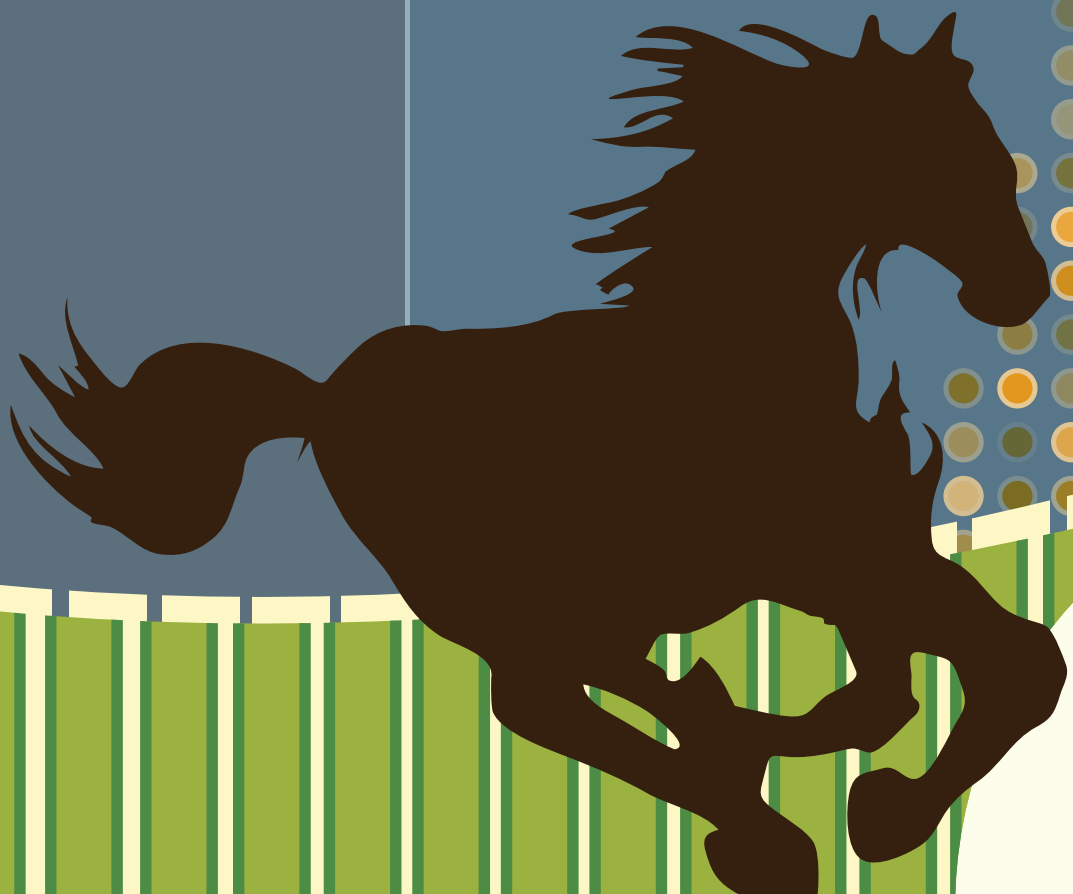
2016 IETS

42nd ANNUAL CONFERENCE

January 23–26, 2016 • The Galt House • Louisville, Kentucky

PROGRAM BOOK



IETS
INTERNATIONAL EMBRYO TRANSFER SOCIETY

Program Book

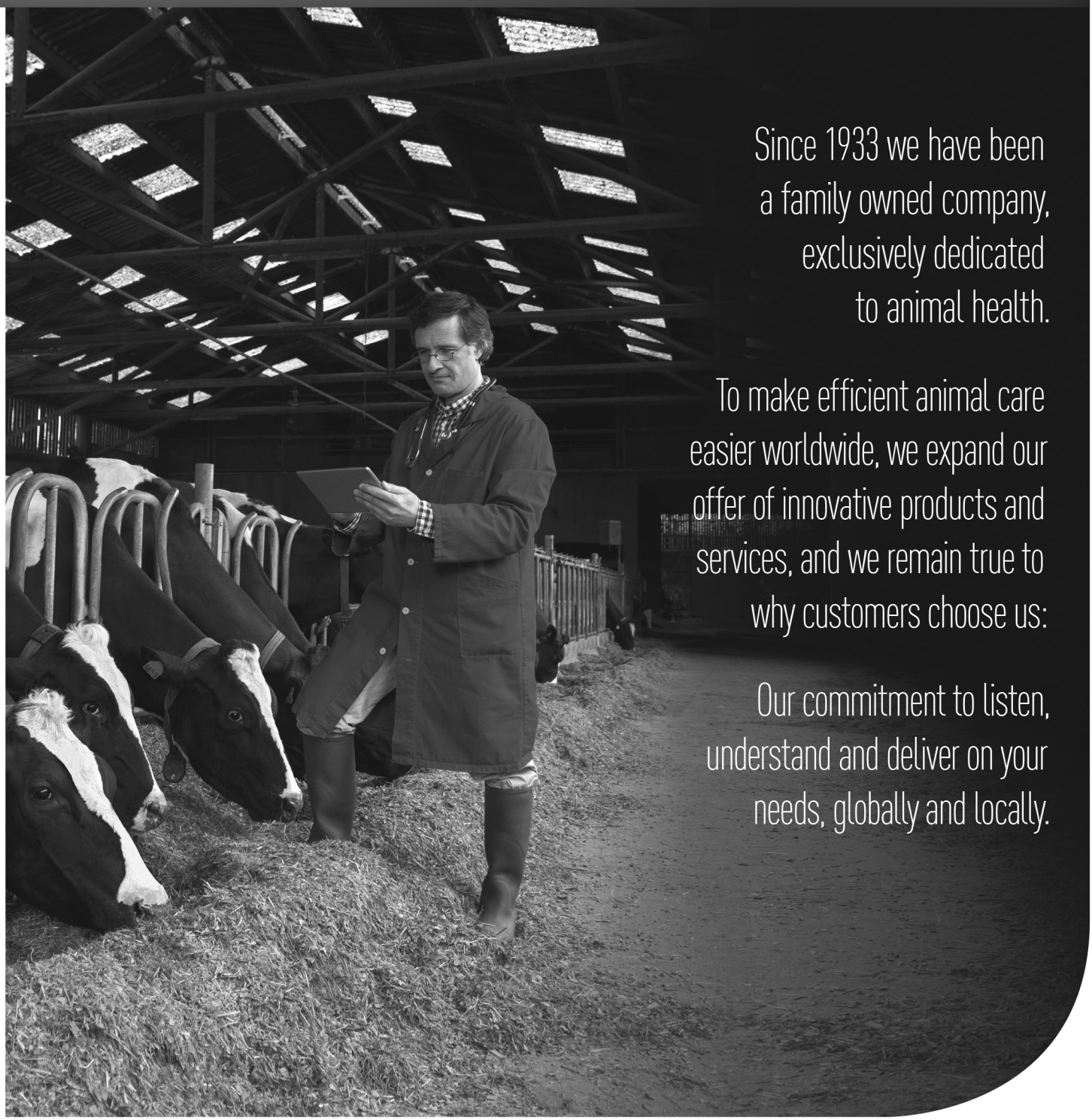
42nd Annual Conference of the International Embryo Transfer Society

Embryo Resilience in the Face of Biotechnology

Galt House Hotel
Louisville, Kentucky
January 23–26, 2016

Scientific Program Co-Chairs:
Marcelo Bertolini and François-Xavier Grand

YOUR WORLD IS CHANGING
OUR COMMITMENT REMAINS SOLID



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Reproductive management in Action

SYNCROSTIM 500 IU lyophilisate and solvent for solution for injection for cattle and sheep/Reconstituted solution for 1 dose of 2 ml contains: Equine serum Gonadotrophin (eCG, formerly known as PMSG) 500 IU, Benzyl alcohol 33.0 mg/Indications for use: In non cycling cattle (cows and heifers) and in ewes and ewe-lambs: Induction and synchronization of oestrus and ovulation. To be used in combination with a progestagen/Intramuscular use/Withdrawal period(s) Meat and offal: zero days. Milk: zero days. **CYSTORELIN/OVARELIN** 50 µg/ml, solution for injection for cattle/Composition for 1 ml: gonadorelin (as diacetate tetrahydrate) 50.0 µg, Benzyl alcohol 15.0 mg/Indications for use: Treatment of delayed ovulation (repeat breeding)/ Intramuscular use/100 µg of gonadorelin (as diacetate) per animal in a single injection. i.e. 2 ml of the product per animal/Withdrawal period(s) Meat and offal: zero days Milk: zero hours. **ENZAPROST** 5 mg/ml Solution for injection for cattle/Each 1ml contains: Dinoprost (as trometamol) 5 mg, Excipients: Benzyl alcohol (E1519) 16.5 mg /Indications for use: The product is indicated for its luteolytic effects in cattle./ Pregnancy status should be determined prior to injection since Dinoprost has been demonstrated to result in abortion or parturition induction when administered at sufficiently high doses in many animal species/Intramuscular use./ Withdrawal period(s) Meat and offal: 3 days. Milk: Zero hours. **PRID DELTA** 1.55 g vaginal delivery system for cattle/Each delivery system contains: 1.55 g of progesterone, Ethyl Vinyl Acetate (EVA), Polyamide, Polyester string/ Indications for use: For the control of the œstrus cycle in cows and heifers including Synchronisation of œstrus in cycling and non cycling cattle. To be used in combination with a prostaglandin and equine Chorionic Gonadotropin (eCG, in the past called PMSG) / Vaginal use: 1.55 g of progesterone per animal for 7 days/ Timing of insemination: Animals should be inseminated 56 hours after removal of the device/ Withdrawal period. Meat and offal: zero days. Milk: zero days.

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Preface and Acknowledgments

Greetings!

The 42nd Annual Conference of the International Embryo Transfer Society will be held at the Galt House in Louisville, Kentucky, USA, from January 23 to 26, 2016. When we defined this year's main theme, "Embryo resilience in the face of biotechnology," the goal was to address how the embryos were "adapting" to biotechnologies, using a complementary basic and applied approach. Our scientific community makes progress faster every day. There is not a week without significant new developments or applications. This week, as an example, the birth of IVF puppy dogs has just been published. In this context, there is a need to gather all expertise and disciplines in order to investigate the extent of the short- and long-term effects of biotechnologies on the embryo, fetus, and offspring development. There will be five plenary sessions featuring 10 invited speakers, who will address topics on the effect of biotechnologies on gamete competence and embryo development, differentiation pathways and early embryo developmental competence, effect of events between ET and pregnancy recognition on pregnancy outcome or early embryo mortality, decisive conceptus–endometrial interactions from pregnancy recognition to fetal phase through implantation, and long-term consequences of early developmental events. George Seidel will enlighten us as the keynote speaker. We thank all the speakers for their great insights, outstanding knowledge, and high quality of the scientific material shared with us, along with their kind patience and willingness to work hard to meet our short deadlines.

In addition to the regular format of our society meeting, the program this year will include two concurrent forums: a DABE forum (Domestic Animal Biomedical Embryology), organized by Carol Keefer, and a practitioners forum, organized by Kevin Lindel and Peter Hansen. To extend the applied scope of this meeting, there will also be three concurrent applied sessions on bovine reproduction, male fertility, and equine reproduction organized by Gabriel Bó, Erdogan Memili, and Barry Ball, respectively. Finally, we will also have a session on selected invited abstracts for oral presentations.

This year, 275 abstracts were submitted and 256 were accepted for the journal. Overall, over one hundred colleagues reviewed manuscripts and abstracts this year. These reviewers represent a wide range of geographic area over the world, which serves to bring a broad set of perspectives to our society. We would like to thank all the Session Editors and reviewers for their time and effort in the review process. We would like to take this opportunity to thank the Morulas, for working with us in selecting candidate students to co-chair the sessions, and the senior co-chairs, for volunteering to host our invited speakers. Also, we received 57 submissions for the student competition, for which we thank Charles Rosenkrans for his leading role in selecting the finalists. We also send our appreciation to the IETS Board of Governors and Executive Board for their support in preparing for the 2015 Annual Conference. Enough thanks cannot be expressed to Debi Seymour, our IETS Executive Secretary, for her invaluable guidance, advices and assistance in every single step of the organization of this meeting. Our sincere appreciation is extended to Dr. Graeme Martin, Editor-in-Chief, and Sussan Au, publisher, of *Reproduction, Fertility and Development* for their help in the production of the conference booklets and proceedings.

Finally, we thank you all for attending the conference. Your participation in the scientific program has been the very soul of our conferences. Every single successful cooking recipe has its own magic ingredient: your contribution to the event will be the magic ingredient! We thank YOU for your faithful support of our society and for attending the meetings. It has been a great pleasure and a privilege to serve you and our society as program co-chairs. We deeply encourage you to initiate, stimulate, and challenge discussions. Interactions are what will always keep our society on the path of success.

Hope to see you all in Kentucky!

Marcelo Bertolini and François-Xavier Grand
2016 IETS Program Co-Chairs

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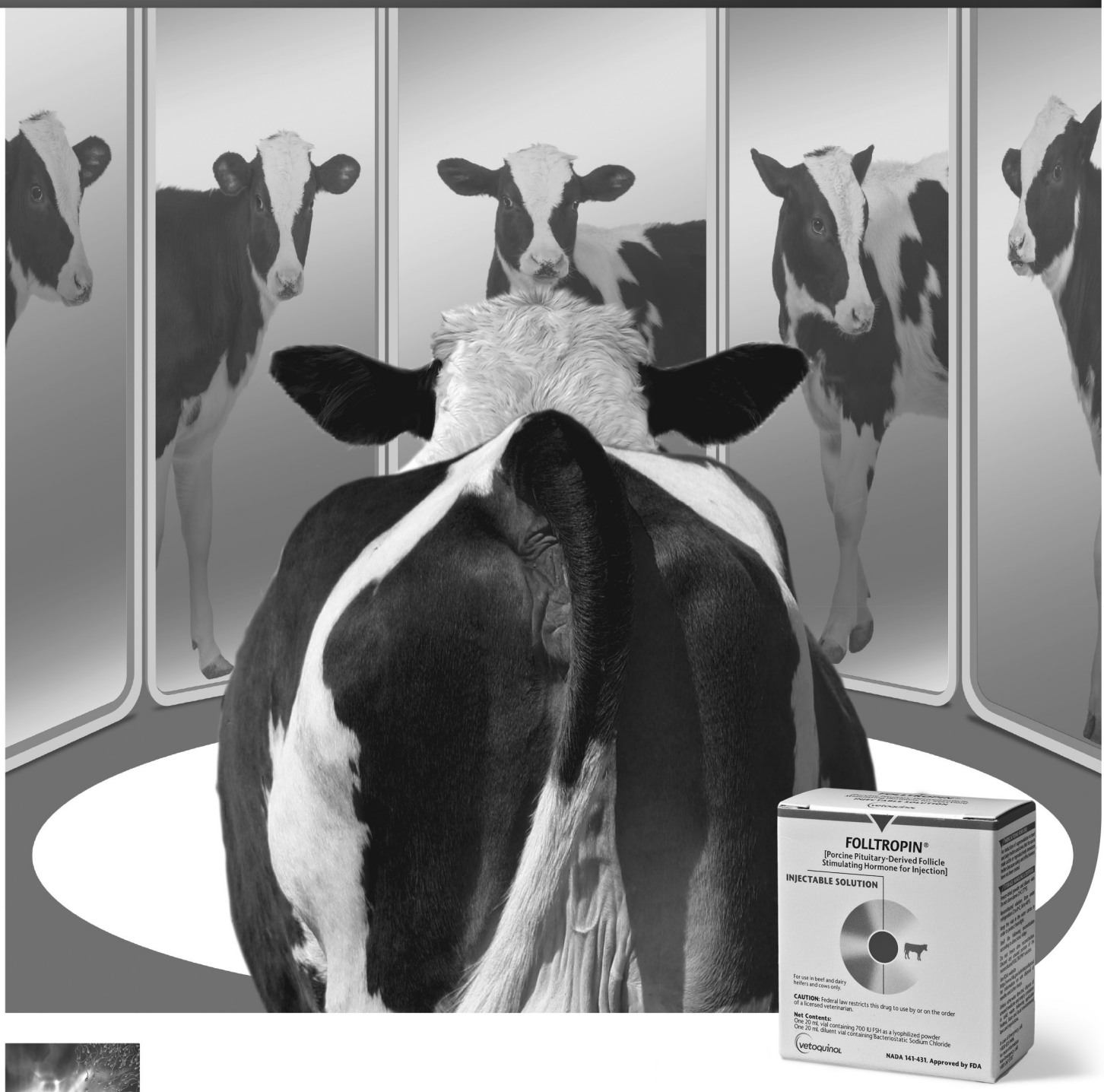

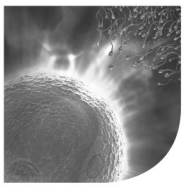

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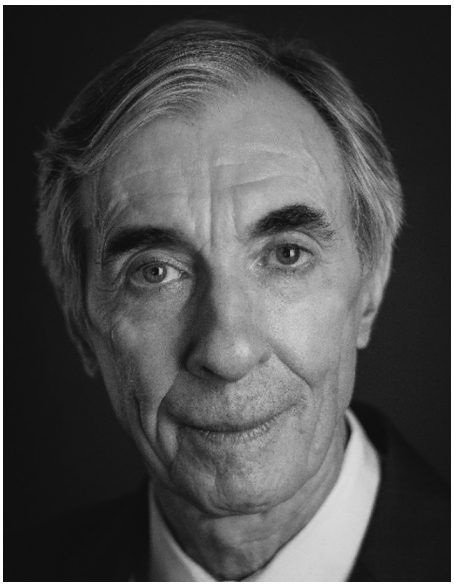
2016 Recipient of the IETS Pioneer Award

Charles Earle Pope



Award Presentation: Tuesday, January 26, at 9:30

Previous Recipients

K. H. S. Campbell (2015)

J.-P. Renard (2015)

W. W. Thatcher (2014)

J. Hahn (2013)

O. J. Ginther (2012)

I. Wilmut (2011)

R. J. Mapletoft (2010)

S. P. Leibo (2009)

G. Seidel Jr. (2008)

A. Iritani (2007)

D. Kraemer (2006)

S. Willadsen (2005)

B. Brackett (2004)

K. Betteridge (2003)

R. H. Foote (2002)

P. J. Dziuk (2001)

R. Yanagimachi (2000)

R. M. Moor (1999)

I. Gordon (1998)

S. Wintenberger-Torres (1997)

W. K. Whitten (1996)

C. R. Austin (1995)

N. W. Moore (1994)

R. G. Edwards (1993)

R. L. Brinster (1992)

A. K. Tarkowski (1991)

J. D. Biggers (1990)

C. Thibault (1989)

A. L. McLaren and D. Michie (1988)

E. J. C. Polge (1987)

T. M. Sugie (1986)

L. E. A. Rowson (1985)

L. E. Casida (1984)

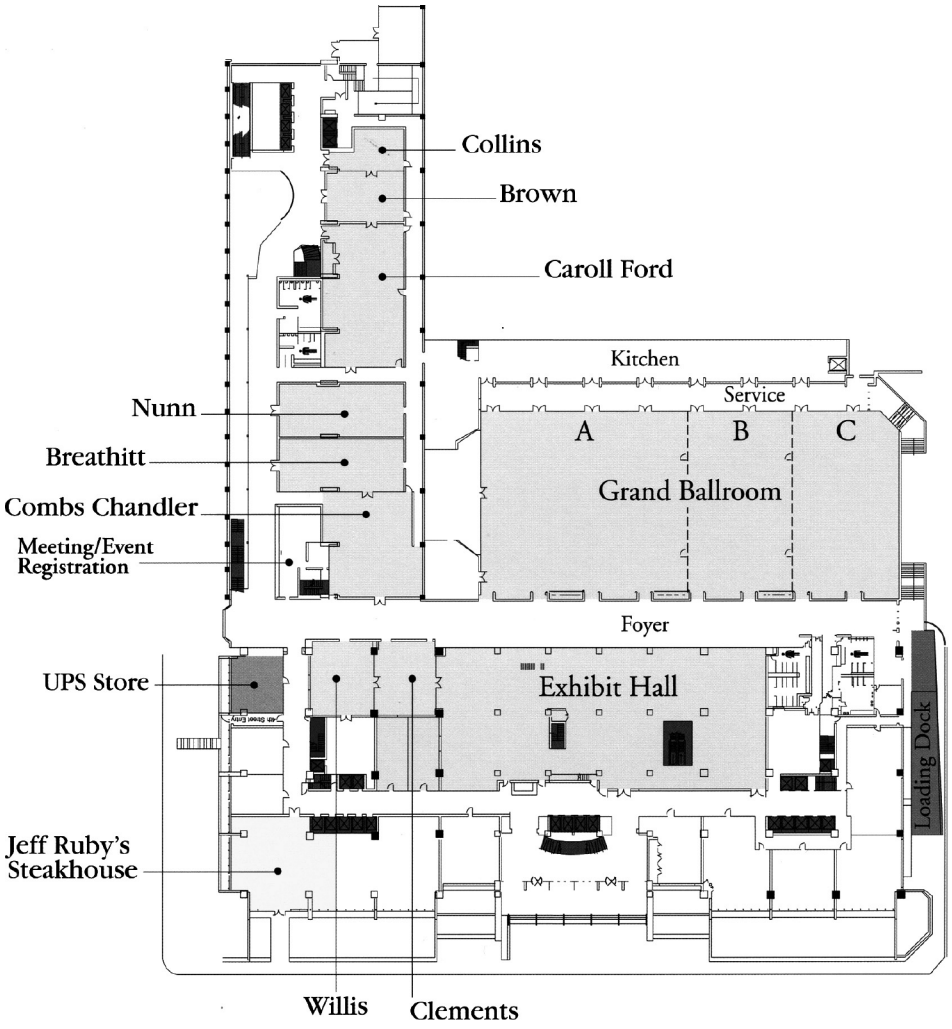
M. C. Chang (1983)

R. O. Berry (1982)

Map of the Venue

Galt House Hotel
140 N 4th Street, Louisville, Kentucky 40202

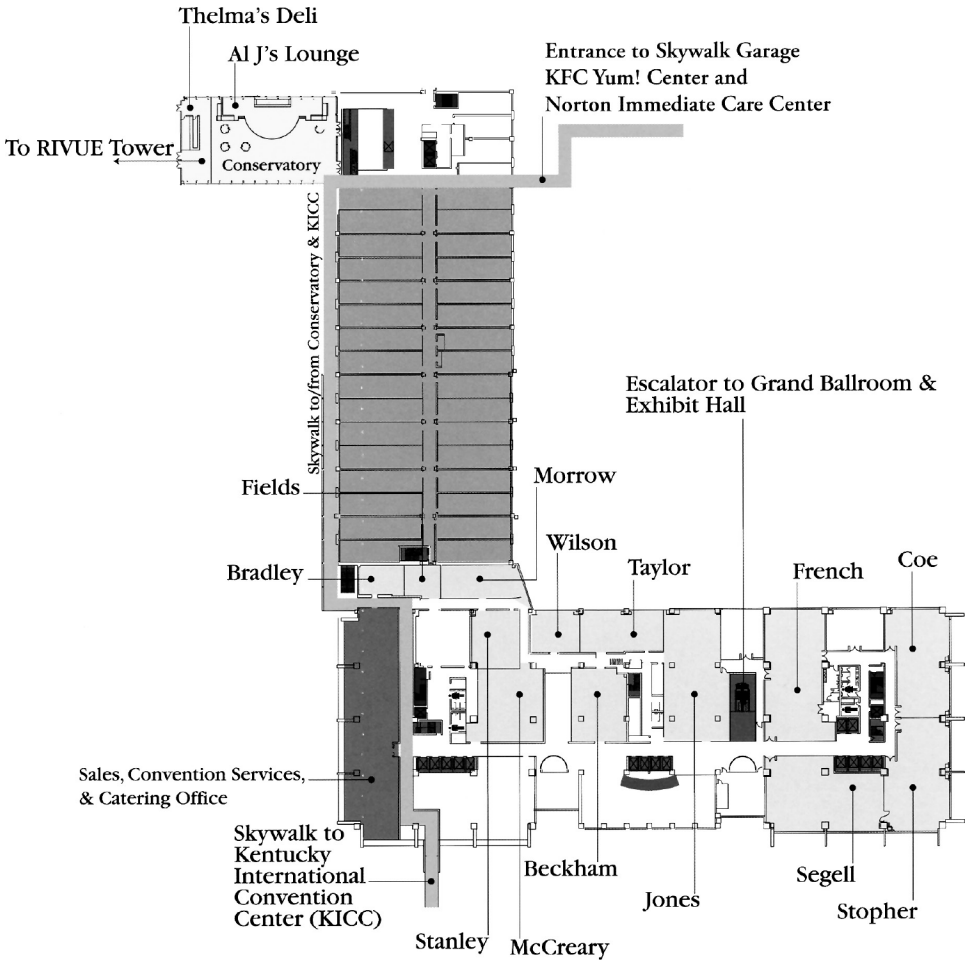
Second Floor (Ballroom Level)



Map of the Venue

Galt House Hotel
140 N 4th Street, Louisville, Kentucky 40202

Third Floor (Conservatory Skywalk Level)



General Information

Meeting Room Directory

Main Conference Sessions	Grand Ballroom C; Concurrent Sessions: Ballroom C, Jones, and Nunn
Exhibits	Grand Ballroom A, B
Poster Displays	Grand Ballroom A, B

Please see the Scientific Program on page 8 for additional room assignments.

Registration Desk Hours

The registration desk is located at GHE 2nd floor.

Pick up of preregistration packets

Friday, January 22	16:00–19:00

On-site registration hours

Saturday, January 23	07:00–18:00
Sunday, January 24	07:00–18:00
Monday, January 25	07:30–16:00
Tuesday, January 26	08:00–15:00

Exhibit Information

Grand Ballroom A, B

Setup

Saturday, January 23	09:00–17:00

Exhibits open

Sunday, January 24	09:00–19:00 18:00–19:00 (Reception)
Monday, January 25	08:00–17:00
Tuesday, January 26	08:30–13:00

Teardown

Tuesday, January 26	13:00–17:00

Details on the exhibitors can be found in the Exhibit Directory on page 53.

Badges

As a security requirement, we request that all participants wear their conference name badges to all sessions and social functions.

Certificates of Attendance and Presentation

A Certificate of Attendance will be included in your badge packet.

Currency

The dollar is the legal tender in the United States. Should you need to exchange your local currency, you will be able to make exchanges at the larger airports, Denver, Los Angeles, Atlanta, Dallas, or Houston, and at Louisville International Airport. On the upper level, you will find a full-service bank, Fifth Third Bank that offers currency exchange.

Messages

Any messages received for conference delegates will be posted on the message board located near the registration desk.

Refreshments

Morning and afternoon refreshments are included in your registration fee and are provided during the scheduled break times in the exhibit area located in Grand Ballroom A, B.

Dining and Entertainment

There are six restaurants and lounges located in the Galt House Hotel.

RIVUE Restaurant and Lounge has it all—looks, style, and taste. Voted one of Louisville's best restaurants, RIVUE, our rooftop restaurant, features expansive views of downtown and the waterfront.

Café Magnolia is the perfect place to dine casually and enjoy breakfast, lunch, or dinner while savoring delectable eats.

Al J's at the Conservatory is in the center of it all and voted best place to "sit a drink." Grab a bite or beverage at the 30-foot aquarium bar, offering sweeping views of downtown and the waterfront.

Jockey Silks Bourbon Bar offers a place to relax and unwind while choosing from more than 150 Kentucky bourbons. The cozy venue was named one of Whisky Magazine's "Best Bourbon Bars in the World."

Thelma's at the Conservatory is a 24-hour deli for that caffeine fix whenever the desire hits. Select from the wide assortment of deli sandwiches, salads, specialty drinks, and more.

Jeff Ruby's Steakhouse is a New York–style steakhouse specializing in steak, seafood, and sushi and featuring a dynamic atmosphere with live entertainment.

Starving for something new? Exciting? Original? You'll find it in Louisville's restaurants, diners, taverns, and take-outs, where the selection ranges from perennial regional favorites to international standards of taste and refinement. Louisville restaurants blend traditional Kentucky cooking with a cosmopolitan mix of eclectic international cuisine including French, Italian, and Mediterranean fare; Mexican and American Southwest influences; as well as classic barbecue. All can be found within the downtown area a short walk from the Galt House Hotel.

Services and Amenities

The Galt House Hotel services and amenities include a state-of-the-art rooftop fitness center, in-room safes, security, business center, six restaurants and lounges, massages, valet parking, and many more services and amenities that will make your stay feel as if you were in the comfort of your home. The Galt House Hotel offers complimentary Wi-Fi in all public areas and wireless Internet in the guest rooms.

There is a shopping shuttle service for the guests to the new Outlet Shoppes of the Bluegrass, Wednesday to Sunday, Departing the Galt House Hotel at 10:00 and departing the Outlet Shoppes of the Bluegrass at 14:00 (estimated travel is 25 minutes).

In addition to the complimentary round-trip shuttle, each guest will receive a shopping coupon booklet valued at $250.

Program

Thursday, January 21

08:00–17:00 IETS Board of Governors meeting (Willis)

Friday, January 22

08:00–15:00 IETS Board of Governors meeting (Willis)
09:00–18:00 HASAC Research Subcommittee meeting (Nunn)
13:00–18:00 W2171 Research Committee (Collins)
16:00–19:00 Registration (GHE 2nd Floor Registration A, B, C)

Saturday, January 23

07:00–18:00 Registration (GHE 2nd Floor Registration A, B, C)
08:00–17:30 CANDES Preconference Symposium (Jones)
09:00–17:00 Commercial Exhibit Setup and Poster Setup (Grand Ballroom A, B)
13:30–17:00 IETS Foundation Board of Trustees Meeting (Willis)

Morulas Preconference Workshop—Epigenetics and embryo technology (Nunn)

Sponsored by CSIRO

14:00–14:50 Session I: Introduction to epigenetics and bovine embryo research
Pablo Ross, University of California

14:50–15:40 Session II: The analysis of DNA methylation in bovine embryos and sperm—Prospects and challenges
Marc-André Sirard, Université Laval

15:40–16:00 Break
Sponsored by CSIRO

16:00–16:50 Session III: Research in developmental epigenetics and laboratory techniques
Jason Knott, Michigan State University

16:50–17:00 Discussion and Closing Remarks

Sunday, January 24

06:30–08:00 Poster Setup (Grand Ballroom A, B)
07:00–08:25 HASAC Forms and Certificates Subcommittee Meeting (Breathitt)
07:00–18:00 Registration (GHE 2nd Floor Registration A, B, C)
07:00–08:30 Past-Presidents' Breakfast (Brown)
07:00–08:30 Graduate and Undergraduate Student Competition Presenters Breakfast, with IETS Foundation Education Committee Chair (Clements)
07:00–18:00 Affiliates Lounge (Wilson)
09:00–19:00 Commercial Exhibition (Grand Ballroom A, B)
08:45–09:00 Opening and Welcome—Marcelo Bertolini, François-Xavier Grand, and Edward Squires (Ballroom C)

Embryo Resilience in the Face of Biotechnology

Session I: Effect of the Environment on Gamete Competence and Embryo Development (Ballroom C)

Session co-chairs: Dimitrios Rizos, Instituto Nacional de Investigación y Tecnologia Agraria y Alimentaria, and Paula Tribulo, University of Florida

09:00–09:45 Causes and consequences of oxidative stress in spermatozoa
John Aitken, University of Newcastle, Australia

09:45–10:30 Fertility and genomics: Comparison of gene expression in contrasting reproductive tissues in female cattle
Alex Evans, University College Dublin, Ireland

10:30–11:00 Refreshment Break and Poster Exhibit and Exhibition (Grand Ballroom A, B)

IETS Foundation Student Competition Presentations (Ballroom C)

Session chair: Charles F. Rosenkrans, University of Arkansas

11:00 Generation of a stable transgenic swine model for cell tracking and chromosome dynamic studies
R. Sper, S. Simpson, X. Zhang, B. Collins, and J. Piedrahita (Abstract 1)

11:15 Circulating microRNA signatures associated with early bovine pregnancy
J. Ioannidis and X. Donadeu (Abstract 2)

11:30 Role of β-defensin 126 in promoting sperm motility in cattle
B. Fernandez-Fuertes, F. Narciandi, K. G. Meade, C. O'Farrelly, S. Fair, and P. Lonergan (Abstract 3)

11:45 Suppression of ASH2L alters DNA methylation and histone patterns during bovine embryonic development
M. D. Snyder, J. H. Pryor, M. D. Peoples, G. L. Williamson, M. C. Golding, M. E. Westhusin, and C. R. Long (Abstract 4)

12:00 A single nucleotide polymorphism in COQ9 affects mitochondrial function, body weight change after calving, and fertility in Holstein cows
M. S. Ortega, S. Wohlgemuth, D. J. Null, J. B. Cole, and P. J. Hansen (Abstract 5)

12:15 The effects of depleting donor cell mitochondrial DNA on cattle embryos derived from somatic cell nuclear transfer
K. Srirattana and J. C. St. John (Abstract 6)

12:30–14:00 Lunch Break

12:30–14:00 IETS Board Luncheon with Affiliate Society Representatives (Willis)

12:30–14:00 HASAC Emerging Technologies (Breathitt)

12:30–14:00 Morulas and Mentor Luncheon (Clements)
Sponsored by Vétoquinol

Session II: Differentiation Pathways and Early Embryo Developmental Competence (Ballroom C)

Session co-chairs: Bianca Gasparrini, University of Naples Federico II, and Carina Blaschka, Justus-Liebig-University

14:00–14:45 Mechanisms of epigenetic remodeling during preimplantation development
Pablo Ross, University of California, USA

14:45–15:30 Measuring embryo metabolism to predict embryo quality
Jeremy Thompson, University of Adelaide, Australia

15:30–16:00 Refreshment Break and Poster Exhibit and Exhibition (Grand Ballroom A, B)

Concurrent Forum

16:00–18:00 Practitioners' Forum (Ballroom C)

Co-chairs: Peter J. Hansen, University of Florida, and Kevin A. Lindell, Tufts University

Sponsored by Partnar Animal Health Inc.

Research focus on recipient synchronization
Pietro Baruselli, Universidade de São Paulo, and Milo Wiltbank, University of Wisconsin

Panel discussion on practical aspects of handling IVP embryos and semen for IVF
Jeremy Block, Ovatech; Bill Croushore, White Oak Veterinary Clinic; Shantille Kruse, Boviteq USA; and Hong Wei, Transova

Selected short presentations from the audience (limited to 2 slides total per person). Selection will be based on relevance.

Concurrent Forum

16:00–18:00 Domestic Animal Biomedical Embryology (DABE) Forum (Nunn)

Chair: Carol Keefer, University of Maryland

Sponsored by Hamilton Thorne Inc.

Contributions from new investigators

Use of transwell cell culture and 3-dimensional printing technology to develop an *in vitro* bovine oviduct (Abstract 52)
Marcia de Almeida Monteiro Melo Ferraz, doctoral candidate, Utrecht University, Utrecht, the Netherlands

Effects of microvesicles secreted from equine amniotic-derived progenitor cells on *in vitro* lipopolysaccharide-treated tendon and endometrial cells (Abstract 226)
Anna Lange-Consiglio, PhD, Reproduction Unit, Large Animal Hospital, University of Milan, Italy

Generation of interspecies chimeras between primate induced pluripotent stem cells and porcine parthenogenetic embryos (Abstract 223)
Monika Nowak-Imialek, DMV, Institute of Farm Animal Genetics, Friedrich-Loeffler-Institut, Mariensee, Hannover, Germany

Efficient edition of the bovine PRNP prion gene in somatic cells and IVF embryos using the clustered regularly interspaced short palindromic repeats (CRISPR)/CAS9 system (Abstract 243)
Romina Bevacqua, PhD assistant researcher, Animal Biotechnology Laboratory, Buenos Aires University, Argentina

18:00–19:00 Welcome Reception (Grand Ballroom A, B)
Sponsored by Professional Embryo Transfer Supply Inc. (PETS)

Monday, January 25

07:30–16:00 Registration (GHE 2nd Floor Registration A, B, C)
07:00–18:00 Affiliates Lounge (Wilson)
07:30–08:30 HASAC Regulatory Subcommittee Meeting (Breathitt)
08:00–17:00 Commercial Exhibits (Grand Ballroom A, B)

Concurrent Session

08:00–09:30 **Bovine reproduction: Donor selection and treatments to improve oocyte collection and *in vitro* embryo production in cattle (Ballroom C)**
Chair: Gabriel Bó, Universidad Nacional de Villa María

08:00–08:15 Influence of breed and season on *in vitro* embryo production
Gabriel Bó, Universidad Nacional de Villa María, Argentina

08:15–08:30 The importance of follicular differentiation to obtain fully competent bovine oocytes
Marc-André Sirard, Université Laval, Canada

08:30–08:45 Superstimulation strategies for ovum pickup in Holstein donors
Lais Vieira and Pietro Baruselli, Universidade de São Paulo, Brazil

08:45–09:00 Optimizing donor efficiency with follicle stimulating hormone superstimulation in a commercial *in vitro* fertilization program in Holsteins
François-Xavier Grand, Boviteq, Canada

09:00–09:30 Roundtable Discussion

Concurrent Session

08:00–09:30 **Equine reproduction: Pre- and post-ovulatory influences on fertility (Nunn)**
Chair: Barry Ball, University of Kentucky

08:00–08:30 Anti-Müllerian hormone: Implications for follicular reserve, follicular function, and fertility in the mare
Barry Ball, Gluck Equine Research Institute; University of Kentucky, USA

08:30–09:00 Factors influencing the success of equine intracytoplasmic sperm injection in a clinical program
Katrin Hinrichs, Texas A&M University, USA

09:00–09:15 Effects of low circulating progesterone concentrations during early diestrus on the endometrial transcriptome of the mare
Alex Esteller-Vico, University of Kentucky, USA

09:15–09:30 The mare model for luteinized unruptured follicle syndrome: Intrafollicular endocrine milieu
Eduardo Gastal, Southern Illinois University, USA

Concurrent Session

08:00–09:30 **From bench to barn: Effects of bull fertility or sperm factors on embryo development and cattle agriculture (Jones)**
Chair: Erdoğan Memili, Mississippi State University

08:00–08:20 Systems biology of sperm and bull fertility
Erdoğan Memili, Mississippi State University, USA

08:20–08:40 Seminal plasma proteins: Functional attributes and potential markers of fertility
Arlindo A. Moura, Federal University of Ceará, Brazil

08:40–09:00 Genomic evaluation of fertility traits and discovery of haplotypes that affect fertility of U.S. dairy cattle
George R. Wiggans, Agricultural Research Service, USDA, USA

09:00–09:20 Prospects for improving semen quality and bull fertility: An industry perspective
Nancy Tisch, International Center for Biotechnology, Cooperative Resources International, USA

09:20–09:30 Discussion
Abdullah Kaya, Selcuk University, Turkey

09:30–10:00 **Distinguished Service Awards (Ballroom C)**

10:00–10:45 **Invited Abstract Oral Presentations (Ballroom C)**
Chair: Matthew Wheeler, University of Illinois

Genome editing of somatic cell nuclear transfer derived zygotes by clustered regularly interspaced short palindromic repeats (CRISPR) CAS9 guide rna injection
K. M. Whitworth, S. L. Murphy, J. A. Benne, L. D. Spate, E. Walters, R. Hickey, S. L. Nyberg, K. D. Wells, and R. S. Prather (Abstract 25)*

Unveiling the role of lipids in organogesis: Molecular anatomy by desorption electrospray ionization mass spectrometry imaging mass spectrometry
V. Pirro, P. O. Favaron, C. R. Ferreira, L. S. Eberlin, R. S. Barreto, R. G. Cooks, and M. A. Miglino (Abstract 61)*

Interception of exosomal messages between the oviduct and the embryo: What are they tweeting about?
C. Almiñana, E. Corbin, G. Harichaux, V. Labas, G. Tsikis, C. Soleilhavoup, K. Reynaud, X. Druart, and P. Mermillod (Abstract 78)*

Follicular fluid microRNA sequences as biomarkers of competent oocytes in cattle
R. Pasquariello, N. Fiandanese, A. Viglino, P. Pocar, J.L. Williams, and F. Gandolfi (Abstract 148)*

Inhibition of 5α-reductase during late gestation in the mare
M. Wynn, E. Legacki, A. Conley, S. Loux, A. Esteller-Vico, S. Stanley, E. Squires, M. Troedsson, and B. Ball (Abstract 67)*

10:45–11:15 Refreshment Break/Poster Exhibit and Exhibition (Grand Ballroom A, B)
10:45–12:45 Poster Session I (Grand Ballroom A, B)
12:45–14:00 Lunch Break
12:45–14:00 Exhibitors' Lunch with IETS Board of Governors (Brown)
12:45–14:00 IETS Data Retrieval Committee Meeting (Willis)
12:45–14:00 HASAC Manual Meeting (Breathitt)
12:45–14:00 Morulas Career Luncheon (Clements)
Sponsored by CSIRO

Session III: Between ET and Pregnancy Recognition Through Elongation: Impact on Pregnancy Outcome and/or Early Embryo Mortality (Ballroom C)

Session co-chairs: Michael Hōelker, University of Bonn, and Jacob Stewart, University of Illinois

14:00–14:45 Determinant molecular markers for peri-gastrulating bovine embryo development
Isabelle Hue, INRA, France

14:45–15:30 The role of progesterone in embryo development in cattle
Patrick Lonergan, University College Dublin, Ireland

15:30–16:00 Poster Exhibit and Exhibition and Break (Grand Ballroom A, B)
16:00–17:00 IETS Business Meeting (Ballroom C)
17:00–18:00 Peter Farin Trainee Award Winners Presentations (Ballroom C)
Co-chairs: Pablo Ross, University of California, and Jennifer Barfield, Colorado State University

Cumulus-oocyte-complex secretions from the first 8 hours of *in vitro* maturation affect oocyte developmental competence
Karen Uhde, Utrecht University (Abstract 66)

Long-term propagation and cryopreservation of cat spermatogonial stem cells
Lindsey Vansandt, Cincinnati Zoo and Botanical Garden (Abstract 229)

Association of G6PDH-activity with oocyte developmental competence and molecular characteristics in goats
Mia Yang, Utah State University

A metabolic approach towards optimizing developmental competency of *in vitro* matured equine oocytes
Niamh Lewis, University of Liverpool

Immunolocalization of steroid sulfatase (STS) and the estrogen-specific sulfotransferase (SULT1E1) in bovine follicles
Carina Blaschka, Justus-Liebig-University (Abstract 54)

Consequences of *in vitro* production of embryos with or without colony-stimulating factor 2 in culture medium on morphometric features of the bovine conceptus at day 86 of gestation
Luiz Gustavo Bruno Siqueria, University of Florida (Abstract 175)

18:00–19:00 HASAC Open Meeting (Nunn)
18:00–19:00 Morulas Forum (Ballroom C)
19:30 Morulas Student Mixer (Galt House Hotel, Al J's at the Conservatory)

Tuesday, January 26

07:00–08:30 Organizational Meeting of the IETS Board of Governors (Willis)
07:00–18:00 Affiliates Lounge (Wilson)
08:00–15:00 Registration (GHE 2nd Floor Registration A, B, C)
08:00–13:00 Commercial Exhibits (Grand Ballroom A, B)

Session IV: From Pregnancy Recognition to Fetal Phase Through Implantation: Decisive Conceptus-Endometrial Interactions (Ballroom C)

Session co-chairs: Barbara Durrant, San Diego Zoo Institute for Conservation Research, and Niamh Lewis, University of Liverpool

08:00–08:45 Adaptability and potential for treatment of placental functions to improve embryonic development and postnatal health
James C. Cross, University of Calgary, Canada

08:45–09:30 Pregnancy losses in cattle: Potential for improvement
Michael G. Diskin, Animal and Grassland Research and Innovation Centre, Ireland

09:30–10:00 Pioneer Award (Ballroom C)
10:00–10:30 Break
10:00–12:00 Poster Session II and Exhibition (Grand Ballroom A, B)
12:00–12:30 14th Annual IETS Running Competition, Louisville Waterfront Park
12:00–13:30 Lunch Break
12:00–13:30 Organizational Lunch Meeting of the IETS Foundation (Willis)
12:00–13:30 2016, 2017, 2018 IETS Program Committee Lunch (Breathitt)
13:00–17:00 Commercial Exhibit and Poster Takedown (Grand Ballroom A,B)

Session V: Long-Term Outcomes of Early Developmental Events (Ballroom C)

Session co-chairs: Hosup Shim, Dankook University, and Steve Yang, University of Saskatchewan

13:30–14:15 Breeding animals for quality products: Not only genetics
Pascale Chavatte-Palmer, INRA, France

14:15–15:00 Livestock in biomedical research: History, current status and future prospective
Irina Polejaeva, Utah State University, USA

Session VI: Keynote Address (Ballroom C)

Session chair: Matthew Wheeler, University of Illinois

15:00–15:45 Assisted reproduction with gametes and embryo: What research is needed and fundable?
George Seidel, Colorado State University, USA

Awards Presentations and Updates (Ballroom C)

15:45–16:15 IETS Foundation Student Competition Awards, CANDES, DABE, and HASAC Updates
16:15–16:30 Closing Ceremony (Ballroom C)
18:30–22:30 Closing Party (Kentucky Derby Museum)

The Program Co-Chairs Acknowledge and Thank the Following People

Section Editors

Charles Rosenkrans, *Student Competition*
João Batista Borges, *Artificial Insemination*
Daniel Salamone, *Cloning and Nuclear Transfer*
Pierre Comizzoli, *Cryopreservation and Cryobiology*
Charles Long, *Developmental Biology*
Pat Lonergan, *Early Pregnancy and Pregnancy Recognition*
Melanie McDowall, *Embryo Culture*
David Wells, *Embryo Manipulation*
Jeremy Block, *Embryo Transfer*
Ann Van Soom, *Epidemiology and Diseases*
Barbara Durrant, *Exotic Species*
Fulvio Gandolfi, *Folliculogenesis and Oogenesis*
Christine Wrenzycki, *Gene Expression*
Hiroaki Funahashi, *IVF and IVP*
John Kastelic, *Male Physiology*
Trudee Fair, *Oocyte Activation*
Dulama Richani, *Oocyte Maturation*
Ulrike Taylor, *Sexing*
Cesare Galli, *Sperm Injection*
Tiziana Brevini, *Stem Cells*
Osamu Dochi, *Superovulation*
Carol Keefer, *Transgenesis*
Charles Rosenkrans, *Undergraduate Poster Competition*

Manuscript and Abstract Reviewers

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Gregg Adams
Paulo L. Aguiar
Ramiro Albeiro
Fernanda D. Lamdim Alvarenga
Gary Anderson
Hernan Baldassarre
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Silvia Colleoni
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Martina Crispo
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Dinesh Dadarwal
Bradford Daigneault
Philip Damiani
Sebastian E. Demyda
Anna Denicol
Catharina Deschauwer
Andras Dinnyes
Margo Dode
Xavier Donadeu
José Eduardo dos Santos
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Veronique Duranthon
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Trudee Fair
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Manoel Sa Filho
Niamh Forde
Hiroaki Funahashi
Cesare Galli
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Bianca Gasparrini
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Michael Golding
Martha Gomez
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Maria Ines Hiriart
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I. H. Kim
Rebecca Krisher
Wilfried Kues
Giovanna Lazzari
Tamara Leahy
Daniel Le Bourhis
Rejean Lefebvre
Khomotso Lekola
Valentina Lodde
Pat Lonergan
Charles Long
Charles Looney

Barbara Loureiro
Charles Love
Alberto Luciano
Mahdi Mahdipour
Michael Mahony
Satoko Matoba
Melanie McDowall
Serge McGraw
Flavio Vieira Meirelles
Erdoğan Memili
Alberto Menchaca
Evelyne Meyer
Maria Angelica Miglino
Marta Munoz
Bruce Murphy
Taku Nagai
Lucky Nedambale
Amir Niasari-Naslaji
Heiner Niemann
Monika Nomm
Bjorn Oback
Lynne O'Shea
John Parrish
Georgia Pennarossa
Jorge Piedrahita
Bill Plummer
Irina Polejaeva
Jose Henrique Pontes
Earle Pope
Randall Prather
Christopher Price
Detlef Rath
Eduardo Ribeiro
Dulama Richani
Dimitrios Rizos
Sangho Roh
Sergio Romero
Rick Rorie
Ryan Rose
Charles Rosenkrans
Pablo Ross
Terri Roth
Tricia Rowlison
Rainer Saner
Marina Sansinena
Roberto Sartori
Carey Satterfield
Dragos Scarlet
Hosup Shim
Kevin Sinclair
Jaswant Singh
Luiz Siqueira
Lawrence Smith
Katrien Smits
Nucharin Songsasen
Jacob W. Stewart
Roger Sturmey
Ali Reza Talebi
Ali Cihan Taskin
Ulrike Taylor
Bhanu Telugu
Dawit Tesfaye
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Gabor Vajta
Ann Van Soom
Paul J. Verma
Rajneesh Verma
Takuya Wakai
David Wells
Mark Westhusin
Brett White
Eckhard Wolf
Christine Wrenzycki
Tim Xiang
Jianbo Yao
Jimena Yapura
Agca Yuksel
Hashiyada Yutaka

Poster Session Information

Location

Posters are located in Grand Ballroom A, B of the Galt House Hotel on the second floor of the Suite Tower (see map on page 4).

Poster Numbers

Posters are identified by the number corresponding to the abstract number in *Reproduction, Fertility and Development* 2016; 28 (1). Numbering of the posters begin at 1 and ends at 245.

Setup

Posters can be put up from 08:00 to 17:00 on Saturday, January 23, 2016, and from 06:30 to 08:00 on Sunday, January 24, 2016. **All posters must remain up throughout the meeting.** Authors of posters not put up by 08:00 on Sunday will be reported to the IETS President for possible disciplinary action.

Poster Session I

Presentations by authors of odd-numbered abstracts (e.g., 7, 9, 11) in *Reproduction, Fertility and Development* 2016; 28 (1), and the Student Competition finalist and Undergraduate finalist poster presentations will take place Monday, January 25, 2016, from 10:45 to 12:45.

Poster Session II

Presentations by authors of even-numbered abstracts (e.g., 8, 10, 12) in *Reproduction, Fertility and Development* 2016; 28 (1), will take place Tuesday, January 26, 2016, from 10:00 to 12:00.

Teardown

Poster teardown will take place from 13:00 to 17:00 Tuesday, January 26, 2016. Posters that are not taken down by 17:00 on Tuesday will be taken down and discarded.

Poster Session Order by Topic

Poster number = abstract number in *Reproduction, Fertility and Development* 2016; 28 (1)

Student Competition

1 Generation of a stable transgenic swine model for cell tracking and chromosome dynamic studies
R. Sper, S. Simpson, X. Zhang, B. Collins, and J. Piedrahita

2 Circulating microRNA signatures associated with early bovine pregnancy
J. Ioannidis and X. Donadeu

3 Role of β-defensin 126 in promoting sperm motility in cattle
B. Fernandez-Fuertes, F. Narciandi, K. G. Meade, C. O'Farrelly, S. Fair, and P. Lonergan

4 Suppression of ASH2L alters DNA methylation and histone patterns during bovine embryonic development
M. D. Snyder, J. H. Pryor, M. D. Peoples, G. L. Williamson, M. C. Golding, M. E. Westhusin, and C. R. Long

5 A single nucleotide polymorphism in *COQ9* affects mitochondrial function, body weight change after calving, and fertility in Holstein cows
M. S. Ortega, S. Wohlgemuth, D. J. Null, J. B. Cole, and P. J. Hansen

6 The effects of depleting donor cell mitochondrial DNA on cattle embryos derived from somatic cell nuclear transfer
K. Srirattana and J. C. St. John

Artificial Insemination

7 Kisspeptin slowly administered during proestrus improves follicle growth and ovulation in anestrous cows
G. G. Macedo, R. V. Sala, L. F. Martins, and P. S. Baruselli

8 Response of communal cows to oestrus synchronization and timed artificial insemination
Z. C. Raphalalani, K. A. Nephawe, M. L. Mphaphathi, F. V. Ramukhithi, M. M. Seshoka, M. Nkadimeng, A. Maqhashu, M. A. Bopape, L. F. Seolwana, M. H. Mapeka, N. L. Kanuya, and T. L. Nedambale

9 Endoscopy-mediated intratubal insemination in the cow—A preliminary report about the application of a novel minimally invasive insemination technique
K. Stein, V. Havlicek, S. Papp, F. Palm, G. Brem, and U. Besenfelder

10 Effect of estradiol benzoate or hCG on day 22 after timed artificial insemination on the corpus luteum size, progesterone concentration, and pregnancy rate in resynchronized beef heifers
J. B. S. Borges, H. L. D. Neri, M. R. Almeida, E. P. Silva, and A. Bilha

11 Comparison of controlled internal drug-release insert–based and progesterone-free methods for ovulation synchronization and timed artificial insemination of goats
A. Llanes, W. B. Knox, and C. E. Farin

12 Initial gonadotropin-releasing hormone treatment increased pregnancy per timed insemination only in acyclic beef heifers subjected to a 5-day Co-synch protocol
I. López-Helguera, P. Whittaker, A. Behrouzi, and M. G. Colazo

13 Effect of 6 times reusing of controlled internal drug release (CIDR) for short term (6 days) on progesterone level and reproductive performance of Awassi ewes
A. Swelum, A. Mouamen, and A. Alowaimer

14 Epigenetic changes in equine spermatozoa during cryopreservation: A preliminary study
C. Aurich, B. Schreiner, N. Ille, M. Alvarenga, and D. Scarlet

Cloning and Nuclear Transfer

15 Histone acetylation profile of porcine embryos produced by 2 cloning methods with or without *in vitro* culture
Y. Liu, A. Lucas-Hahn, B. Petersen, R. Li, D. Hermann, P. Hassel, M. Ziegler, J. Li, K. Larsen, H. Niemann, and H. Callesen

16 Histone deacetylase inhibitors PCI-24781 and quisinostat improve the *in vitro* developmental competence of pig somatic cell nuclear transfer embryos
L. Jin, H.-Y. Zhu, Q. Guo, Y.-C. Zhang, X.-C. Li, J.-D. Kang, and X.-J. Yin

17 Treatment with MGCD 0103 improves the *in vitro* development of porcine embryos derived from somatic cell nuclear transfer
H.-Y. Zhu, L. Jin, Q. Guo, Y.-C. Zhang, X.-C. Li, J.-D. Kang, and X.-J. Yin

18 Embryo aggregation in pig improves cloning efficiency and embryo quality
C. Buemo, A. Gambini, L. Moro, R. F. Y. Martin, and D. Salamone

19 Direct introduction of gene constructs into the pronucleus-like structure of cloned embryos: A new strategy for the generation of genetically modified pigs
M. Kurome, S. Leuchs, B. Kessler, E. Kemter, E. Jemiller, V. Zakhartchenko, and E. Wolf

20 Sialyltransferase gene expression in *GGTA1* knockout pigs
G. A. Kim, J.-X. Jin, S. Lee, A. Oh, and B. C. Lee

21 Generation of *GGTA1* and *CMAH* biallelic knockout porcine fibroblast cell lines by transcription activator-like effector nuclease and clustered regularly interspaced short palindromic repeats (CRISPR)/Cas9
J.-D. Kang, S.-M. Ryu, H.-Y. Zhu, L. Jin, W.-X. Li, C.-D. Cui, J.-S. Kim, and X.-J. Yin

22 Production of porcine transgenic cell line inserted with *SV40LT*, *EGFRvIII* gene, and inducible CreERT system
S. U. Hwang, J. D. Yoon, K. Y. Eun, H. G. Kim, and S. H. Hyun

23 Reduction of mitochondrial function, proliferation, and gene expression in fibroblast donor cells for use in somatic cell nuclear transfer by CPI-613 and PS48
B. R. Mordhorst, S. L. Murphy, L. D. Spate, R. M. Ross, K. D. Wells, J. A. Green, and R. S. Prather

24 Effect of donor cell type on *in vitro* and *in vivo* developmental competence of cloned buffalo (*Bubalus bubalis*) embryos
N. L. Selokar, P. Sharma, D. Kumar, R. K. Sharma, and P. S. Yadav

25 Genome editing of somatic cell nuclear transfer derived zygotes by clustered regularly interspaced short palindromic repeats (CRISPR)/Cas9 guide RNA injection
K. M. Whitworth, S. L. Murphy, J. A. Benne, L. D. Spate, E. Walters, R. Hickey, S. L. Nyberg, K. D. Wells, and R. S. Prather

26 Pilot study: Yolk sac *VEGF* expression in bovine embryos from reproductive techniques
A. M. Mess, A. C. O. Carreira, C. Marinovic de Oliveira, P. Fratini, P. O. Favaron, R. S. N. Barreto, F. V. Meirelles, and M. A. Miglino

27 An improved large animal model for the study of adult stem cells
S. Simpson, L. Gonzalez, J. Chung, A. Blikslager, S. Magness, and J. Piedrahita

28 Doubling oocyte cytoplasm volume increases blastocyst quality following interspecies somatic cell nuclear transfer in Argali sheep (*Ovis ammon*)
A. L. Green, F. C. Oback, J. E. Oliver, L. Popovic, L. T. McGowan, S. J. Appleby, F. Meng, D. L. Hyndman, D. Carson, and D. N. Wells

Cryopreservation and Cryobiology

29 The novel cryoprotective agent carboxylated ε-poly-L-lysine is effective for vitrification of pre-implantation mouse embryos at the different stages
J. Ito, Y. Kawasaki, Y. Shibao, K. Matsumura, S.-H. Hyon, and N. Kashiwazaki

30 Effect of the repeated use of open system vitrification devices on mii stage and cleavage rates of bovine cumulus–oocyte complexes
F. A. Diaz, E. J. Gutierrez, B. A. Foster, P. T. Hardin, and K. R. Bondioli

31 Intrafollicular transfer of fresh and vitrified immature bovine oocytes: An option for embryo production
J. F. W. Spricigo, S. B. S. Netto, C. V. Muterlle, S. A. D. Rodrigues, L. O. Leme, A. L. Guimaraes, F. Caixeta, I. Pivato, and M. A. N. Dode

32 Effects of high hydrostatic pressure on expression profiles of *in vitro*-produced, vitrified bovine blastocysts
Z. Jiang, P. Harrington, M. Zhang, S. Marjani, L. Kuo, C. Pribenszky, and X. Tian

33 Post-thaw viability of bovine embryos produced *in vitro* following treatment with ascorbic acid, dithiothreitol, and caspase-3 inhibitor during cryopreservation
E. L. Carrascal-Triana, A. M. Zolini, A. Ruiz, J. M. Penitente-Filho, C. A. A. Torres, and J. Block

34 Effects of L-carnitine and *trans*-10,*cis*-12 conjugated linoleic acid supplementation during maturation on development and cryotolerance of bovine embryos produced *in vitro*
J. Block, A. M. Zolini, E. Carrascal-Triana, A. Ruiz, P. J. Hansen, and C. A. A. Torres

35 Effects of thawing temperature of frozen semen on viability of refrozen and thawed Chickso (Korean brindle cattle) and Korean albino cattle spermatozoa
S. W. Kim, C. Y. Choe, D. K. Kim, A. R. Choi, and H. H. Seong

36 Effect of cAMP modulators during oocyte *in vitro* maturation on gap junctional activity of vitrified bovine oocytes
C. A. S. Monteiro, G. R. Leal, H. F. R. A. Saraiva, A. J. R. Camargo, P. M. S. Rosa, A. L. R. Rodrigues, R. V. Serapião, L. A. G. Nogueira, L. S. A. Camargo, J. M. Garcia, and C. S. Oliveira

37 Double freezing and thawing of Nguni bull semen
M. L. Mphaphathi, M. M. Seshoka, T. R. Netshirovha, Z. C. Raphalalani, T. C. Chokoe, M. Nkadimeng, N. L. Kanuya, J. P. C. Greyling, and T. L. Nedambale

38 Quail egg yolk in citrate extender is suitable for cryopreservation of Nguni bull semen
M. M. Seshoka, M. L. Mphaphathi, K. S. Mafolo, M. Nkadimeng, Z. C. Raphalalani, N. L. Kanuya, and T. L. Nedambale

39 Fertility potential of frozen-thawed wood bison semen using extender without exogenous protein
S. X. Yang, G. P. Adams, J. M. Palomino, and M. Anzar

40 Cholesterol supplementation reduces cryocapacitation damages in buffalo (*Bubalus bubalis*) sperm
V. Longobardi, G. Albero, A. Salzano, G. Zullo, G. Bifulco, C. De Canditiis, and B. Gasparrini

41 Developmental potential of buffalo oocytes vitrified at the germinal vesicle stage: Effects of different cryoprotectant combinations and cryodevices
A. S. El-Shalofy, A. R. Moawad, G. M. Darwish, S. T. Ismail, and A. B. Badawy

42 Diffusion of the cryoprotectants ethylene glycol and glycerol into day 9 to 11 equine embryos: Preliminary results
T. Chenier, B. Foster, L. Gonzalez, and M. Schlaf

43 Mass vitrification of germinal-vesicle stage equine oocytes
H. S. Canesin, I. Ortiz, J. G. Brom-de-Luna, Y. H. Choi, and K. Hinrichs

44 Effect of cryoprotectant agents in equine ovarian biopsy fragments
G. D. A. Gastal, B. G. Alves, S. O. Paiva, K. A. Alves, S. G. S. de Tarso, G. Ishak, S. T. Bashir, and E. L. Gastal

45 Acrosome reaction and heterologous zona binding assay of frozen stallion sperm after hyperactivation
M. A. Lagares, H. S. Martins, M. R. Souza, C. F. A. M. Penna, F. O. P. Leme, G. C. Silva, S. F. Cortes, and R. Stahlberg

46 Vitrification at the germinal vesicle stage triggers precocious meiotic resumption but does not affect cytoplasmic maturation in cumulus-enclosed porcine oocytes during *in vitro* maturation
T. Somfai, N. T. Men, H. Kaneko, J. Noguchi, S. Haraguchi, E. C. da Silva Santos, T. Nagai, and K. Kikuchi

47 Effect of L-carnitine treatment during oocyte maturation on the post-thaw development of porcine embryos vitrified at the pronuclear stage
C. G. Grupen, T. Somfai, and K. Kikuchi

48 Carboxylated ε-poly-L-lysine (COOH-PLL) improves developmental ability and reduces mitochondrial damage of vitrified porcine embryos at the pronuclear stage
M. Kamoshita, K. Fujiwara, K. Matsumura, S.-H. Hyon, J. Ito, and N. Kashiwazaki

49 Effect of adding Trolox C and ascorbic acid to ram sperm before cryopreservation on the motility and binding capability
J. Costa, W. Lima, E. Moraes, P. Sousa, L. Ramon, D. Lima, and V. Coelho

50 Estimation of chromatin abnormality of Ogye rooster semen with Diff-Quik staining
S. W. Kim, A. R. Choi, C. Y. Choe, D. K. Kim, H. H. Seong, and J. D. Kim

51 Optimization of vitrification parameters for rhesus macaque blastocysts
C. Ramsey, C. Hanna, and J. Hennebold

Developmental Biology

52 Use of transwell cell culture and 3-dimensional printing technology to develop an *in vitro* bovine oviduct
M. A. M. M. Ferraz, H. H. W. Henning, K. M. A. Van Dorenmalen, P. L. A. M. Vos, T. A. E. Stout, P. F. Costa, J. Malda, and B. M. Gadella

53 Targeted screen for amino acids that regulate bovine inner cell mass development
V. Najafzadeh, R. Martinus, and B. Oback

54 Immunolocalization of steroid sulfatase and estrogen-specific sulfotransferase in bovine follicles
C. Blaschka, G. Schuler, and C. Wrenzycki

55 Effect of dimethyl sulfoxide supplementation on bovine *in vitro* embryo development
J. Stöhr, H. Grothmann, and C. Wrenzycki

56 The effects of serum level of androgens, luteinizing hormone, and insulin-like growth factor 1 in early follicular phase on ovarian follicular growth parameters and pregnancy rate
Z. Raoofi, F. Hosseini, S. Pegah Parvar, and S. Paniz Parvar

57 Developmental characteristics of later-stage porcine embryos produced *in vivo* or *in vitro*
H. Callesen and P. Holm

58 Effect of lysophosphatidic acid on porcine oocyte *in vitro* maturation and subsequent embryonic development after parthenogenetic activation and IVF
K.-J. Kim, E. Lee, and S.-H. Hyun

59 Lipid dynamics in the early embryonic development of zebrafish by desorption electrospray ionization mass spectrometry imaging and nanoelectrospray mass spectrometry
A. K. Jarmusch, C. T. Mahapatra, V. Pirro, C. R. Ferreira, and M. S. Sepúlveda

60 Effects of AY9944 A-7 on meiotic resumption of porcine oocytes and cumulus cell expansion
S. Lee, C. Khoirinaya, J.-X. Jin, G. A. Kim, and B.-C. Lee

61 Unveiling the role of lipids in organogesis: Molecular anatomy by desorption electrospray ionization mass spectrometry imaging mass spectrometry
V. Pirro, P. O. Favaron, C. R. Ferreira, L. S. Eberlin, R. S. Barreto, R. G. Cooks, and M. A. Miglino

62 Effect of progesterone on calcium regulation during differentiation of mouse embryonic stem cells into cardiomyocytes
Y.-K. Choi, H. Y. Kang, J.-U. Hwang, T. D. Nam, and E.-B. Jeung

63 Equine follicles modulate cortisol levels and capability of oocytes to adapt to stress situations
D. Scarlet, N. Ille, G. D. A. Gastal, B. G. Alves, S. O. Paiva, M. O. Gastal, E. L. Gastal, and C. Aurich

64 Epithelial mesenchymal transition and differentiation of steroidogenic factor 1 mouse embryonic stem cells into the steroidogenic cells
H. Y. Kang, Y.-K. Choi, J.-U. Hwang, and E.-B. Jeung

65 Effect of trichostatin A and 5-aza-2′-deoxycytidine treatment of donor cells, fused embryos, or both on the developmental competence, quality, and epigenetic status of cloned buffalo (*Bubalus bubalis*) embryos
M. Saini, N. L. Selokar, H. Agrawal, S. K. Singla, M. S. Chauhan, R. S. Manik, and P. Palta

66 Cumulus-oocyte-complex secretions from the first 8 hours of *in vitro* maturation affect oocyte developmental competence
K. Uhde, H. T. A. van Tol, T. A. E. Stout, and B. A. J. Roelen

67 Inhibition of 5α-reductase during late gestation in the mare
M. Wynn, E. Legacki, A. Conley, S. Loux, A. Esteller-Vico, S. Stanley, E. Squires, M. Troedsson, and B. Ball

68 Steroidogenic control of intrauterine sexual differentiation in Spix's yellow-toothed cavy, *Galea spixii*
A. C. Santos, D. C. Viana, F. D. Oliveira, M. F. Oliveira, and A. C. Assis-Neto

69 Age at puberty and reproductive development of lambs fed sunflower cake
K. L. Da Silva, N. G. Alves, I. J. Ascari, D. R. Da Silva, J. P. A. Campos, D. M. Costa, A. C. Costa, F. J. Barbosa, I. F. F. Garcia, and R. Ribeiro de Lima

70 Gonadal development in guinea pig males (*Cavia porcellus*)
F. Oliveira, A. Santos, and A. A. Neto

Early Pregnancy

71 Circulating microRNAs as potential biomarkers of early pregnancy in high-producing dairy cows
N. Fiandanese, A. Viglino, F. Strozzi, A. Stella, J. L. Williams, P. Lonergan, N. Forde, and D. Iamartino

72 Preliminary data on the presence of bacteria in the uterus of pregnant cows
H. G. Pedersen, L. R. V. Knudsen, J. S. Agerholm, T. K. Jensen, K. S. Klitgaard, and C. C. Karstrup

73 Proteomic analysis of uterine luminal fluid on day 7 of pregnancy in cattle
C. Passaro, N. Forde, T. E. Spencer, and P. Lonergan

74 Analysis of steroid hormones in bovine oviductal fluid by gas chromatography coupled with tandem mass spectrometry
J. Lamy, P. Liere, P. Mermillod, and M. Saint-Dizier

75 Expression of growth factor genes in *in vitro*–produced blastocyst changes after uterine passage, but endometrial expression is unaffected by the presence of embryos
M. Muñoz, S. Carrocera, D. Martin, N. Peynot, C. Giraud-Delville, E. Correia, O. Sandra, V. Duranthon, and E. Gómez

76 Effects of reduced environmental light on the *in vitro* maturation of pig oocytes
L. Y. Parra-Forero, A. Góngora, S. Romo-García, E. P. López Damian, G. D. Mendoza, J. A. Guevara, and A. García-Contreras

77 Use of seminal plasma to improve reproductive performance in alpacas (*Vicugna pacos*) following natural mounting
W. Huanca, J. Turin, C. Mamani, R. Sanchez, W. F. Huanca, and T. Huanca

78 Interception of exosomal messages between the oviduct and the embryo: What are they tweeting about?
C. Almiñana, E. Corbin, G. Harichaux, V. Labas, G. Tsikis, C. Soleilhavoup, K. Reynaud, X. Druart, and P. Mermillod

Embryo Culture

79 Reactive oxygen species level in cultured porcine embryos after high hydrostatic pressure
M. Romek, M. Kucia, B. Gajda, and Z. Smorag

80 Reactive oxygen species level in pig embryos cultured in presence of hyaluronan
B. Gajda, M. Kucia, Z. Smorag, and M. Romek

81 Altered protein composition of porcine follicular fluid due to a high-fibre diet and the potential for optimisation of *in vitro* culture media
S. Jarrett, A. C. Gill, D. Kurian, E. M. Ferguson, and C. J. Ashworth

82 Early porcine embryo energy preference and subsequent development
L. D. Spate, B. K. Redel, and R. S. Prather

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2016 Recipients of the IETS Distinguished Service Award

Naida M. Loskutoff

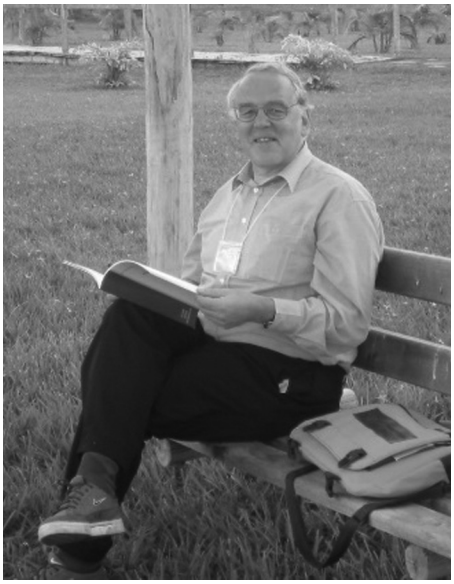
The 2016 IETS Distinguished Service Award has been awarded posthumously to Naida Loskutoff in honor of her long-term support and significant contributions to the IETS.

Loskutoff made some important decisions early in her academic career that helped forge her path in research and application of embryo technologies in wildlife species. Unknown to her at the time, her early mentors included two innovative researchers who would later become recipients of the IETS Pioneer Award. With a BS degree in zoology from the California State Polytechnic University, Loskutoff continued on to obtain her MS and PhD degrees from the Department of Veterinary Physiology and Pharmacology, Texas A&M University. It was during her graduate studies that she began focusing on in vitro embryo production and manipulation techniques. Her PhD advisor, Duane Kramer (2006 IETS Pioneer Award), became a long-time mentor whom she fondly referred to throughout her career. She followed her PhD with a postdoctoral fellowship at the Animal Biotechnology Embryo Laboratory, University of Guelph, under the supervision of Keith Betteridge (2003 IETS Pioneer Award) where she produced the world's first identical quadruplet bulls from a single four-cell embryo.

In 1992 Loskutoff began her professional career at Omaha's Henry Doorly Zoo and Aquarium, Nebraska, where she became Director of Reproductive Sciences. During her time in this position, she not only mentored numerous young students and scientists within the United States and around the world, but she was instrumental in promoting the application of reproductive technologies in nondomestic and endangered species. Her novel research resulted in significant accomplishments, including a patented sperm disinfection protocol and the first gorilla birth from IVF-ET. Most importantly, she focused on developing methods that were transportable, allowing her to explore new species in their home environments, and as a result, spent much of her time bringing wildlife reproductive science to Africa.

Loskutoff was a member of IETS for more than 30 years, having joined the society in 1982. During that time, she was a consistent attendee at the annual conferences, as well as an active contributor to the society with participation in the HASAC committee (2000–2015), Foundation (1993–1999), and Board of Governors, specifically in the roles of vice president (2006), president (2007), and immediate past president (2008). For the 2001 annual conference in Omaha, Nebraska, Loskutoff was the chair of the Local Organizing Committee. In that same year, she had the vision to establish the Committee for Companion Animals, Non-Domestic and Endangered Species (CANDES). As chair of CANDES for more than 10 years, she initiated discussions on topics that were not even being considered at the time for nondomestic and endangered species, including biosecurity, regulatory requirements for import and export, and legalities of ownership. She put significant effort into getting CANDES established and supported several symposiums over the years, both in Omaha and during subsequent IETS annual conferences.

In her many roles within IETS, Loskutoff dedicated her time with pleasure and was a strong advocate of the importance of IETS as a society and resource for veterinarians, reproductive biologists, technologists, and students. Her noteworthy accomplishments in wildlife reproductive science and within IETS make her a worthy recipient of the Distinguished Service Award.



Steph Dieleman

P. L. A. M. Vos et al., *Theriogenology* 84 (2015) 321–322

Associate Professor Steph J. Dieleman was born in 1944 and grew up in Twisk, a village located at the northwest of the Netherlands. After finishing secondary school he started his academic career at Utrecht University as a student of the Chemistry Faculty and passed his majors in organic chemistry and biochemistry. During his study he proved his first scientific potency by receiving a prestigious prize for his research project performed in the Shell/AKZO Company. In June 1969 he passed his final doctoral exams and started his working career at the TNO Chemical Institute, Utrecht. For a period of two years, he focused on a project about biochemical aspects of the resistance against specific fungi infections in apples.

In November 1971 he accepted a position and hence a new challenge at Utrecht University at the Faculty of Veterinary Medicine, Department Obstetrics, Gynaecology, and AI. This career switch was the start of his research focus on the hormonal processes around parturition, and Dieleman's first challenge was to develop the Radio Immuno Assay (RIA) technology for hormonal (steroid) analysis and to set up an endocrine laboratory for reproductive studies. In 1973 he became the head of this endocrine biochemistry laboratory. During those days he went to Edinburgh, Scotland, for a sabbatical to learn more about RIA, and indeed he developed the first oestradiol RIA in Utrecht using an antiserum that he received as a present during this visit. In 1975 he started his PhD project on the endocrinology of the bovine oestrous cycle, finally resulting in the acceptance of his PhD thesis titled "Steroids of preovulatory bovine follicles relative to the peak of luteinizing hormone," which was successfully defended at Utrecht University in 1984. This study showed that concurrently with changes in the micromorphology of the follicular wall, the steroidal microenvironment of the maturing bovine oocyte switches from predominantly oestrogenic at oestrus to one in which progesterone is the major steroid present shortly before ovulation. Through this milestone Dieleman created a solid scientific basis for the introduction and further development of embryo technologies and hence a better understanding of the endocrinology during the normal oestrus cycle and the follicular development during superovulation in cattle. In this respect, the testing of the first monoclonal antibody in PMSG superstimulated animals, called "anti-PMSG," was performed for the company Intervet, the Netherlands.

Especially, his interest for follicular development in relation to (final) oocyte maturation has to be mentioned. An impressive number of (EU) projects and in vivo experiments have been performed, mainly in cattle, to gain a better understanding on the communication between the oocyte and its microenvironment. To this end many laboratory tools have been developed and validated to support and prove the proposed experimental hypothesis: from hormonal analysis, staining techniques, in vitro production of blastocysts to genomics and proteomics. Steph Dieleman performed research in the context of reproductive physiology, hence he stimulated in vivo research being the bridge between fundamental and the application in the field. To reach this goal, the multidisciplinary approach was an absolute prerequisite for him; he always strongly believed in his own original scientific concepts, ideas, and hypotheses, although those were always open for discussion and critical comments.

In the field of reproductive physiology, technology, and embryo production, the national and international research achievements of Dieleman have been impressive: a very productive, worldwide-acknowledged, multifaceted research program in species such as cows, pigs, horses, elephants, dogs, dolphins, and ostriches. Through his work in collaboration with many outstanding and acknowledged research colleagues and international groups, he has contributed to more than 300 book contributions, abstracts, and full papers in regular and top scientific journals, including 38 refereed papers in Theriogenology.

The supervision and professional guidance of dozens of postdocs, PhDs, and research students was an important achievement of Dieleman. Dieleman liked this work, as a perfectionist and hard worker; he was therefore very stimulating for all his students and colleagues who have spent time at his laboratory. They have experienced the laboratory of Steph Dieleman to be a pleasant and stimulating environment for performing excellent research, with lots of fun and good team work in a warm atmosphere.

During his scientific career, Dieleman received much recognition for his contributions and achievements. Over the years, he was awarded academic honors, and he was invited as keynote speaker and session chair at many international scientific conferences and meetings. He has been a member of the Board of Governors and secretary-treasurer and president of the International Embryo Transfer Society (IETS). In the IETS he was recognized for his financial expertise ("the master of finance"). For his active membership and contributions, the AETE society awarded him with the Pioneer Award at the annual meeting of the AETE in Sardinia in 2007. Moreover, Steph Dieleman was an expert in organizing scientific meeting programs, and as a result he organized an impressive list of recognized scientific meetings worldwide and in the Netherlands. For example, he chaired the IETS meeting in Maastricht (2000), which was also organized by him. Furthermore, he was president of the International Congress on Animal Reproduction (ICAR) and organized the ICAR conference in The Hague (1992). He also organized the European Embryo Transfer Society (AETE) meeting (2002) and the International Conference on Pig Reproduction (ICPR) (2004), both organized in the ancient monastery Rolduc.

Finally, at the end of his impressive career, Dieleman organized the International Conference on Farm Animal Reproduction (ICFAR), again in Rolduc, the Netherlands (June 2007), which was his final international recognition to his scientific colleagues and friends that were gathered together from all over the world to contribute to this special and memorable scientific meeting. To this end he was special editor of the proceedings that appeared as a special issue in Theriogenology [1], containing 34 excellent contributions covering several main topics in the field of theriogenology. This special issue not only was a concise update of the state of the art in research "from egg to embryo," but also exemplified the broad and multidisciplinary approach Steph Dieleman added during his scientific career to this exciting field.

For more than 30 years Steph Dieleman performed interdisciplinary, clinically orientated research and education in the field of reproduction. He was a true and driven scientist who exposed a serious attitude, but he also very much enjoyed the Burgundy lifestyle, which he continued after his retirement. One of the last photographs that was taken of him, at his 70th birthday, is characteristic and gives an honored remembrance of our friend and colleague Steph Dieleman. He is enjoying his glass of wine with his closest friends during a boot trip in his favorite waterside landscape at Loosdrecht. Steph Dieleman passed away February 15, 2015. We will remember Dieleman as a warm person, an excellent scientist, and a dear colleague and friend.

Reference

[1] S. J. Dieleman (guest editor). Proceedings of the International Conference on Farm Animal Reproduction. Kerkrade, Limburg, the Netherlands, May 27–31, 2007. *Theriogenology* 2006, 68 (Suppl. 1), pp. S1–S228.

Special Events

Morulas' Preconference Workshop
Epigenetics and Embryo Technologies
Saturday, January 23
14:00–17:00
Nunn
Sponsored by CSIRO

This preconference symposium organized by the IETS Morulas Board of Governors explores the growing field of epigenetics as it relates to gamete and embryo technologies. Trainees should plan to arrive one day early and take advantage of this great opportunity by hearing from excellent speakers who are leading researchers in the field of epigenetics including Pablo Ross, Marc-André Sirard, and Jason Knott. All IETS members are welcome to this three-hour event that will cover the basics of epigenetics while incorporating new techniques and real-life data examples along with discussion from the audience. Trainees will have the opportunity to interact with each other and speakers in a short discussion that will close the conference. Please take advantage of this wonderful opportunity at a fantastic cost (**registration required**).

Affiliates Lounge
Sunday–Tuesday, January 24–26
Wilson
07:00–17:00, Daily

A room has been reserved for the society affiliates to meet and network for the duration of the meeting.

Morulas and Mentor Luncheon
Sunday, January 24
12:30–14:00
Clements
Sponsored by Vetoquinol

One of the main goals of the Morulas is to provide trainees opportunities to interact with the general membership of the IETS. The Morulas and Mentors luncheon is designed to give trainees a chance to sit down with mentors in small groups to develop meaningful connections with leaders in our field. Join a number of outstanding Mentors at this annual event and choose from one of eight Mentors that you would like to dine with (**ticket required**).

Practitioners' Forum
Sunday, January 24
16:00–18:00
Ballroom C
Sponsored by Partnar Animal Health Inc.

DABE Forum
Sunday, January 24
16:00–18:00
Nunn
Contributions from new investigators
Sponsored by Hamilton Thorne Inc.

Welcome Reception
Sunday, January 24
18:00–19:00
Grand Ballroom A, B
Sponsored by Professional Embryo Transfer Supple Inc. (PETS)

A welcome reception will be held in the Grand Ballroom A, B of the Galt House Hotel from 18:00 to 19:00. Meet the exhibitors and renew old friendships. Wine, cocktails, and light hors d'oeuvres will be served.

Concurrent Session
Monday, January 25
08:00–09:30
Ballroom C

Bovine reproduction: Donor selection and treatments to improve oocyte collection and in vitro embryo production in cattle

Concurrent Session
Monday, January 25
08:00–09:30
Nunn

Equine reproduction: Pre- and post-ovulatory influences on fertility

Concurrent Session
Monday, January 25
08:00–09:30
Jones

From bench to barn: Effects of bull fertility or sperm factors on embryo development and cattle agriculture

Morulas Career Luncheon
Monday, January 25
12:45–14:00
Clements
Sponsored by CSIRO Publishing

This year's Career Luncheon will feature a talk by two speakers who will share unique perspectives from their own personal career paths. Hear Jennifer Barfield of Colorado State University speak about her bison program and Christian Vigneault from Boviteq in Québec speak about his research with bovine oocytes and embryos. This forum provides a chance for trainees to gain perspective outside of their current work environment and meet others with similar aspirations (**ticket required**).

Open Meeting of the Health and Safety Advisory Committee (HASAC)
Monday, January 25
18:00–19:00
Nunn

Morulas' Trainee Forum
Monday, January 25
18:00–19:00
Ballroom C

All trainees are invited and encouraged to attend the Morulas Trainee Forum. The Board of Governors will be updating the membership on activities and attending to business matters. In addition we will welcome the new Morulas president, recognize the 2015 Mentor of the Year Recipient, and discuss important events and opportunities for all trainees. This is a great time to get involved and boost your international relations.

Morulas' Student Mixer
Monday, January 25
19:30
Galt House Hotel, Al J's at the Conservatory

After business comes fun! Shortly after the Morulas Trainee Forum, everyone is invited to gather with friends and drinks for a social event. Hosted by IETS, this annual event is a fun time for all trainees and general members to relax and enjoy the atmosphere. Take advantage of meeting new people and establish connections that last a lifetime.

The mixer will conveniently be located in the Atrium on the 2nd floor of the Galt Hotel. Registration and tickets are NOT required.

14th Annual IETS Fun Run

Tuesday, January 26
12:30–13:00
Louisville Waterfront Park

Even if you do not participate, come and cheer on the runners in a magnificent landscape and even dress up!

Closing Party

Tuesday, January 26
18:30–22:30
Kentucky Derby Museum

Come and join us for the event of the week. Share a meal, enjoy the surroundings, and get reacquainted with old friends. There will be music for your listening and dancing pleasure. You will also have a chance to tour the museum. With two floors of interactive, family-friendly exhibits, the Kentucky Derby Museum takes visitors through every stage of a Thoroughbred's life, from birth to the first Saturday in May. Learn about all the great history of the race dating back to the inaugural running in 1875 and about our most recent Kentucky Derby champion. Experience all the traditions that have transformed the race into what it is today. You will also have a chance to view the new state-of-the-art 360° Greatest Race Experience. Don't miss this event. **Shuttle service to and from the Galt House to the museum will be provided**, beginning at 18:00, from the Galt House Hotel, outside of the Suite Tower, with return service beginning at 19:30. **Tickets are required for this event.**

Exhibit Hall Layout

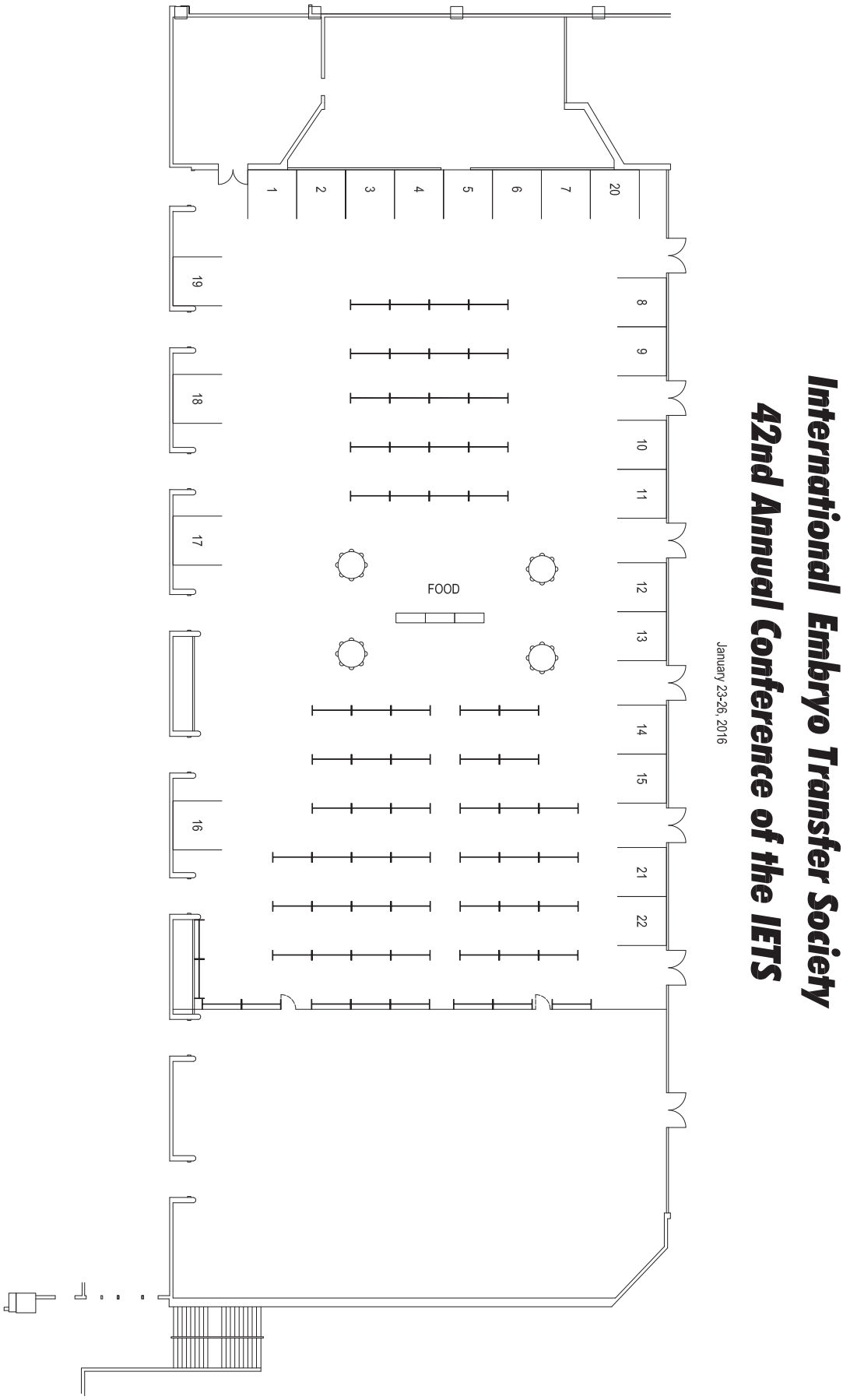


Exhibit Directory

Booth Listing by Number:

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2	American Embryo Transfer Association (AETA)
3	MOFA Global
4	Biogenics Inc.
5 & 6	WTA Technologies LLC
7	IVFtech ApS
8	RI Life Sciences
9	Misawa Medical Industry Co. Ltd.
10 & 11	Vetoquinol
12	Partnar Animal Health
13	IVF Bioscience
14	Echo Control Medical
15	IMV Technologies
16	Professional Embryo Transfer Supply Inc. (PETS)
18	Agtech Inc.
19	Boviteq
20	STEM ALPHA

Alphabetical Listing of Exhibitors

Agtech Inc.

Agtech Inc. is your source for the embryo transfer products you can count on for success. In all that we do, from product development to assisting with your product needs, it is the drive to build on our customer's success that keeps us moving forward.

We are driven to help our customers succeed, helping them continue to be leaders in the industry and support their goals.

We take great pride in our relationships with our customers, providing them with the products, support, and attention to detail that they have come to rely on.

8801 Anderson Avenue
Manhattan, KS 66503-9612, USA
Phone: 800-367-4016
Fax: 785-776-4295
www.agtechinc.com
Booth: 18

American Embryo Transfer Association (AETA)

The purpose of the American Embryo Transfer Association is to unite those organizations and individuals in the United States engaged in the embryo transfer industry into an affiliated federation operating under self-imposed standards of performance and conduct

• to present a unified voice of the industry to promote the mutual interests and ideals of its members;

• to protect the users of the embryo transfer industry to the extent technically and ethically possible;

• to educate the public properly to the status and capability of the United States embryo transfer industry;

• and to encourage others to engage in the pursuit of this industry.

1800 South Oak Street
Suite 100
Champaign, IL 61820, USA
Phone: 217-398-2217
http://www.aeta.org
Booth: 2

Biogenics Inc.

Biogenics has specialized in the focused niche of cryopreservation instruments and temperature control for embryo transfer since 1990. In 2015, our 25th year in business, we engineered and manufactured generation two of our groundbreaking CRYSALYS® 9500 freezing system, incorporating numerous changes to make these systems more robust than ever. Freeze at rates as high as 70°C per minute or as low as 0.1°C per minute, and in large or small volumes of straws.

In 2014, Biogenics released BioViator™, the world's first portable, ambient compensating incubator/refrigerator that does not require a padded shipping carton increasing its dimensional weight. Battery life is up to 72 hours at 38°C. Datalogging and ramp functions are standard, as well as many other patent-pending features.

At IETS in 2016, Biogenics unveils Binucleate™, a faster, simpler, and more reliable method for seeding embryo straws when used in conjunction with our C2060S cryochamber.

Biogenics' technical specialists cordially welcome your visit to our stand, and appreciate your valuable time.

2797 Napa Valley Corporate Dr.
Napa, CA 94558-6216, USA
Phone: 707-224-7024
http://www.biogenics.com
Booth: 4

Boviteq

A world leader in developing and implementing new techniques for embryo transfer, Boviteq offers reproductive and genetic solutions to clients across North America from its world-class in vitro–fertilization (IVF) laboratories in Madison, Wisconsin, and Saint-Hyacinthe, Québec.

Working with accredited OPU (ovum pickup) centers, clients can take advantage of Boviteq's innovative reproductive technologies. "Our goal is to make available a range of options to enable breeders to optimize the reproductive career of their elite animals and manage the genetic advancement of their herds," explains Boviteq's Director of Embryo Operations and R&D, Patrick Blondin.

This network of accredited OPU centers and vets is part of a unique, 360° IVF embryo solution, and as a fully integrated semen and IVF embryo facility, Boviteq is one of the industry's only true genetic solutions company.

6330 Copps Avenue, Suite B
Monona, WI 53716, USA
Phone: 608-210-4151
http://www.boviteq.com/us-home
Booth: 19

Echo Control Medical

The company ECM has been in the field of ultrasound scanning for more than 30 years.

We design and produce a complete range of ultrasound systems for reproduction diagnosis and ovary exam.

Come and see the Exago as well as the Exapad, which can be equipped with on OPU guide and deliver an outstanding image quality for oocyte retrieval applications.

126 Bd De La Republique
F-16000 Angouleme, France
Phone: +33 5 45 92 03 57
http://www.ecmscan.com
Booth: 14

ICPbio Reproduction

ICPbio Reproduction is a global supplier of embryo transfer and reproductive products, including flushing and embryo handling media for the equine, bovine, and ovine used by veterinarians and reproductive specialists. ICPbio Reproduction also manufactures and distributes the Ovagen brand FSH for superovulation of ovine and bovine for embryo transfer procedures.

PO Box 39
303 South McKay Avenue
Spring Valley, WI 54767, USA
Phone: 877-978-5827
http://www.icpbiorepro.com
Booth: 1

IMV Technologies

The world's leading player in the reproductive biotechnology market, IMV is present in 120 countries.

IMV designs and develops equipment, consumables, and preservation media dedicated to animal reproduction, bringing each idea from the drawing board to large-scale production.

Today, IMV Technologies develops solutions designed to simplify the processes involved in herd improvement programs around five main areas of expertise:

• semen collection and analysis,

• sample preparation and dilution,

• packaging and cryopreservation,

• assisted insemination, and

• embryo transfer.

IMV Technologies offers the widest range of ET products, including collection and freezing media, filtration devices, laboratory equipment, and embryo packaging and transfer tools. See our complete range at www.imv-technologies.com.

11725 95th Avenue North
Maple Grove, MN 55369, USA
http://www.imv-technologies.com
Booth: 15

IVF Bioscience

Bringing a new approach to the animal ART market, IVF Bioscience's new IVP media range for bovine, caprine, and ovine will help to produce an increased number of higher quality embryos. Alongside our ready-to-use and serum-free media, we aim to provide exceptional service levels to help create a more productive world. Join us at stand 13 to find out more about our IVP media line.

Bickland Industrial Park
Falmouth, Cornwall TR11 4TA, United Kingdom
Phone: +441326 372 733
http://www.research-instruments.com
Booth: 13

IVFtech ApS

IVFtech is a company producing high quality, customizable equipment for IVF laboratories.

The art and science of assisted reproduction often demands personalized solutions where strict considerations must be given to the culture conditions and the growth environment of gametes and embryos. Key factors for success rely on providing a steady temperature close to 37°C and securing an atmosphere with the right humidity and CO2 concentration.

IVFtech knows that not all laboratories are the same, that's why IVFtech combines the bespoke nature of our products with a high quality and service level.

Custom products and services are, by definition, unique.

Toppevadvej 34-38
DK-3660 Stenløse, Denmark
Phone: +45 3940 2565
Fax: +45 3940 2564
IVFtech ApS CVR no.: 20892307
e-mail:info@ivftech.dk
www.ivftech.dk
Booth: 7

Misawa Medical Industry Co. Ltd.

We are one of the leading manufacturers and distributors of disposable needles and cow ova vacuuming, ET products for veterinary purpose in Japan. We established a worldwide reputation for our reliability and expertise based on experiences over half a century.

Our products for veterinary purposes, cow ova vacuuming needles, “mo-No.4” embryo transfer catheter, and “mo-No.5” intrauterine horn catheter were developed and manufactured with a special and innovative method.

We offer these products of superior quality, all manufactured in Japan.

351 Asahi-machi
Kasama City, Ibaraki 309-1717, Japan
Phone: +81 296 77 8804
http://www.misawa-medical.co.jp/English/intro.html
Booth: 9

MOFA Global

MOFA Global, a subsidiary of CRI International, is a leading provider of assisted reproduction technologies for porcine, bovine, equine, and canine. We are a company active in research and product development and have produced many products that are considered industry standards. Visit the MOFA Global booth to learn more about the available products for artificial insemination, ovum pickup, in vitro fertilization, embryo transfer, embryo cryopreservation, and embryo sexing technologies.

419 Venture Ct.
Verona, WI 53593, USA
Phone: 800-646-4882
http://www.mofaglobal.com
Booth: 3

Partnar Animal Health

Partnar Animal Health is pleased to present its range of embryo transfer and OPU products. We will present information on Stimufol (pFSH) and eMP3, our own range of embryo flush, hold, and freeze media. For OPU, we also have the Ibex Portable Ultrasound with an OPU probe, aspiration pumps, and retrieval needles and the MicroQ controlled temperature shipping device for oocyte, embryo, and fresh extended sexed semen transport.

2014 Holland Ave, Unit 227
Port Huron, MI 48060, USA
Phone: 519-666-0033
http://www.partnaranimalhealth.com
Booth: 12

Professional Embryo Transfer Supply Inc. (PETS)

PETS has been a world leading embryo transfer supply company in the bovine and equine industries for almost three decades. Our goal all this time has been your success, and we work every day to achieve this with quality service and ET supplies from ICPbio, Vetoquinol, MAI, SPI, Wesco, NovaVive, and more. Come visit with us for more details.

Box 188
Canton, TX 75103, USA
www.pets-inc.com
Booth: 16

RI Life Sciences

RI Life Sciences (RI LS) specializes in micromanipulation, laser ablation, and cell handling technologies for life sciences applications. RI LS is proud to be a division of Research Instruments Limited, a world leader in the design and manufacture of specialist hardware and consumables for the human ART field.

Visit stand 8 to try the Saturn 5 Active Laser System, offering a movable target that ablates cells with submicron accuracy. Demo the Integra 3 micromanipulator featuring Thermosafe, which maintains sample temperature uniformly across the dish. See our extensive consumables range including glass micropipettes and the EZ-Range of cell handling devices.

Bickland Industrial Park
Falmouth, Cornwall, United Kingdom TR11 4TA
Phone: +44(0)1326 372753
Fax: +44(0)1326 378783
www.research-instruments.com
Booth: 8

STEM ALPHA

Cryo.3 is an animal-component-free medium for freezing and thawing cells, designed and produced by STEM ALPHA, a French company. Cryo.3 has been designed for improving preservation in low temperature (−80°C to −196°C). Cryo.3 provides a safe protective environment for cells and tissues during the freezing, storage, and thawing processes. Cryo.3 is animal component free and Dextran free.

La Chenevatière - RD389
69610 Saint Genis l’Argentière, France
http://www.stemalpha.com
Booth: 20

Vetoquinol

In April 2014 Bioniche Animal Health, the manufacturer of Folltropin, became the newest division of Vetoquinol. Vetoquinol is a family-owned, independent company devoted exclusively to animal health. Our product portfolio is divided between livestock and companion animals and includes most therapeutic categories. Vetoquinol trades throughout Europe, the Americas, Africa, the Middle East, and Asia Pacific. With the acquisition of Bioniche Animal Health, Vetoquinol is committed to servicing the assisted reproduction industry with its long-lasting tradition of excellence.

BP 189
70204 Lure Cedex, France
Phone: +33 3 84 62 55 55
Fax: +33 3 84 62 55 56
www.vetoquinol.com
Booth: 10 & 11

WTA Technologies LLC

WTA, Watanabe Tecnologia Aplicada, is a Brazilian technology-based company, focused on products for animal assisted reproduction, offering high added value solutions for ovum pickup (OPU), in vitro fertilization (IVF), embryo transfer (ET), and artificial insemination (AI). Our products are mainly focused on cattle, horses, and small ruminants.

WTA sells throughout Brazil and in many countries, being recognized as one of the leading companies in the market.

Each product is designed to provide security, economy, and the very best result, always focusing on animal health. Every piece has a precise design, quality materials, and fine workmanship.

WTA, Brazil: + 55 16 39518161
Sales, Brazil: + 66 16 99762-7777
Sales, USA: + (979) 324-6168
http://www.wtavet.com.br
Booth: 5 & 6

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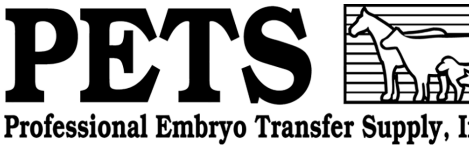
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Don't miss out on this opportunity!

Come and join us for the event of the week. Share a meal, enjoy the surroundings, and get reacquainted with old friends. There will be music for your listening and dancing pleasure. You will also have a chance to tour the museum. With two floors of interactive, family-friendly exhibits, the Kentucky Derby Museum takes visitors through every stage of a Thoroughbred's life, from birth to the first Saturday in May. Learn about all the great history of the race dating back to the inaugural running in 1875 and about our most recent Kentucky Derby champion. Experience all the traditions that have transformed the race into what it is today. You will also have a chance to view the new state-of-the-art 360° Greatest Race Experience. Don't miss this event. **Shuttle service to and from the Galt House to the museum will be provided**, beginning at 18:00, from the Galt House Hotel, outside of the Suite Tower, with return service beginning at 19:30. **Tickets are required for this event.**

Preconference Symposium
42nd Annual Conference of the IETS
Louisville, Kentucky

Biomaterials Repositories: The Science and Business of Biobanking

Dedicated to Naida Loskutoff for her tireless efforts and significant contribution to the advancement of reproductive sciences in companion animals, non-domestic and endangered species

Saturday, January 23, 2016
Galt House Hotel (Jones)

Program Co-Chairs:
Nucharin Songsasen and Gabriela Mastromonaco

08:30–08:45 Opening and Welcome
Nucharin Songsasen and Gabriela Mastromonaco

08:45–09:30 **Keynote Speaker**
Cryobiology principles and species conservation: Benefits for coral reefs
Mary Hagedorn, Smithsonian Conservation Biology Institute, Hawaii Institute of Marine Biology, Hawaii, USA

Session 1: Emerging Techniques for Germplasm Cryopreservation

Session chair: Ann Van Soom, Ghent University, Ghent, Belgium

09:30–09:55 Dry-state preservation of mammalian sperm
Takehito Kaneko, Graduate School of Medicine, Kyoto University, Kyoto, Japan

09:55–10:20 Cryopreservation of mouse oocytes and embryos by vitrification and laser-induced ultra-rapid warming
Peter Mazur, College of Arts and Sciences, University of Tennessee, Knoxville, USA

10:20–10:45 Micromanipulation of equine blastocysts to allow vitrification
Katrin Hinrichs, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, USA

10:45–11:05 Break

Session 2: Biobanking in Practice

Session chair: Jason Herrick, National Foundation for Fertility Research, Colorado, USA

11:05–11:30 Oocyte banking
Zsolt Peter Nagy, Reproductive Biology Associates, My Egg Bank, Atlanta, USA

11:30–11:55 Establishing a biobank to support biomedical research at a veterinary hospital
Marta Castelhano, Cornell Veterinary Biobank, Cornell University, Ithaca, USA

11:55–12:20 Implementing the use of biobanks: Lessons learned from the endangered black-footed ferret
Rachel Santymire, Davee Center for Epidemiology and Endocrinology, Lincoln Park Zoo, Chicago, USA

12:20–13:30 Lunch (on your own)

13:30–14:15 **Keynote Speaker**
Biobanking rare breeds: Challenges and implementation
Phillip H. Purdy, USDA-ARS National Animal Germplasm Program, Fort Collins, USA

Session 3: Unique Challenges to Cryopreservation

Session chair: William Swanson, Cincinnati Zoo and Botanical Garden, Cincinnati, USA

14:15–14:40 Repository development for germplasm of aquatic species
Terrence Tiersch, Aquatic Germplasm and Genetic Resources Center, Louisiana State University Agricultural Center, Baton Rouge, USA

14:40–15:05 Cryopreservation and associated technologies for threatened amphibians and reptiles
John Clulow, School of Environmental and Life Sciences, University of Newcastle, New South Wales, Australia

15:05–15:30 Sperm cryopreservation in wild ungulates
Budhan Pukazhenthi, Smithsonian Conservation Biology Institute, Front Royal, USA

15:30–15:50 Break

Session 4: Management of Biospecimens

Session chair: Gabriela Mastromonaco, Toronto Zoo, Toronto, Canada

15:50–16:15 Implications of the Nagoya Protocol
Pierre Comizzoli, Smithsonian Conservation Biology Institute, Office of the Under-Secretary for Science, Washington, DC

16:15–17:15 **Roundtable Discussion**
Future of biobanking: What should we become?
Z. Nagy, M. Castelhano, P. Purdy, B. Pukazhenthi, and P. Comizzoli

17:15–17:30 Closing

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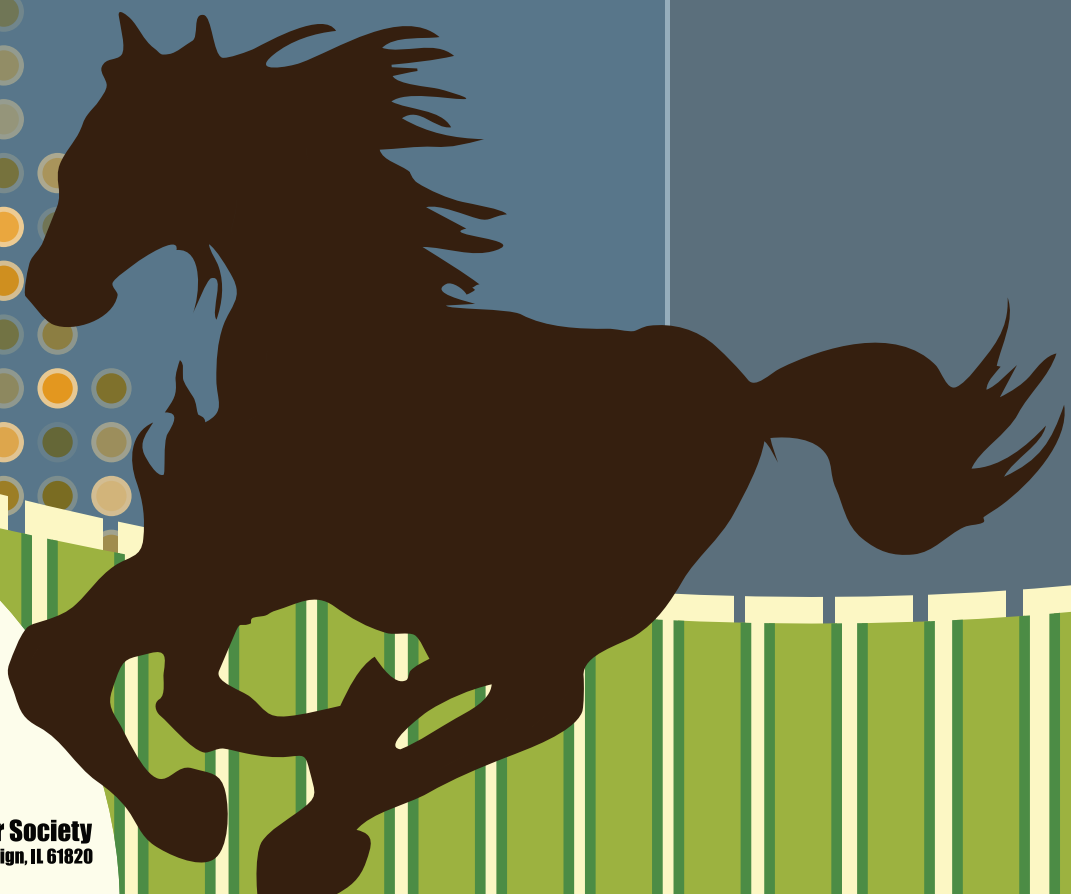

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International Embryo Transfer Society
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