgood Marshall Southeast Ballroom |
|              | PM1—The Application of In Silico Computational Modeling to Safety Pharmacology         | Wilson Room    |
|              | PM2—Translation of Central Nervous System Data to Problem Solving As It Relates to Suicidal Ideation and Abuse Liability | Coolidge Room  |
|              | PM3—Respiratory System Safety Pharmacology and Case Studies                             | Harding Room   |
| 6:00 PM–7:30 PM | Welcome Reception and Exhibition Opening                                                | Exhibit Hall   |

### Tuesday, October 21

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:15 AM–8:15 AM</td>
<td>Exhibitor Sponsored Presentations</td>
<td>Thurgood Marshall Southeast Ballroom</td>
</tr>
<tr>
<td>8:30 AM–9:30 AM</td>
<td>Plenary: Cardiac Pressure-Volume Analysis—A Practical Perspective</td>
<td>Thurgood Marshall Southeast Ballroom</td>
</tr>
<tr>
<td>9:00 AM–5:00 PM</td>
<td>Exhibits/Posters Open</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>9:30 AM–10:00 AM</td>
<td>Break</td>
<td>Exhibit Hall</td>
</tr>
</tbody>
</table>
| 10:00 AM–12:00 Noon | Morning Track Sessions  
A: Cardiovascular 2—Dysfunction  
B: Regulatory | Thurgood Marshall Southeast Ballroom |
|              | 12:00 Noon–2:00 PM Lunch Break, Exhibits, and Poster Presentations                     | Exhibit Hall   |
| 12:30 PM–1:30 PM | Exhibitor Sponsored Presentations                                                        | Thurgood Marshall Northwest Ballroom |
| 1:00 PM–2:00 PM | All Posters Presented                                                                   | Exhibit Hall   |
| 2:00 PM–3:00 PM | Oral Communications 3–4 Invited Oral Communications Session 3: Focused In Vivo Nonclinical Models | Thurgood Marshall Southwest Ballroom |
|              | Invited Oral Communications Session 4: In Silico Methods, Disease Models and Integrated Pharmacology | Thurgood Marshall Northwest Ballroom |
| 3:00 PM–3:45 PM | Break, Exhibits and Poster Presentations                                                | Exhibit Hall   |
| 3:45 PM–5:45 PM | Afternoon Track Sessions  
A: Novel Assays for Safety Pharmacology Assessment  
B: Respiratory: Should the Sleep State be a Target for Safety Pharmacology? | Thurgood Marshall Northwest Ballroom |
|              | 5:00 PM–6:00 PM Poster Removal                                                          | Exhibit Hall   |
| 6:00 PM–7:00 PM | Exhibitor Sponsored Presentations                                                        | Thurgood Marshall Northwest Ballroom |

### Wednesday, October 22

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM–8:50 AM</td>
<td>SPS Annual Members’ Meeting and Awards Ceremony</td>
<td>Salon 1, Lobby Level</td>
</tr>
<tr>
<td>8:30 AM–10:00 AM</td>
<td>Poster Removal</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>8:50 AM–9:20 AM</td>
<td>Distinguished Service Award Presentation: Safety Futurology: From Virtuous to Virtual</td>
<td>Salon 1, Lobby Level</td>
</tr>
<tr>
<td>9:20 AM–11:05 AM</td>
<td>Update and Perspectives on Comprehensive In Vitro Proarrhythmia Assay (CIPA): Part 1</td>
<td>Salon 1, Lobby Level</td>
</tr>
<tr>
<td>11:05 AM–11:45 AM</td>
<td>Lunch (available for registered attendees)</td>
<td>Salon 1, Lobby Level</td>
</tr>
<tr>
<td>11:45 AM–2:15 PM</td>
<td>Update and Perspectives on Comprehensive In Vitro Proarrhythmia Assay (CIPA): Part 2</td>
<td>Salon 1, Lobby Level</td>
</tr>
<tr>
<td>2:15 PM–2:45 PM</td>
<td>President’s Summary of Issues, Recommendations and Debates</td>
<td>Salon 1, Lobby Level</td>
</tr>
<tr>
<td>2:45 PM</td>
<td>SPS 14th Annual Meeting Adjourns</td>
<td>Salon 1, Lobby Level</td>
</tr>
</tbody>
</table>
# Program and Exhibitor Directory

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Meeting Overview</td>
<td>8</td>
</tr>
<tr>
<td>Inside Front Cover</td>
<td></td>
</tr>
<tr>
<td>Welcome Letter</td>
<td>3</td>
</tr>
<tr>
<td>2014 Distinguished Service Award</td>
<td>4</td>
</tr>
<tr>
<td>Junior Investigator Travel Award</td>
<td>4</td>
</tr>
<tr>
<td>Student Travel Award</td>
<td>4</td>
</tr>
<tr>
<td>SPS 2014 Board of Directors</td>
<td>5</td>
</tr>
<tr>
<td>Diplomates in Safety Pharmacology</td>
<td>6</td>
</tr>
<tr>
<td>Committees</td>
<td>7</td>
</tr>
<tr>
<td>Annual Meeting Events</td>
<td></td>
</tr>
<tr>
<td>Annual Members’ Meeting</td>
<td>8</td>
</tr>
<tr>
<td>Distinguished Service Award Presentation</td>
<td>8</td>
</tr>
<tr>
<td>Continuing Education Courses</td>
<td>8</td>
</tr>
<tr>
<td>Exhibition</td>
<td>8</td>
</tr>
<tr>
<td>Poster Presentations</td>
<td>9</td>
</tr>
<tr>
<td>Poster Installation, Poster Removal, Poster Presentations, Poster Contest, and Oral Communications</td>
<td>9</td>
</tr>
<tr>
<td>Scientific Sessions</td>
<td>9</td>
</tr>
<tr>
<td>Welcome Reception and Exhibition Opening</td>
<td>9</td>
</tr>
<tr>
<td>Online meeting Materials</td>
<td>9</td>
</tr>
<tr>
<td>General Information</td>
<td></td>
</tr>
<tr>
<td>Accessibility for Persons with Disabilities</td>
<td>10</td>
</tr>
<tr>
<td>Badges</td>
<td>10</td>
</tr>
<tr>
<td>Certificates of Attendance</td>
<td>10</td>
</tr>
<tr>
<td>Internet Access</td>
<td>10</td>
</tr>
<tr>
<td>Lost and Found</td>
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<tr>
<td>Online Meeting Materials</td>
<td>10</td>
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<tr>
<td>Photography/Recording Policy</td>
<td>10</td>
</tr>
<tr>
<td>Registration Desk Hours</td>
<td>10</td>
</tr>
<tr>
<td>Security and Safety</td>
<td>10</td>
</tr>
<tr>
<td>Speaker Ready Room</td>
<td>11</td>
</tr>
<tr>
<td>Exhibitor Sponsored Presentations</td>
<td>11</td>
</tr>
<tr>
<td>The Marriott Wardman Park Hotel Maps</td>
<td>12</td>
</tr>
</tbody>
</table>

## CE Courses

Continuing Education Courses ...................................................... 14

## Program

Scientific Sessions and Other Events ........................................... 17

## Posters

Poster Presentation Floor Plan ..................................................... 26
Poster Index by Poster Number ...................................................... 28
Presenting Author Index ............................................................... 40

## Exhibitor Sponsored Presentations

Exhibitor Sponsored Presentation Descriptions ................................ 42

## Exhibitor Directory

Exhibitor Listing by Booth Number .................................................. 45
Exhibitor Listing by Company Name ................................................ 46
2014 Exhibit Map ............................................................................. 47
Exhibit Hours .................................................................................. 48
Exhibitor Directory ......................................................................... 48

## Looking Ahead

2015 Annual Meeting ........................................................................ 17

## Sponsorship

Society Sponsors ................................................................................ 14

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Become a Member of the Safety Pharmacology Society (SPS)

Safety pharmacology is a scientific discipline of great interest to those involved with the discovery and development of new pharmaceuticals. The scientific foundations of safety pharmacology are based on the integration of pharmacology, physiology, and toxicology. SPS members represent the pharmaceutical industry, as well as, academia, government, contract research organizations, service industries, consulting agencies, and private organizations world-wide. The benefits of joining SPS include:

Get Involved!
Safety pharmacology is still a rapidly developing area which is also reflected by the growth of the Society. SPS is still of a size which allows you multiple opportunities to become involved in the field by volunteering your time and enthusiasm. The Society has a wide variety of committee activities to meet all member volunteer needs and skills.

Education
Continuing Education courses are given in conjunction with the Safety Pharmacology Society Annual Meeting, as well as in satellite meetings throughout the year. CE courses include a comprehensive introduction to safety pharmacology for the “newcomer,” as well as advanced courses that challenge even the experienced safety pharmacologist. Webinars on relevant topics and online CE courses are also available.

Employment Opportunities
SPS provides a forum for advertising employment opportunities and for investigating new positions. This is available both by posting at the Annual Meeting, as well as on the SPS website (SPS Careers link). Being able to meet and even interview potential new employees/employers is a benefit for members attending the Annual Meeting.

Diplomate Certification Exam
The Safety Pharmacology Society has established a process for certification which would evaluate and document competency in the field of Safety Pharmacology. There is a need from the industry, and regulators worldwide for a certification process to confirm expertise and identify quality standards for professionals involved in the practice of safety pharmacology. Diplomates in Safety Pharmacology stimulate recognition of the discipline in the overall drug development community and with regulators, encourages toxicologists and other professionals who wish to diversify their experience and professional expertise to participate in SPS activities, and stimulates poster presentations and publications in safety pharmacology.

Communication and Networking
As a member, you are associated with experienced and knowledgeable scientists, providers, and regulators active in the field of safety pharmacology. Fellow members are available for discussions on safety pharmacology issues, such as study designs and data interpretation.

SavingS
Becoming a member of SPS includes discounted registration at the SPS Annual Meeting, at Continuing Education courses, and at Satellite Meetings and Workshops. Gain access to the Journal of Pharmacological and Toxicology Methods, in ScienceDirect, the Elsevier publication database. Your membership dues are more than compensated with these discounts.

Travel—New Places and New Friends
Each year there is a new venue for the Annual Meeting. Currently, we alternate between North America and Europe. This gives members the opportunity to travel and enjoy new cultures and international networking opportunities.

Vendor and CRO Contacts
Work done by safety pharmacologists are supported by dedicated vendors and contract research organizations. Members of SPS involved in this business segment also attend the SPS Annual Meeting and participate in the SPS Annual Meeting Exhibition. Furthermore, vendors sponsor safety pharmacology-related mini-symposiums to assist in the sharing of cutting-edge technology.

Website/SPShare—A Secure, Collaborative Network
SPShare is a secure collaborative network available to members for sharing information and the latest professional developments, professional networking, and much more. Easily access in real-time member profile information, educational documents, and the latest news about Society activities.

Membership Fees:
Full Membership ............................................................... $125
Retired Membership ..........................................................$50
Student Membership .......................................................$50

The easy online membership application takes approximately five minutes to complete. Visit www.safetypharmacology.org (select Invitation to Join SPS) for the application.
Dear Colleagues,

On behalf of the SPS Officers, Board of Directors, and Program Committee, we would like to welcome you to our 14th Annual Meeting in the historic, international city of Washington, DC.

The 2014 Scientific Program features a diverse range of scientific sessions organized into two theme tracks and covers issues specific to important therapeutic areas, new regulatory developments and new technologies so that attendees can stay abreast of new content and developments in all areas of safety pharmacology. The meeting offers a broad Continuing Education program both on an introductory level as well as advanced courses for the expert.

In an effort to support attendance from our younger colleagues, please note that SPS has selected both Student and Junior Investigator Travel Award recipients, and a Junior Investigator Poster Competition will take place at select posters in the Exhibit Hall as well.

We strongly encourage you to find time in your schedule to visit our Posters and Exhibitors in the Exhibit Hall as they are an important part of our Meeting. From the accepted poster abstracts, a variety were also selected to give short oral communications on Monday and Tuesday.

We cordially invite you to become a member of SPS, get involved in our ongoing activities and hope you have an enjoyable 14th Annual SPS Meeting!

Sincerely,

Jean-Pierre Valentin, PhD, DSP
SPS President 2014
Congratulations to the SPS 2014 Award Recipients

2014 Distinguished Service Award

William S. Redfern, BSc (Hons), PhD, FSB, FBPharmacolS, DSP, has over 30 Years’ postdoctoral experience in in vivo CNS and cardiovascular pharmacology, the last 28 years of which was spent in the pharmaceutical industry (nonclinical drug discovery and safety pharmacology), and includes broad experience of CNS preclinical disease models. His extensive experience of scientific leadership includes line management roles in three companies spanning 28 years. Dr. Redfern has provided safety pharmacology support across all therapy areas, at all stages of drug discovery and development, from target safety risk assessment to life cycle management. He has also authored safety pharmacology sections in INDs/IMPDs for more than 10 candidate drugs.

Dr. Redfern is an international opinion leader in safety pharmacology and is regularly invited to speak at international conferences and lecture at continuing education courses. He is the author of over 30 peer-reviewed articles (including five reviews), four book chapters, 70 conference proceedings abstracts, and two drug patents. He is also a Fellow of two societies (Society of Biology and British Pharmacological Society) and most recently has been appointed Honorary Senior Lecturer in the Faculty of Life Sciences at the University of Manchester (UK).

Please be sure to attend Dr. Redfern’s presentation, “Safety Futurology: From Virtuous to Virtual” on Wednesday, October 22 from 8:50 am–9:20 am in Salon 1.

Junior Investigator Travel Award

Siddhartha Bhatt
Pfizer
Poster #51

Sara Dutta
University of Oxford
Poster #26

Ivy Garfinkel
Merck
Poster #105

Mayel Gharanei
Inocardia
Poster #67

Krishna S. Naruganahalli
Indian Institute of Science
Poster #60

XueJun Wu
GlaxoSmithKline
Poster #90

Up to six (6) Junior Investigator Travel Awards are granted annually with consideration given to select awardees from diverse geographies.

Student Travel Award

Kylie Beattie
University of Oxford
Poster #23

Larissa Butler
AstraZeneca
Poster #63

Up to two (2) Student Travel Awards are granted annually with consideration given to select awardees from diverse geographies.
SPS 2014 Board of Directors

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UCB Biopharma

VICE PRESIDENT
Alfred Botchway
Xenometrics, LLC

VICE PRESIDENT-ELECT
Michael K. Pugsley
Janssen R&D

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AstraZeneca

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Martin Sanders
Martin Traebert

Executive Director
Krystle Correll
Diplomates in Safety Pharmacology
(As of 2014)

We wish to congratulate those who have become Diplomates in Safety Pharmacology in its inaugural year. We are excited to see the certification stimulate recognition of the discipline in the overall drug development community and with regulators, and look forward to the certified community of safety pharmacologists growing in the next few years.

Simon Authier, DVM, MSc, MBA, PhD, DSP
Marc Bailie, DVM, PhD, DSP
Ted Baird, PhD, DSP
Russell Bialecki, MSc, PhD, FSB, DSP
Alfred Botchway, MSc, PhD, DSP
Arthur Brown, MD, PhD, DSP
Kristy Bruse, PhD, DSP
Michael Curtis, PhD, FHEA, FBPharmacolS, DSP
Jill Dalton, PhD, DABT, DSP
Annie Delaunois, DVM, PhD, DSP
Mike Engwall, DVM, PhD, DSP
Thomas Grizzle, MS, DABT, DSP
Robert Hamlin, DVM, PhD, DACVIM, DSP
Mary Jeanne Kallman, PhD, DSP

John Koerner, PhD, DSP
Derek Leishman, PhD, DSP
Monica R. Metea, PhD, DSP
Dennis J. Murphy PhD, DABT, DSP
Helen Prior, PhD, FSB, DSP
Michael Pugsley, MSc, PhD, FBPharmacolS, DSP
Will Redfern, PhD, FSB, FBPharmacolS, DSP
Brian M. Roche, PhD, DSP, DABT
Marie Luce Rosseels, DVM, DSP
Matthew Skinner, PhD, DSP
Maxim Soloviev, MD, PhD, DSP
Jean-Pierre Valentin, PhD, HDR, ERT, CBiol, FSBiol, FRCPath, DSP
Hugo M. Vargas, PhD, DSP
The success of the Safety Pharmacology Society is dependant on the dedication and commitment of member volunteers. The Society would like to recognize the following members for their service on SPS committees.

Abstract Review Committee
Michael K. Pugsley, Chair (2014–2015)
Alfred Botchway, Co-Chair (2014)
Claudio Arrigoni
Robert J. Austin-LaFrance
Simon Authier
Anthony Bahinski
Khuram Chaudhary
Aurore Colomar
Carlos Del Rio
Eric Delpy
Mark Deurinck
Joffrey Ducrocq
Abdel-Ilah El Amrani
Yu-Jing Gao
Ursula A. Germann
John Ken Gibson
Jason Gill
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Kim Henderson
Daniel M. Johnson
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Bradley Main
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Pierre Morissette
Tomas Mow
Mark Pietras
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Frederick J. Sannajust
Silke Schwengberg
Hong Shi
Dan Singer
Greet Teuns
Martin Traebert

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Franz J. Hock
Daniel M Johnson
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Carrie G. Markgraf
Eric Martel
Chris Mathes
Carrie McMahon
Chris Regan
Anup Raj Upreti

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Derek J. Leishman, Co-Chair (2014)
Simon Authier
Anthony Bahinski
Carlos Del Rio
Franz J. Hock
Mary Jeanne Kallman
Chris Mathes
Anup Raj Upreti
Philippe Zitoun

Continuing Education (CE) Committee
Alfred Botchway, Chair (2014–2015)
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Robert J. Austin-LaFrance
Anthony Bahinski
Kim Henderson
Donald Hodges
Mary Jeanne Kallman
Paul Joseph Kruzich
Jeffrey McKee
Bruce Morimoto
Tomas Mow
Chris Regan
Greet Teuns

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Bruce Morimoto, Co-Chair (2014)
Arthur Brown
Serge Kaddoura
Chris Mathes

DSP Certification Exam Committee
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Mary Jeanne Kallman (2013–2014)
Maxim Soloviev (2013–2014)

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Khuram Chaudhary
Carlos Del Rio
Berengere Dumotier
Yu-Jing Gao
Jason Gill
Michael Markert
Chris Mathes
Jonelle May
Carrie McMahon
Pierre Morissette
Maria Isabel Roman
Hong Shi
Anup Raj Upreti

Nominating Committee
Hugo M. Vargas, Chair (2014)
Ted J. Baird
Gregory S. Friedrichs
Kimberly Hoagland
Silke Schwengberg

2014 Program Committee
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Philip Atterson
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Anthony Bahinski
Paul Butler
Cheryl Carlson
Khuram Chaudhary
Katsuyoshi Chiba
Michael Curtis
Carlos Del Rio
Michael Engwall
Ursula A. Germann
Gary Gintant
Jean-Michel Guillon
Wendy Halpern
Mike Hawk
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Xiaoxia Li
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Dennis J. Murphy
Joy Olbertz
Mark Pietras
Michael K. Pugsley
Kohei Sawada
Silke Schwengberg
Hong Shi
Maxim Soloviev
Andrew Sonderfan
Rachel Lynne Tapp
Yukie Ueyama
Anup Raj Upreti
Philippe Zitoun

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Hugo M. Vargas, Co-Chair (2014)
Jason Gill
Serge Kaddoura
Chris Mathes
Annual Meeting Events

Annual Members’ Meeting and Awards Ceremony

Salon 1, Lobby Level

Wednesday, October 22
8:00 AM–8:50 AM

A brief summary of the Society’s activities over the past year and the goals for the coming year will be presented. The Society’s Officers will be recognized and the incoming members of the Board will be announced. The ceremonial “passing of the gavel” will take place.

Awards recipients will be recognized for the following SPS Awards: Junior Investigator Travel Award; Junior Investigator Poster Contest; Student Travel Award; and the Distinguished Service Award (DSA).

Distinguished Service Award Presentation: Safety Futurology: From Virtuous to Virtual

Salon 1, Lobby Level

Wednesday, October 22
8:50 AM–9:20 AM

The 2014 DSA Lecture will be given by this year’s award recipient, William S. Redfern, BSc (Hons), PhD, FSB, FBPPharmacolS, DSP, AstraZeneca from 8:50 am–9:20 am.

Continuing Education Courses

All Continuing Education courses will be held on Sunday, October 19. Attendees will receive a certificate of attendance for participation at the end of each course. If you wish to participate in a CE course but have not yet registered, please visit the Registration Desk on the Exhibition Level to register. See page 14 for course descriptions.

Morning Courses: AM1, AM2, AM3

Morning courses include a continental breakfast and refreshments during the break (for AM CE course attendees only).

7:30 AM–8:00 AM—Continental Breakfast

(for morning course participants)

Breakfast for morning courses will be located outside the course rooms.

8:00 AM–12:00 Noon—Courses in Session

AM1—Cardiac Electrophysiology: The Biophysics of Ion Channels for the Safety Pharmacologist

Wilson Room

AM2—Excelling in EEG

Coolidge Room

AM3—Translational Medicine: Case Studies for the Application of Safety Pharmacology to Clinical Development

Harding Room

Afternoon Courses: PM1, PM2, PM3

Afternoon courses include a boxed lunch and refreshments during the break (for PM CE course attendees only).

1:00 PM—2:00 PM—Boxed Lunch

(for afternoon course participants)

Lunches for afternoon courses will be located outside the course rooms.

2:00 PM–6:00 PM—Courses in Session

PM1—The Application of In Silico Computational Modeling to Safety Pharmacology

Wilson Room

PM2—Translation of Central Nervous System Data to Problem Solving As It Relates to Suicidal Ideation and Abuse Liability

Coolidge Room

PM3—Respiratory System Safety Pharmacology and Case Studies

Harding Room

Exhibition

Exhibit Hall

Exhibits are open to all registered attendees. Refreshment breaks and lunch will be available in the Exhibit Hall on Monday and Tuesday.

Exhibit Hours

Sunday, October 19 ......................................................... 6:00 PM–7:30 PM
Monday, October 20 ...................................................... 9:00 AM–5:00 PM
Tuesday, October 21 ....................................................... 9:00 AM–5:00 PM

Exhibitors please note:

Installation Times

Sunday, October 19 ......................................................... 9:00 AM–3:00 PM

Exhibitors must complete their installation by 3:00 pm to allow time for the Welcome Reception setup.

Dismantle Times

Tuesday, October 21 ....................................................... 5:00 PM–9:00 PM
Wednesday, October 22 ............................................... 8:30 AM–12:00 Noon

Exhibitors must vacate the Exhibit Hall by 12:00 noon on Wednesday, October 22.
**Scientific Sessions**

The 2014 scientific program features a diverse range of scientific sessions organized into two thematic tracks and covering issues specific to important therapeutic areas, new regulatory developments and new technologies so that attendees can stay abreast of new content and developments in all areas of safety pharmacology. Sessions take place in the following rooms: Thurgood Marshall Ballrooms Southeast and Northwest on the Mezzanine Level and Salon 1, on the Lobby Level (see map on page 13). Please see the daily schedule beginning on page 17, for session details.

**Welcome Reception and Exhibition Opening**

*Exhibit Hall*

**Sunday, October 19**

6:00 PM–7:30 PM

Admission to the Welcome Reception is included in the registration fee for attendees and exhibitors. Refreshments, Exhibitors, and posters will be present at the Welcome Reception. Refreshments will be available from 6:00 pm until 7:30 pm.

**Reminder**

All refreshment and lunch breaks will take place in the Exhibit Hall on Monday and Tuesday. Exhibitors and Poster Authors will be available to attendees to discuss their products, services, and posters. See pages 8–9 for specific availability and hours.
General Information

Accessibility for Persons with Disabilities
The Marriott Wardman Park Hotel is accessible for individuals with special mobility needs. If you require more information about access, please speak with a Marriott Hotel representative.

Badges
During the Annual Meeting, badges must be worn at all times while in the Marriott Wardman Park Hotel. For security purposes, please remove your badge when leaving the hotel. If you misplace your badge please visit the Registration Desk during registration hours for a replacement.

Certificates of Attendance
Certificates of attendance will be available in your registration packet at the Registration Desk located on the Exhibition Level.

Internet Access
Wireless Internet is available in the common areas of the Marriott Wardman Park Hotel.

Lost and Found
Lost and found articles may be taken to the SPS Registration Desk. Any items left at the SPS Registration Desk after 2:00 pm on Wednesday, October 22 will be turned over to the Marriott Wardman Park Hotel.

Online Meeting Materials
Download Abstracts and the Attendee List from SPS Website
Poster Abstracts and other meeting materials are accessible online. The Poster Index is available on page 26 for you to navigate the Poster Presentations.

The following items are also available online:
- Program and Exhibitor Directory
- Poster and Speaker Abstracts
- Session and CE Course Evaluations
- Attendee List

We encourage you to download the electronic files to your computer, smart phone, or PDA. Please visit www.safetypharmacology.org/AM2014.

This is a QR (Quick Response) code. Download a QR reader app on your smart phone or tablet and scan for easy access to up-to-date Annual Meeting information.

Registration Desk Hours

Exhibition Level, Marriott Wardman Park Hotel
- Sunday, October 19: 7:00 AM–6:00 PM
- Monday, October 20: 7:30 AM–6:00 PM
- Tuesday, October 21: 8:00 AM–6:00 PM

Lobby Level, Marriott Wardman Park Hotel
- Wednesday, October 22: 7:30 AM–2:00 PM

Photography/Recording Policy
Photography and/or recording of scientific presentations and poster presentations in any manner is prohibited without the specific consent of SPS and the presenter(s)/author(s). Session chairs are asked to strictly enforce this policy, and individuals who do not comply will be asked to leave the session. In addition, cameras, and recording devices are prohibited in the Exhibit/Poster Areas. If you have any questions regarding this policy, please visit the SPS Registration Desk.

Security and Safety
SPS provides security personnel at the Marriott Wardman Park Hotel. If you have any security concerns, please contact SPS staff at the Registration Desk.

Given the nature of our conference there is always a possibility of demonstrators. Demonstrations can range from verbal confrontations to protests. We recommend the following procedures in the event of demonstrations:

- Have your name badge available upon entering the Marriott Wardman Park Hotel and wear it in the hotel at all times. When leaving the hotel, remove it, so as to blend with other people.
- If you see a demonstration or protest beginning, please contact any member of the SPS Annual Meeting staff and they will initiate an SPS response. If you see actions that appear threatening, notify the nearest security personnel.
- Do not engage, defend either side, or subdue person(s) in any type of disturbance. Demonstrators are usually trying to attract media attention, don’t help them.
- SPS representatives will respond to media inquiries. Do not participate in interviews or other media responses.
Travel Safety Tips:
Walk “smart” when you leave the Marriott Wardman Park Hotel.

- Don’t answer the door in a hotel room without verifying who it is. If a person claims to be an employee, call the Front Desk and ask if someone from their staff is supposed to have access to your room and for what purpose.
- Know your destination and the best way to reach it.
- Travel along sidewalks in lighted areas at night, and don’t walk alone.
- Establish a “buddy” system with another attendee to walk to and from the Marriott Wardman Park Hotel.
- Share schedules and check on each other periodically.
- Build your awareness of unknown surroundings by reviewing local information.
- Laptop computers, electronic tablets, and smart phones are attractive, easy targets for thieves. Be sure your equipment is kept in a secure place.
- Jackets with pockets provide a convenient alternative to reduce the chance for lost or stolen handbags.

Speaker Ready Room

Tyler Room

The Speaker Ready Room is available for speakers to upload and test their presentations during the following times:

Saturday, October 18: 3:00 PM–5:00 PM
Sunday, October 19: 7:00 AM–6:00 PM
Monday, October 20: 7:30 AM–5:30 PM
Tuesday, October 21: 7:30 AM–5:30 PM
Wednesday, October 22: 7:30 AM–1:00 PM

Exhibitor Sponsored Presentations

Each year SPS invites all exhibitors and annual meeting sponsors to host Exhibitor Sponsored Presentations during the meeting. For a complete list of 2014 Exhibitor Sponsored Presentations please see page 42. Exhibitor Sponsored Presentations are promoted on the SPS website, via email blasts to registrants, and in the Program and Exhibitor Directory.

While they are not a part of the official SPS scientific program, Exhibitor Sponsored Presentations are permitted by the Society.

Upcoming Meetings

SPS 15th Annual Meeting
Prague, Czech Republic
Prague Congress Centre
September 28–October 1, 2015

SPS 16th Annual Meeting
Vancouver, Canada
Vancouver Convention Centre
September 18–21, 2016
The Marriott Wardman Park Hotel Maps

**Lobby Level**
*Scientific Sessions (Wednesday), Registration (Wednesday)*

Exhibits, Posters, Registration (Sunday–Tuesday)

**Exhibition Level**

Exhibits and Scientific Posters

SPS Registration
Sunday–Tuesday

SPS Sessions (Wednesday)

SPS Registration (Wednesday)
The Marriott Wardman Park Hotel Maps

Mezzanine Level
CE Courses, Scientific Sessions, DSP Exam, and Other Meetings
Continuing Education

Saturday, October 18

Diplomate in Safety Pharmacology (DSP) Certification Exam
9:00 AM–4:30 PM—Marriott Wardman Park Hotel, Wilson A Room
Preregistration for the exam was required by October 1. The next DSP certification exam will be held in Prague, Czech Republic in September 2015.

Sunday, October 19

Morning Continuing Education Courses
Morning courses include a continental breakfast and refreshments during the break (for AM CE course attendees only).

7:30 AM–8:00 AM—Continental Breakfast
(for morning course participants)
Breakfast for morning courses will be located outside the course rooms.

Please refer to your course book for further details and presentation handouts.

Sunday Morning

AM1: Cardiac Electrophysiology: The Biophysics of Ion Channels for the Safety Pharmacologist
8:00 AM–12:00 Noon
Wilson Room
Co-Chairs: Michael K. Pugsley, MSc, PhD, FBPharmacolS, DSP, Janssen R&D, Raritan, NJ, United States, and Donald Hodges, PhD, Vertex Pharmaceuticals, Boston, MA, United States

Ion channels have an important role in a variety of biological processes including cardiac contraction, and neuronal membrane excitation. While ion channels are important drug targets for the development of novel therapeutics, an understanding of the electrophysiological role of the ion channel in both cardiac and neuronal physiology is critical to the safety pharmacologist in order to assure complete characterization of the safety profile of the new chemical entity (NCE). This course will highlight basic principles of ion channel biophysics as well as the role of ion channels (sodium, calcium and potassium) in establishing the cardiac action potential and the EKG. Standard electrophysiological principles and practice for safety pharmacologists will be reviewed as well as advances in automated electrophysiology and other emerging technologies. Ion channel properties of stem cells (iPSC-CM) will be discussed in light of the ongoing discussions regarding the potential for adoption of a new, integrated nonclinical in vitro/in silico paradigm, the Comprehensive In Vitro Proarrhythmia Assay (CiPA).

Recommendation to attendees: This course should be taken as an introduction or preparation for advanced discussions in the afternoon in silico session which requires knowledge of ion channel biophysics and principles of electrophysiology.

Speakers: Michael K. Pugsley, MSc, PhD, FBPharmacolS, DSP, Janssen R&D, Raritan, NJ, United States, William J. Crumb Jr., PhD, Ze nas Technologies LLC, New Orleans, LA, United States, Arthur “Buzz” Brown, MD, PhD, DSP, ChanTest Corporation, Cleveland, OH, United States, and Donald Hodges, PhD, Vertex Pharmaceuticals, Boston, MA, United States

AM2: Excelling in EEG
8:00 AM–12:00 Noon
Coolidge Room
Co-Chairs: Carrie G. Markgraf, MD, PhD, Merck Research Laboratories, Kenilworth, NJ, United States, and Simon Authier, DVM, MSc, MBA, PhD, DSP, CiToxLAB, Laval, QC, Canada

This course will cover the use of electroencephalogram (EEG) in preclinical safety studies with a focus on EEG in seizure detection and prediction. It is intended for those who perform EEG, those who use EEG in evaluating compound safety and those who would like to learn more about the role EEG can play in risk assessment. The course will begin with an overview of EEG technology—its correct application and its limitations, as well as best practices for setting up the animal models. Sleep and seizure detection, two common uses for EEG in the nonclinical setting, will be discussed in detail followed by a case study in which EEG was used successfully to advance a potentially seizure-genic compound. The didactic portion of the course will conclude with a Regulatory perspective on EEG. The course will finish with interactive EEG pattern review and presentation of various examples of EEG waveforms. Upon completion of this course, the attendee will be able to (1) understand the EEG technology, its use in animals and the differences between implanted electrodes and use of scalp electrodes; (2) identify the five basic EEG frequencies, recognize various sleep states and understand the morphology of spikes and spike-wave complexes and (3) appreciate the role EEG can play in risk assessment for compound with impact on sleep or with seizure potential.

Speakers: Carrie G. Markgraf, MD, PhD, Merck Research Laboratories, Kenilworth, NJ, United States, Monica R. Metea, PhD, DSP, Covance Laboratories, Inc., Greenfield, IN, United States, Joanne Stevens, Merck Research Laboratories, West Point, PA, United States, Simon Authier, DVM, MSc, MBA, PhD, DSP, CiToxLAB, Laval, QC, Canada, Marcus Delatte, PhD, US FDA, Silver Spring, MD, United States, and Mary Jeanne Kallman, PhD, DSP, Covance Laboratories, Inc., Greenfield, IN, United States

AM3: Translational Medicine: Case Studies for the Application of Safety Pharmacology to Clinical Development
8:00 AM–12:00 Noon
Harding Room
Co-Chairs: Bruce Morimoto, PhD, Celerion, Redwood City, CA, United States, and Alfred Botchway, MSc, PhD, DSP, Xenometrics, LLC, Stilwell, KS, United States

This will be an intermediate/advanced level course geared toward understanding how data obtained in safety pharmacology studies
Sunday, October 19 continued

is used in early clinical development. Detailed presentations will introduce what goes into a Phase 1 first-in-human study discussing how nonclinical data is used to justify the starting dose, how doses are escalated, and stopping rules. Examples of Phase 1 protocols will be presented as well as a virtual tour of a Phase 1 facility. The second formal presentation will focus on how data from nonclinical safety pharmacology studies (CNS, CV, respiratory, etc.) are mapped to clinical outcome measurements in a Phase 1 study. Specifically, how safety pharmacology endpoints are interpreted and translated into clinical risk assessment. The course will include several case studies of how nonclinical safety pharmacology findings were addressed with clinical safety evaluations incorporated into Phase 1 protocols and how this data was used to mitigate the risk identified in safety pharmacology studies.

Speakers: Richard J. Briscoe, PhD, Merck & Co., Inc., West Point, PA, United States, Hugo M. Vargas, PhD, DSP, Amgen, Inc., Thousand Oaks, CA, United States, Erin Castelloe, MD, EBD Consulting, San Diego, CA, United States, Alfred Botchway, MSc, PhD, DSP, Xenometrics, LLC, Stilwell, KS, United States, and Bruce Morimoto, PhD, Celerion, Redwood City, CA, United States

Lunch Break
(afternoon course participants, please see below for boxed lunch information)

12:00 Noon–2:00 PM

Sunday Afternoon

Afternoon Continuing Education Courses

Afternoon courses include a boxed lunch and refreshments during the break (for PM CE course attendees only).

1:15PM–2:00 PM — Boxed Lunch Break
(for afternoon course participants)
Lunches for afternoon courses will be located outside the course rooms.

Poster Installation
2:00 PM–3:00 PM
Exhibit Hall

PM1: The Application of In Silico Computational Modeling to Safety Pharmacology

2:00 PM–6:00 PM
Wilson Room

Co-Chairs: Michael K. Pugsley, MSc, PhD, FBPharmacolS, DSP, Janssen R&D, Raritan, NJ, United States, and Donald Hodges, PhD, Vertex Pharmaceuticals, Boston, MA, United States

This course is designed to outline current trends with regard to the application of in silico computational modeling to cardiac safety pharmacology principles and practice. The course will outline basic ion channel biophysics as well as mathematical principles used in the construct of the cardiac action potential. In silico models to be discussed will include those developed by O’Hara-Rudy and ten Tusscher and their application to single-cardiac and human Purkinje fiber cell models. Examples of the uses/limitations of the models will be provided as they are developed in order to complement the current assessment methods in the identification of cardiac liabilities of compounds.

Recommendation to attendees: It would be ideal to attend AM1 Course if you have a minimal knowledge of ion channel electrophysiology and basic biophysics.

Speakers: Michael K. Pugsley, MSc, PhD, FBPharmacolS, DSP, Janssen R&D, Raritan, NJ, United States, Colleen E. Clancy, PhD, University of California-Davis, Davis, CA, United States, Sebastian Polak, PhD, Simcyp, UK, Sheffield, United Kingdom, Hugo M. Vargas, PhD, DSP, Amgen, Inc., Thousand Oaks, CA, United States, and Donald Hodges, PhD, Vertex Pharmaceuticals, Boston, MA, United States

PM2: Translation of Central Nervous System Data to Problem Solving As It Relates to Suicidal Ideation and Abuse Liability

2:00 PM–6:00 PM
Coolidge Room

Co-Chairs: Mary Jeanne Kallman, PhD, DSP, Covance Laboratories, Inc., Greenfield, IN, United States, and Tomas Mow, DVM, PhD, H. Lundbeck A/S, Copenhagen, Denmark

This course will include sessions on Suicidal Ideation & Behavior and Abuse Liability Testing methods and models—including translational aspects and case stories.

Part One: Suicidality

Concerns have been raised that e.g. SSRIs are associated with suicidal thinking and behavior. Suicide is a complex human behavior and no direct link to animal behavior exists. However, some behavioral traits associated with suicide in humans have shown strong cross-species parallels. Modeling relevant traits like aggression, impulsivity, irritability, and hopelessness/helplessness in animals have been able to clarify the impact of SSRIs.

Speakers: Keri E. Cannon, PhD, DABT, Pfizer Inc., Groton, CT, United States, and Todd D. Gould, MD, University of Maryland School of Medicine, Baltimore, MD, United States

Part Two: Abuse Liability

The assessment of the abuse potential has become a major topic in the development of CNS-active drugs since the release of the EMA, ICH, and draft FDA guidelines. Preclinical abuse liability assessment usually involves several tests, evaluating different aspects characteristic for abuse potential which are considered predictive for substance abuse, thus ensuring an appropriate translational approach.

Speakers: Michael A. Nader, PhD, DABT, Wake Forest School of Medicine, Winston-Salem, NC, United States, and Susan Goody, PhD, Pfizer Inc., Groton, CT, United States
PM3: Respiratory System Safety Pharmacology and Case Studies

2:00 PM–6:00 PM

Harding Room

Co-Chairs: Greet Teuns, DVM, MSc, Janssen R&D, Beerse, Belgium, and Jeffrey McKee, MS, PhD, DABT, Baxter Healthcare Corporation, Round Lake, IL, United States

This course will cover comparative animal respiratory system anatomy and physiology as well as the methodologies and measurement endpoints typically employed in safety pharmacology studies. The hope is that the information from this course will help participants optimize respiratory safety pharmacology study design and to increase the predictability of their study findings to the clinic. The course will include detailed information on the macroscopic and microscopic anatomical differences between the respiratory systems of various animal species employed in safety pharmacology studies relative to humans. The course will also cover in-depth information on lung mechanics, the advantages and disadvantages of the various methodologies employed in safety pharmacology studies (e.g., PV-loops, spirometry, head-out / head-in / whole body plethysmography, forced maneuvers), and the pros and cons associated with commonly used measurement endpoints. Finally, the course will cover the appropriate design of safety pharmacology studies and data analysis strategies in order to maximize the information from your data as well as case studies.

Speakers: Jeffrey McKee, MS, PhD, DABT, Baxter Healthcare Corporation, Round Lake, IL, United States, Greet Teuns, DVM, MSc, Janssen R&D, Beerse, Belgium, Kristy D. Bruse, PhD, DSP, Independent Consultant, Albuquerque, NM, United States, Stéphane Milano, PhD, WIL Research Europe, Lyon, Saint Germain sur l’Arbresle, France, and Simon Authier, DVM, MSc, MBA, PhD, DSP, CiToxLAB, Laval, QC, Canada

Welcome Reception and Exhibition Opening

6:00 PM–7:30 PM

Exhibit Hall

Photographed by Chris Cerniglia.
Monday, October 20

Exhibitor Sponsored Presentations
7:15 AM–8:15 AM
See page 42

Welcome and Announcements
8:15 AM–8:30 AM
Thurgood Marshall Southeast Ballroom
Jean-Pierre Valentin, PhD, DSP, SPS President, UCB Biopharma, Braine l’Alleud, Belgium

Monday Morning Sessions

Plenary Keynote: The Past, Present, and Future of Alzheimer’s Disease Research
8:30 AM–9:30 AM
Thurgood Marshall Southeast Ballroom
Neil S. Buckholtz, PhD, Division of Neuroscience (DN) at the National Institute on Aging, National Institutes of Health, Bethesda, MD, United States

Break
9:30 AM–10:00 AM
Exhibit Hall

Track A: Cardiovascular 1—Models for Cardiac Assessment
10:00 AM–12:00 Noon
Thurgood Marshall Southeast Ballroom
Co-Chairs: Bradley Main, Data Sciences International, St. Paul, MN, United States, and Robert Kaiser, PhD, DABT, Charles River Laboratories, Reno, NV, United States

The industry standard for assessment of preclinical cardiovascular safety has focused on drug induced changes on heart rate, blood pressure, and electrophysiology. A fundamental property of the cardiovascular system that has not been consistently investigated is the inotropic state of the heart which impacts cardiac output and blood pressure. Reasons that the effects of drugs on contractility have not been investigated include lack of agreement on appropriate methods to interrogate these effects and lack of understanding regarding the translation of preclinical results to the clinic. The purpose of this session is to bring together speakers on appropriate methods for investigating left ventricular function. In addition, results from the HESI Cardiac Safety Initiative will be presented showing the predictivity of preclinical studies.

10:00 AM–10:30 AM Modeling of the Cardiovascular System to Guide Development of Devices for Heart Failure
Daniel Burkhoff, MD, PhD, Columbia University, New York, NY, United States

10:30 AM–11:00 AM Ventriculo-Arterial Responses in Health and Disease: A Look Through Ventricular Pressure-Volume Analysis
Carlos del Rio, PhD, QTest Labs, Columbus, OH, United States

11:00 AM–11:30 AM Translation of Drug-Induced Heart Rate and Blood Pressure Effects in Rat, Dog, and Nonhuman Primate to Human—How Predictive Are Preclinical Models?
Jill Steidl-Nichols, PhD, Pfizer, Inc., Groton, CT, United States

11:30 AM–12:00 Noon HESI Cardiac Safety Committee: Prospective Studies to Evaluate the Sensitivity of Left Ventricular Function Measured via Telemetry in Dogs to Predict Clinical Effects of Human Drugs
Michael Engwall, DVM, PhD, DSP, Amgen Inc., Thousand Oaks, CA, United States

Track B: Central Nervous System
10:00 AM–12:00 Noon
Thurgood Marshall Northwest Ballroom
Co-Chairs: Franz J. Hock, PhD, CorDynamics, Dieburg, Germany, and Philip Atterson, MSc, WIL Research, Ashland, OH, United States

This session will focus on safety assessment in a range of areas related to the CNS. One presentation is on testing in juvenile animals, an area until now, not in the focus of the Safety Pharmacologist. Further presentations will address safety issues associated with the visual system, which is a relatively new field in this context. The abuse liability potential of large molecules is a novel concept and will be the topic of a further talk. Finally, convulsive potential of novel compounds is often underestimated. The FDA perspective and recommendations for resolving-issues to convulsions are in the focus of the final talk.

10:00 AM–10:30 AM Juvenile Testing
LaRonnda Morford, PhD, WIL Research, Ashland, OH, United States

10:30 AM–11:00 AM Considerations for Abuse Liability Testing
Christina de Zafra, PhD, DABT, Genentech Inc., South San Francisco, CA, United States

11:00 AM–11:30 AM Safety Issues in Vision
Joshua Bartoe, DVM, MS, MPI Research, Mattawan, MI, United States

11:30 AM–12:00 Noon A Regulatory Perspective on Convulsions in Nonclinical Studies
Amy Avila, PhD, US FDA, Silver Spring, MD, United States
Monday, October 20 continued

**Lunch Break, Exhibits, and Poster Presentations**

*12:00 Noon–2:00 PM*
*Exhibit Hall*

**Exhibitor Sponsored Presentations**

*12:30 PM–1:30 PM*
See page 42

**Poster Presentations and Junior Investigator Poster Judging**

*1:00 PM–2:00 PM*
*Exhibit Hall*
All Posters Presented

**Monday Afternoon Sessions**

**Oral Communications 1–2**

*Invited Oral Communications Session 1: Use of Stem Cells as Preclinical Cardiac Ion Channel Assays*

*2:00 PM–3:00 PM*
*Thurgood Marshall Southeast Ballroom*
Co-Chairs: Wendy Halpern, PhD, DVM, DACVP, Genentech Inc., South San Francisco, CA, United States and Derek J. Leishman, PhD, DSP, Eli Lilly and Company, Indianapolis, IN, United States

- 2:00 PM–2:15 PM QTc Profile of a Selective Blocker of the hKv4.3-hKChIP2.2 Potassium Channel
Chris Pollard, et al.

- 2:15 PM–2:30 PM Human Stem Cell Research for Cardiac Safety: Janssen's (JNJ) Ongoing Strategy in Relation to FDA's CiPA Proposal with Data from 60 Reference Compounds, Four Different Cell Providers and Five Different Technologies
Hua Rong Lu, et al.

- 2:30 PM–2:45 PM Application of Optical Measurements of Electrical Activity to Cor4U Human-Induced Pluripotent Stem Cells-Derived Cardiomyocytes (hiPSC-CMs) As a Predictive Tool for Preclinical Safety Assessment
Maria P. Hortigon-Vinagre, et al.

- 2:45 PM–3:00 PM Can MEA Recording in hiPSC-Derived Cardiomyocytes Assess Proarrhythmic Risk?
Yusheng Qu, et al.

**Invited Oral Communications Session 2: Assessment of Seizure Potential and Dependence Liability**

*2:00 PM–3:00 PM*
*Thurgood Marshall Northwest Ballroom*
Co-Chairs: Mary Jeanne Kallman, PhD, DSP, Covance Laboratories, Inc., Greenfield, IN, United States and Yukie Ueyama, DVM, QTest Labs, Columbus, OH, United States

- 2:00 PM–2:15 PM In Vitro Assessment of Drug-Induced Seizure Liability Using a Multi-Electrode Array Based Rat Cortical Neuronal Assay
Khuram W. Chaudhry, et al.

- 2:15 PM–2:30 PM Field EPSP Recordings from Rat Dentate Gyrus As a Safety Evaluation Method for Assessing Seizure Liability
Ludmilla Mazelin-Winum, et al.

- 2:30 PM–2:45 PM Physical Dependence Liability of Retigabine in Rats
Maria Pilla, et al.

- 2:45 PM–3:00 PM Combining Neurobehavioral and Neurophysiological Endpoints to Dissociate Evidence of Tremors from Seizure Liability in the Beagle Dog
Lynne King, et al.

**Break**

*3:00 PM–3:45 PM*
*Exhibit Hall*
Even Numbered Posters Presented and Junior Investigator Poster Judging

**Track A: Noncardiac Ion Channels**

*3:45 PM–5:45 PM*
*Thurgood Marshall Southeast Ballroom*
Co-Chairs: Chris Mathes, PhD, ChanTest Corporation, Cleveland, OH, United States, and R. Dustan Sarazan, PhD, DVM, Data Sciences International, St. Paul, MN, United States

Cardiac ion channels receive a lot of attention in safety pharmacology. However, drug discoverers need to remember noncardiac ion channels, too. In this session, experts from the ion channel field in drug discovery will present recent and relevant findings from work related to selectivity and trafficking of ion channels related to important therapeutic areas such as pain and cystic fibrosis.

- 3:45 PM–4:15 PM Correctors and Potentiators of CFTR: Combination Therapy for Cystic Fibrosis
Andrew Kolodziej, PhD, Flatley Discovery Labs, Charlestown, MA, United States

- 4:15 PM–4:45 PM Making Safe Sodium Channel Drugs
Margaret Lee, PhD, Zalicus, Cambridge, MA, United States

- 4:45 PM–5:15 PM Histone Deacetylase Inhibitors Prolong Cardiac Repolarization Through Epigenetic Mechanisms
Stanley Spence, PhD, Novartis Institutes for BioMedical Research, Cambridge, MA, United States

- 5:15 PM–5:45 PM Ion Channels in Safety Pharmacology: A Case Study
Ken Stauderman, PhD, CalciMedica, La Jolla, CA, United States
Peripheral neuropathy is damage or disease affecting nerves, which may affect sensation, movement, gland or organ function, and other aspects of health, depending on the type of nerve affected. Common causes include systemic diseases such as diabetes or leprosy, vitamin deficiency, medication such as chemotherapy, traumatic injury, excessive alcohol consumption, immune system disease, infection, or it may be inherited and present since birth. The objective of this session is to present a clinical overview of peripheral neuropathy, including preclinical assessment, clinical translation, clinical translation and risk validation. Additionally this session will look at examples of peripheral neuropathies associated with oncolytics and diabetic neuropathy.

3:45 PM–4:15 PM Preclinical Assessment of Peripheral Neuropathy: Strengths and Limitations of Available Procedures
Joe Arezzo, PhD, Albert Einstein College of Medicine, Bronx, NY, United States

4:15 PM–4:45 PM Neuropathy and Pain
Smriti Iyengar, PhD, Eli Lilly and Company, Indianapolis, IN, United States

4:45 PM–5:15 PM Peripheral Neuropathy and Anticancer Therapy: Preclinical Approaches to a Clinical Limitation
Myrtle Davis, DVM, PhD, The National Cancer Institute, National Institutes of Health, Bethesda, MD, United States

5:15 PM–5:45 PM Unique Aspects of Small Fiber Neuropathies
Joe Arezzo, PhD, Albert Einstein College of Medicine, Bronx, NY, United States

The depiction of cardiac performance by instantaneous pressure-volume relations of the ventricle dates back to the early 20th century, but received its more robust attention and evolution in the 1970's with the seminal work of Drs. Sagawa, Suga, and Sunagawa. The work was performed in the isolated canine hearts coupled to a servo-controlled system to mimic vascular and venous loading and thus allow hearts to ejection. Coming after an era of intensive searching for specific yet comprehensive ways to index cardiac contractility, the PV approach provided simplicity and given its systems-engineering foundations, also provided ways to index heart-vascular interaction, energetics, and integrative physiology. The practical conundrum was how to measure LV (or RV) volume, and here the second development of a conductance or impedance catheter that converted blood volume to an electrical signal proved key. This catheter became common in large mammals and humans, and the ability to assess LV function using the PV framework in a practical way in patients led to a decade or more of new insights into clinical disease and therapy mechanisms. In the late 1990’s the method was shrunk to be useable in the mouse, and at present, far more studies report PV data of the heart in genetically engineered mice than any other species. In this talk, I will give a broad sense of the various features of PV analysis, the interpretation of the elastances and other indexes of diastolic and systolic function that it provides, and how this can be used to assess pharmacological responses. New heart failure agents—such as omecamtiv mercarbil reveal the utility of examining more than the typical parameters generated from these relations, and I will discuss this as well. Practical issues regarding the catheter measurement method, calibration and potential artifact issues will be discussed.
Often drug development decisions are not black and white and each drug development program offers its own unique set of challenges. In the case of cardiotoxicity testing, the changing regulatory landscape also adds to this challenge making it difficult to navigate the safest, most efficient development path. What are the decision factors when the preclinical cardiotoxicity data are not black and white? Is this automatically a reason to stop compound development? What if the preclinical data are clean followed by an unexpected signal in the clinic? How do regulators approach evaluating conflicting preclinical cardiotoxicity results? The objective of this session is to highlight how those in industry and regulatory agencies have tackled some of these challenges with the goal of providing insight into different approaches that could be used to safely and efficiently move compound development forward.

10:00 AM–10:30 AM Case Studies: Applying Different Models to De-risk Cardiotoxicity and Make Development Decisions
Paul Levesque, PhD, Bristol-Myers Squibb R&D, Pennington, NJ, United States

10:30 AM–11:00 AM Case Study: Derisking Hemodynamic Effects—Finding a Better Backup
Mark Vogel, PhD, Pfizer Inc., Cambridge, MA, United States

11:00 AM–11:30 AM Nonclinical Cardiovascular Testing for Oncology Drug Candidates: Experience Pre- and Post-ICH S9
Timothy K. Hart, PhD, GlaxoSmithKline, Malvern, PA, United States

11:30 AM–12:00 Noon Regulatory Perspective on CardioTox
Elizabeth Hausner, DVM, DABT, US FDA, Silver Spring, MD, United States

Focus of the session will be a discussion of regulatory guidances that were recently issued. The first two presentations will focus on the Draft Guidance on Abuse-Deterrent Opioid Formulations. Speakers will summarize industry and regulatory discussion of expectations and application of the challenges of the guidance to new drug applications. The topic for the latter presentations will include a discussion of the challenges of approving treatments that need to be tested in biohazard containment and finally a perspective of how the industry is doing a decade after implementation of the S7 guidance documents.

10:00 AM–10:30 AM Review of the FDA Guidance on Abuse Deterrent Formulations
Silvia N. Calderon, PhD, Center for Drug Evaluation and Research, US FDA, Silver Spring, MD, United States

10:30 AM–11:00 AM Industry Challenges in Development and Evaluation of Abuse Deterrent Formulations
Marta Sokolowska, PhD, Grunenthal USA, Bedminster, NJ, United States

11:00 AM–11:30 AM Challenges in Approval of New Treatments in the Biodefense World
Tracy MacGill, US FDA, Silver Spring, MD, United States

11:30 AM–12:00 Noon Key Impacts of ICH S7 on Pharmaceutical Development: A FDA Perspective
Timothy J. McGovern, PhD, ODE Associate Director for Pharmacology/Toxicology, FDA/CDER/Office of New Drugs, Silver Spring, MD, United States

Lunch Break, Exhibits, and Poster Presentations
12:00 Noon–2:00 PM
Exhibit Hall

Exhibitor Sponsored Presentations
12:30 PM–1:30 PM
See page 42

All Posters Presented
1:00 PM–2:00 PM
Exhibit Hall
## Tuesday Afternoon Sessions

### Oral Communications 3–4

#### Invited Oral Communications Session 3: Focused In Vivo Nonclinical Models

**2:00 PM–3:00 PM**

**Thurgood Marshall Southeast Ballroom**

Co-Chairs: Frederick Sannajust, PharmD, PhD, Merck & Co., Inc., West Point, PA, United States and Simon Authier, DVM, MSc, MBA, PhD, DSP, CiToxLAB, Laval, QC, Canada

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<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>2:00 PM–2:15 PM</td>
<td>Evaluation of Cardiac Inotropy Effects under Various Ambient Temperatures Using Conscious Telemetered Rats</td>
<td>Kathy Derakhchan, et al.</td>
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<tr>
<td>2:45 PM–3:00 PM</td>
<td>Evaluation of Cardiac Contractility by Invasive and Noninvasive Methodologies: Comparison of LV-dP/dtmax with Echocardiography Parameters in Anesthetized Healthy Beagle Dogs</td>
<td>Kathy Derakhchan, et al.</td>
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#### Invited Oral Communications Session 4: In Silico Methods, Disease Models and Integrated Pharmacology

**2:00 PM–3:00 PM**

**Thurgood Marshall Northwest Ballroom**

Co-Chairs: Amy Kim, MSPH, PhD, Genentech Inc., South San Francisco, CA, United States and Eric Rossman, PhD, GlaxoSmithKline, King of Prussia, PA, United States

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<th>Time</th>
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<tr>
<td>2:00 PM–2:15 PM</td>
<td>A Comparison of In Silico Cardiac Action Potential Simulations with Electrophysiological Effects in the Isolated Rabbit Wedge Preparation for Compounds with Different Ion Channel Blocking Profiles</td>
<td>Bruce P. Damiano, et al.</td>
</tr>
<tr>
<td>2:15 PM–2:30 PM</td>
<td>Increased Risk of Torsades de Pointes in Alloxan-Induced Type-1 Diabetic Rats</td>
<td>Dan Salvail, et al.</td>
</tr>
<tr>
<td>2:30 PM–2:45 PM</td>
<td>Evaluation of Cardiac Contractility in a Telemetered Rat Model: Compare to a Translational Assessment by Echocardiography</td>
<td>Hai-Ming Tang, et al.</td>
</tr>
<tr>
<td>2:45 PM–3:00 PM</td>
<td>Proarrhythmia Assessment—A Probabilistic Approach to Integrated Risk Assessment</td>
<td>Derek Leishman, et al.</td>
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### Break, Exhibits, and Poster Presentations

#### 3:00 PM–3:45 PM

**Exhibit Hall**

Odd Numbered Posters Presented

#### Track A: Novel Assays for Safety Pharmacology Assessment: Zebrafish (Sushi or Science?)

**3:45 PM–4:45 PM**

**Thurgood Marshall Southeast Ballroom**

Co-Chairs: Stéphane Milano, PhD, WIL Research Europe, Lyon, Saint Germain sur l’Arbresle, France, and Bruce Morimoto, PhD, Celerion, Redwood City, CA, United States

Models are what make the world go ‘round… Or at least that is what safety pharmacologists think. Animal models are key to nonclinical safety testing, but validation data are needed to understand and interpret the results. The first session, “Zebrafish (Sushi or Science?)” will feature early safety assessment screening using zebrafish, focusing on the areas of QT prolongation, seizure liability, abuse liability, and GI dysfunction.

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<th>Time</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>3:45 PM–4:15 PM</td>
<td>Zebrafish Models in Drug Safety: Finding the Best Fit</td>
<td>Paul Butler, Pfizer Inc., San Diego, CA, United States</td>
</tr>
<tr>
<td>4:15 PM–4:45 PM</td>
<td>Zebrafish Models of Complex Brain Disorders: From Drug Discovery to Modeling Toxidromes</td>
<td>Allan V. Kalueff, PhD, ZENEREI Institute and the International Zebrafish Neuroscience Research Consortium (ZNRC), Slidell, LA, United States, and Research Institute for Marine Drugs and Nutrition (IMND), Guangdong Ocean University, Zhanjiang, China</td>
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**4:45 PM–5:45 PM**

**Thurgood Marshall Southeast Ballroom**

Co-Chairs: Stéphane Milano, PhD, WIL Research Europe, Lyon, Saint Germain sur l’Arbresle, France, and Bruce Morimoto, PhD, Celerion, Redwood City, CA, United States

Nausea and vomiting are a common side effect of chemotherapy with a global market of > $2.5 billion. Additionally, nausea and vomiting are common adverse events seen in Phase 1 studies. The second part of the session, “Nausea and Vomiting: Not a Gagging Matter” will feature two talks on animal models of emesis with a detailed discussion of the mechanism and a comparison of species, highlighting how animal models for emesis can be used in safety assessment.

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<th>Time</th>
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<tr>
<td>4:45 PM–5:15 PM</td>
<td>Cross-Species Mechanisms for Emesis</td>
<td>Charles C. Horn, University of Pittsburgh, Pittsburgh, PA, United States</td>
</tr>
<tr>
<td>5:15 PM–5:45 PM</td>
<td>Nausea and Emetic Reflex in the Minipig: Legend and Reality</td>
<td>Stéphane Milano, PhD, WIL Research Europe, Lyon, Saint Germain sur l’Arbresle, France</td>
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</tbody>
</table>
The sleep state is known to have a restorative function and disruption can lead to adverse cardiovascular and CNS effects. Physiological changes that occur during sleep include decreases in airway tone and respiratory drive, which can lead to adverse events such as sleep disordered breathing and apnea. The objective of this session is to present the methodologies used to monitor the stages of sleep in animal models, review the physiological changes associated with the sleep state, discuss the causes and consequences of sleep disruption and sleep apnea, and ultimately address the question of whether there are drug targets associated with sleep that could impact safety and should be addressed in safety pharmacology studies.

3:45 PM–3:50 PM  **Introduction**  
Dennis Murphy, PhD, DABT, DSP, GlaxoSmithKline, King of Prussia, PA, United States

3:50 PM–4:15 PM  **Identification and Characterization of the Sleep States—Species Comparisons**  
Simon Authier, DVM, MSc, MBA, PhD, DSP, CiToxLAB, Laval, QC, Canada

4:15 PM–4:40 PM  **Disruption of the Sleep States—Causes and Consequences**  
Francis J. Golder, BVSc, PhD, DACVA, Galleon Pharmaceuticals, Inc., Horsham, PA, United States

4:40 PM–5:05 PM  **Physiological Changes Associated with the Sleep State—Potential Drug Interactions**  
Aidan Curran, PhD, Huntingdon Life Sciences, East Millstone, NJ, United States

5:05 PM–5:30 PM  **Sleep Apnea—Causes and Consequences**  
Jerome A. Dempsey, PhD, University of Wisconsin, Madison, WI, United States

5:30 PM–5:45 PM  **Panel Discussion—Are There Sleep State Targets for Safety Pharmacology?**  
Dennis Murphy, PhD, DABT, DSP, GlaxoSmithKline, King of Prussia, PA, United States, Simon Authier, DVM, MSc, MBA, PhD, DSP, CiToxLAB, Laval, QC, Canada, Francis J. Golder, BVSc, PhD, DACVA, Galleon Pharmaceuticals, Inc., Horsham, PA, United States, Aidan Curran, PhD, Huntingdon Life Sciences, East Millstone, NJ, United States, and Jerome A. Dempsey, PhD, University of Wisconsin, Madison, WI, United States

**Poster Removal**

5:00 PM–6:00 PM  
**Exhibit Hall**

**Exhibitor Sponsored Presentations**

6:00 PM–7:00 PM  
See page 42
Update and Perspectives on Comprehensive In Vitro Proarrhythmia Assay (CIPA): Part 2

11:45 AM–2:15 PM

Salon 1, Lobby Level

Japanese Activity for Proarrhythmia Prediction Using In Silico and iPSC Approach
Kohei Sawada, PhD, Eisai Co. Ltd., Tsukuba-shi, Japan

12:25 PM–1:05 PM

Clinical Perspectives on Preclinical QT Liability Evaluation and the Value of the Thorough QT Study
Peter R. Kowey, MD, FACC, FAHA, FHRS, Lankenau Institute, Wynnewood, PA, United States

1:05 PM–1:45 PM

Preclinical Cardiovascular Safety Testing: Moving Forward
Douglas Throckmorton, MD, FDA Center for Drug Evaluation and Research, Silver Spring, MD, United States

1:45 PM–2:15 PM

Panel Discussion
Gary Gintant, PhD, AbbVie, North Chicago, IL, United States, Khuram Chaudhary, PhD, GlaxoSmithKline, King of Prussia, PA, United States, Bernard Fermini, PhD, Pfizer Inc., Groton, CT, United States, Colleen Clancy, PhD, University of California-Davis, Davis, CA, United States, Kohei Sawada, PhD, Eisai Co. Ltd., Tsukuba-shi, Japan, Peter R. Kowey, MD, FACC, FAHA, FHRS, Lankenau Institute, Wynnewood, PA, United States, Douglass Throckmonton, MD, FDA Center for Drug Evaluation and Research, Silver Spring, MD, United States, and Marc Bailie, DVM, PhD, DSP, Michigan State University and INDS Inc, Ann Arbor, MI, United States

President’s Summary of Issues, Recommendations, and Debates
2:15 PM–2:45 PM

Salon 1, Lobby Level

Jean-Pierre Valentin, PhD, DSP, SPS President, UCB Biopharma, Braine l’Alleud, Belgium

SPS 14th Annual Meeting Adjourns
2:45 PM
Posters

**Online Meeting Materials**

Download Abstracts and the Attendee List from SPS Website

Poster Abstracts and other meeting materials are accessible online. The Poster Index is available on page 26 for you to navigate the Poster Presentations.

The following items are also available online:

- Program and Exhibitor Directory
- Poster and Speaker Abstracts
- Session and CE Course Evaluations
- Attendee List

We encourage you to download the electronic files to your computer, smart phone, or PDA. Please visit www.safetypharmacology.org/AM2014.

This is a QR (Quick Response) code. Download a QR reader app on your smartphone or tablet and scan for easy access to up-to-date Annual Meeting information.

**Poster Presentations**

**Exhibit Hall**

**Poster Installation**

Sunday, October 19 ......................................................... 2:00 PM–3:00 PM

Posters must be installed by 3:00 pm to allow time for the Welcome Reception setup.

**Poster Removal**

Tuesday, October 21 ....................................................... 5:00 PM–6:00 PM

Wednesday, October 22 ................................................... 8:30 AM–10:00 AM

Posters not claimed by 10:00 am on Wednesday, October 22, will be discarded.

**Poster Presentations**

All posters will remain on display from Sunday evening through Tuesday in one poster session. Please view the detailed poster presentation times below.

*Note to Presenters:* Please plan to attend your poster during the following times:

**Sunday, October 19**

6:00 PM–7:30 PM ......................................................... Optional

**Monday, October 20**

1:00 PM–2:00 PM ......................................................... All Posters Present

1:00 PM–2:00 PM ......................................................... Junior Investigator Poster Judging

3:00 PM–3:45 PM ......................................................... Even Numbered Posters Present

3:00 PM–3:45 PM ......................................................... Junior Investigator Poster Judging

**Tuesday, October 21**

1:00 PM–2:00 PM ......................................................... All Posters Present

3:00 PM–3:45 PM ......................................................... Odd Numbered Posters Present

**Poster Contest**

Individuals who submitted abstracts for the Junior Investigator Poster Contest are required to present their posters on Monday, October 20 from 1:00 pm–2:00 pm and 3:00 pm–3:45 pm during judging.

Poster contest recipients will be announced during the Awards Ceremony on Wednesday, October 22.
INTRODUCING THE ALL NEW
\textbf{xCELLigence® CardioECR System}

First Platform with Simultaneous Measurement of Cardiomyocyte Contractility and Electrophysiology

\begin{itemize}
  \item Dual readout using impedance and field potential recording electrodes under pacing or non-pacing conditions
  \item Robust with high temporal resolution
  \item Short and long term measurements in real-time
\end{itemize}

**VISIT**
SPS Booth #221

**WORKSHOP**
Monday, October 20\textsuperscript{th}
12:30PM-1:30PM Room Wilson A-C

**LAUNCH PARTY**
Tuesday, October 21\textsuperscript{st}
7:00PM-10:00PM

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Photography/Recording Policy and Protocols for Attendees

Out of courtesy for the scientific presenters and exhibitors, we appreciate your compliance with the following policies:

• Cell phones and other electronic devices should be set on mute.
• Cameras and recording devices are prohibited in the Exhibit/Poster Areas.
• Children under the age of 15 are prohibited from accessing the Exhibit/Poster Areas at any time.

If you have any questions regarding these policies, please contact the SPS Headquarters staff at the Registration Desk.
Poster Category Listing

<table>
<thead>
<tr>
<th>Poster No.</th>
<th>Primary Category</th>
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<tbody>
<tr>
<td>1–22</td>
<td>Behavioral Pharmacology (e.g. Screening, Drug Dependence/Abuse Liability, Convulsion, Visual, Auditory)</td>
</tr>
<tr>
<td>23–38</td>
<td>Cardiac Ion Channel Electrophysiology and Cellular Mechanisms (e.g. Ikr, Iks, hERG hKv11.1, Na, Ca, Trafficking)</td>
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<tr>
<td>39–50</td>
<td>Disease Models, In Silico, Exploratory Pharmacology</td>
</tr>
<tr>
<td>51–62</td>
<td>Integrated Risk Assessment (Translational Safety Pharmacology Endpoints)</td>
</tr>
<tr>
<td>63–67</td>
<td>Isolated Organ/Tissue</td>
</tr>
<tr>
<td>68–90</td>
<td>Nonrodent, Lagomorphs and Rodent Telemetry (e.g. Rabbit, Dog, NHP, Pig, Rats, and Guinea Pig)</td>
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<tr>
<td>91–103</td>
<td>Other Cardiovascular Models (e.g. Anaesthetized Models)</td>
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<tr>
<td>104–110</td>
<td>Other Central Nervous System Models</td>
</tr>
<tr>
<td>111–113</td>
<td>Pulmonary models (In Vivo Conscious or Anaesthetized)</td>
</tr>
<tr>
<td>114–117</td>
<td>Regulatory, Animal Welfare, Clinical, Other</td>
</tr>
<tr>
<td>118–148</td>
<td>Stem Cells</td>
</tr>
<tr>
<td>149–153</td>
<td>Supplemental Assays (e.g. Renal Gastrointestinal, Autonomic, Endocrine)</td>
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<td>Poster</td>
<td>Abstract Title and Author (presenting authors underlined)</td>
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| 1      | **Influence of Stimulus Parameters and Speaker Calibration on Auditory Threshold Sensitivity**  
Matthew Abernathy¹, Joshua Yoder¹, Brian Wilson¹, Jared Richardson¹, Rachel Tapp¹, David Gauvin¹, Theodore Baird⁰, **MPI Research, Mattawan, MI, USA** |
| 2      | **Validation of Continuous Telemetric Electroencephalography (EEG) with Synchronized Behavioral Scoring in the Beagle Dog**  
Theodore Baird¹, Kyle O'Donohue¹, Tara Posthumus¹, David Gauvin¹, **MPI Research, Mattawan, MI, USA** |
| 3      | **Challenging Contemporary Status on Drug Safety Evaluation: A Case for the Implementation of Ototoxicity Screening in Toxicology Programs**  
Theodore Baird¹, Rachel Tapp¹, Matthew Abernathy¹, Jill Dalton¹, David Gauvin¹, **MPI Research, Mattawan, MI, USA** |
| 4      | **Electroencephalography (EEG) in Sprague-Dawley Rats and Cynomolgus Monkeys: Super-Intervals to Increase Model Sensitivity**  
Leanne Bassett¹,², Mylene Poulion¹, Eric Troncy¹, Samir Abtou¹, Alexis Ascah¹, Simon Authier¹,², **CiToxLAB, Laval, Quebec, Canada**  
¹Université de Montréal, St-Hyacinthe, Quebec, Canada  
²Université de Montréal, St-Hyacinthe, Quebec, Canada |
| 5      | **Abuse Potential Assessment of Preladenant, An Adenosine2A Receptor Antagonist: Self-Administration in Rats**  
Richard Briscoe¹, Carrie Markgraf², David Gauvin¹, Clint Rosenfeld¹, **Merck Research Laboratories, West Point PA, USA**  
²Merck Research Laboratories, Kenilworth NJ, USA, **MPI Research, Mattawan MI, USA** |
| 6      | **In Vitro Assessment of Drug-Induced Seizure Liability Using a Multi-Electrode Array Based Rat Cortical Neuronal Assay**  
Khuram W. Chaudhary¹, Jenifer A. Bradley³, Harry L. Luithardt³, Christopher J. Strock³, Lynne A. King³, Matthew Cato³, Barry S. Brown³, **GlaxoSmithKline, King of Prussia, PA, USA**  
³Cyprotex US, LLC, Watertown, MA, USA |
| 7      | **Applying the Audiogenic Seizure Model to Evaluate the Interaction with Anticonvulsant Treatment**  
Theo Dinkla¹, Monika Aegler¹, Andrea Greiter-Wilke¹, **Roche Pharmaceutical Research and Early Development, Pharmaceutical Sciences, Roche Innovation Center Basel, Basel, Switzerland** |
| 8      | **In Vitro Hippocampal Slices and In Vivo Video-tEEG Model in Rat to Assess Convulsion/Seizure Risk of Novel Compounds**  
Nicola Fasdelli¹, **Aptuit, Verona, Italy** |
| 9      | **Patency and Longevity Improvements of Self-Administration Studies Based on Changes in Skin Button Type and Surgical Technique in Male Sprague-Dawley Rats**  
Lindsey Gilbert¹, Mario Sgro¹, Deah Modlin¹, Nathaniel Wheat¹, Mary Jeanne Kallman¹, **Covance Laboratories Inc., Greenfield, IN, USA** |
| 10     | **The Induced Hyperactivity Test for Potential Derisking of Antipsychotic Off-Target Activity of Drugs**  
Herbert Himmel¹, Veronika Stump¹, Nebojsa Sedlak¹, Christa Hegele-Hartung¹, **Bayer Pharma AG, Wuppertal, Germany** |
| 11     | **Rodent Big Brother: Development and Validation of a Home Cage Automated Behavioural Monitoring System for Use in Safety Pharmacology Studies in Rats**  
L Leslie¹, JD Armstrong¹, J Heward¹, B Allison¹, T Lukins¹, R Sillitto¹, C Grant¹, DJ Craigg¹, C Vickers¹, K Chapman¹, WS Redfern¹, **AstraZeneca R&D, Macclesfield, UK**  
¹Actual Analytics Ltd, Edinburgh, UK, **NCRI’s, London, UK** |
| 12     | **Assessment of Seizure Liability of Org 306039, a 5-HT2c Agonist, Using Hippocampal Brain Slice and Rodent EEG Telemetry**  
Carrie Markgraf¹, Erik DeBoer¹, Jin Zhao¹, Lara Cornelius¹, Ying Ying Zhou¹, Ciona MacSweeney¹, **Merck Research Labs, Kenilworth, NJ, USA**  
²Merck Research Labs, West Point, PA, USA, **Children’s Hospital of Philadelphia, Philadelphia, PA, USA**  
³Biotrial International, London, UK |
| 13     | **Abuse Potential Assessment of Preladenant, An Adenosine2A Receptor Antagonist: Drug Discrimination in Rats**  
Carrie Markgraf¹, Richard Briscoe², David Gauvin¹, Clint Rosenfeld¹, **Merck Research Laboratories, Kenilworth NJ, USA**  
²Merck Research Laboratories, West Point PA, USA, **MPI Research, Mattawan MI, USA** |
<table>
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| 14     | **Abuse Potential Assessment of Preladenant, An Adenosine2A Receptor Antagonist: Physical Discrimination in Rats**  
         *Carrie Markgraf*, Richard Briscoe, David Gauvin, Clint Rosenfeld, *Merck Research Laboratories, Kenilworth NJ, USA, 1st Merck Research Laboratories, West Point PA, USA, 2nd MPI Research, Mattawan MI, USA* |
| 15     | **Advantages and Limitations of Computerized Methods for Analysis of Telemetry EEG Data**  
         *Monica Metea*, Covance Laboratories, Inc., Greenfield, IN, USA |
| 17     | **Assessment of Physical Dependence Liability in Rats**  
         *Michela Tessari*, Lisa Dacome, Maria Pilla, Aptuit, Verona, Italy |
         *Mylene Pouliot*, Leanne Bassett, Eric Troncy, Simon Authier, 1st CitoxLAB North America, Laval, Quebec, Canada, 2nd Faculty of Veterinary Medicine, University of Montreal, St-Hyacinthe, Quebec, Canada |
| 19     | **Comparison of Amphetamine and Caffeine in Preclinical Abuse Liability and Dependence Rat Studies**  
         *Marie-Luce Rosseels*, Frederic Martin, Francois-Xavier Mathy, Christopher Peters, Mario Sgro, Mary Jeanne Kallman, Jean-Pierre Valentim, Olympe Depelchin, 1st UCB Biopharma Sprl, Braine-l’Alleud, Belgium, 2nd Covance Laboratories Inc, Greenfield, IN, USA |
| 20     | **Bioanalytical Analysis of Plasma Cocaine Exposure in a Preliminary Self-Administration Study Utilizing Different Vehicles**  
         *Jonathan Toot*, Timothy Pringle, Nichole Myers, Leslie Danos, Matt Bennett, Jason Boggs, Phil Atterson, WIL Research, Ashland, OH, USA |
| 21     | **Manual versus Automated Data Collection: Evaluation of a Modified Testing Paradigm and Learning/Memory Endpoints using a Complex Water T-Maze in Juvenile Rats**  
         *Jonathan Toot*, Timothy Pringle, Kelly Berkley, Michele Simons, Phil Atterson, WIL Research Laboratories, Ashland, OH, USA |
| 22     | **Evaluation of Proconvulsant Risk using Tests Evaluating Spontaneous and Provoked Convulsions**  
         *Elise Esneault*, Guillaume Peyon, Christelle Froger-Colleaux, Toni Wolinsky, Vincent Castagné, Persolt SAS, Le Genest Saint Isle, France |
| 23     | **Voltage Protocol Design for Determining hERG Channel Kinetics**  
         *Kylie Beattie*, Teun de Boer, David Cavaghan, James Louttit, Gary Mirams, University of Oxford, Oxford, UK, 2nd University Medical Center, Utrecht, The Netherlands, 3rd GlaxoSmithKline, Ware, UK |
| 24     | **NOTOCORD-SenseTM Field Potential Screener—A Novel Analysis Methodology for Cardiac Liability Assay Using Field Potential Signals**  
         *Christophe Bleunven*, David Labarde, Pierre-Damien Dekoninck, Sylvain Bernasconi, Marcus Gabriel, Philippe Zitoun, 1st NOTOCORD Systems, Croissy Sur Seine, France |
| 25     | **Utilizing Human Embryonic Stem Cell-Derived Cardiomyocytes on Multiple Analytical Platforms For a More Comprehensive Cardiac Safety Assessment**  
         *Mike Clements*, Nick Thomas, GE Healthcare, Cardiff, UK |
| 26     | **Class III Drugs in Human Regionally-Ischemic Ventricles: Anti- or Proarrhythmic Action?**  
| 27     | **Importance, But Difficulty, In Measurement of QRS Duration (QRSd)**  
         *Robert Hamlin*, 1st QTest Labs, Columbus, OH, USA, 2nd Ohio State University, Columbus, OH, USA |
| 28     | **Cytocentering Patch Clamp Recordings of iPSC-Derived Cardiomyocytes and of HEK Cells Expressing Cardiac Ion Channels at Physiological Temperature**  
         *Dirck Lassen*, Stefanie Frech, Bogdan Amuzescu, Olaf Scheel, Thomas Knott, Cytocentrics Bioscience GmbH, Rostock, MV, Germany |
<table>
<thead>
<tr>
<th>Poster</th>
<th>Abstract Title and Author (presenting authors underlined)</th>
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<tbody>
<tr>
<td>§29</td>
<td><strong>QTc Profile of a Selective Blocker of the hKv4.3-hKChIP2.2 Potassium Channel</strong> Chris Pollard¹, Jonathan Stott¹, Rikard Pehrson¹, Matthew Bridgland-Taylor¹, Najah Abi-Gerges¹, ¹AstraZeneca, Macclesfield, Cheshire, UK; ²AstraZeneca, Mölndal, Sweden</td>
</tr>
<tr>
<td>30</td>
<td><strong>The hERG Channel Blocking Actions of Astemizole and Dofetilide in CHO vs. HEK Cells</strong> Michael Pugsley¹, Jutta Rohrbacher¹, David Gallacher¹, Ian Waldie¹, Nigel Gillard¹, ¹Global Safety Pharmacology, Janssen Pharmaceuticals, Raritan, NJ, USA; ²Global Safety Pharmacology, Janssen Pharmaceuticals, Beerse, Belgium; ³In vitro Sciences, Charles River, Edinburgh, UK</td>
</tr>
<tr>
<td>31</td>
<td><strong>Loss of hERG 1b is Arrhythmogenic in Human Cardiomyocytes</strong> David Jones¹, Fang Liu¹, Blake Anson¹, Steve Fiene¹, Matthew Trudeau¹, Gail Robertson¹, ¹University of Wisconsin SMPH, Madison, WI, USA; ²Cellular Dynamics International, Madison, WI, USA; ³University of Maryland SOM, Baltimore, MD, USA</td>
</tr>
<tr>
<td>32</td>
<td><strong>The Source of hERG IC50 Values (Manual vs. Automated Patch Clamp) May Influence In Silico Modelling</strong> Jutta Rohrbacher¹, Bruce P. Damiano², Ihab G. Girgis³, Michael K. Pugsley¹, Ard Teisman¹, David J. Gallacher¹, ¹Janssen Research &amp; Development, Beerse, Belgium; ²Janssen Research &amp; Development, Spring House, PA, USA; ³Janssen Research &amp; Development, Raritan, NJ, USA</td>
</tr>
<tr>
<td>33</td>
<td><strong>Determination of Proarrhythmic Effects of Compounds in Human iPSC-Derived Cardiomyocytes Using FDSS/µCell Imaging Platform</strong> Maria I Roman¹, Haoyu Zeng¹, Ted Lis¹, Armando Lagrutta¹, Frederick Sannajust¹, ¹Merck Laboratories, West Point, USA</td>
</tr>
<tr>
<td>34</td>
<td><strong>Drug-Induced Shift in Voltage-dependent Sodium Current Activation Explains Rat-Specific Proarrhythmia in an Oncology Drug</strong> Dany Salvali¹, Annie Bouchard¹, ¹IPS Therapeutique Inc., Sherbrooke, QC, Canada</td>
</tr>
<tr>
<td>35</td>
<td><strong>Species-Specific ERG Effects: hERG vs dERG vs cERG</strong> Martin Traebert¹, Anina von Planta¹, Gregory Guillemain¹, Enrico Funhoff¹, Axel Vicart¹, Greg Friedrichs², ²Novartis Institutes for Biomedical Research, Basel, Switzerland; ³Novartis Institutes for Biomedical Research, East Hanover, NJ, USA</td>
</tr>
<tr>
<td>36</td>
<td><strong>Simultaneous Measurement of Action Potentials and Contractility of Human iPSC-Derived Cardiomyocytes for Safety Assessment of Pharmaceutical Compounds</strong> Xiaoyu Zhang¹, Wayne Ouyang¹, Biao Xi¹, Xiao Xu¹, Xiaobo Wang¹, Yama A. Abassi¹, ¹ACEA Biosciences Inc., San Diego, CA, USA</td>
</tr>
<tr>
<td>37</td>
<td><strong>Evaluation of Cardiac Liable Compounds using Stem Cell-Derived Cardiomyocytes and a Small-Well RTCA E-Plate Cardio 96</strong> Xiaoyu Zhang¹, Leyna Zhao¹, Lewis Li¹, Tommy Yao¹, Jack Jin¹, Jijun Lin¹, Donald Thomas¹, Yama A. Abassi¹, Xiaobo Wang¹, ¹ACEA Biosciences Inc., San Diego, CA, USA</td>
</tr>
<tr>
<td>38</td>
<td><strong>Toward Transmembrane Potential Estimation From In Vitro Multi-Electrode Field Potentials Using Mathematical Modeling</strong> Muriel Boulakia¹, Fabien Raphael², Jean-Frédéric Gerbeau¹, Philippe Zitoun³, ²INRIA, Rocquencourt, Le Chesnay, France; ³INRIA, Rocquencourt, Le Chesnay, France; ³INRIA, Rocquencourt, Le Chesnay, France; ³UPMC Université Paris 6, Paris, France</td>
</tr>
<tr>
<td>§39</td>
<td><strong>Increased Risk of Torsades de Pointes in Alloxan-Induced Type-1 Diabetic Rats</strong> Annie Bouchard¹, Lawrence Nelson¹, Charles E. Laurent¹, Dany Salvali¹, ¹IPS Therapeutique Inc., Sherbrooke, QC, Canada; ²SignPath Pharma Inc., Quakertown, PA, USA</td>
</tr>
<tr>
<td>40</td>
<td><strong>Improved Relevance of Pharmacodynamics In Vitro using Concentration Gradient Microfluidics</strong> Maureen Bunger¹, Gabrielle Resh¹, Tai Zheng¹, Randall McCllelland¹, ¹SciKon Innovation, Research Triangle Park, NC, USA</td>
</tr>
<tr>
<td>41</td>
<td><strong>Involvement of Mitogen Activated Kinase Kinase 7 in Tyrosine Kinase Inhibitor-Induced Myocardial Injury</strong> Samantha Cooper¹, Harip Sandhu¹, Afthab Hussain¹, Helen Maddock¹, ¹Applied Bioscience and Exercise Sciences Faculty Research Centre, Coventry, UK</td>
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<tr>
<td>Poster</td>
<td>Abstract Title and Author (presenting authors underlined)</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>§ 42</td>
<td><strong>A Comparison of In Silico Cardiac Action Potential Simulations with Electrophysiological Effects in the Isolated Rabbit Wedge Preparations with Different Ion Channel Blocking Profiles</strong>&lt;br&gt; Bruce P. Damiano¹, Jutta Rohrbacher², Michael K. Pugsley¹, Ihab Girgis¹, Hua Rong Lu³, David J. Gallacher³, ¹Janssen Research &amp; Development, Spring House, PA, USA, ²Janssen Research &amp; Development, Beerse, Belgium, ³Janssen Research &amp; Development, Raritan, NJ, USA</td>
</tr>
<tr>
<td>43</td>
<td><strong>Web-Based Simulation and Analysis Tool for High-Throughput Ion-Channel Screening Data</strong>&lt;br&gt; Eric Fernandez¹, Hitesh Mistry¹, Frances Brightman¹, David Orrell¹, Deborah Guest¹, Jonathan Swinton¹,², Christophe Chassagnole¹, ¹Physiomics plc, Oxford, UK, ²Deodands ltd, Altrincham, UK</td>
</tr>
<tr>
<td>44</td>
<td><strong>Comparative Evaluation of Five In Silico Models for the Prediction of Drug-Induced hERG Inhibition</strong>&lt;br&gt; Kevin Ford¹, ¹Genentech, Inc., South San Francisco, CA, USA</td>
</tr>
<tr>
<td>45</td>
<td><strong>In Silico Assessment of Cardiac Safety of Drugs using Integrated Computer Model of Failing Heart</strong>&lt;br&gt; Taeko Kubo¹,², Takashi Ashihara¹, Naruaki Nomura¹, Hitoshi Funabashi¹, Minoru Horie¹, ¹Sumitomo Dainippon Pharma Co., Ltd., Osaka, Japan, ²Shiga University of Medical Science, Otsu, Japan</td>
</tr>
<tr>
<td>46</td>
<td><strong>In Silico Analysis Indicates that Action Potential Duration and Triangulation are Major Indicators of Torsadogenic Risk of Clinically Relevant Drugs</strong>&lt;br&gt; Carlos Obejero-Paz¹, James Kramer¹, ¹ChanTest Corporation, Cleveland, OH, USA</td>
</tr>
<tr>
<td>47</td>
<td><strong>Population Level Simulation of the Action Potential As a System for the Drugs Proarrhythmic Potency Classification</strong>&lt;br&gt; Barbara Wisniowska¹, Sebastian Polak¹,², ¹Faculty of Pharmacy Jagiellonian University Medical College, Cracow, Poland, ²Simcyp Ltd. (part of Certara), Sheffield, UK</td>
</tr>
<tr>
<td>48</td>
<td><strong>Search for the Anti-Amyloid Beta Drugs using Primary Neuronal Cultures with Drebrin Cluster Density As a Marker of Synaptic Function</strong>&lt;br&gt; Tomoaki Shiraga¹, Yuta Ishizuka¹, Hideo Shimizu¹, Yuko Sekino¹,¹, ¹Gunma University Graduate School of Medicine, Maebashi, Japan, ²National Institute of Health Sciences, Tokyo, Japan</td>
</tr>
<tr>
<td>49</td>
<td><strong>N-(2-hydroxy phenyl) acetamide (NA-2): A Novel Suppressor Adjuvant-Induced Arthritis in Rats</strong>&lt;br&gt; Shabana Simjee¹, Huma Jawed¹, Kahkashan Perveeen¹, Siddiqua Jamal¹, ¹International Center for Chemical and Biological Sciences, University of Karachi, Karachi, Pakistan, ²Department of Biochemistry, University of Karachi, Karachi, Pakistan</td>
</tr>
<tr>
<td>50</td>
<td><strong>Multi-Scale Heart Simulator, UT-heart is Useful for Proarrhythmia Prediction Based on Cardiac Multi-Ion Channel Data</strong>&lt;br&gt; Takashi Yoshinaga¹, Junichi Okada¹, Junki Kurokawa¹, Tomohiko Taniguchi¹, Tetsuya Furukawa¹, Seiyo Sugiuara¹, Toshiaki Hisada¹, Kohei Sawada¹, ¹Eisai Co., Ltd., Tsukuba, Japan, ²The University of Tokyo, Tokyo, Japan, ³Tokyo Medical and Dental University, Tokyo, Japan</td>
</tr>
<tr>
<td>*51</td>
<td><strong>A Nonhuman Primate Model for Investigating Risk of Orthostatic Hypotension and Sympathetic Dysfunction: Preclinical Correlate to a Clinical Test</strong>&lt;br&gt; Siddhartha Bhatt¹, Stephen Foote¹, Andrew Smith¹, Paul Butler¹, Jill Steidl-Nichols¹, ¹Global Safety Pharmacology, Drug Safety Research and Development, Pfizer Inc, Groton, CT, USA, ²Global Safety Pharmacology, Drug Safety Research and Development, Pfizer Inc, San Diego, CA, USA</td>
</tr>
<tr>
<td>52</td>
<td><strong>Quantitative PKPD Modeling of Baclofen-mediated Cardiovascular Effects using Blood Pressure and Heart Rate</strong>&lt;br&gt; Russell Bialecki¹, Harriet Kamendi¹, Herbert Barthlow¹, David Lengel¹, Marie-Eve Beaudoin¹, Jay Mettetal¹, ¹AstraZeneca Pharmaceuticals, Waltham, MA, USA</td>
</tr>
<tr>
<td>53</td>
<td><strong>Habituating Nonhuman Primates for Arterial Blood Pressure Measurement: A Comparison of Three Protocols of Habituation</strong>&lt;br&gt; Eric Boissiere¹, Fabrice Tirole¹, Sylvie Maitre¹, Yoann Grataloup¹, Charlotte Romanet¹, Jean-Pierre Martinolle¹, Christophe Boixel¹, ¹Sanofi, Montpellier, Languedoc Roussillon, France</td>
</tr>
<tr>
<td>54</td>
<td><strong>The Effect of Sample Size (N) in a Standard Latin Square Cardiovascular Study Design</strong>&lt;br&gt; Matt Coffee¹, James Adkins¹, Tom Vidmar¹, Phil Atterson¹, ¹WIL Research, Ashland, OH, USA, ²BioSTAT Consultants, Inc., Portage, MI, USA</td>
</tr>
<tr>
<td>Posters</td>
<td>Abstract Title and Author (presenting authors underlined)</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------</td>
</tr>
</tbody>
</table>
| §55     | Detection of Cardiac Liability of UCB-X by Novel In Vitro and In Vivo Models  
Aurore Colomar¹, Annie Delaunois¹, Marie-Luce Rosseels¹, Jean-Pierre Valentin¹, ¹UCB Pharma, Braine l’Alleud, Belgium |
| §56     | Pathology and Cardiovascular Safety Pharmacology Data from a Cynomolgus Monkey with Spontaneous Hypertrophic Cardiomyopathy  
Wendy Halpern¹, Henry Holzgreve², Jennifer Chilton³, Matthew Smith³, Robert Kaiser³, ¹Genentech, South San Francisco CA, USA, ²Charles River Laboratories, Reno NV, USA |
| §57     | Compound X Increases Heart Weight: Ultrasound and Telemetry Evaluation in the Rat  
Haisong Ju¹, Kenneth Hershman¹, Shufang Zhao¹, Carrie LaDuke¹, Lee Williams¹, Cynthia Carey¹, Gregory Friedrichs¹, ¹Safety Pharmacology, Preclinical Safety, Novartis Institute for Biomedical Research, East Hanover, NJ, USA, ²Translational Toxicology, Preclinical Safety, Novartis Institute for Biomedical Research, East Hanover, NJ, USA, ³Translational Imaging Group, BioMarker Development, Translational Medicine, Novartis Institute for Biomedical Research, East Hanover, NJ, USA |

§58 Proarrhythmia Assessment—A Probabilistic Approach to Integrated Risk Assessment  
Derek Leishman¹, ¹Eli Lilly & Company, Indianapolis, IN, USA |

§59 A New Noninvasive Primate Model for Assessing Potency and Safety of Botulinum Toxins  
Christophe Bory¹, Olivier Bouchêix¹, Stephane Baudet¹, Stéphane Milano¹, ¹WIL Research Europe-Lyon, Lyon, France |

*60 Evaluation of the Effect of Tiotropium on Carbachol-induced Bronchoconstriction, Salivation and Bradycardia in Anesthetized Guinea Pigs  
Krishna Naruganahalli², Sandeep Sinha¹, Abhijit Ray¹, ¹Ranbaxy Research Labs, Gurgaon, Haryana, India, ²Indian Institute of Science, Bangalore, Karnataka, India |

§61 Evaluation of Cardiac Contractility in a Telemetered Rat Model: Compare to a Translational Assessment by Echocardiography  
Hai-Ming Tang¹, Haisong Ju¹, Shufang Zhao¹, Carrie LaDuke¹, Suzette Hahn¹, Jim Glick¹, Cynthia Carey¹, Gregory Friedrichs¹, ¹Novartis Institute for Biomedical Research, East Hanover, NJ, USA |

62 Predictive Value of Nonclinical QT Data to Man: Retrospective Database of TQT Studies with Noncardiovascular Drugs  
Berengere Dumotier¹, Martin Traebert¹, Gregory Friedrichs¹, ²Novartis, Basel, Switzerland, ²Novartis, East Hanover, Switzerland |

≈63 Enhanced Characterization of Inotropy in Cardiomyocytes Paced at Different Frequencies  
Larissa Butler¹, Caroline Cros¹, Alex Harmer¹, Amy Pointon¹, Chris Pollard¹, Najah Abi-Gerges¹, ¹Drug Safety & Metabolism, AstraZeneca R&D, Macclesfield, UK |

64 Blebbistatin Alters Contractility Independently from Cav1.2 Channel Inhibition: Can Rat and Guinea-pig Isolated Langendorff Perfused Heart Predict It?  
Joffrey Ducroq¹, Helene Didier¹, Celine Salvetat¹, Marie Le Grand¹, ¹PhysioStim, Lautrec, France |

65 The Effect of Cycle Frequency and Starting Length on the Power Output of Human Trabeculae Muscles In Vitro  
Mayel Gharanei¹, Rob Wallis¹, Helen Maddock¹, ¹InoCardia, Coventry, UK |

66 Involvement of Heme Oxygenase–1 in Attenuation of the Cardioprotective Effect of Ischemic Preconditioning in Diabetic Rat Heart  
Shubham Goyal¹, Sawati Sharma¹, Nitin Verma¹, ¹School of Pharmacy and Emerging Sciences, Baddi University of Emerging Sciences and Technology, Vill-Makhnumajra, Baddi, Distt. - Solan, Himachal Pradesh, India |

*67 Validation of the Rat Papillary Work-Loop Assay to Assess Inotropic Drug Effects  
Mayel Gharanei¹, Rob Wallis¹, Helen Maddock¹, ¹InoCardia, Coventry, UK |

68 Noninvasive (jacketed) ECG Monitoring with Telemetry in Beagle Dogs, Göttingen Minipigs and Cynomolagus Monkeys: Species Comparisons and Benefits from Multiple ECG Derivation Interpretation  
Alexis Ascahy¹, Samir Abtout¹, Mylene Pouilot¹, Leanne Bassett², Simon Authier¹, ²CToxLAB, Laval, Quebec, Canada, ²Université de Montréal, St-Hyacinthe, Quebec, Canada |
<table>
<thead>
<tr>
<th>Poster</th>
<th>Abstract Title and Author (presenting authors underlined)</th>
</tr>
</thead>
</table>
| 69     | Left Ventricular Pressure (LVP) Assessment Screening Models: Comparison of High Definition Telemetry in Free-Moving with Anesthetized Rats  
Alexis Ascah1, Mylene Pouliot1, Samir Abtou1, Leanne Bassett1, Eric Troncy2, Simon Authier1, 2, 1CiToxLAB North America, Quebec, Canada, 2Faculty of Veterinary Medicine, University of Montreal, St-Hyacinthe, QC, Canada |
| 70     | A New System for Assessment of Intervals and Arrhythmias in Surface ECGs  
Marina Brockway1, Brian Brockway1, Carlos del Rio2, Robert Hamlin1, 2, 1VivaQuant, LLC, St Paul, MN, USA, 2QTest Labs, LLC, Columbus, OH, USA, 3The Ohio State University, Columbus, OH, USA |
| 71     | Assessment of Cardiac Function in Large Animal Telemetry Studies: Model Sensitivity and Historical Results  
Lewis Buchanan1, William Warner1, Susan Arthur1, Geoff Lewen1, Paul Levesque1, Michael Gill1, 1Bristol Myers Squibb, Lawrenceville, NJ, USA |
| 72     | Application of a Cloud Analysis Program for Beat to Beat Analysis of Cardiac Function in Large Animal Telemetry  
Lewis Buchanan1, William Warner1, Geoff Lewen1, Paul Levesque1, Michael Gill1, 1Bristol Myers Squibb, Lawrenceville, NJ, USA |
| 73     | Thioridazine Causes Concomitant Activation of Cardiac Sympathetic and Parasympathetic Pathways in Conscious Beagle Dogs  
Pascal Champeroux1, Sebastien Jude1, Christine Laigot1, Anne Maurin1, Marie-Laure Sola1, John SL Fowler1, Serge Richard1, 1CERB, Baugy, France |
| 74     | § Evaluation of Cardiac Inotropy Effects under Various Ambient Temperatures Using Conscious Telemetered Rats  
Kathy Derakhchan1, Hugo M. Vargas1, 1Amgen Inc., Safety and Exploratory Pharmacology, Toxicology Sciences, Thousand Oaks, CA, USA |
| 75     | Effects of Isoproterenol Hydrochloride and Moxifloxacin Hydrochloride on Cardiovascular Parameters Assessed via Jacketed External Telemetry (JET) in the Freely Moving Minipig  
Lisa Diehl1, William Nungester1, Doug Regalia1, 1Charles River, Spencerville, OH, USA, 2Charles River, Reno, NV, USA |
| 76     | Concomitant Evaluation of Cardiovascular, Respiratory and Central Nervous System Functions Following a Single Administration of a Candidate Drug in Cynomolgus Monkey  
Abdel-Ilah El Amrani1, Stéphane Loriot1, Francine El Amrani1, Olivier Foulon1, Roy Forster1, 1CiToxLAB, Evreux, France |
| 77     | Atrioventricular Blocks in the Mauritian Cynomolgus Monkey—A Not so Uncommon Arrhythmia?  
Andrea Greiter-Wilke1, Kyle O'Donohue1, Annette Körner1, Ted Baird1, 1Roche Pharmaceutical Research and Early Development, Pharmaceutical Sciences, Roche Innovation Center Basel, Basel, Switzerland, 2MPI Research, Mattawan, MI, USA |
| 78     | Evaluation of Jacketed External Telemetry in Multiple Social Housing Paradigms for Cynomolgus Monkey  
Robert Kaiser1, Stephen Tichenor1, Douglas Regalia1, Kristina York1, Cori Funderberg1, Heath Farber1, Henry Holzgrefe1, 1Charles River, Reno, NV, USA |
| 79     | Hypertensive Rat Model Induced by IV Infusion of Phenylephrine via Programmable Pump  
Carrie LaDuke1, Haisong Ju1, Suzette Hahn1, Cynthia Carey1, Shufang Zhao1, Gregory Friedrichs1, 1Novartis, East Hanover, NJ, USA |
| 80     | Telemetry Study in Common Marmosets for In Vivo Cardiovascular Risk Assessment  
Motoko Maekawa1, Toshiki Kagawa1, Mahoko Asayama1, Masatoshi Asahina1, Tomohiro Koike1, Keisuke Yoshikawa1, Shuichi Towa1, Nobuyuki Baba1, 1Mitsubishi Tanabe Pharma Corporation, Toda-shi, Saitama, Japan |
| 81     | Post Natal Cardiovascular Assessments in Nonclinical Pediatric Studies Using the Jacketed External Telemetry in Beagles for Juvenile Toxicology Studies  
Rommel Matheson1, Maria Adamo1, Keith Robinson1, Kevin Norton1, 1Charles River Laboratories, Preclinical Services, Montreal, Quebec, Canada |
| 82     | Surgical Best Practices to Optimize Telemetry Models and Animal Care and Welfare  
Nancy Poy1, 1Groton, CT, USA |
<table>
<thead>
<tr>
<th>Poster</th>
<th>Abstract Title and Author (presenting authors underlined)</th>
</tr>
</thead>
<tbody>
<tr>
<td>84</td>
<td><strong>Comparison of Direct and Ultrasound-Derived Pulse Wave Velocity Measurement in Conscious and Anesthetized Wistar Rats</strong>&lt;br&gt;<strong>Hillary Regan</strong>, Christopher Regan, Patrick Fanelli, Heather Bogie, R. Dustan Sarazan, Frederick Sannajust, 'Merck and Co., Inc, West Point, PA, USA, 2Data Sciences International, St. Paul, MN, USA</td>
</tr>
<tr>
<td>85</td>
<td><strong>Using a New Implantable Telemetry Device to Examine the Effects of L-NAME on Cardiovascular Parameters in the Göttingen Minipig</strong>&lt;br&gt;<strong>Sonia Roberts</strong>, Roland Jenni, David Waiz, Luca Ferrari, Ruedi Erdin, Franz Bucheli, Steve Pettinger, Andrea Greiter-Wilke&lt;br&gt;1Roche Pharmaceutical Research and Early Development, Pharmaceutical Sciences, Roche Innovation Center, Basel, Switzerland, 2RMISS, Lakeville, PA, USA</td>
</tr>
<tr>
<td>86</td>
<td><strong>Effect of Moxifloxacin Hydrochloride on Cardiovascular Parameters Assessed via Jacketed External Telemetry (JET) in the Male Beagle Dog Co-Housed in European Caging</strong>&lt;br&gt;<strong>Nataliya Sadekova</strong>, Kevin Norton, 'Charles River Laboratories, Preclinical Services, Montreal, Quebec, Canada</td>
</tr>
<tr>
<td>87</td>
<td><strong>Preclinical Investigation of Blood Pressure Elevation Induced by DEB025 in Spontaneously Hypertensive Rats (SHR)</strong>&lt;br&gt;Hai-Ming Tang, Haisong Ju, Carrie LaDuke, Dominique Brees, Louis Griffel, Clifford Brass, Gregory Friedrichs, 'Novartis Institute for Biomedical Research, East Hanover, NJ, USA, 2Novartis Pharmaceuticals Corporation, East Hanover, NJ, USA</td>
</tr>
<tr>
<td>88</td>
<td><strong>Electro-Mechanical Effects of Common Anesthetic Agents: Assessment of Electrocardiographic and Functional Liabilities in Conscious Telemetered Guinea Pigs</strong>&lt;br&gt;<strong>Yukie Ueyama</strong>, Carlos del Rio, Steve Roof, Brad Youngblood, Saiakew Sutayatram, Robert Hamlin, 'QTest Labs, Columbus, OH, USA, 'The Ohio State University, Columbus, OH, USA</td>
</tr>
<tr>
<td>90</td>
<td><strong>A Retrospective Comparison of Heart Rate and QT Variability, Using Total Instability Index, for the Prediction of Ventricular Arrhythmias in Dogs</strong>&lt;br&gt;XueJun Wu, Jason Payseur, Amanda Windbeck, Dennis Murphy, Eric Rossman, 'GlaxoSmithKline, King of Prussia, PA, USA</td>
</tr>
<tr>
<td>91</td>
<td><strong>Lengthening of the Electro-Mechanical Window (EMw) in Dogs with Pacing-Induced Left-Ventricular Dysfunction: Correlation with Indices of Diastolic Function</strong>&lt;br&gt;Carlos del Rio, Bradley Youngblood, Yukie Ueyama, Robert George, Robert Hamlin, 'QTest Labs, Columbus, OH, USA, 'The Ohio State University, Columbus, OH, USA</td>
</tr>
<tr>
<td>92</td>
<td><strong>Evaluation of Cardiac Contractility by Invasive and Noninvasive Methodologies: Comparison of LV-dP/dtmax with Echocardiography Parameters in Anesthetized Healthy Beagle Dogs</strong>&lt;br&gt;Kathy Derakhchan, Weston Sutherland, Ray W. Chui, Hugo M. Vargas, 'Amgen Inc., Safety and Exploratory Pharmacology, Toxicology Sciences, Thousand Oaks, CA, USA</td>
</tr>
<tr>
<td>93</td>
<td><strong>Blood Pressure, Heart Rate, Temperature, and Central Nervous System Evaluation of Cyanide Intoxication in Juvenile and Adult Mice</strong>&lt;br&gt;M. Hawk, T. Vinci, K. Henderson, B. Roche, G. Ritchie, S. Behringer, K. Knostman, 'Battelle, Columbus, OH, USA</td>
</tr>
<tr>
<td>94</td>
<td><strong>Comparative Analysis of Data Sciences International PhysioTelITM D70 and PhysioTelTM Digital Telemetry Platforms</strong>&lt;br&gt;Kenneth Kearney, Rhea Pittman, Phil Atterson, 'WIL Research, Ashland, OH, USA</td>
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<td>Poster</td>
<td>Abstract Title and Author (presenting authors underlined)</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>95</td>
<td>Effects of Blood Pressure on Electro-Mechanical Window in Anesthetized Rabbits</td>
</tr>
<tr>
<td></td>
<td>Vudhiporn Limprasutr¹, Nakkawee Saengklub¹, Anusak Kijtawornrat², Suwanakiet Sawangkoon¹², Robert L. Hamlin¹⁴,</td>
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<td></td>
<td>¹Department of Physiology, Faculty of Veterinary Science, Chulalongkorn University, Bangkok, Thailand, ²Research study and testing of drug's effect related to cardiovascular system in laboratory animal, Bangkok, Thailand, ¹⁴QTest Labs, LLC., Columbus, OH, USA, ¹The Ohio State University, Columbus, OH, USA</td>
</tr>
<tr>
<td>96</td>
<td>An Enantiomerically Pure Formulation of Esmolol Attenuates Hypotension and Preserves Heart Rate Control in Dogs</td>
</tr>
<tr>
<td></td>
<td>Jeffrey McKee¹, Barrett Rabinow¹, Justin Daller¹, ¹Baxter Healthcare Corporation, Round Lake, IL, USA</td>
</tr>
<tr>
<td>97</td>
<td>Effects of Amrinone, Atenolol, Itraconazole, and Pimobendan on Left Ventricular Function in the Anesthetized Dog</td>
</tr>
<tr>
<td></td>
<td>Scott Mittelstadt¹, Patricia Banfor¹, Brett Herzberg¹, Lee Preusser¹, ¹AbbVie, North Chicago, IL, USA</td>
</tr>
<tr>
<td>98</td>
<td>Torsadogenic Drugs Shorten The Cardiac Electromechanical Window Before Prolonging the QTc Interval In Anesthetized Guinea Pigs</td>
</tr>
<tr>
<td></td>
<td>Pierre Morissette¹, Jeffrey Travis¹, Pamela Gerenser¹, Christopher Regan¹, Frederick Sannajust¹, ¹SALAR-Safety &amp; Exploratory Pharmacology Department, Merck Research Laboratories, West Point, PA, USA</td>
</tr>
<tr>
<td>99</td>
<td>Diastolic Dysfunction Induced by Either Chronic Isoproterenol or Renal Wrapping: Evidence of Altered Left Ventricular Filling Pressures, Compliance and Ca2+ Handling</td>
</tr>
<tr>
<td></td>
<td>Steve Roof¹, Carlos del Rio¹, Robert Hamlin¹, Mark Ziolo¹, ¹QTest Labs, Columbus, OH, USA, ¹The Ohio State University, Columbus, OH, USA</td>
</tr>
<tr>
<td>100</td>
<td>QT Interval Correction Assessment in the Ketamine/Xylazine-Anesthetized Guinea Pig Model</td>
</tr>
<tr>
<td></td>
<td>Jeffrey Travis¹, Pierre Morissette¹, Hillary Regan¹, Kevin Fitzgerald¹, Sylvain Bernasconi¹, Pamela Gerenser¹, Patrick Fanelli¹, Christopher Regan¹, Frederick Sannajust¹, ¹SALAR-Safety &amp; Exploratory Pharmacology Department, Merck Research Laboratories, West Point, PA, USA, ¹Notocord, Croissy Sur Seine, France</td>
</tr>
<tr>
<td>101</td>
<td>“Effect or No effect?”—That’s the main Question: A Scientific and Statistical Driven Perspective to Analyse Data of a Highly Complex In Vivo Model</td>
</tr>
<tr>
<td></td>
<td>Henk van der Linde¹, Karel Van Ammel¹, Brigitte Loenders¹, Arnd Teisman¹, David J Gallacher¹, ¹Janssen Research &amp; Development, Beese, Belgium</td>
</tr>
<tr>
<td>102</td>
<td>M-Mode and 2D-Speckle Tracking Echocardiography for the Assessment of Cardiac Function in Conscious Dogs</td>
</tr>
<tr>
<td></td>
<td>Kenta Watanabe¹, Akihiko Kiyoshi¹, Yasunori Katsura¹, Yuji Ogi¹, Tadashi Tsubouchi¹, Hitoshi Funabashi¹, ¹Sumitomo Dainippon Pharma Co., Ltd., Osaka, Japan</td>
</tr>
<tr>
<td>103</td>
<td>Effects of Fentanyl Analgesia on Electromechanical Indices in Conscious Beagle Dogs</td>
</tr>
<tr>
<td></td>
<td>Bradley Youngblood¹, Carlos del Rio¹, Sai Sutayatram¹², Robert Hamlin¹², Bill Muir¹, ¹QTest Labs, Columbus, OH, USA, ¹The Ohio State University, Columbus, OH, USA, ¹Chulalongkorn University, Bangkok, Thailand</td>
</tr>
<tr>
<td>104</td>
<td>Assessment of Sedative or Stimulant Effect of Drugs using the Thiopental-Induced Sleeping Time Test</td>
</tr>
<tr>
<td></td>
<td>Delphine Parachou¹, Emilie Cayre¹, Anthony Déal¹, Manon Sauvagnat¹, Sabrina Guiffard¹, Christophe Drieu la Rochelle¹, Eric Delpy¹, ¹BIOTRIAL Pharmacology, Rennes, France</td>
</tr>
<tr>
<td>105</td>
<td>Predictive Validity of an Integrated Preclinical Approach Combining In Vivo Rat PK/PD and In Vitro Rat Hippocampal Brain Slice Assays to Assess Drug-Induced Seizure Risk Liability</td>
</tr>
<tr>
<td></td>
<td>Ivy Garfinkel¹, Jin Zhai¹, Jeff Travis¹, Haoyu Zeng¹, Armando Lagrutta¹, Alyssa Chaves¹, Ying-Ying Zhou¹, Frederick Sannajust¹, ¹Merck Research Laboratories, West Point, PA, USA</td>
</tr>
<tr>
<td>106</td>
<td>Combining Neurobehavioral and Neurophysiological Endpoints to Dissociate Evidence of Tremors from Seizure Liability in the Beagle Dog</td>
</tr>
<tr>
<td></td>
<td>Lynne King¹, Joseph Arezzo¹, Michelle McClafferty¹, Sandra Turner¹, Dennis Murphy¹, ¹Safety Assessment, GlaxoSmithKline, King of Prussia, PA, USA, ¹Albert Einstein College of Medicine, Bronx, NY, USA</td>
</tr>
<tr>
<td>108</td>
<td>Field EPSP Recordings from Rat Dentate Gyrus As a Safety Evaluation Method for Assessing Seizure Liability</td>
</tr>
<tr>
<td></td>
<td>Ludmilla Mazelin-Winum¹, Jean-Pierre Martinolle¹, Christophe Boixel¹, Elisabeth Patterson¹, ¹Sanofi, Montpellier, France</td>
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<tr>
<td>Poster</td>
<td>Abstract Title and Author (presenting authors underlined)</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 109    | **A Functional Phenotypic Screen for Synapse Formation in Human iPSC-Derived Neurons**  
Jason Sharp¹, Beibei Cai¹, Anthony Essex¹, Erika Batchelder¹, Shuyun Feng¹, Patrick McDonough¹, Jeffrey Price¹, ¹Vala Sciences, San Diego, CA, USA |
| 110    | **Safety and Efficacy of Antiepileptic Drug Therapy in Pediatric Population—New Delhi Tertiary Hospital Study**  
Sengottuvel Viswanathan¹, Bhattacharya S K¹, Anju Aggarwal¹, ¹UCMS and GTB Hospital, Delhi, India |
| 111    | **Respiratory Assessment in Conscious, Telemeterized Cynomolgus Monkeys**  
Pamela Gayheart-Walsten¹, Ty Speece¹, Scott Hill¹, Joel Baublits¹, Sandra Love¹, Alfred Bottchway¹, ¹Xenometrics, Stilwell, KS, USA |
| 112    | **Biovalidation of Implantable Impedance Telemetry Device**  
Kenneth Kearney¹, Cory Appleby¹, Phil Atterson¹, ¹Wil Research, Ashland, OH, USA |
| 113    | **Development of Methods for Measuring Ventilatory and Arterial Blood Gas Parameters in Juvenile Rats**  
Loren Kohrs¹, Jon Renninger¹, Dennis Murphy¹, ¹GlaxoSmithKline, King of Prussia, PA, USA |
| 114    | **Set-up of An Internal Multidisciplinary Vehicle Working Group to Build Knowledge on Excipients and Propose Recommendations for Use in Preclinical In Vivo Studies**  
Annie Delaunois¹, Monique Berwaer², Willy Briône³, Annick Cauvin¹, Melina Caruso¹, Colette Chaussée¹, Pierrette De Ron¹, Farnaz Fallah-Arani¹, Frédéric Martin¹, Judith Van Asperen¹, ¹UCB Biopharma SPRL, Braine-l’Alleud, Belgium, ¹UCB Pharma SA, Braine-l’Alleud, Belgium, ³UCB Celltech, Slough, UK |
| 115    | **Overcoming Barriers to Human Tissue use for Safety Assessment**  
| 116    | **New Master of Science Program Emphasizing Safety Pharmacology—Results to Date**  
Abdul Matlib¹, Scott Belcher¹, Robert Rapoport¹, Ron Millard¹, Hong-Sheng Wang¹, John Maggio¹, University of Cincinnati, Cincinnati, OH, USA |
| 117    | **Effect of Antiepileptic Therapy on Trace Elements Status in Indian Population in a Tertiary Care Hospital from Northern India: A Cross Sectional Study**  
Sudhir Chandra Sarangi¹, Manjari Tripathi¹, Ashish Kumar Kakkar¹, Yogendra Kumar Gupta¹, ¹All India Institute of Medical Sciences, New Delhi, India, ²All India Institute of Medical Sciences, Raipur, India, ³All India Institute of Medical Sciences, Bhopal, India |
| 118    | **Would Field Potential Duration, Recorded from Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes, have Utility As an Early QT Screen?**  
Najah Abi-Gerges¹, Karen L Oldman¹, Helen Garside¹, Amy Pointon¹, Chris E Pollard¹, AstraZeneca, Macclesfield/Cheshire, UK |
| 119    | **Cardiotoxicity Screening using the Cardioexcyte 96: A Noninvasive Methodology of Combining Extracellular Field Potential and Impedance Measurements**  
Corina Bot¹, David Guinot¹, Ulrich Thomas¹, Leo Doerr¹, Sanja Stoelzl-Feix¹, Matthias Beckler¹, George Okeyo¹, Joerg Oestreich¹, Rodolfo Haedo¹, Michael George¹, Niels Fertig¹, Nanion Technologies, North Brunswick, NJ, USA, ¹Nanion Technologies, Munich, Germany |
| 120    | **Pluricyte® Cardiomyocytes: Benefits and Characteristics of Improving the Maturity of Stem Cell-Derived Cardiomyocytes with a Fully-defined Culture Medium**  
Stefan Braam¹, Rob Towart¹, Pluriomics BV, Leiden, The Netherlands |
| 121    | **Human iPS Cell-Derived Cardiomyocytes ReproCardio 2TM as an Analytic Tool for Large-Scale Toxicity Screening**  
Shunsuke Yoshida¹, Yu Ching Lin¹, Joylynn Clark¹, Mark Bryant¹, Takashi Masai¹, Mitsuru Inamura¹, ¹ReproCELL, Yokohama, Japan, ²ReproCELL, Boston, MA, USA, ³ReproCELL, Crewe, UK |
| 122    | **Measurement of Optical Action Potentials and Calcium Transients in hIPSC-Derived Cardiomyocytes using the Novel Optopatch© Fluorescent Protein Platform**  
Khuram W. Chaudhary¹, Graham Dempsey², Joel Kralj³, Cuong Nguyen³, Nicholas Atwater³, Barry S. Brown¹, Dennis Murphy¹, ¹GlaxoSmithKline, King of Prussia, PA, USA, ²Q-STATE Biosciences, Cambridge, MA, USA |
<table>
<thead>
<tr>
<th>Poster</th>
<th>Abstract Title and Author (presenting authors underlined)</th>
</tr>
</thead>
</table>
| 123   | Optical Measurements of Electrical Activity From hiPSC-Derived Cardiomyocytes As An Approach for Cardiac Toxicology Screening and Preclinical Safety  
Ana Costa¹, Maria P Hortigon-Vinagre², Caroline Ameen³, Peter Sarpity³, Victor Zamora³, Margaret-Anne Craig¹, Francis Burton¹,², Godfrey Smith¹,², Clyde Biosciences Ltd, Glasgow, UK, ³University of Glasgow, Glasgow, UK, ³Cellectis AB, Gothenburg, Sweden |
| 124   | Cardiac Safety Profile of Pan-HER Inhibitors Afatinib and Neratinib in a Multi-parameter In Vitro Screening Approach  
Kimberly Doherty¹, Dominique Talbert¹, Patricia Trusk¹, Scott Shell¹, Sarah Bacus¹, Quintiles, Westmont, IL, USA |
| 125   | Pharmacological Comparison between Human induced Pluripotent Stem Cells derived Cor.4U® Ventricular Cardiomyocytes (hiPSC-CM) and Guinea Pig Ventricular Cardiomyocytes (GP-CM)  
Stephanie Guilbot¹, Richard Printemps¹, Ludovic Hautefeuille¹, Joffrey Ducroq¹, Marie Le Grand¹, PhysioStim, Lautrec, France |
| 126   | Genetically Modified Human Pluripotent Stem Cell Derived Hepatocytes Display Adult Characteristics and Functionality and Are Suitable As Toxicity Reporter  
Sara Johansson¹, Gustav Holmgren¹, Barbara Kuppers-Munther¹,², Catharina Ellerström¹, Peter Sartipy¹,², Anders Aspegren¹, Josefinä Edsboage¹, Cellectis AB, Gothenburg, Sweden, ²University of Skövde, Skövde, Sweden |
| 127   | Evaluation of Nifedipine on Action Potentials, Ion Currents and Calcium Transients from Adult Human Stem Cell Derived Cardiomyocytes  
John Ken Gibson¹, Yimei Yue¹, Jared Bronson¹, Ionic Transport Assays, Inc, St Louis, MO, USA |
| 128   | Doxorubicin-Induced Toxicity in Cardiomyocytes Derived from Human Pluripotent Stem Cells  
Gustav Holmgren¹,², Jane Synnergren¹, Yalda Bogestad¹, Caroline Ameén¹, Karolina Åkesson¹, Sandra Holmgren¹, Anders Lindahi¹, Peter Sartipy¹,², Systems Biology Research Center, School of Bioscience, University of Skövde, Skövde, Sweden, ²Department of Clinical Chemistry and Transfusion Medicine, Institute of Biomedicine, The Sahlgrenska Academy at University of Gothenburg, Gothenburg, Sweden, ³Cellectis AB, Gothenburg, Sweden |
| 129   | Application of Optical Measurements of Electrical Activity to Cor4U Human Induced Pluripotent Stem Cells Derived Cardiomyocytes (hiPSC-CMs) As a Predictive Tool for Preclinical Safety Assessment  
Maria P Hortigon-Vinagre¹, Amy E. Taylor¹, Silke Schwengberg¹,², Bettina Bertram¹, Victor Zamora¹, Ana Costa¹, Margaret A. Craig¹, Francis L. Burton¹,², Godfrey L. Smith¹,², Clyde Biosciences, Glasgow, UK, ³University of Glasgow, Glasgow, UK, ⁴Cells at Work Consulting & Services, Dueren, Germany, ⁵Axiogenesis AG, Cologne, Germany |
| 130   | Functional Effects of Cardiac Reference Agents in Human IPSC Cardiomyocytes Correlate with Gene Expression Profile  
Minxue Huang¹, Wen-Pin Yang¹, Jun Zhu¹, Hong Shi¹, Lewis Buchanan¹, Jae Kwagh¹, Paul Levesque¹, Bristol Myers Squibb, Pennington, NJ, USA |
| 131   | Scalable, Reproducible, and Economical Method for Producing Cardiomyocytes from Human iPS Cells  
Masamichi Ito¹, Yuki Kuramoto², Atsuhiko Naito¹,², The University of Tokyo, Tokyo, Japan, ²Osaka University, Osaka, Japan |
| 132   | Breaking New Ground in Early Cardiac Safety: Human iPSC Cardiomyocytes Derived from IPSCs in High–Throughput Screening  
Ralf Kettenhofen¹, Anika Duenbostell¹, Thomas Niedereichholz¹, Jean Marc D’Angelo³, Hirofumi Horai¹, Bettina Bertram¹, Francis L. Burton¹,², Godfrey L. Smith¹,², University of Glasgow, Glasgow, UK, ³Clyde Biosciences, Glasgow, UK, ⁴Cells at Work Consulting & Services, Dueren, Germany, ⁵Axiogenesis AG, Cologne, Germany |
| 133   | The Newcomer is Getting Up and Running: Human iPS Cell-Derived Cardiomyocyte Implementation in Multiple Cardiac Safety Assessment Assays  
Ralf Kettenhofen¹, Anika Duenbostell¹, Bettina Bertram¹, Matthias Gossmann¹, Gesa Rascher-Eggstein¹, Axiogenesis AG, Cologne, Germany |
| 134   | A Novel Translational In Vitro Model to Detect Drug-Induced Delayed/Chronic Cardiotoxicity in Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes  
Ivan Kopljar¹, Eddy Vlaminckx¹, Hua Rong Lu¹, David Gallacher¹, Janssen Pharmaceutica, Beerse, Belgium |
| 135   | Non-genetic Method for Purification of Ventricular Cells from Human iPS Cell-Derived Cardiomyocytes  
Yuki Kuramoto¹, Masamichi Ito¹, Atsuhiko Naito¹,², The University of Tokyo, Tokyo, Japan, ²Osaka University, Osaka, Japan |
<table>
<thead>
<tr>
<th>Poster</th>
<th>Abstract Title and Author (presenting authors underlined)</th>
</tr>
</thead>
</table>
| § 136  | **Human Stem Cell Research for Cardiac Safety: Janssen's (JNJ) Ongoing Strategy in Relation to FDA's CiPA Proposal with Data from 60 Reference Compounds, Four Different Cell Providers and Five Different Technologies**  
Hua Rong Lu¹, An Hermans¹, Ivan Koplar¹, Jutta Rohrbacher¹, David J Gallacher¹, ¹Janssen Pharmaceutical NV, Beerse, Belgium |
| 137    | **Stem Cell-Derived Cardiomyocyte Toxicity Testing Using a Novel Label-Free and Contact-Free Imaging Platform**  
Mahnaz Maddah¹, Julia Heidmann¹, Kevin Loewke¹, ¹Cellogy In., Menlo Park, CA, USA |
| 138    | **Action Potentials from Stem Cell-Derived Cardiomyocyte Clusters for Cardiac Safety Screening**  
Carlos Obejero-Paz², Nikolai Fedorov¹, James Kramer¹, Andrew Bruening-Wright¹, Arthur M. Brown¹, ¹ChanTest Corporation, Cleveland, OH, USA |
| § 139  | **Can MEA Recording in hiPSC-Derived Cardiomyocytes Assess Proarrhythmic Risk?**  
Yusheng Qu¹, Hugo Vargas¹, ¹Amgen Inc., Thousand Oaks, CA, USA |
| 140    | **Availability of Intracellular Ca2+ Imaging Using iPSC-Induced Cardiomyocytes as a New Cardiac Toxicity Assessment**  
Tomoko Sakakura¹, Kiyoshi Takasuna¹, ¹Daiichi Sankyo Co., Ltd., Tokyo, Japan |
| 141    | **Search for the Human Induced Pluripotent Stem Cell-Derived Neurons Capable of Detecting the CNS-Specific Toxicity**  
Kaoru Sato¹, Kanako Takahashi¹, Yukari Shigemoto-Mogami¹, Kanae Ohtsu¹, Yonehiro Kanemura², Tomoko Shofuda³, Hayato Fukusumi¹, Yohei Okada¹, Hideyuki Okano⁴, Tomoaki Shirao⁴, Yuko Sekino¹, ¹NIHS, Tokyo, Japan, ²Osaka National Hospital, National Hospital Organization, Osaka, Japan, ³Keio University, Tokyo, Japan, ⁴Aichi Medical University, Aichi, Japan, ⁵Gunma University, Maebashi, Japan |
| 142    | **Effects of Valproic Acid and Astemizole on the Neurite Growth of Human iPSCs-Derived Neurons**  
Yuko Sekino¹, Mao Ootsu¹, Yuki Ohara¹, Hiroyuki Yamazaki¹, Kaoru Sato¹, Reiko T Roppongi², Noriko Koganezawa¹, Tomoaki Shirao¹, ¹Gunma University Graduate School of Medicine, Maebashi, Japan, ²National Institute of Health Sciences, Tokyo, Japan |
| 143    | **Functional and Genetic Characterization of Human IPS Cardiomyocytes for Cardiac Safety Screening**  
Martin Traebert¹, Marie-Helene Delmotte¹, Kurt Zimmermann¹, Valerie Weber¹, Claudio Gardi¹, Greg Friedrichs², ¹Novartis Institutes for Biomedical Research, Basel, Switzerland, ²Novartis Institutes for Biomedical Research, East Hanover, NJ, USA |
| 144    | **Spontaneous Cardiac Action Potentials Recordings from Human Cardiomyocytes Derived from Pluripotent Stem Cells: An Experimental Paradigm in Agreement with CiPA Recommendation**  
Caterina Virginio¹, Annarosa Ugolini¹, Elisa Ballini¹, Corrado Carignani¹, Mauro Corsi¹, ¹Aptuit, Verona, Italy |
| 145    | **Predicting Compound Effects On Cardiac Repolarization And Detection Of Proarrythmia Signals Using Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes.**  
Raquel Vega¹, Ralf Kettenhofen¹, Ross Whittaker¹, ¹Vala Sciences Inc., San Diego, CA, USA, ²Axiogenesis AG, Cologne, Germany |
| 146    | **Analysis Of 90 Compounds Using Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes to Detect Compound Effects On Cardiac Repolarization And Generation Of Arrhythmia.**  
Raquel Vega¹, Emily Pfeiffer¹, Ross Whittaker¹, ¹Vala Sciences Inc., San Diego, CA, USA |
| 147    | **Rapid Intensity Modulation of a Single Light Source Allows Excitation of a Voltage Sensitive Dye and Intermittent Activation of Channel Rhodopsin in hiPSC Derived Cardiomyocytes (hiPSC-CMs)**  
Victor Zamora¹, Maria Pura Hortigón-Vinagré¹, Tobias Bruegmann¹, Ana Costa¹, Margaret Anne Craig¹, Francis Burton¹, Philipp Sasse¹, Godfrey Smith¹-², ¹Institute of Cardiovascular and Medical Sciences, University of Glasgow, Glasgow, UK, ²Department of Biomedical Engineering, University of Glasgow, Glasgow, UK, ³Institut of Physiology I, University Bonn, Bonn, UK, ⁴Clyde Biosciences, University of Glasgow, Glasgow, UK |
| 148    | **Using Human Embryonic Stem Cell-Derived Cardiomyocytes Assays to Predict Cardiotoxicity**  
Yong Zhao¹, Shimin Wang¹, Karen Marcoe¹, John Kushleika¹, ¹Eurofins Panlabs, Inc., Redmond, WA, USA |
<table>
<thead>
<tr>
<th>Poster</th>
<th>Abstract Title and Author (presenting authors underlined)</th>
</tr>
</thead>
</table>
| 149    | **Renal Safety Pharmacology: Characterization of a Non-Rodent Model with Water Loading Using a Positive Control Agent**  
*Samir Abtout*, Alexis Ascah, Leanne Bassett, Mytlene Pouliot, Simon Authier, 1 CItoxLAB, Laval, Quebec, Canada, 2 Université de Montréal, St-Hyacinthe, Canada |
| 150    | **Evaluation of Role of Atorvastatin in Cisplatin Induced Nephrotoxicity in Wistar Rats**  
*Sravan Kumar Boorla*, 1 Vaagdevi College of Pharmacy, Warangal, Andhra Pradesh, India |
| 151    | **An Animal Model of Postoperative ileus**  
*Sonia Goineau*, Phillipe Guillame, Marion Hunault, Sylvie Bézivin, Guillaume Froget, 1 Porsolt SAS, Le Genest St Isle, France |
| 153    | **In Vivo Rat Model of GI Transit Measurement Using X-Ray Computed Tomography Imaging**  
*Malar Pannirselvam*, Crystal Tolman, Donald Hodges, Mac Johnson, 1 Global Drug Safety Evaluation, Vertex Pharmaceuticals, Boston, MA, USA, 2 Imaging, Vertex Pharmaceuticals, Boston, MA, USA |
# Presenting Author Index

<table>
<thead>
<tr>
<th>Abstract Author</th>
<th>Poster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abernathy, Matthew</td>
<td>1</td>
</tr>
<tr>
<td>Abi-Gerges, Najah</td>
<td>118</td>
</tr>
<tr>
<td>Abtou, Samir</td>
<td>149</td>
</tr>
<tr>
<td>Asch, Alexis</td>
<td>68, 69</td>
</tr>
<tr>
<td>Baird, Theodore</td>
<td>2, 3</td>
</tr>
<tr>
<td>Bassett, Leanne</td>
<td>4</td>
</tr>
<tr>
<td>Beattie, Kylie</td>
<td>23</td>
</tr>
<tr>
<td>Bhatt, Siddhartha</td>
<td>51</td>
</tr>
<tr>
<td>Bialecki, Russell</td>
<td>52</td>
</tr>
<tr>
<td>Bleunven, Christophe</td>
<td>24</td>
</tr>
<tr>
<td>Boisserie, Eric</td>
<td>53</td>
</tr>
<tr>
<td>Boorla, Svan Kumar</td>
<td>150</td>
</tr>
<tr>
<td>Bot, Corina</td>
<td>119</td>
</tr>
<tr>
<td>Bouchard, Annie</td>
<td>39</td>
</tr>
<tr>
<td>Braam, Stefan</td>
<td>120</td>
</tr>
<tr>
<td>Briscoe, Richard</td>
<td>5</td>
</tr>
<tr>
<td>Brockway, Marina</td>
<td>70</td>
</tr>
<tr>
<td>Bryant, Mark</td>
<td>121</td>
</tr>
<tr>
<td>Buchanan, Lewis</td>
<td>71, 72</td>
</tr>
<tr>
<td>Burner, Maureen</td>
<td>40</td>
</tr>
<tr>
<td>Butler, Larissa</td>
<td>63</td>
</tr>
<tr>
<td>Champeroux, Pascal</td>
<td>73</td>
</tr>
<tr>
<td>Chaudhary, Khuram W.</td>
<td>6, 122</td>
</tr>
<tr>
<td>Clements, Mike</td>
<td>25</td>
</tr>
<tr>
<td>Coffee, Matt</td>
<td>54</td>
</tr>
<tr>
<td>Colomar, Aurore</td>
<td>55</td>
</tr>
<tr>
<td>Cooper, Samantha</td>
<td>41</td>
</tr>
<tr>
<td>Costa, Ana</td>
<td>123</td>
</tr>
<tr>
<td>Damiano, Bruce P</td>
<td>42</td>
</tr>
<tr>
<td>Delaunois, Annie</td>
<td>114</td>
</tr>
<tr>
<td>Delphy, Eric</td>
<td>104</td>
</tr>
<tr>
<td>del Rio, Carlos</td>
<td>91</td>
</tr>
<tr>
<td>Derakhchan, Kathy</td>
<td>74, 92</td>
</tr>
<tr>
<td>Diehl, Lisa</td>
<td>75</td>
</tr>
<tr>
<td>Dinklo, Theo</td>
<td>7</td>
</tr>
<tr>
<td>Doherty, Kimberly</td>
<td>124</td>
</tr>
<tr>
<td>Duroq, Joffrey</td>
<td>64, 125</td>
</tr>
<tr>
<td>Dutta, Sara</td>
<td>26</td>
</tr>
<tr>
<td>Edsbagge, Josefina</td>
<td>126</td>
</tr>
<tr>
<td>El Amrani, Abdel-Ilah</td>
<td>76</td>
</tr>
<tr>
<td>Fasdelli, Nicola</td>
<td>8</td>
</tr>
<tr>
<td>Fernandez, Eric</td>
<td>43</td>
</tr>
<tr>
<td>Ford, Kevin</td>
<td>44</td>
</tr>
<tr>
<td>Froget, Guillaume</td>
<td>151</td>
</tr>
<tr>
<td>Garfinkel, Ivy</td>
<td>105</td>
</tr>
<tr>
<td>Gayheart-Walsten, Pamela</td>
<td>111</td>
</tr>
<tr>
<td>Gharanei, Mayel</td>
<td>65</td>
</tr>
<tr>
<td>Gibson, John Ken</td>
<td>127</td>
</tr>
<tr>
<td>Gilbert, Lindsey</td>
<td>9</td>
</tr>
<tr>
<td>Goyal, Shubham</td>
<td>66</td>
</tr>
<tr>
<td>Greiter-Wilke, Andrea</td>
<td>77</td>
</tr>
<tr>
<td>Halpern, Wendy</td>
<td>56</td>
</tr>
<tr>
<td>Hamlin, Wendy</td>
<td>27</td>
</tr>
<tr>
<td>Hawk, M.</td>
<td>93</td>
</tr>
<tr>
<td>Himmel, Herbert</td>
<td>10</td>
</tr>
<tr>
<td>Holmes, Anthony</td>
<td>115</td>
</tr>
<tr>
<td>Holmgren, Gustav</td>
<td>128</td>
</tr>
<tr>
<td>Hortigon-Vinagre, Maria P</td>
<td>129</td>
</tr>
<tr>
<td>Huang, Minxue</td>
<td>130</td>
</tr>
<tr>
<td>Ito, Masamichi</td>
<td>131</td>
</tr>
<tr>
<td>Ju, Haisong</td>
<td>57</td>
</tr>
<tr>
<td>Kaiser, Robert</td>
<td>78</td>
</tr>
<tr>
<td>Kearney, Kenneth</td>
<td>94, 112</td>
</tr>
<tr>
<td>Kettenhofen, Ralf</td>
<td>132, 133</td>
</tr>
<tr>
<td>King, Lynne</td>
<td>106</td>
</tr>
<tr>
<td>Kohrs, Loren</td>
<td>113</td>
</tr>
<tr>
<td>Koplijar, Ivan</td>
<td>134</td>
</tr>
<tr>
<td>Kubo, Taeko</td>
<td>45</td>
</tr>
<tr>
<td>Kuramoto, Yuki</td>
<td>135</td>
</tr>
<tr>
<td>LaDuke, Carrie</td>
<td>79</td>
</tr>
<tr>
<td>Lassen, Dirck</td>
<td>28</td>
</tr>
<tr>
<td>Leishman, Derek</td>
<td>58</td>
</tr>
<tr>
<td>Leslie, L</td>
<td>11</td>
</tr>
<tr>
<td>Limprasuttr, Vudhiporn</td>
<td>95</td>
</tr>
<tr>
<td>Abstract Author</td>
<td>Poster</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td>Lu, Hua Rong.......................</td>
<td>136</td>
</tr>
<tr>
<td>Maddah, Mahnaz........................</td>
<td>137</td>
</tr>
<tr>
<td>Maddock, Helen........................</td>
<td>67</td>
</tr>
<tr>
<td>Maekawa, Motoko........................</td>
<td>80</td>
</tr>
<tr>
<td>Maggio, John..................................</td>
<td>116</td>
</tr>
<tr>
<td>Malhi, Saima.................................</td>
<td>107</td>
</tr>
<tr>
<td>Markgraf, Carrie.......................</td>
<td>12, 13, 14</td>
</tr>
<tr>
<td>Matheson, Rommel........................</td>
<td>81</td>
</tr>
<tr>
<td>Mazelin-Winum, Ludmilla................</td>
<td>108</td>
</tr>
<tr>
<td>McKee, Jeffrey.............................</td>
<td>96</td>
</tr>
<tr>
<td>Metea, Monica.............................</td>
<td>15</td>
</tr>
<tr>
<td>Milano, Stéphane...........................</td>
<td>59</td>
</tr>
<tr>
<td>Mittelstadt, Scott........................</td>
<td>97</td>
</tr>
<tr>
<td>Morissette, Pierre........................</td>
<td>98</td>
</tr>
<tr>
<td>Naruganahalli, Krishna...............</td>
<td>60</td>
</tr>
<tr>
<td>Obejero-Paz, Carlos........................</td>
<td>46, 138</td>
</tr>
<tr>
<td>Pannirselvam, Malar..........................</td>
<td>153</td>
</tr>
<tr>
<td>Pilla, Maria..................................</td>
<td>17</td>
</tr>
<tr>
<td>Polak, Sebastian...........................</td>
<td>47</td>
</tr>
<tr>
<td>Pollard, Chris...............................</td>
<td>29</td>
</tr>
<tr>
<td>Pouliot, Mylene..............................</td>
<td>18</td>
</tr>
<tr>
<td>Poy, Nancy.....................................</td>
<td>82</td>
</tr>
<tr>
<td>Prior, Helen....................................</td>
<td>83</td>
</tr>
<tr>
<td>Pugsley, Michael............................</td>
<td>30</td>
</tr>
<tr>
<td>Qu, Yusheng....................................</td>
<td>139</td>
</tr>
<tr>
<td>Regan, Hillary...............................</td>
<td>84</td>
</tr>
<tr>
<td>Robertson, Gail..............................</td>
<td>31</td>
</tr>
<tr>
<td>Roberts, Sonia...............................</td>
<td>85</td>
</tr>
<tr>
<td>Rohrbacher, Jutta............................</td>
<td>32</td>
</tr>
<tr>
<td>Roman, Maria I..................................</td>
<td>33</td>
</tr>
<tr>
<td>Roof, Steve......................................</td>
<td>99</td>
</tr>
<tr>
<td>Rosseels, Marie-Luce......................</td>
<td>19</td>
</tr>
<tr>
<td>Sadekova, Nataliya...........................</td>
<td>86</td>
</tr>
<tr>
<td>Sakakura, Tomoko............................</td>
<td>140</td>
</tr>
<tr>
<td>Salvai, Dany....................................</td>
<td>34</td>
</tr>
<tr>
<td>Sarangi, Sudhir Chandra....................</td>
<td>117</td>
</tr>
<tr>
<td>Sato, Kaoru.....................................</td>
<td>141</td>
</tr>
<tr>
<td>Sekino, Yuko......................................</td>
<td>142</td>
</tr>
<tr>
<td>Sharp, Jason.....................................</td>
<td>109</td>
</tr>
<tr>
<td>Shirao, Tomoaki..............................</td>
<td>48</td>
</tr>
<tr>
<td>Simjee, Shabana..............................</td>
<td>49</td>
</tr>
<tr>
<td>Tang, Hai-Ming...............................</td>
<td>61, 87</td>
</tr>
<tr>
<td>Toot, Jonathan...............................</td>
<td>20, 21</td>
</tr>
<tr>
<td>Traebert, Martin.............................</td>
<td>35, 62, 143</td>
</tr>
<tr>
<td>Travis, Jeffrey...............................</td>
<td>100</td>
</tr>
<tr>
<td>Ueyama, Yukie.....................................</td>
<td>88</td>
</tr>
<tr>
<td>Urmaliya, Vijay...............................</td>
<td>89</td>
</tr>
<tr>
<td>van der Linde, Henk..........................</td>
<td>101</td>
</tr>
<tr>
<td>Virginio, Caterina............................</td>
<td>144</td>
</tr>
<tr>
<td>Viswanathan, Sengottuvel...................</td>
<td>110</td>
</tr>
<tr>
<td>Watanabe, Kenta...............................</td>
<td>102</td>
</tr>
<tr>
<td>Whittaker, Ross...............................</td>
<td>145, 146</td>
</tr>
<tr>
<td>Wolinsky, Toni.................................</td>
<td>22</td>
</tr>
<tr>
<td>Wu, XueJun.......................................</td>
<td>90</td>
</tr>
<tr>
<td>Yoshinaga, Takashi............................</td>
<td>50</td>
</tr>
<tr>
<td>Youngblood, Bradley..........................</td>
<td>103</td>
</tr>
<tr>
<td>Zamora, Victor..................................</td>
<td>147</td>
</tr>
<tr>
<td>Zhang, Xiaoyu.....................................</td>
<td>36, 37</td>
</tr>
<tr>
<td>Zhao, Yong.......................................</td>
<td>148</td>
</tr>
<tr>
<td>Zitoun, Philippe...............................</td>
<td>38</td>
</tr>
</tbody>
</table>

2015 Call for Abstracts
Look for an Announcement in Early 2015
Sponsored Presentation Descriptions

**Exhibitor Sponsored Presentations**

Each year SPS invites all exhibitors and annual meeting sponsors to host Exhibitor Sponsored Presentations during the meeting. Exhibitor Sponsored Presentations are promoted on the SPS website, via email blasts to registrants, and in the Program and Exhibitor Directory.

While they are not a part of the official SPS scientific program, Exhibitor Sponsored Presentations are permitted by the Society.

**Monday, October 20**

**The ABC’s of IND’s**

7:15 AM – 8:15 AM

*McKinley Room*

**Sponsored by: ChanTest and WIL Research**

Please join ChanTest and WIL Research for breakfast and a session entitled “The ABC’s of IND’s.” Dr. Brian Roche, Director of Safety Pharmacology at WIL Research, will present “Support for an IND application: A focus on Safety Pharmacology and Toxicology Studies.” Dr. Jessica Brimecombe, Vice President of Operations at ChanTest, will present “Beyond hERG.”

**Examining Drug Candidates for Pulmonary Arterial Hypertension: Ups and Downs of Multiple Animal Models**

12:30 PM – 1:30 PM

*McKinley Room*

**Sponsored by: CorDynamics**

Enjoy lunch while discussing an R&D hotspot—pulmonary arterial hypertension (PAH). Learn the differences (and benefits) of monocrotaline, hypoxia with/without VEGF inhibition, and immunodeficiency as preclinical initiators of PAH—and how your compounds may prevent/reverse this condition on the path to clinic.

Warning: This is a high speed scientific presentation that includes sudden and dramatic discussions of data and pharmacology. CorDynamics assumes no responsibility for disappointment incurred from expecting a tedious sales pitch.

**The Applications of xCELLigence Cardio System and Stem Cell-Derived Cardiomyocytes for Cardiac Risk Assessment**

12:30 PM – 1:30 PM

*Wilson Room*

**Sponsored by: ACEA Biosciences**

Cardiac toxicity is a major concern in drug development. It is imperative that clinical candidates are thoroughly tested for adverse effects earlier in the process. This presentation will discuss the utility of ACEA Biosciences xCELLigence RTCA Cardio System in conjunction with stem cell derived cardiomyocytes for assessment of compound risk.

**DSI’s 7th Annual Scientific Data Blast**

6:00 PM – 7:00 PM

*Wilson Room*

**Sponsored by: Data Sciences International (DSI)**

Do you like learning about the latest safety pharmacology developments? Are you busy and wishing a CliffsNotes version existed? Then join us for this educational and entertaining event to network and enjoy a cocktail while your colleagues present their latest scientific discoveries in an abbreviated format. Refreshments will be served.

**Complementary Automated Patch Clamp, Extracellular Field Potential and Impedance Recordings of Stem Cells Allow Reliable Wholistic Cardio- or Neurotoxicity Prediction**

6:00 PM – 7:00 PM

*McKinley Room*

**Sponsored by: Nanion**

Safety comes first: comprehensive cardio and neurotoxicity screening with complementary high throughput instrumentation. Stem cell recordings on our automated patch clamping and impedance/EFP platforms: the Patchliner, the new SyncroPatch384 PE and the CardioExcyte96.
Tuesday, October 21

Human ESC-Derived Cardiomyocytes: Bridging Analytical Platforms for more Comprehensive Cardiac Safety Assessment
7:15 AM–8:15 AM
Wilson Room
Sponsored by: GE Healthcare

A major limitation of current in vitro cardiotoxicity tests is that none of the cell line and ex vivo models can be utilized as a single testing model across multiple analytical platforms to generate a cohesive data set for safety assessment. Here we discuss how hESC-derived cardiomyocytes could overcome this limitation.

Cardiac Electrophysiology: Update on CiPA and the Industry’s Approach to Ion Channel Testing
7:15 AM–8:15 AM
McKinley Room
Sponsored by: Sophion

Through the CiPA Initiative, the FDA is consulting with industry and safety expertise on modifying the guidelines for cardiac arrhythmic risk assessment. Bernard Ferrini from Pfizer Global Safety Pharmacology will present Pfizer’s strategic approach to cardiac risk assessment. Weifeng Yu, application scientist at Sophion will present on the capabilities of Sophion automated patch clamp platform.

Impact of Autonomic Nervous System on QT-RR Variability and Arrhythmia Liability
12:30 PM–1:30 PM
Hoover Room
Sponsored by: Emka TECHNOLOGIES Inc

Arrhythmogenic risk is influenced by changes in autonomic state and impaired hysteresis thus cannot be appropriately evaluated by QTc intervals. Beat-to-beat QT-QT-RR interval dynamics allows application of restitution principals to continuous ECG data to define normal reference bounds and quantify arrhythmia vulnerability. Translation from preclinical to clinical regulatory studies demonstrated.

New Technologies to Refine Safety Pharmacology and Toxicology Studies
12:30 PM–1:30 PM
McKinley Room
Sponsored by: Data Sciences International (DSI)

Learn firsthand how the latest implantable telemetry technologies will change the way scientists conduct safety pharmacology and toxicology studies. Presenters will offer perspectives on:

- Transitioning from jacketed to implantable technologies for Toxicology studies
- Incorporating glucose endpoints into Discovery or early Safety studies

New Techniques for MEA-Based Interrogation of Human Stem Cell-Derived Cardiomyocytes to Support CiPA and In Vitro Safety Pharmacology Assays
6:00 PM–7:00 PM
Wilson Room
Sponsored by: Cellular Dynamics International

Learn about advances in microelectrode recordings with human stem cell derived cardiomyocytes over drinks and snacks. This interactive discussion will cover new techniques in cardiomyocyte preparation and MEA recording technologies, including minimized cell handling, cardiomyocyte pacing, arrhythmia assessment, and recording stability in serum-containing and serum-free media. Audience participation is strongly encouraged.

Leverage Drug Approval Precedents to Inform Preclinical and Clinical Development
6:00 PM–7:00 PM
McKinley Room
Sponsored by: Elsevier

Plan to attend talks by leading scientists from major pharmaceutical companies, including Johnson & Johnson and Galderma. They’ll discuss leveraging regulatory evidence to address challenges in preclinical and clinical development. This is an excellent opportunity to meet the speakers and fellow researchers afterwards over light food and cocktails.
A REVEALING COMBINATION.

Integrated Safety Pharmacology and Toxicology Solutions

See the process of safety assessment in an entirely different light. Now you can assess your safety pharmacology endpoints during your toxicology studies to make better safety predictions, earlier than ever before. Rethink what’s possible and discover how we deliver Solutions Made Real™.

Let's start the conversation.

Go to Covance.com/SPS to:
- Set up a meeting with our scientists while at SPS
- Learn more about our Safety Pharmacology and Toxicology Solutions
- Download our latest posters

Covance is a proud sponsor of SPS.
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<th>Booth Number</th>
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<td>225</td>
<td>PhysioStim</td>
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<td>227</td>
<td>Biotrial</td>
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<td>Data Sciences International (DSI)</td>
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<td>Axion BioSystems, Inc.</td>
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<td>ChanTest Corporation</td>
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<td>311</td>
<td>Charles River</td>
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<td>Clyde Biosciences</td>
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<td>NEUROSERVICE</td>
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<td>Q State Biosciences</td>
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<td>TSE Systems, Inc.</td>
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<td>WIL Research</td>
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<td>325</td>
<td>Elsevier</td>
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<td>Ionic Transport Assays/IonsGate Preclinical Services</td>
<td>326</td>
<td>NOTOCORD Systems</td>
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<td>Axiogenesis AG</td>
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<td>Eurofins Cerep-Panlabs</td>
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<td>Pinnacle Technology Inc.</td>
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<td>Huntingdon Life Sciences/Harlan Laboratories</td>
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<td>MPI Research</td>
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<td>Marshall BioResources</td>
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<td>Transonic</td>
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# Exhibit Listing by Company Name

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<td>307</td>
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</table>
Poster Presentation details can be found on page 27.

Photography/Recording Policy and Protocols for Attendees

Out of courtesy for the scientific presenters and exhibitors, we appreciate your compliance with the following policies:

• Cell phones and other electronic devices should be set on mute.
• Cameras and recording devices are prohibited in the Exhibit/Poster Areas.
• Children under the age of 15 are prohibited from accessing the Exhibit/Poster Areas at any time.

If you have any questions regarding these policies, please contact the SPS Headquarters staff at the Registration Desk.
Exhibitor Directory

Exhibit Hours
Sunday, October 19 .................................................. 6:00 PM–7:30 PM
Monday, October 20 .................................................. 9:00 AM–5:00 PM
Tuesday, October 21 .................................................. 9:00 AM–5:00 PM

Exhibitor Access Online
Access the latest information on all annual meeting exhibitors through our exhibitor section on the Annual Meeting website, by visiting www.safetypharmacology.org/am2014, then choose Exhibitors. Here you will find up-to-the-minute information on each company, including contact information and company descriptions.

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Sponsors (as of September 26, 2014) are noted within the company descriptions. See complete listing of sponsors on back cover.

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6779 Mesa Ridge Road #100
San Diego, CA 92121 United States
Tel: 858.724.0928
Fax: 858.724.0927
Email: adeleon@aceabio.com
Website: www.aceabio.com
Contact: Amy de León

ACEA Biosciences, Inc. is a pioneer in the development and commercialization of high-performance cell analysis xCELLigence and NovoCyte platforms for life science research. The xCELLigence RTCA Cardio Instrument monitors the beating function of cardiomyocytes in real-time, providing a high-throughput, quantitative and predictive assay system for assessment of cardiac liability.

See our advertisement on page 25.

Exhibitor Directory

Alpha MED Scientific Inc. 406
209, 7-7-15, Saito-asagi
Ibaraki, Osaka 567-0085 Japan
Tel: 81.72.648.7973
Fax: 81.72.648.7974
Email: info@med64.com
Website: www.med64.com
Contact: Rika Yamazaki

Alpha MED Scientific manufactures and provides the MED64 micro-electrode array (MEA) system for in vitro electrophysiology. With its industry’s most-sensitive electrodes, the MED64 provides clean and accurate electrophysiological recordings, enabling advanced semi-automated drug and safety screening. The new medium throughput system will enable you to perform high-quality drug and safety screening for up to eight samples simultaneously and is easily scalable for testing hundreds of compounds.

Axiogenesis AG 206
Nattermannallee 1, Building S20
Cologne, NRW 50829 Germany
Tel: +49 (0) 221 9988180
Fax: +49 (0) 221 99881810
Email: brian.murphy@axiogenesis.com
Website: www.axiogenesis.com
Contact: Brian Murphy

Axiogenesis is the leading expert providing human induced pluripotent stem cell (iPSC)-derived cell types for drug development and high-throughput (HTS) applications. All cells are produced by Axiogenesis proprietary production technology and show relevant morphology, protein-expression, electrophysiology and pharmacology. Cor.4U® human cardiomyocytes, Peri.4U™ (peripheral) and Dopa.4U™ (dopaminergic) human neurons are available as in vitro models for safety, efficacy and toxicology studies.
Axion BioSystems, Inc. 304
1819 Peachtree Road NE, Suite 350
Atlanta, GA 30309 United States
Tel: 404.477.2557
Email: info@axion-biosystems.com
Website: www.axionbiosystems.com
Contact: Jim Filippini

Axion’s Maestro Multi-well MEA system elevates in vitro MEA technology to high-throughput levels with the new 96-well plate. Multiple noninvasive electrodes in each well directly measure electrical activity from intact networks of excitable cells. Axion’s technology provides single cell and tissue level, label-free platform for investigations in neurotoxicology, cardiac safety, in vitro disease modeling, and drug discovery.

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Opal Level Sponsor
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Tel: 800.201.2011
Email: solutions@battelle.org
Website: www.battelle.org
Contact: Jim Blank

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Glasgow, United Kingdom
Tel: 44.141.330.8225
Fax: 44.141.330.2166
Email: ruthmclaughlin@biopta.com
Website: www.biopta.com
Contact: Ruth Mclaughlin

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Temple Chambers 3-7 Temple Avenue
London EC4Y 0HP United Kingdom
Tel: 004.4.20.70609110
Email: contact@biotrial.com
Website: www.biotrial.com
Contact: Cliona MacSweeney

Founded in 1989, Biotrial is a leading full-service provider specialized in early development. Biotrial offers tailor-made solutions to Pharma and Biotech companies. Biotrial’s GLP preclinical services include: in vivo safety pharmacology studies (core battery, supplemental and follow-up studies), therapeutic efficacy tests and tailor-made models. Cardiovascular safety models are available in a wide range of species, including guinea-pig and nonhuman primate.
Calvert Laboratories, Inc.  210
130 Discovery Drive, Scott Technology Park
Scott Township, PA 18447 United States
Tel: 570.586.2411
Fax: 570.586.3450
Email: Leslie.maas@calvertlabs.com
Website: www.calvertlabs.com
Contact: Leslie Maas

Calvert is a highly-respected and experienced CRO providing a complete spectrum of nonclinical safety studies for over forty years to the pharmaceutical, biotechnology and chemical industries. Services include Toxicology, General and Safety Pharmacology, Telemetry, Discovery Services, Immunotoxicology and Pharmacokinetic/ADME. If you are looking for a highly personalized level of flexible, highly-communicative and responsive service, then Calvert is your laboratory of choice.

ChanTest Corporation  115
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14656 Neo Parkway
Cleveland, OH 44128 United States
Tel: 216.332.1665
Email: amague@chantest.com
Website: www.chantest.com
Contact: Alissa Mague

ChanTest provides GLP/non-GLP preclinical safety testing for hERG and other cardiac ion channels, APD testing on stem cell-derived cardiomyocytes, novel label-free cardiotoxicity assays and in vitro QT Prolongation Assays. The company offers the largest panel of ion channel targets and has been recognized as “the most trusted ion channel services company” in independent surveys since 2006.

Cellular Dynamics International, Inc. (CDI)  111
525 Science Drive
Madison, WI 53711 United States
Tel: 608.310.5189
Email: mstafford@cellulardynamics.com
Website: www.cellulardynamics.com
Contact: Marissa Stafford

Cellular Dynamics International is a leading developer of fully functional human cells derived from induced pluripotent stem (iPS) cells. Our iCell® and MyCell® product lines provide industrial quantities of high-quality, highly pure human cells enabling disease modeling, drug discovery, toxicity testing, and regenerative medicine research.

Charles River  311
Opal Level Sponsor
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Wilmington, MA 01887 United States
Tel: 877.274.8371
Email: askcharlesriver@crl.com
Website: www.criver.com/safetypharmacology
Contact: Jessica Jianiak

With established ICH core battery tests and supplementary safety pharmacology capabilities, we can meet current regulatory requirements and provide meaningful data to drive your decision-making process. Our safety pharmacology facilities feature dedicated telemetry suites, surgical capabilities and custom-built cardiovascular laboratories. From in vitro and specialty evaluations to IND enabling studies, we offer integrated services for your safety pharmacology needs every step of the way.
CiToxLAB

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Fax: 450.973.2259
Email: duguayf@ca.citoxlab.com
Website: www.citoxlab.com
Contact: Francois Duguay

CiToxLAB Group offers a wide range of GLP nonclinical and specialty safety evaluation services. Our safety pharmacology services include: CV: Telemetry and Jacketed (Rodent, Dog, Minipig, and NHP) FOB: Rodent, Dog, Minipig, NHP EEG: Seizure, Sleep and Stimulatory/Depressive, CSF (NHP) Renal: RPF and GFR Respiratory: Ventilation and Airway Resistance (Rodents, Large Animals) GI: Transit and gastric emptying time (Rats, Large Animals).

CorDynamics

117

2242 W. Harrison Street, Suite 108
Chicago, IL 60612 United States
Tel: 312.421.8876
Fax: 312.873.3710
Email: info@cordynamics.com
Website: www.cordynamics.com
Contact: Peter B. Senese

CorDynamics is a preclinical CRO focused on examining the cardiac effects of drug candidates. Our models help optimize these candidates early during drug development. Focusing on this critical phase improves the attrition of compounds selected for further testing, thereby reducing overall costs and time lines associated with your projects. Our validated GLP models include the isolated heart, anesthetized preparations, telemetry in five species, complex *in vivo* electrophysiology, and many other preps.

Clyde Biosciences

123

3rd floor West Medical Building, University of Glasgow
Glasgow G21 8QO United Kingdom
Website: www.clydebiosciences.com
Contact: Margaret Anne Craig

Cyprotex

420

313 Pleasant Street
Watertown, MA 02472 United States
Email: enquiries@cyprotex.com
Tel: 617.600.4300
Website: www.cyprotex.com
Email: enquiries@cyprotex.com
Contact: Sam Verla

Cyprotex is an AIM-listed company (CRX) headquartered in Macclesfield, UK with laboratories in Watertown, Massachusetts and Kalamazoo, MI (CeeTox). The company is the leader in predictive toxicology and ADME research, offers several proprietary technologies (CellCiphr®, Cloe®PK, eCiphrCardio, and eCiphrNeuro) and prides itself on custom assay development and fast turnaround times.
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119 14th Street NW, Suite 100  
St. Paul, MN 55112 United States  
Tel: 651.481.7400  
Fax: 651.481.7417  
Email: sales@datasci.com  
Website: www.datasci.com  
Contact: Jennifer Seidl

DSI manufactures and provides physiological monitoring technologies for cardiovascular, CNS, pulmonary and other basic research and drug development applications. Products include PhysioTel implanted telemetry, jacketed external telemetry, data acquisition, analysis and reporting software. A full line of amplifiers, transducers, and whole body plethysmographs. Ambulatory infusion and data integration options available. Global offices provide service, support, and application expertise.

**EMKA Technologies Inc  207**

307 Annandale Road, Suite 203  
Falls Church, VA 22042 United States  
Tel: 703.237.9001  
Fax: 703.237.9006  
Email: emkatech@emkatech.com  
Website: www.emkatech.com  
Contact: Serge Kaddoura

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**Eurofins Cerep-Panlabs  327**

15318 NE 95th Street  
Redmond, WA 98052 United States  
Tel: 425.895.8666  
Fax: 425.895.8668  
Email: JennyThouvenin@eurofins.com  
Website: www.eurofinscereppanlabs.com  
Contact: Jenny Thouvenin

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<table>
<thead>
<tr>
<th><strong>GE Healthcare</strong></th>
<th><strong>105</strong></th>
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<tbody>
<tr>
<td>The Maynard Centre Forest Farm, Whitchurch Cardiff, Mid Glamorgan CF14 7YT United Kingdom</td>
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<tr>
<td>Tel: 44.2920.526191</td>
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<tr>
<td>Email: <a href="mailto:jan.turner@ge.com">jan.turner@ge.com</a></td>
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<tr>
<td>Website: <a href="http://www.gelifesciences.com">www.gelifesciences.com</a></td>
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<tr>
<td>Contact: Jan Turner</td>
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<td>GE Healthcare has a focused development program to advance technologies for predictive toxicology. Cytiva cardiomyocytes demonstrate an overall pharmacological sensitivity greater than conventional rabbit or canine purkinje fiber tests and allow convenient, early assessment of multiple ion channel effects and compound liability, while cytotoxic signatures obtained from IN Cell Analyzer HCA platforms can provide highly informative insights into the mechanism of action of off-target, cytotoxic agents.</td>
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<tr>
<th><strong>InoCardia</strong></th>
<th><strong>324</strong></th>
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<tbody>
<tr>
<td>The TechnoCentre Puma Way, Coventry CV12TT United Kingdom</td>
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<tr>
<td>Tel: 07988 563489</td>
<td></td>
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<tr>
<td>Email: <a href="mailto:info@inocardia.com">info@inocardia.com</a></td>
<td></td>
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<tr>
<td>Website: <a href="http://www.inocardia.com">www.inocardia.com</a></td>
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<tr>
<td>Contact: Jeremy Billson</td>
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<td>InoCardia is a contract research organisation that specialises in the development and execution of novel clinically relevant preclinical assays to assess drug effects on the contractility of the heart. These assays will have a greater throughput and predictivity for adverse effects in humans and will be used to test for undesirable effects of new therapeutics on the heart. InoCardia can deliver a more accurate and cost-effective way to identify cardiovascular contractility associated drug effects.</td>
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<tr>
<th><strong>Huntingdon Life Sciences/Harlan Laboratories</strong></th>
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<tbody>
<tr>
<td>PO Box 2360 Mettlers Road East Millstone, New Jersey 08875 United States</td>
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<tr>
<td>Tel: 732.873.2550</td>
<td></td>
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<tr>
<td>Fax: 732.873.8899</td>
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<tr>
<td>Website: <a href="http://www.huntingdon.com">www.huntingdon.com</a></td>
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<tr>
<td>Huntingdon Life Sciences/ Harlan is an international contract research organization offering a comprehensive range of non-clinical development services to pharmaceutical, biopharmaceutical, crop protection, and chemical companies. Our mission is to help our customers develop safe and effective new compounds that make a real difference to people's lives. Our Research Models and Services operating group provides high-quality research models and lab animal diets with support services worldwide.</td>
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<tr>
<th><strong>Ionic Transport Assays/IonsGate Preclinical Services</strong></th>
<th><strong>204</strong></th>
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<tbody>
<tr>
<td>1100 Corporate Square Drive St. Louis, MO 63132 United States</td>
<td></td>
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<tr>
<td>Tel: 314.743.7922</td>
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<tr>
<td>Email: <a href="mailto:ken@ionictransport.com">ken@ionictransport.com</a></td>
<td></td>
</tr>
<tr>
<td>Contact: Ken Gibson</td>
<td></td>
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<tr>
<td>Ionic Transport Assays focuses on induced pluripotent stem cell (hiPSC) cardiomyocytes in a broad range of cardiac safety pharmacology assays. IonsGate Preclinical Services provides a spectrum of cardiac safety pharmacology and ion channel assays ranging from cell based to conscious animal testing. These assays offered by Ionic Transport Assays and IonsGate Preclinical Services enable clients to make solid Go/No Go decisions about their test articles very early in development.</td>
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<tr>
<td>MPI Research</td>
<td>54943 North Main Street, Mattawan, MI 49071 United States</td>
</tr>
<tr>
<td>IPS Therapeutique Inc.</td>
<td>975 Leon-Trepanier, Sherbrooke QC J1G 5J6 Canada</td>
</tr>
<tr>
<td>Millar, Inc.</td>
<td>6001-A Gulf Freeway, Houston, TX 77023 United States</td>
</tr>
<tr>
<td>Marshall BioResources</td>
<td>5800 Lake Bluff Road, North Rose, NY 14516 United States</td>
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**Exhibitor Directory**

MPI Research, with global headquarters in Mattawan, Michigan, provides DMPK, safety evaluation, surgical and medical device evaluation, bioanalytical, and analytical services to the biopharmaceutical, medical device, animal health, and chemical industries. We exceed expectations through consistency and quality, with a commitment to communication and innovation, delivering benefits throughout all phases of development.

IPST provides preclinical cardiovascular efficacy and safety expertise for drug development. IPST safety assays include manual patch-clamp testing for ionic channel inhibition (including hERG), action potential recording, isolated heart (Langendorff) preparation, cardiac and vascular tissue tension as well as instrumented animals monitoring. Efficacy testing includes pulmonary and systemic arterial hypertension, thrombogenicity testing (Wessler), and several other specialized tests.

Millar provides innovative physiological monitoring solutions using our Telemetry, Pressure and PV Loop Systems. The Millar Telemetry System’s fully implantable telemeters deliver high-fidelity LVP, dP/dt, ECG, EMG, SNA, BP and tissue oxygen measurement data. With an unequaled signal quality, results are achieved in a shorter timeframe, reducing costs. Using wireless power and a rechargeable battery, the system enables 24/7 long-term recordings and free-roaming monitoring.

Marshall BioResources supplies Marshall Beagles, Gottingen Minipigs, ferrets, and mixed breed mongrels and hounds from our AAALAC-accredited facilities. For 75 years our animals have been recognized as standard research models, known around the world for their good health, genetic consistency, gentle temperament and uniformity. We remain a family owned and operated company dedicated to the highest standards of animal care and customer satisfaction.
Neuroservice is a private Contract Research Organization providing pharmacological assays based on electrophysiological recordings of acute brain, spinal cord slices and cultured neurons. These assays are performed with two complementary techniques: the Multi-Electrode Array (MEA) and the Patch-Clamp. Our mission is to support the early phases of CNS and PAIN R&D programs in Lead Selection and Optimization as well as in the investigation of Mechanism of Action for experimental compounds.
Pinnacle Technology Inc.

1401 27th Street
Lawrence, KS 66046 United States
Tel: 785.832.8866
Email: llane@pinnaclet.com
Website: www.pinnaclet.com
Contact: Linda Lane

Pinnacle offers turn-key wireless and tethered monitoring systems for preclinical research. Products include EEG/EMG systems for sleep or seizure research, biosensor systems for measuring neurotransmitters or continuous glucose monitoring, and fast scan cyclic voltammetry systems. This year, Pinnacle is introducing the first of its line of optogenetic tools. Synchronized video and precision timing can be added to any hardware setup. Customization is available to meet your research needs.

NOTOCORD Systems

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Email: information@notocord.com
Website: www.notocord.com
Contact: Philippe Zitoun

NOTOCORD is a leading provider of software solutions designed to acquire and analyze data in preclinical studies (discovery, early safety and toxicology). Our featured solutions include:

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PhysioStim

ZI de Brénas
Lautrec 81440 France
Tel: 33 5 63 70 89 92
Fax: 33 5 63 70 81 08
Email: marie.legrand@physiostim.com
Website: www.physiostim.com
Contact: Marie Le Grand

Specialized in cardiac electrophysiology, PhysioStim put forward GLP safety pharmacology studies to evaluate your compounds on the risk of QT interval prolongation (ICH572). We propose to pharmaceutical and biotech companies in vitro models on:

- Human ion channel assays (hERG, hNav1.5, hCav1.2, hKv4.3, hKvLQT1/MinK, hKv1.5)
- Action potentials (Purkinje fibre, papillary muscles, atria...)
- ECG recordings: Isolated Langendorff perfused heart
- Human or guinea-pig isolated cardiomyocytes

OtoScience Labs

1225 Tendick Street
Jacksonville, IL 62650 United States
Tel: 760.210.4799
Email: michael@kinderscientific.com
Website: www.otosciencelabs.com
Contact: Michael Kinder

OtoScience Labs specializes in providing comprehensive preclinical contract research and consulting services related to ototoxicity and tinnitus research. Our patented OtoCentrix technology helps streamline drug development and safety assessment by rapidly screening rodent models for hearing loss and tinnitus, helping to more efficiently identify toxicity by using the ear as a sentinel system.
Q Test Labs is a CRO that specializes in efficacy, cardiovascular safety and risk assessment of a pharmaceutical or medical device. Our studies include a wide range of species in both normal and diseased models, (e.g., heart failure, hypertrophy, diabetes, systemic and pulmonary hypertension, orthostatic hypotension, hemorrhagic shock) that occur commonly in man. Our aim is to minimize lead-time, and cardiovascular risk, while increasing mechanistic understanding of the test article or device.

Q State Biosciences combines optogenetics, stem cell technology, and advanced optical imaging to develop a proprietary all-optical electrophysiology platform for controlling and recording electrical activity in human cardiomyocytes and neurons. Q-State simultaneously probes voltage and Ca2+ waveforms with higher throughput, lower cost, and higher information content than current electrophysiology techniques. Please visit us at booth 125, and see our data on Poster 0079! www.qstatebio.com

Porsolt, a fully GLP compliant, preclinical CRO, has been providing efficacy evaluation and safety pharmacology services for almost 30 years, covering early screening thru regulatory submission. Porsolt provides physiopathological models in multiples species, customized procedures, and tailored solutions, (including in vitro assays and drug formulation analysis), for psychiatric and neurological disorders, pain, cardiac and vascular diseases, metabolic and eating disorders.

Pluriomics has developed novel culture systems which are free of serum and other undefined components. These novel systems support efficient differentiation and maturation of cardiomyocytes. Cardiomyocytes generated and maintained in this new culture system show enhanced sarcomeric organization, a more negative membrane resting potential and increased upstroke velocities.
Sophion Bioscience A/S 214

Baltorpvej 154
Ballerup 2750 Denmark
Tel: 4544608800
Email: jane.lucas@biolinscientific.com
Website: www.biolinscientific.com/sophion
Contact: Jane Lucas

Sophion offers the most flexible automated patch clamp systems on the market. The QPatch product line consists of three fully automated patch clamp systems. The systems cover a wide range of throughput needs and provide the user with genuine whole-cell patch clamp data based on true gigaseals. Qube is a high-throughput system for ion channel screening, intended for use in laboratories with a need for thousands of data points per day.

ReproCELL 212

24 Denby Road, Suite 220
Boston, MA 02134 United States
Tel: 617.987.2015
Email: info_en@reprocell.com
Website: www.reprocell.com.en
Contact: Takashi Masai

ReproCELL develops diverse products, with an underlying theme that focuses on stem cell technology, to address the needs of researchers and clinicians. This product range encompasses reagents for ES/iPS cells and stem cell-derived functional cells:
• Research reagents for human ES/iPS culture
• Human iPSC-derived cardiomyocytes
• Human iPSC-derived neurons
• Human iPSC-derived hepatocytes
• Disease model cell generation using human IPS cell technologies
Takara Bio Europe AB

Arvid Wallgrens Backe 20
SE-423 46 Gothenburg, Sweden
Tel: +46 31 758 0900
Fax: +46 31 758 0910
Email: mia.emgard@cellectis.com
Website: www.cellartis.com
Contact: Mia Emgard

Cellartis™ hiPS-CM, Pure hES-CM and Enhanced hiPS-HEP represents a reliable source of high-quality human pluripotent stem cell (hPSC) derived cardiomyocytes and hepatocytes ideal for ADME-Tox and Safety Pharmacology. Takara Bio Europe AB was formed in September 2014 through the acquisition of Cellectis AB, formerly Cellartis AB, by Takara Bio Inc. With more than 13 years’ experience in hPSC differentiation the company is today a world leading provider of Cellartis™ specialized cells.

TSE Systems, Inc.

186 Chesterfield Industrial Boulevard
Chesterfield, MO 63005 United States
Tel: 866.466.8873
Fax: 866.467.8873
Email: info@TSE-Systems.com
Website: www.TSE-Systems.com

TSE Systems has over 125 years of experience with high-quality laboratory supplies. We’re one of the leading manufacturers for behavioral, metabolic research equipment and for inhalation exposure systems. Our focus is on automated, high-throughput research equipment for highest data reproducibility and comparability. Over 1000 peer-reviewed publications using TSE Systems equipment speak for themselves. We proudly present our latest developments in implantable telemetry systems: Stellar Telemetry.

Transonic

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Email: support@transonic.com
Website: www.transonic.com
Contact: Miriam Tenorio

Transonic provides physiologically relevant flow, pressure and pressure volume measurements; solutions for all your in vivo and ex vivo CV research. Ultrasonic transit-time probes measure absolute flow in blood vessels, ducts, plastic tubing and isolated organ apparatus. Laser Doppler technology supports your microcirculation research. Transonic Scisense Pressure Volume systems assess cardiac function. New EndoGear provides telemetric measurement solutions for large and small animal models.

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Contact: Brian Brockway

VivaQuant products collect and analyze ECGs in safety pharmacology and repeat dose toxicology studies faster and less expensively than competing systems. These products save labor, provide faster turn-around, and deliver more accurate results.
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<td>Xenometrics, LLC</td>
<td>17745 S Metcalf Building 3, Stilwell, KS 66085 United States, Tel: 913.850.5073, Fax: 913.850.5001, Email: <a href="mailto:squade@xenometricsllc.com">squade@xenometricsllc.com</a>, Website: <a href="http://www.xenometricsllc.com">www.xenometricsllc.com</a>, Contact: Sara Quade</td>
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**WIL Research**

WIL Research provides comprehensive Safety Pharmacology services designed to provide the necessary information for filing IND applications and completion of worldwide registration of new therapeutic agents, inclusive of cardiovascular, central nervous system and respiratory studies. These services, along with our interdisciplinary approach and comprehensive array of pharmacological, toxicological and analytical research services make WIL Research the CRO of choice to pharma and biotech industries.

**Xenometrics, LLC**

Xenometrics, of Stilwell, Kansas, is a GLP-compliant, USDA registered, AAALAC-accredited contract research organization, providing services to the pharmaceutical, biotech, companion animal health, and industrial- and agro-chemical industries. Xenometrics’ research species includes rodents, rabbits, minipigs, dogs, cats, nonhuman primates, and other research species. Xenometrics’ study services include: Safety Pharmacology, DMPK, General Toxicology, and Development and Reproductive Toxicology.

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