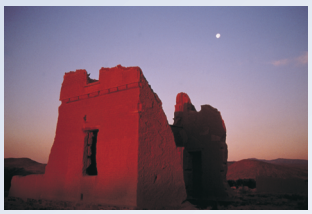
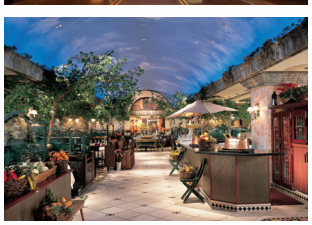
IETS

INTERNATIONAL EMBRYO TRANSFER SOCIETY





40th ANNUAL CONFERENCE

Program Book

John Ascuaga's Nugget Hotel

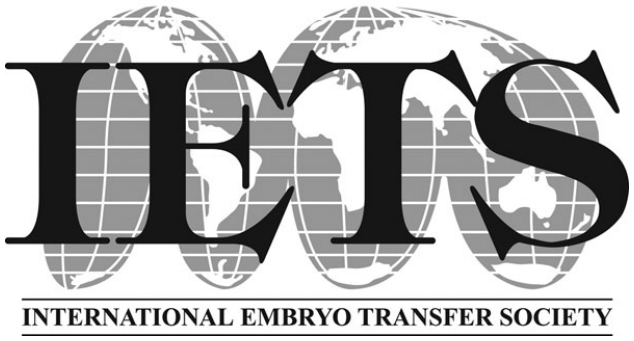
Reno, Nevada
January 11–14, 2014

Scan the code to access mobile website

Program Book

40th Annual Conference of the International Embryo Transfer Society

Advancing Embryo Technologies in the Genomic Era



John Ascuaga's Nugget Hotel
Reno, Nevada
January 11–14, 2014

Scientific Program Co-Chairs:
Pablo Ross and James Murray

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2013–2014 IETS Board of Governors

Preface and Acknowledgment

The annual meeting of the International Embryo Transfer Society will be held at John Ascuaga's Nugget Hotel in Reno, Nevada, from January 11 to 14, 2014. This is a special meeting because it is the 40th anniversary of the IETS. Special events have been added to the program to commemorate this remarkable occasion. This year's program theme is "Advancing Embryo Technologies in the Genomic Era". There will be five plenary sessions featuring 10 invited speakers who will address topics such as genetics and genomics of reproduction, molecular aspects of embryonic development, cryopreservation of sperm and embryos, new imaging techniques, and advances in genetic modification of livestock species. Dr. Kevin Sinclair will give the keynote presentation titled "Parental diet, pregnancy outcomes and offspring health: Metabolic determinants in developing oocytes and embryos". This year, there will be two think-tank forums, a CANDES forum, and the practitioners' forum; in which applied and basic aspects of embryo technologies will be discussed. These forums are provided to encourage ample participation from the attendees and to stimulate constructive discussion that relate to embryo technology practice and research. Also, more than 200 abstracts will be presented as posters, with a record 60 abstracts being presented orally as well. The concurrent oral abstract presentations, with 48 presenters, and the CANDES forum, with 6 presenters, will provide students, postdocs and researchers a unique opportunity to showcase their research. Furthermore, 6 more abstracts will be presented during the student competition, highlighting probably the best quality research presented at the meeting.

We are grateful to many of our society's members and colleagues for their valuable contributions of time and effort in organizing this meeting. We thank the invited speakers and their co-authors for providing excellent scientific manuscripts. Special thanks go to the section editors who coordinated the abstract review process, and to so many of our colleagues for their effort and expertise in reviewing manuscripts and abstracts. We are indebted to our colleagues who have responded to our invitations to help and accepted the responsibility of chairing the various presentation sessions, as this is an important task for the smooth running of any meeting. We also thank Dr. Peter Hansen for organizing the Practitioners' Forum, Dr. Fulvio Gandolfi for organizing the DABE think-tank, Dr. Reuben Mapletoft for arranging the Practitioners' think-tank, and Dr. Naida Loskutoff for organizing the CANDES Forum. Special thanks go to Dr. Matt Wheeler and Dr. Patrick Blondin for arranging the hands-on pre-IETS Symposium: "New Developments in Embryo Technologies and Embryo Transfer Techniques".

The local organizing committee chaired by Dr. Matt Wheeler and involving his colleagues and student volunteers have done an outstanding job in choosing a great location and ensuring that we will have an excellent time, both scientifically and socially. We encourage all students to participate in the events organized by our student members, the Morulas, who have developed into a very active and enthusiastic group, representing the bright future of our society.

We also thank the IETS Board of Governors for their support in preparing for the 2014 Annual Conference. Our sincere appreciation is extended to Debi Seymour of FASS, executive secretary of IETS, and Dr. Tony Flint, editor-in-chief, and Caroline Hadley, publisher, of *Reproduction, Fertility and Development* for their help in the production of the conference booklets and proceedings.

This meeting would not be possible without the critical economic contributions of our sponsors, and we especially thank them for their support.

Finally, we thank YOU for attending and contributing to the conference and hope that this 40th Annual Conference of the IETS will be exceptionally rewarding.

Pablo Ross and James Murray
2014 Program Co-Chairs

2014 Recipient of the IETS Pioneer Award

William W. Thatcher

Award Presentation: Tuesday, January 14, at 14:30

Previous Recipients

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)

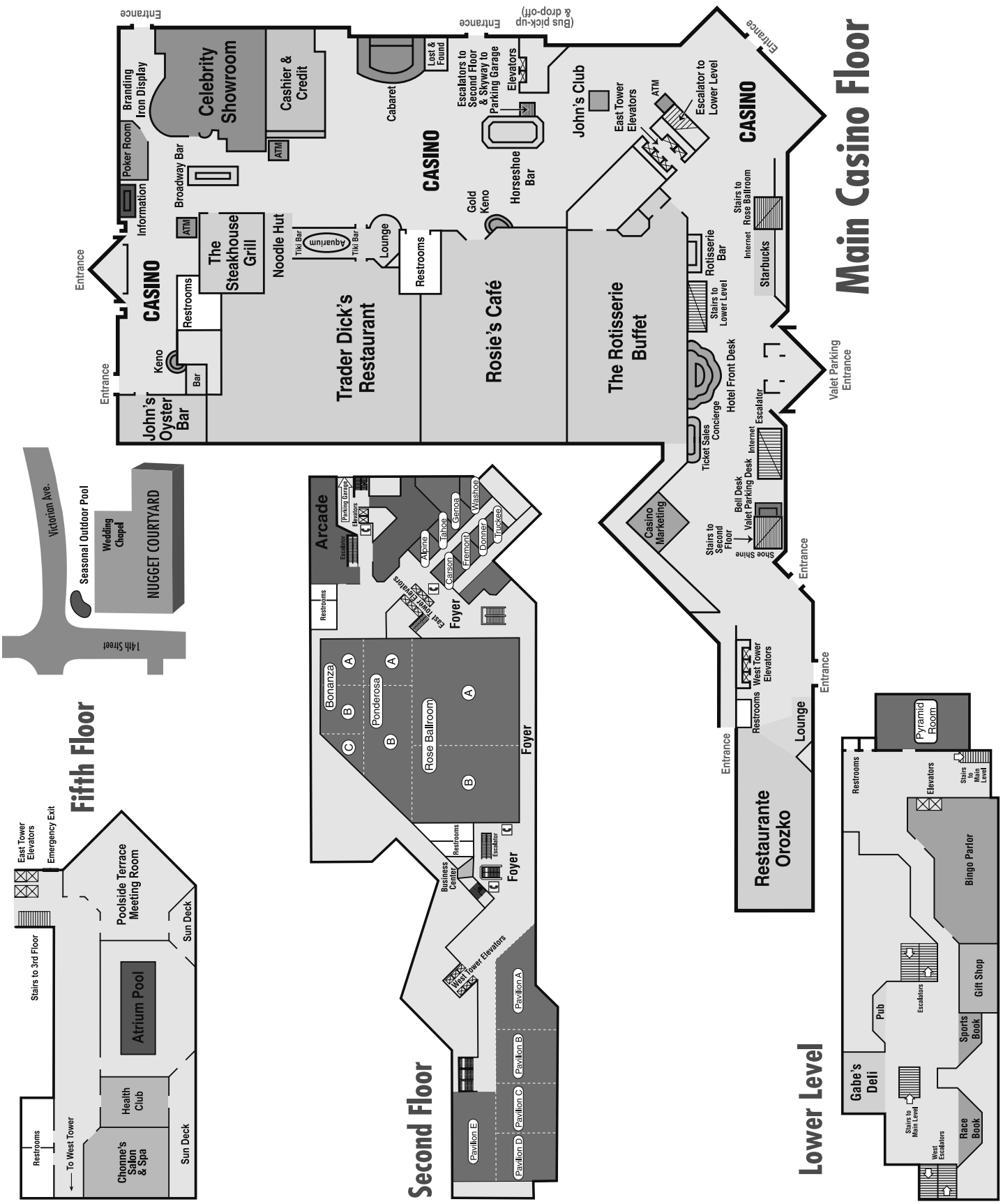
L. E. A. Rowson (1985)

L. E. Casida (1984)

M. C. Chang (1983)

R. O. Berry (1982)

Map of the Venue



General Information

Meeting Room Directory

Main Conference Sessions	Celebrity Showroom, Rose B, Pavilion E
Concurrent Sessions	Pavilion B, Pavilion CD, Pavilion E, Rose B
Exhibits	Rose A
Poster Displays	Rose A

Please see the Scientific Program on page 6 for additional room assignments.

Registration Desk Hours

The registration desk is located in the Rose A Foyer.

Pick up of preregistration packets only:

Friday, January 10	16:00–19:00

On-site registration hours

Saturday, January 11	07:00–18:00
Sunday, January 12	07:00–18:00
Monday, January 13	07:30–16:00
Tuesday, January 14	08:00–15:00

Exhibit Information (Rose A)

Set-up:

Saturday, January 11	08:00–17:00

Exhibits open:

Sunday, January 12	10:00–19:30
	18:00 –19:30 (Reception)
Monday, January 13	08:30–17:00
Tuesday, January 14	08:30–12:00

Teardown:

Tuesday, January 14	12:00–17:00

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

If you requested a Certificate of Attendance on your registration form, it will be included in your badge packet. If you did not request a certificate and need one, please come to the registration desk.

Currency

The dollar is the legal tender in the United States. There are NO exchange bureaus in the Reno/Tahoe airport, so we recommend that you exchange currency in a major international airport, such as JFK, O'Hare, San Francisco, or Denver. However, most people choose to only carry small amounts of cash within Reno and prefer to use either a credit card or debit card where possible.

Message Board

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 Rose A.

Dining and Entertainment

With nine restaurants and seven bars on the property, you will not have to leave the Nugget to dine or get reacquainted with friends. Trader Dick's features Polynesian and American cuisine; Steakhouse Grill serves choice prime rib, filet mignon, or the fresh catch of the day; and Orozko has wine tasting on Thursdays. You will also find Rosie's Cafe, where you can check out the Awful, Awful Burger; the Noodle Hut; Gabe's Pub & Deli; and Starbuck's Coffee. Check the Nugget website for early-bird specials and activities.

Services and Amenities

John Ascuaga's Nugget features over 1,500 hotel rooms in two luxurious hotel towers, East and West, where every room offers a breathtaking view of the Sierra Nevada mountains and valley. All hotel rooms have free wi-fi. John Ascuaga's Nugget offers a wide array of hotel amenities to meet all your needs, including the year-round indoor Atrium Pool, an on-site wedding chapel, a full-service salon and spa, a fitness center located next to the Atrium Pool, eight award-winning restaurants, Starbucks Coffee located in the lobby, a business center located on the 2nd floor, the Skywalk Arcade, and one of the area's largest gift shops located on the lower level.

Program

Wednesday, January 8

12:00–18:00 IETS Board of Governors meeting (Washoe)

Thursday, January 9

08:00–18:00 IETS Board of Governors meeting (Washoe)

Friday, January 10

09:00–18:00 HASAC Research Subcommittee meeting (Fremont)
12:00–17:00 Commercial exhibit setup (Rose A)
12:00–15:00 W2171 Annual Meeting (Donner)
15:00–17:00 IETS Foundation Board of Trustees meeting (Carson)
16:00–19:00 Registration (Rose A Foyer)

Saturday, January 11

07:00–18:00 Registration (Rose A Foyer)
08:00–17:00 Commercial exhibit setup and poster setup (Rose A)
08:00–17:00 Preconference Symposium: Practical Advances in Embryo Technologies (see page 48 for full program)

- *In Vitro* Embryo Production in Cattle (Pavilion CD)
- Ultrasound-Associated Technologies (Valet Parking Garage)
- Embryo Grading and Manipulation Technologies (Pavilion B)
- New Techniques/Technologies in Embryo Cryopreservation (Pavilion E)
- Current Developments in Semen Technologies (Pavilion A)

17:00–18:00 IETS student group (The Morulas) Organizational meeting (Donner)
18:00–19:00 Morulas student mixer (Casino Bar Crawl)

Sunday, January 12

06:30–08:00 Poster setup (Rose A)
07:00–08:25 HASAC Food Safety Subcommittee meeting (Fremont)
07:00–18:00 Registration (Rose A Foyer)
07:00–08:30 Past Presidents' Breakfast (Genoa)
07:00–08:30 Student Competition presenters' breakfast with Foundation Education Committee (Tahoe)
07:00–08:30 IETS Foundation Education Committee meeting (Donner)
10:00–19:30 Commercial exhibition (Rose A)
08:30–08:40 Opening and welcome—James Murray, Pablo Ross, and Matt Wheeler (Celebrity Showroom)
08:40–09:00 Forty years of IETS: George Seidel and John Hasler (Celebrity Showroom)

Advancing Embryo Technologies in the Genomic Era

Session I: Genetics and genomics of animal reproduction (Celebrity Showroom)

Session Co-Chairs: Jorge Piedrahita, North Carolina State University, and
Heiner Niemann, Institute of Farm Animal Genetics

Sponsored by ICPbio Reproduction

09:00–09:45 Genetic control of reproduction in dairy cows
Stephen Butler, Teagasc, Ireland

09:45–10:30 Reproductive technologies and genomic selection in dairy cattle
Claire Ponsart, UNCEIA, France

10:30–11:00 Refreshment break/poster exhibit and exhibition

IETS Foundation Student Competition Presentations (Rose B)

Session Co-Chairs: Kenneth R. Bondioli, Louisiana State University, and
Charles F. Rosenkrans, University of Arkansas

11:00 Autocrine communication between bovine embryos cultured in Primo Vision® dishes outweighs possible negative influences of bad embyos
E. Wydooghe, L. Vandaele, and A. Van Soom (Abstract #1)

11:10 Specific fatty acid follow-up reveals rumen-protected fat supplementation effects on bovine oocyte quality and embryo development
A. F. González-Serrano, C. R. Ferreira, V. Pirro, J. Heinzmann, K.-G. Hadeler, D. Herrrmann, P. Aldag, U. Meyer, M. Piechotta, C. Rohrer, G. Jahreis, S. Dänicke, R. G. Cooks, and H. Niemann (Abstract #2)

11:20 Application of laparoscopic oviductal artificial insemination for conservation management of Brazilian ocelots and Amur tigers
C. A. Lambo, H. L. Bateman, and W. F. Swanson (Abstract #3)

11:30 Production of 11β-hydroxysteroid dehydrogenase type 1 (11β-HSD1) over-expressed pigs for the study of metabolic syndrome disease
Y. Jeon, Y. K. Kim, J. D. Yoon, L. Cai, S. U. Hwang, E. Kim, S. Lee, E. B. Jeung, and S. H. Hyun (Abstract #4)

11:40 Disruption of the high mobility group AT-hook2 (*HMGA2*) gene in swine reduces postnatal growth
J. Chung, X. Zhang, B. Colins, K. Howard, S. Simpson, C. Salmon, S. Koh, R. Sper, C. Byrd, and J. Piedrahita (Abstract #5)

11:50 Gene expression analysis of *in vivo*- and *in vitro*-matured porcine metaphase II oocytes
L. Cox, G. Saunders, J. Stevens, and S. C. Isom (Abstract #6)

12:30–14:00 Lunch break
12:30–14:00 IETS Board lunch with affiliate society representatives (Washoe)
12:30–14:00 HASAS Forms and Certificates Subcommittee meeting (Pavilion A)
12:30–13:30 Morulas and Mentors luncheon (Genoa)

Session II: Molecular aspects of embryonic development (Rose B)

Session Co-Chairs: Pat Lonergan, University College Dublin, and
Charles Long, Texas A&M University

14:00–14:45 Molecular signatures of bovine embryo developmental competence
Michael Hölker, University of Bonn, Germany

14:45–15:30 Embryotropic actions of follistatin: Paracrine and autocrine mediators of oocyte competence and embryo developmental progression
George Smith, Michigan State University, USA

15:30–16:00 Refreshment break/poster exhibit and exhibition (Rose A)

16:00–18:00 Concurrent forums

16:00–18:00 **Practitioners' forum (Rose B)**
Chair: Peter Hansen
Implementation of IVF programs in commercial farms: New opportunities in the genomic era.
Patrick Blondin, L'Alliance Boviteq, Canada; Osamu Dochi, Rakuno Gakuen University, Japan; Flavio Meirelles, Universidade de São Paulo, Brazil; Knut Roschlau, Masterrind GmbH, Germany

16:00–18:00 **CANDES forum (Pavilion E)**
Chairs: Naida M. Loskutoff and Gabriela Mastromonaco

16:00–16:30 Understanding and controlling the reproduction of nontraditional animal species—Progress and prospect
Pierre Comizzoli, Smithsonian Conservation Biology Institute, USA

Presentations from selected abstracts

16:30–16:45 Development of a sperm cryopreservation protocol for the Argentine black and white tegu (*Tupinambis merianae*)
C. Young, M. Curtis, N. Ravida, F. Mazotti, and B. Durrant (Abstract #109)

16:45–17:00 Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*) embryos produced using somatic cell nuclear transfer
T. Stroud, T. Xiang, S. Romo, and M. E. Kjelland (Abstract #38)

17:00–17:15 Ovarian down-regulation with oral progestin for fixed-time laparoscopic oviductal artificial insemination with freshly collected and frozen-thawed spermatozoa in domestic cats
W. F. Swanson, J. Newsom, L. A. Lyons, R. A. Grahn, and H. L. Bateman (Abstract #58)

17:15–17:30 Expression of oviduct-specific glycoprotein in the canine oviduct during the periovulatory period
C. Marnier, M. Saint-Dizier, M. Z. Tahira, S. Chastant-Maillard, and K. Reynaud (Abstract #148)

17:30–17:45 Genetic inactivation of the SRY gene in Argali wild and Romney domestic sheep with CRISPR-CAS systems for producing sex-reversed female animals
Z. Fan, S. Lee, H. Park, K. Lucibello, Q. Meng, I. Polejaeva, K. White, T. Bunch, and Z. Wang (Abstract #107)

17:45–18:00 Transplantation of SSEA-1+ and SSEA-4+ spermatogonial cell subpopulations in untreated sexually immature domestic cats
R. H. Powell, J. L. Galiguis, Q. Qin, M. N. Biancardi, S. P. Leibo, C. E. Pope, G. Wang, and M. C. Gómez (Abstract #201)

Sunday, January 12 (continued)

18:00–19:30 Welcome reception (Rose A)
Sponsored by Professional Embryo Transfer Supply Inc. (PETS)

Monday, January 13

07:30–16:00 Registration (Rose A Foyer)
07:30–09:30 HASAC Regulatory Subcommittee meeting (Donner)
08:30–17:00 Commercial exhibits (Rose A)

Concurrent short presentations from submitted abstracts

08:00–09:00 Artificial Insemination/Male Physiology (Rose B)
Chair: Richard Pursley, Michigan State University

08:00 Estral response and fertility in dairy cows treated with progesterone for 6 days prior to estrus synchronization with PGF2α
J. Hernandez-Ceron (Abstract #7)

08:10 Synchronization of ovulation in dairy heifers using a shortened estradiol-based protocol that provides for a lengthened proestrus
G. Bo (Abstract #8)

08:20 Strategies to modulate the peri-ovulatory endocrine milieu by controlling progesterone concentrations pre- and post-insemination in beef cows
G. Pugliesi (Abstract #11)

08:30 Motility characteristics of spermatozoa from bulls grazing tall fescue pastures
J. P. Harris (Abstract #13)

08:40 Development of an *in vitro* bioluminescent sperm binding assay: Preliminary data
R. C. Youngblood (Abstract #149)

08:50 Serum testosterone concentrations in bulls supplemented with rumen-protected fat and or antioxidants
R. Sartori (Abstract #150)

08:00–09:00 Somatic Cell Nuclear Transfer/Embryo Micromanipulation (Pavilion B)
Chair: Marcelo Bertolini, University of Fortaleza

08:00 Oxamflatin treatment enhances nuclear reprogramming by inhibiting XIST expression and reducing DNA methylation in porcine SCNT embryos
J. Mao (Abstract #22)

08:10 *In vivo* exogenic organ generation with organogenesis-disabled cloned pigs as a platform
H. Matsunari (Abstract #26)

08:20 Production of a cloned foal using mitochondrial DNA-identical oocytes
Y. H. Choi (Abstract #33)

08:30 Efficient bovine embryo splitting for gene expression and *in vivo* development studies
L. Rodriguez-Alvarez (Abstract #94)

08:40 A novel method to increase the developmental potential of activated oocytes by using Zn^{2+} chelator TPEN
K. Lee (Abstract #151)

08:50 Improvement of intracytoplasmic sperm injection mediated transgenesis (TM-ICSI) using bull sperm pre-treated with heparin and glutathione
N. G. Canel (Abstract #218)

08:00–09:00 Oogenesis/Oocyte Maturation (Pavilion CD)
Chair: Rebecca Krisher, National Foundation for Fertility Research

08:00 The chacteristics of corpus luteum size, blood flow and plasma progesterone concentration after ovulation of the first and second wave dominant follicle
R. Miura (Abstract #116)

08:10 Mitochondrial dynamics in pre- and post-pubertal pig oocytes before and after *in vitro* maturation
H. S. Pedersen (Abstract #152)

08:20 The effect of zinc on porcine *in vitro* maturation and subsequent embryonic development after *in vitro* fertilization
S.-H. Hyun (Abstract #154)

08:30 Effect of cAMP modulators on *in vitro* maturation of bovine oocytes
S. E. Farmer (Abstract #160)

08:40 Maturation of bovine oocytes in poly (dimethylsiloxane) microwells and their subsequent development following *in vitro* fertilization
K. Saeki (Abstract #166)

08:50 Inhibition of bovine oocyte cumulus cell progesterone synthesis during *in vitro* maturation affects chromosome alignment and spindle integrity in fertilized eggs and early embryos
T. Fair (Abstract #168)

08:00–09:00 Stem Cells/Transgenesis (Pavilion E)
Chair: Dimitrios Rizos, INIA

08:00 Isolation and characterization of bovine endometrial stem cells
F. O. Castro (Abstract #184)

08:10 Bovine amniotic fluid mesenchymal stem cells characterization after culture *in vitro*
B. Rossi (Abstract #186)

08:20 Identification and characterization of Oct4-EGFP expressing cells in transgenic pig testis
M. Nowak-Imialek (Abstract #192)

08:30 Live piglets generated by SCNT following targeting of a porcine enhanced green fluorecent protein line mediated by zinc finger nucleases to establish cloned hygromycin resistant primary cell lines suitable for Cre-mediated recombinase-mediated cassette exchange
I. Lagutina (Abstract #215)

08:40 Production of a gonadotropin-releasing hormone II receptor knockdown swine line
B. White (Abstract #217)

08:50 Length of donor DNA homology to facilitate bi-allelic gene targeting during TALEN-mediated gene targeting
B. P. Beaton (Abstract #220)

09:00–10:30 Poster Session I/exhibition (Rose A)

Concurrent Session

Session III: Novel imaging approaches for predicting reproductive outcomes (Rose B)

Session Co-Chairs: Kei Imai, Rakuno Gakuen University, and Peter Bols, University of Antwerp

10:30–11:15 Ultrasound biomicroscopy: A non-invasive approach for *in vivo* evaluation of oocytes and small antral follicles in mammals
Gregg Adams, University of Saskatchewan, Canada

11:15–12:00 Morphometric analysis of human embryos to predict developmental competence
Søren Ziebe, University Hospital of Copenhagen, Denmark

Concurrent Session

Session IV: Advances in genetic modifications of livestock species (Pavilion E)

Session Co-Chairs: Carol Keefer, University of Maryland, and Irina Polejaeva, Utah State University

10:30–11:15 Role of stem cells in large animal genetic engineering in the TALENs-CRISPR era
Bhanu Telugu, University of Maryland, USA

11:15–12:00 Editing livestock genomes with site-specific nucleases
Dan Carlson, Recombinetics, USA

12:00–13:30 Lunch break

12:00–13:30 IETS Data Retrieval Committee meeting (Fremont)

12:00–13:30 Morulas Career luncheon (Washoe)
Sponsored by CSIRO Publishing

Concurrent Think-Tanks

13:30–15:00 Current advances in ovarian stimulation in livestock species (Rose B)

Sponsored by Bioniche Animal Health (Global)

13:30 Introduction
Reuben Mapletoft, University of Saskatchewan

13:35 Recruitment of a follicle wave with superstimulation in the face of a dominant follicle
Richard Pursley, Michigan State University

13:50 The use of eCG to improve FSH-induced superovulation—Follicle breakthrough and superovulation with a lengthened superstimulation treatment protocol
Gabriel Bo, IRAC

14:05 The effect of a lengthened Folltropin treatment protocol on superovulatory response
Alvaro Garcia Guerra, University of Wisconsin

14:20 The effect of lengthened superstimulatory protocols on ovarian response, oocyte quality and granulosa cell gene expression
Fernando Dias, University of Saskatchewan

14:35 General discussion

13:30–15:00 DABE Think-Tank (Pavilion E)
Chair: Fulvio Gandolfi

Poul Hyttel and Fulvio Gandolfi will introduce the persistent difficulties and occasional success in obtaining reliable pluripotent domestic animal stem cells or deriving fully differentiated and functional cells from ESC or iPS with no risk of tumorigenic transformation in all species. This scenario makes it appropriate to consider whether or not pluripotent stem cells have still a role to play in research, therapy and drug development or alternatives such as cell conversion should be embraced.

15:00–15:45 Poster exhibit and exhibition (Rose A)
15:45–16:00 John Ascuaga address to IETS (Rose B)
16:00–16:30 IETS Distinguished Service Award Presentation (Rose B)
16:30–17:30 IETS Business Meeting (Rose B)
17:30–18:00 Domestic Animal Biomedical Embryology (DABE) Open Meeting (Rose B)
18:00–19:00 Companion Animal, Non-Domestic, and Endangered Species (CANDES) Open Meeting (Pavilion E)
18:00–19:00 Health and Scientific Advisory Committee (HASAC) Open Meeting (Rose B)

Tuesday, January 14

06:30–08:00 Organizational meeting of the IETS Board of Directors (Washoe)
08:00–15:00 Registration (Rose A Foyer)

Concurrent short presentations from submitted abstracts

08:00–09:00 Cryopreservation (Rose B)
Chair: Elizabeth Maga, University of California-Davis

08:00 Hypothermic storage for 10 days of bovine embryos using type III antifreeze protein
A. Ideta (Abstract #46)

08:10 Effects of lipid metabolic regulators during bovine embryo culture on blastocyst development and cryosurvival
A. Ruiz (Abstract #48)

08:20 Practical application of the hollow fiber vitrification method for cryopreservation of mammalian embryos
A. Uchikura (Abstract #49)

08:30 Relationship between blastocyst cell number at embryo transfer and conceptus elongation on Day 14: Can supplementary progesterone rescue small embryos?
L. O'Hara (Abstract #76)

08:40 Oviduct-embryo interactions: Two-way traffic or a one-way street? Transcriptomic response of the bovine oviduct to the presence of an embryo
V. M. Sevilla (Abstract #77)

08:50 Blastocoele collapse improves post thaw survival of slow frozen and vitrified *in vitro*-produced bovine embryos
J. P. Barfield (Abstract #136)

08:00–09:00 Developmental Biology/Gene Expression (Pavilion B)

Chair: Christine Wrenzycki, Justus-Liebig-University Giessen

08:00 Epigenetic remodeling of histone 3 marks during bovine preimplantation development
Y. S. Bogliotti (Abstract #68)

08:10 Sex-specific developmental programming of the bovine embryo by colony stimulating factor 2 (CSF2)
K. B. Dobbs (Abstract #93)

08:20 Expression profiling of non-coding microRNAs in bovine granulosa cells of preovulatory dominant follicle using deep sequencing
D. Tesfaye (Abstract #113)

08:30 Expression of steroid receptors in the cumulus oocyte complex around ovulation in the bitch
K. Reynaud (Abstract #121)

08:40 Suppression of epigenetic modifiers alters the bovine embryonic developmental program during *in vitro* culture
M. D. Snyder (Abstract 122)

08:50 Changes in expression of genes associated with genetic variation in preimplantation development of the bovine embryo
M. S. Ortega (Abstract #123)

08:00–09:00 *In Vitro* Embryo Production (Pavilion CD)

Chair: Clay Isom, Utah State University

08:00 Development of a synthetic medium for the *in vitro* culture of bovine embryos
D. Moreno (Abstract #80)

08:10 Vitamin K2 supplementation improves blastocyst rate by recovery of mitochondria *in vitro* cultured bovine embryos
L. Baldoceda (Abstract #83)

08:20 Effect of replacing fetal bovine serum by different growth factors in the preimplantation development of bovine embryos generated by *in vitro* fertilization
R. Felmer (Abstract #134)

08:30 Effects of X-sorted sperm in quality of bovine blastocyst derived from *in vivo* matured oocyte
K. Imai (Abstract #137)

08:40 Effect of high and low antral follicle count in pubertal beef heifers on *in vitro* fertization
C. C. Chase Jr. (Abstract #142)

08:50 Effect of different fertilization media on *in vitro* bovine embryo development using flow-cytometrically sorted female sperm
L. B. Ferré (Abstract #177)

08:00–09:00 Superovulation/Embryo Transfer (Pavilion E)
Chair: Alex Souza, University of California

08:00 Risk of transmission of *Coxiella burnetii* by embryo transfer of *in vitro* early bovine embryos
F. Fieni (Abstract #101)

08:10 Failure to remove bluetongue serotype 8 virus (BTV-8) from *in vitro*-produced bovine embryos
A. O. Penido (Abstract #104)

08:20 Superovulatory response and embryo production in Holstein cows fed diets enriched in oleic, linoleic or α-linolenic acid
R. Salehi (Abstract #208)

08:30 Factors affecting superovulation response in cattle: A retrospective study
C. Cabrera (Abstract #210)

08:40 Effect of a low dose of eCG on superovulation and embryo collection in wood bison during the breeding season
J. M. Palomino (Abstract #212)

08:50 The effect of β-mercaptoethanol on cleavage rates, developmental competence and quality of *in vitro* produced bovine embryos
E. Rosa (Abstract #84)

09:00–12:00 Commercial exhibits (Rose A)
09:00–10:30 Poster Session II/exhibition (Rose A)

Session V: Cryopreservation of sperm and embryos (Rose B)

Session Co-Chairs: Stuart Meyers, University of California-Davis, and
Fidel Ovidio Castro, Universidad de Concepcion

10:30–11:15 Directional freezing of spermatozoa and embryos
Amir Arav, CoreDynamics, Israel

11:15–12:00 Mammalian fertility preservation through cryobiology: Value of classical comparative studies and the need for new preservation options
George Pierre Comizzoli, Smithsonian Conservation Biology Institute, USA

12:15–13:00 12th IETS annual running competition (Victorian Plaza Circle)
12:00–17:00 Commercial exhibit and poster teardown (Rose A)
12:15–14:00 Lunch break
12:15–14:00 Organizational lunch meeting of the IETS Foundation (Tahoe)
12:15–14:00 2014, 2015, 2016 IETS Program Committee Lunch (Washoe)

Tuesday, January 14 (continued)

14:00–16:00 Awards presentations

14:00–14:30 IETS Foundation Student Competition Awards, CANDES, DABE, and HASAC Updates (Pavilion CDE)

14:30–15:30 IETS Pioneer Award Presentation (Pavilion CDE)

Session VI: Keynote Address (Pavilion CDE)

Session Co-Chairs: Cesare Galli, AVANTEA, and Ciro Barros, University of São Paulo State

16:00–16:45 Parental diet, pregnancy outcomes and offspring health: Metabolic determinants in developing oocytes and embryos
Kevin Sinclair, University of Nottingham, United Kingdom

16:45–17:00 Closing ceremony (Pavilion CDE)

19:00–24:00 Closing party (Ponderosa Ballroom)

The Program Co-Chairs Acknowledge and Thank the Following People

Section Editors

Ken Bondioli, Charles Rosenkrans, *Student Competition*
Richard Pursley, *Artificial Insemination*
Jorge Piedrahita, *Cloning/Nuclear Transfer*
Stuart Meyers, *Cryopreservation*
Erdogan Memili, *Developmental Biology*
Olivier Sandra, *Early Pregnancy/Pregnancy Recognition*
Alfonso Gutiérrez-Adán, *Embryo Culture*
Marcelo Bertolini, *Embryo Manipulation*
Osamu Dochi, *Embryo Transfer*
Ann Van Soom, *Epidemiology/Diseases*
Naida Loskutoff, *Exotic Species*
Trudee Fair, *Folliculogenesis/Oogenesis*
Christine Wrenzycki, *Gene Expression*
Cesare Galli, *IVF/IVP*
Patrick Blondin, *Male Physiology*
Daniel Salamone, *Oocyte Activation*
Rebecca Krisher, *Oocyte Maturation*
Ken White, *Sexing*
Katrin Hinrichs, *Sperm Injection*
Ramiro Alberio, *Stem Cells*
Manoel Sa Filho, *Superovulation*
Irina Polejaeva, *Transgenesis*
Ken Bondioli, *Undergraduate Poster Competition*

Manuscript and Abstract Reviewers

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Gary B. Anderson
Cheryl Ashworth
Ki Aston
Fernanda Alvarenga
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Esmail Behboodi
Luciana Relly Bertolini
Jeff Betthauser
Dean Betts
Zeki Beyhan
Andrzej Bielanski
Rafael Bisinotto
Patrick Blondin
Gabriel Bo
Peter Bols
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Stephen P. Ford
Fabiana Forell
Rob Foss
Paul Fricke
Cesare Galli
Fulvio Gandolfi
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Irina Polejaeva
Earle Pope
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Jaswant Singh
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Tamas Somfai
Nucharin Songsasen
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Mark Tizard
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Paul Verma
João Henrique M. Viana
Patrick Vincent
Siobhan Walsh
Zhongde Wang
Nisar A. Wani
David Wells
Matthew Wheeler
Eckhard Wolf
Christine Wrenzycki
Boo Keun Yang
Jianbo Yao
Ye Yuan

Poster Session Information

Location

Posters are located in Rose A (second floor) of the Nugget Hotel (see map on page 3).

Poster Numbers

Posters are identified by the number corresponding to the abstract number in *Reproduction, Fertility and Development* 2014; 26(1). Numbering of the posters begins at 1 and ends at 226.

Setup

Posters can be put up from 08:00 to 17:00 on Saturday, January 11, 2014, and from 06:30 to 08:00 on Sunday, January 12, 2014. 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 in *Reproduction, Fertility and Development* 2014; 26(1), the Student Competition finalist, and Undergraduate finalist poster presentations will take place Monday, January 13, 2014, from 09:00 to 10:30.

Poster Session II

Presentations by authors of even-numbered abstracts in *Reproduction, Fertility and Development* 2014; 26(1) will take place Tuesday, January 14, 2014, from 09:00 to 10:30.

Teardown

Poster teardown must take place from 12:00 to 17:00 Tuesday, January 14, 2014. Posters that are not taken down by 17:00 on Tuesday will be removed and discarded.

Poster Session Order by Topic

Poster number = abstract number in *Reproduction, Fertility and Development* 2014; 26(1)

Graduate Student Competition

1 Autocrine communication between bovine embryos cultured in Primo Vision® dishes outweighs possible negative influences of bad embryos
E. Wydooghe, L. Vandaele, and A. Van Soom

2 Specific fatty acid follow-up reveals rumen-protected fat supplementation effects on bovine oocyte quality and embryo development
A. F. González-Serrano, C. R. Ferreira, V. Pirro, J. Heinzmann, K.-G. Hadeler, D. Herrrmann, P. Aldag, U. Meyer, M. Piechotta, C. Rohrer, G. Jahreis, S. Dänicke, R. G. Cooks, and H. Niemann

3 Application of laparoscopic oviductal artificial insemination for conservation management of Brazilian ocelots and Amur tigers
C. A. Lambo, H. L. Bateman, and W. F. Swanson

4 Production of 11β-hydroxysteroid dehydrogenase type 1 (11β-HSD1) over-expressed pigs for the study of metabolic syndrome disease
Y. Jeon, Y. K. Kim, J. D. Yoon, L. Cai, S. U. Hwang, E. Kim, S. Lee, E. B. Jeung, and S. H. Hyun

5 Disruption of the high mobility group AT-hook 2 (*HMGA2*) gene in swine reduces postnatal growth
J. Chung, X. Zhang, B. Colins, K. Howard, S. Simpson, C. Salmon, S. Koh, R. Sper, C. Byrd, and J. Piedrahita

6 Gene expression analysis of *in vivo*- and *in vitro*-matured porcine metaphase II oocytes
L. Cox, G. Saunders, J. Stevens, and S. C. Isom

Artificial Insemination

7 Oestral response and fertility in dairy cows treated with progesterone for 6 days prior to oestrus synchronization with prostglandin $F_{2\alpha}$
M. Orozco, C. G. Gutierrez, R. Lopez, C. Aguilar, C. Roque, and J. Hernandez-Ceron

8 Synchronization of ovulation in dairy heifers using a shortened estradiol-based protocol that provides for a lengthened proestrus
M. Re, J. J. de la Mata, and G. A. Bo

9 Effect of timing of insemination with sorted semen on subsequent pregnancy rate in postpartum beef cows synchronized with a modified 14-day progesterone protocol
A. J. Davis, J. G. Powell, T. D. Lester, and R. W. Rorie

10 Influence of administration of human chorionic gonadotropin on Day 4 after fixed-time AI on corpus luteum size, function, and pregnancy rate in beef cows
J. B. S. Borges and D. X. Thedy

11 Strategies to modulate the peri-ovulatory endocrine milieu by controlling progesterone concentrations pre- and post-insemination in beef cows
G. Pugliesi, E. Lopes, A. M. G. Diaza, M. R. França, R. S. Ramos, E. R. Araujo, M. Sponchiado, S. C. Scolari, M. L. Oliveira, J. R. G. Maio, and M. Binelli

12 Intrauterine chitosan injection advances the oestrous return date after delivery in Japanese Black cows
T. Aoyama, T. Nokubo, and H. Funahashi

13 Motility characteristics of spermatozoa from bulls grazing tall fescue pastures
J. P. Harris, J. L. Edwards, L. A. Rispoli, N. R. Rorhbach, T. M. Prado, A. M. Saxton, and F. N. Schrick

14 Conception rate of buffalo heifers treated with oestradiol cypionate to induce ovulation in timed artificial insemination programs
D. G. Souza, A. Martins, Jr., E. Oba, A. S. Camargos, E. P. Moreira, and C. Gallego

15 Thermoresistance sperm test for epididymal stallion sperm frozen with two cryoprotectants
E. Mellisho, R. Olmos, E. Ancco, H. Celiz, and C. Quispe

16 Sperm distribution after laparoscopic intrauterine insemination of frozen goat semen
N. Anakkul, J. Suwimonteerabutr, T. Tharasanit, S. Khunmanee, P. Diloksumpan, D. K. Berg, and M. Techakumphu

17 Testicular histopathological characteristics of rams treated with low-level laser therapy: Preliminary results
M. R. Bianchi-Alves, E. C. C. Celeghini, R. P. de Arruda, A. F. C. De Andrade, L. Batissaco, M. A. Torres, S. A. Florez-Rodriguez, G. M. Ravagnani, H. E. Thomé, and C. L. Canella

Cloning/Nuclear Transfer

18 Developmental competence of cloned porcine embryos produced with different cloning procedures
Y. Liu, A. Lucas-Hahn, B. Petersen, R. Li, P. Hassel, M. Ziegler, J. Li, K. Larsen, H. Niemann, and H. Callesen

19 Lifetime mortality of cloned piglets
M. Schmidt, K. D. Winther, and H. Callesen

20 Generation and characterization of transgenic-cloned pigs expressing the far-red fluorescent protein monomeric plum
M. Kobayashi, M. Watanabe, H. Matsunari, K. Nakano, T. Kanai, G. Hayashida, Y. Matsumura, M. Kuramoto, R. Sakai, Y. Arai, K. Umeyama, N. Watanabe, M. Onodera, M. Nagaya, H. Nagashima

21 Site-specific recombination using Dre-recombinase in porcine cells and embryos
S. Y. Yum, S. J. Kim, J. H. Moon, W. J. Choi, J. H. Lee, B. C. Lee, and G. Jang

22 Oxamflatin treatment enhances nuclear reprogramming by inhibiting XIST expression and reducing DNA methylation in porcine somatic cell nuclear transfer embryos
J. Mao, M. T. Zhao, K. M. Whitworth, L. D. Spate, K. Lee, E. M. Walters, and R. S. Prather

23 Improving efficiency in work with transfer of cloned pig embryos
H. Callesen, Y. Liu, R. Li, and M. Schmidt

24 Improvement of porcine cloned embryonic stem-like cells derivation by zona-mediated embryo aggregation
D. K. Lee, C.-H. Park, Y.-I. Jeong, J. Y. Hwang, J.-N. Oh, D. Son, and C.-K. Lee

25 Porcine oocytes selection using brilliant cresyl blue and embryo development after somatic cell nuclear transfer
E. J. Park, K. Y. Song, J. H. Moon, and B. C. Lee

26 *In vivo* exogenic organ generation with organogenesis-disabled cloned pigs as a platform
H. Matsunari, K. Nakano, T. Kanai, T. Matsuda, M. Maehara, M. Watanabe, K. Umeyama, M. Nagaya, H. Nakauchi, and H. Nagashima

27 Somatic cell nuclear transfer cloning and embryo aggregation in pigs
C. P. Buemo, A. Gambini, I. Hiriart, and D. Salamone

28 Treatment with suberoylanilide hydoxamic acid or sodium butyrate on porcine somatic cell nuclear transfer embryos derived from kidney cells of human heme oxygenase-1 transgenic pig
K.-Y. Song, J.-H. Moon, E.-J. Park, S.-J. Kim, Y.-B. Choi, G. Jang, and B.-C. Lee

29 Generation of transgenic fibroblasts expressing pancreas-specific and DOX-inducible ICER Iγ in a miniature pig model of human diabetes mellitus
H. Y. Kang, E. M. Jung, and E. B. Jeung

30 A transcription activator-like effector nuclease (TALEN)-mediated universal gene knock-in strategy for mammary glands-specific expression of recombinant proteins in dairy cattle
S. Lee, H. Park, I. Kong, and Z. Wang

31 Protocol optimization and evaluation of maturation promoting factor and mitogen-activated protein kinase activities in bovine cytoplasts obtained by chemical enucleation techniques
N. Z. Saraiva, C. S. Oliveira, M. del Collado, M. R. de Lima, R. Vantini, F. M. Monteiro, S. C. M. Niciura, and J. M. Garcia

32 Pregnancy of equine cloned embryos microinjected with pluripotency inducing genes (*OCT4*, *SOX2*, *C-MYC, K1F4*)
R. Olivera, R. Jordan, C. Alvarez, M. Radrizzani, and G. Vichera

33 Production of a cloned foal using mitochondrial DNA-identical oocytes
Y. H. Choi, J. Ritthaler, and K. Hinrichs

34 Effect of donor cells serum starvation on the development of aggregated zona-free cloned equine embryos
A. Gambini, A. De Stefano, R. J. Bevaqua, and D. F. Salamone

35 Learning and memory behavioral patterns in cloned dogs
C. W. Shin, W. J. Park, L. T. Baek, K. Y. Park, G. A. Kim, and B. C. Lee

36 Effect of activation methods on DNA synthesis and development of canine parthenogenetic embryos
H. J. Oh, M. J. Kim, G. A. Kim, Y. K. Jo, J. Choi, and B. C. Lee

37 Restoring reprogramming abnormalities in a cloned dog having ectopic liver and gall bladder by recloning
M. J. Kim, H. J. Oh, G. A. Kim, Y. K. Jo, J. Choi, and B. C. Lee

38 Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*) embryos produced using somatic cell nuclear transfer
T. Stroud, T. Xiang, S. Romo, and M. E. Kjelland

39 Effect of follicular size of cytoplast donor on cloning efficiency in goats
J. Hall, M. Yang, Q. Meng, J. Dai, and I. A. Polejaeva

40 Knockout of goat nucleoporin 155 (*NUP155*) gene using CRISPR/CAS9 systems
S. Hu, Z. Wang, and I. Polejaeva

41 Efficient strategy for interspecific cloning in felids
L. N. Moro, M. I. Hiriart, J. Jarazo, C. Buemo, A. Sestelo, and D. F. Salamone

42 Effects of trichostatin A treatment on gene expression of cloned mouse 2-cell and blastocyst stage embryos
S. L. Marjani, M. G. Carter, L-Y. Sung, K. Inoue, S. Rodriguez-Zas, L. Wang, H. Yu, H. Shen, T. Cheng, X. Yang, and X. C. Tian

Cryopreservation/Cryobiology: Cryopreservation of gametes and reproductive tissues

43 Warming temperature affects the viability and meiotic competence of immature porcine oocytes vitrified in a chemically defined solution
D. Takahashi and H. Funahashi

44 Production of live piglets after cryopreservation of immature porcine oocytes
T. Somfai, K. Kikuchi, K. Yoshioka, F. Tanihara, H. Kaneko, J. Noguchi, S. Haraguchi, and T. Nagai

45 Effect of vitrification on kidding of caprine embryos
M. M. Toishibekov, H. Blackburn, G. A. Valieva, S. M. Askarov, and B. B. Molzhigitov

46 Hypothermic storage for 10 days of bovine embryos using type III antifreeze protein
A. Ideta, S. Tsuda, Y. Nishimiya, K. Tsuchiya, Y. Nakamura, and Y. Aoyagi

47 Comparison between cryoloop and open pulled straw vitrification methods for Bos indicus blastocysts
E. Herrera-Puerta, N. Chavarria, R. Urrego, and N. Rodriguez-Osorio

48 Effects of lipid metabolic regulators during bovine embryo culture on blastocyst development and cryosurvival
A. Ruiz, P. J. Hansen, and J. Block

49 Practical application of the hollow fiber vitrification method for cryopreservation of mammalian embryos
A. Uchikura, T. Wakayama, S. Wakayama, H. Matsunari, M. Maehara, Y. Matsumura, K. Nakano, E. Sasaki, J. Okahara, H. Tsuchiya, H. Nakauchi, and H. Nagashima

50 Development of a modified straw loading method for vitrification of *in vitro*-produced bovine blastocysts
A.-N. Ha, H.-S. Park, K.-L. Lee, Y.-G. Kim, S.-H. Song, P.-R. Park, T. Kim, K. L. White, and I.-K. Kong

51 Artificial dormancy of bovine embryos for a maximum of 7 days using a simple medium
K. Tsuchiya, A. Ideta, Y. Nishimiya, S. Tsuda, and Y. Aoyagi

52 Vitrification of Day-8 equine expanded blastocyst: An *in vitro* comparison of direct versus indirect mechanical introduction of cryoprotectant
F. A. Diaz, D. L. Paccamonti, K. R. Bondioli, and G. T. Gentry

53 Comparison of 4 different cryoprotectants on freezing Nguni bull spermatozoa evaluated by computer-aided sperm analysis
M. M. Seshoka, M. L. Mphaphathi, and T. L. Nedambale

54 Effect of thawing temperature on post-thaw survival of boar sperm
R. Athurupana and H. Funahashi

55 Differential expression of aquaporins and spermadhesins in frozen-thawed "good freezer" and "poor freezer" boar spermatozoa
A. C. M. Filho, R. M. Brezinsky, R. C. Youngblood, L. D. M. Da Silva, S. T. Willard, P. L. Ryan, and J. M. Feugang

56 Comparison of 4 different diluent agents on cryopreservation of semen from unimproved indigenous South African goats
B. Matshaba, M. L. Mphaphathi, L. M. Schwalbach, P. C. Greyling, and T. L. Nedambale

57 Effect of cholestanol or cholesterol on the motility of frozen goat spermatozoa after a thermal resistance test
B. G. Silva, E. A. Moraes, W. C. G. Matos, C. S. Oliveira, W. D. Ferrari Junior, and J. K. Graham

58 Ovarian down-regulation with oral progestin for fixed-time laparoscopic oviductal artificial insemination with freshly collected and frozen-thawed spermatozoa in domestic cats
W. F. Swanson, J. Newsom, L. A. Lyons, R. A. Grahn, and H. L. Bateman

59 Evaluation of cryopreserved chicken semen with different cryoprotectants
J. S. Choi, D.-B. Shin, Y.-G. Ko, Y.-J. Do, H.-H. Seong, D.-H. Kim, I.-K. Kong, and S. W. Kim

60 Effect of cake collapse on the integrity of freeze-dried bull spermatozoa
H. Hara, M. Tagiri, M. Hirabayashi, and S. Hochi

61 Transgenic Huntington's disease monkey sperm has a lower cryotolerance
S. P. Moran, T. Chi, M. S. Prucha, H. R. Engelhardt, A. Yuksel, and A. W. S. Chan

62 Effects of varying glutathione concentrations in semen extender on the quality of frozen-thawed canine sperm
K. Ogata, B. Sarentonglaga, M. Yamaguchi, A. Sasaki, Y. Kato, M. Wakabayashi, K. Nishihara, Y. Yanagisawa, R. Fukui, H. Takano, and Y. Nagao

63 The effect of a modified cryopreservation method on the viability of frozen-thawed primordial germ cell on the Korean native chicken (Ogye)
H. Kim, D. H. Kim, J. Y. Han, S. B. Choi, Y.-G. Ko, Y. J. Do, and H.-H. Seong

64 Ex vivo culture of fresh and frozen-thawed sheep whole ovaries
S. Maffei, G. Pennarossa, T. A. L. Brevini, and F. Gandolfi

Developmental Biology

65 Association between aldosterone and cortisol levels during the ovulatory period in Spanish purebred mares
K. Satué, P. Montesinos, and J. C. Gardon

66 Relationship between plasma chloride levels and follicle diameter in cycling Spanish purebred mares
K. Satué, J. C. Gardon, and P. Montesinos

67 Correlation of architectural and functional reprogramming of nuclei during embryonic genome activation of early bovine embryos generated by IVF and SCNT
J. Popken, D. Koehler, A. Brero, A. Wuensch, T. Thormeyer, T. Guengoer, E. Wolf, V. Zakhartchenko, and T. Cremer

68 Epigenetic remodeling of histone 3 marks during bovine pre-implantation development
Y. S. Bogliotti, L. B. Ferré, D. J. Humpal, and P. J. Ross

69 Global H3K9AC and H3K27ME3 expression in blastomeres from 8- to 16-cell stage bovine embryos
C. S. Oliveira, N. Z. Saraiva, L. Z. Oliveira, R. V. Serapião, M. R. de Lima, and J. M. Garcia

70 Protein expression of the insulin-like growth factor 1 receptor during bovine pre-implantation embryonic development
F. Poppicht, H. Stinshoff, and C. Wrenzycki

71 Effects of a controlled dietary exposition to zeralenone on selected reproductive parameters in dairy cows
H. Stinshoff, S. Kruse, F. Poppicht, S. Dänicke, and C. Wrenzycki

72 Effects of a preconceptional and gestational multivitamin-mineral-omega-3 supplementation on fetoplacental development in a rabbit model
E. Mourier, A. Tarrade, D. Ralliard-Rousseau, T. Larcher, J.-P. Albert, M.-C. Aubrière, M. Dahirel, C. Richard, R. Lévy, and P. Chavatte-Palmer

Early Pregnancy

73 Intrauterine growth restriction after between-breed embryo transfer is associated with strong alterations in placental structure and function in horses
P. Peugnet, S. Valentino, A. Tarrade, L. Wimel, F. Reigner, D. Serteyn, and P. Chavatte-Palmer

74 Effect of size and culture period of frozen-thawed bovine trophoblastic vesicles on interferon-τ secretion
Y. Hashiyada, H. Takahashi, D. Yamaguchi, K. Imai, and M. Geshi

75 Detection of embryonic death by monitoring ovarian steroids balance and ultrasonography in japanese black cattle
H. Matsuda, Y. Hashiyada, T. Yamanouchi, and K. Imai

76 Relationship between blastocyst cell number at embryo transfer and conceptus elongation on Day 14: Can supplementary progesterone rescue small embryos?
L. O'Hara, N. Forde, A. K. Kelly, and P. Lonergan

77 Oviduct-embryo interactions: Two-way traffic or a one-way street? Transcriptomic response of the bovine oviduct to the presence of an embryo
V. Maillo, P. O'Gaora, J. P. Mehta, C. De Frutos, N. Forde, T. E. Spencer, P. Lonergan, and D. Rizos

78 The periovulatory endocrine milieu affects the oxidative stress control on endometrium of cows
R. d. S. Ramos, A. P. Izaguirry, L. M. Vargas, M. B. Soares, F. S. Mesquita, F. W. S. Cibin, and M. Binelli

79 Uterine and placental interactions during necrotic tip development in the pig from Day 22 to 42 of gestation
E. C. Wright, J. R. Miles, C. A. Lents, and L. A. Rempel

Embryo Culture

80 Development of a synthetic medium for the *in vitro* culture of ovine embryos
D. Moreno, A. Neira, L. Dubreil, L. Liegeois, S. Destrumelle, L. Amirat-Briand, D. Bencharif, and D. Tainturier

81 Effect of *in vitro* culture system modification using CR1aa medium on embryo development and pregnancy rate in cattle
G. Singina, T. Taradajnic, N. Taradajnic, and N. Zinovieva

82 Effect of high fetal calf serum concentration in the gene expression pattern of *in vitro*-produced bovine embryos
M. J. Sudano, D. M. Paschoal, E. S. Caixeta, R. R. Maziero, M. D. Guastali, L. F. Crocomo, T. S. Rascado, L. C. O. Magalhães, B. A. Monteiro, A. Martins Jr., R. Machado, J. Buratini, and F. D. C. Landim-Alvarenga

83 Vitamin K2 supplementation improves blastocyst rate by recovery of mitochondria in *in vitro*-cultured bovine embryos
L. Baldoceda, C. Vigneault, P. Blondin, and C. Robert

84 The effect of β-mercaptoethanol on cleavage rates, developmental competence, and quality of *in vitro*-produced bovine embryos
E. R. Lliteras, M. Chong, S. Andries, E. Merckx, E. P. A. Jorssen, J. L. M. R. Leroy, and P. E. J. Bols

85 The effect of 17*α*-ethinylestradiol exposure of *in vitro*-cultured bovine morulae on subsequent embryonic development and quality
E. P. A. Jorssen, L. Jordaens, E. Merckx, S. Andries, J. L. M. R. Leroy, and P. E. J. Bols

86 Simple method for emulsification of lipophilic nutrients that affect pre-implantation development of bovine embryos *in vitro*
S. Ikeda

87 Evaluation of the numerical chromosomal abnormalities on *in vitro* early bovine embryos: Effect of the cell co-culture with granulosa cells
S. Demyda-Peyrás, M. Hidalgo, J. Dorado, and M. Moreno-Millan

88 Effects of removal of cumulus cells and PB1 presence of *in vitro*-matured buffalo oocytes prior to IVF on cleavage rate and subsequent embryo development
J.-H. Shang, H.-Y. Zheng, C.-Y. Yang, F.-X. Huang, B.-Z. Yang, and X.-W. Liang

89 Concentration of zinc in fluid follicular of females horses
L. Y. Parra-Forero, G. Vela-Correa, O. Cano-Flores, G. Mendoza, S. Pulido, J. A. Guevara, A. Gongora, and A. C. Garcia-Contreras

90 Characterization of a primary culture of oviductal cells in the bitch
C. Gibson, K. Reynaud, S. Thoumire, B. Grimard, and M. Saint-Dizier

91 Effect of leukemia inhibitory factor (LIF) on maturation of porcine oocytes *in vitro* maturation and development of parthenogenetic embryos
Y. B. Choi, S. J. Kim, E. J. Park, K.Y. Song, J.H. Moon, and B.C. Lee

Embryo Manipulation

92 Effects of zona pellucida cutting by laser on the cryosurvial and hatching rates of vitrified blastocysts in buffalo (*Bubalus bubalis*)
C. Yang, J. Shang, H. Zheng, F. Huang, X. Liang, and B. Yang

93 Sex-specific developmental programming of the bovine embryo by colony stimulating factor 2 (CSF2)
K. B. Dobbs, D. Gagné, E. Fournier, I. Dufort, C. Robert, J. Block, M. A. Sirard, L. Bonilla, A. D. Ealy, and P. J. Hansen

94 Efficient bovine embryo splitting for gene expression and *in vivo* development studies
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222 Production of knockout rats by using zinc finger nucleases and TAL effector nucleases
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224 Construction of gene targeting vectors for RAG-1 and RAG-2
A. Byrne, B. Beaton, and K. Wells

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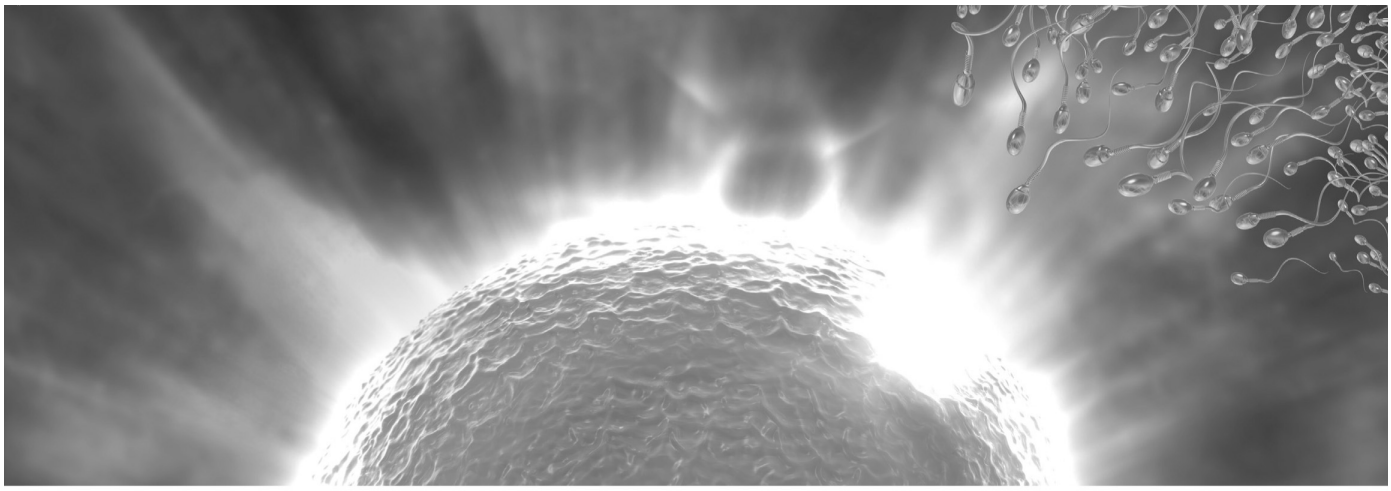
226 Human lactoferrin expressed in cow milk can extend the shelf life of milk
S. N. Lotti, A. Cooper, and J. D. Murray



BIONICHE ANIMAL HEALTH:
A GLOBAL LEADER IN ASSISTED REPRODUCTION

Bioniche Animal Health discovers, develops, manufactures and markets animal health products worldwide. Headquartered in Canada, the Company was formed in 1979 to develop vaccines and other pharmaceutical-based products for the preventative and non-antibiotic health management of animal diseases. A key area of focus for Bioniche Animal Health is enhancing reproduction performance. Bioniche Animal Health has numerous achievements in the area of assisted reproduction including;

- Manufacturing the world's leading FSH product, **Folltropin®-V**, for the superovulation of cattle.
- Being the first company to offer a USDA-approved product, **SETTLE™**, as a non-antibiotic aid in the treatment of equine endometritis.
- Representing the only FDA-approved deslorelin product, **SucroMate™ Equine**, for use as an ovulatory agent in mares.
- Developing **SYNGRO®**, the first full line of non-animal origin, embryo collection and transfer media.
- Supporting research in the field of superovulation and FTAI in cattle
- Distributing a full complement of reproductive hormones, including **Cue-Mate®**, a progesterone insert, eCG and progesterone sponges for small ruminants.
- Bringing **Cue-Mare®**, the first registered intravaginal progesterone releasing device for mares, to the market.

Bioniche Animal Health is committed to researching and developing new products and protocols to meet the changing needs of the assisted reproduction industry. Please visit our booth to learn more about our areas of research and our products.

BIONICHE ANIMAL HEALTH

www.BionicheAnimalHealth.com

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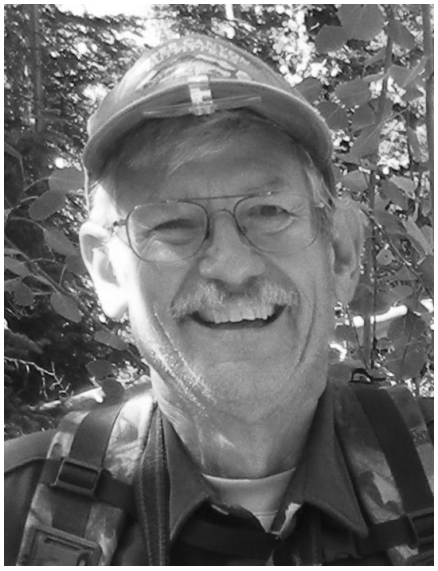
Author, Poster = abstract number in *Reproduction, Fertility and Development 2014;* 26(1)

Scan the code or visit www.iets.org/2014/ for more information on the 2014 IETS Meeting

2014 Recipient of the IETS Distinguished Service Award



Dr. John F. Hasler obtained BS and MA degrees from the University of Missouri followed by 2 years in the US Army, and then a PhD from the University of Illinois, where he studied reproduction of the collared lemming, a very seasonal breeder. One of his mentors in Illinois was Phillip Dziuk, who received the IETS Pioneer Award in 2001.

After his PhD, Dr. Hasler spent 3 years as a postdoctoral student/research associate at the Bovine Embryo Transfer Laboratory at Colorado State University, where he participated in many research projects concerning embryo transfer, including the relationship of blood progesterone concentrations and pregnancy rates in embryo transfer recipients. In 1977, he and his young family moved to Canada, where he worked in commercial embryo transfer.

In 1979, he and Dr. Alan McCauley started the company EmTran Inc. in Pennsylvania. For the next 22 years, EmTran was a dominant player in commercial embryo transfer in the United States, pioneering applications including splitting embryos, simplifying procedures for cryopreserving embryos, genotyping and sexing embryos, and especially *in vitro* fertilization, the latter resulting in the third most cited paper in the history of the journal *Theriogenology*. Procedures for improving superovulation and extensive analyses of pregnancy rates with varying asynchrony of donor/recipient estrus were studied and published. In fact, for 2 decades, the numerous publications from EmTran set the industry standard for comprehensiveness, reliability, and sharing of information. Many veterinarians worked at EmTran and EmTran West, a California branch, and a number of them subsequently established their own successful embryo transfer practices.

Dr. Hasler provided his services to IETS on numerous occasions. To date, he has never missed any of the 40 annual meetings. He served 2 terms on the Board of Governors, in each case as Secretary/Treasurer. He was chair or co-chair of 3 IETS meetings, and was an invited speaker at 6 annual meetings. He similarly served the American Embryo Transfer Association in a number of capacities, and received their Embryo Transfer Person of the Year Award in 1993. He also has represented the embryo transfer industry repeatedly by giving many dozens of talks at other meetings.

In 2001, EmTran Inc. was sold, and John and his wife, Marilyn, moved to Colorado where he was employed as director of research for the company XY Inc., which was developing practical procedures for sexing semen. In recent years, he has worked nearly full time as a technical consultant for Bioniche Inc., and he regularly writes columns for the AETA and CETA newsletters. He also continues to assist with research projects at Colorado State University on a regular basis.

Dr. Hasler is clearly an engaged proponent of our industry, who has helped in any capacity requested. He is a most worthy recipient of the 2014 IETS Distinguished Service Award.

Special Events

Morulas' (IETS Student Group) Organizational Meeting

Saturday, January 11
17:00–18:00
Donner

Morulas' Student Mixer

Saturday, January 11
18:30–20:00
Nugget Hotel

Following the Morulas' organizational meeting, all trainees are invited to gather at one of the many bars in the Nugget to start the meeting off in friendship. Hosted by IETS and the Morulas student group, this will be a great opportunity to establish a network at the start of the meeting and build the Morulas association. Student membership to IETS or the Morulas is not necessary.

Morulas and Mentor Luncheon

Sunday, January 12
12:30–13:30
Genoa

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 an opportunity to sit down with mentors in small groups providing an opportunity to interact and develop a connection with the leaders in our field. This year will be the first time a speaker panel will be held at the conclusion of the luncheon and will provide attendees an opportunity to hear about careers from representatives in academia, industry, and government (ticket required).

Practitioners' Forum

Sunday, January 12
16:00–18:00
Rose B

Implementation of IVF programs in commercial farms: New opportunities in the genomic era.

CANDES Forum

Sunday, January 12
16:00–18:00
Pavilion E

Understanding and controlling the reproduction of nontraditional animal species- Progress and prospect.

Welcome Reception

Sunday, January 12
18:00–19:30
Rose A

Sponsored by Professional Embryo Transfer Supply Inc. (PETS)

Please join us for the welcome reception. Wines, cocktails, and hors d'oeuvres will be served in the Rose A.

Morulas Career Luncheon

Monday, January 13
12:00–13:30
Washoe

Sponsored by CSIRO Publishing

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 an opportunity to sit down with mentors in small groups providing an opportunity to interact and develop a connection with the leaders in our field. This year will be the first time a speaker panel will be held at the conclusion of the luncheon and will provide attendees an opportunity to hear about careers from representatives in Academia, Industry, and Government (ticket required).

Practitioners' Think Tank

Monday, January 13
13:30–15:00
Rose B

Sponsored by Bioniche Animal Health (Global)

Current advances in ovarian stimulation in livestock species.

DABE Think Tank

Monday, January 13
13:30–15:00
Pavilion E

Is it time to reassess the use of plutipotent stem cells?

Open Meeting of the DABE Committee

Monday, January 13
17:30–18:00
Rose B

Open Meeting of the CANDES Committee

Monday, January 13
18:00–19:00
Pavilion E

Open Meeting of HASAC

Monday, January 13
18:00–19:00
Rose B

12th IETS Annual Fun Run

Tuesday, January 14
12:15–13:00
Nugget

Join us for the 12th annual fun run. Even if you choose not to participate, come and watch and cheer on the runners.

Closing Party

Tuesday, January 14
19:00–1:00
Ponderosa Ballroom

Join us for a night of good food, great conversation, fun and dancing. Mark your calendar for the closing party; the dinner fee is included in this year's registration fee, with a hosted bar for one hour.

IETS 2014 Preconference Symposium

January 11, 2014
New Developments in Embryo Technologies and Embryo Transfer Techniques

Organized by Matthew B. Wheeler, University of Illinois, and
Patrick Blondin, L'Alliance Boviteq, Canada

This year's preconference symposium is designed to provide hands-on, state-of-the-art training, updates, and practice on many of the embryo and embryo-associated technologies used in research and clinical practice. These will be accompanied by lectures from renowned experts in the field. The symposium is designed to provide useful techniques, methods, and "tricks of the trade" for all levels from the new student in embryo/reproductive biology to the experienced embryo transfer practitioner.

Format
Five concurrent presentations with wet labs. Each session module will last approximately 2 hours. The modules are designed to promote hands-on, individualized interaction with the presenters and instructors, including some demonstrations. Each module will have 3 or 4 specific activities within the topical area. Enrollment will be limited in order to maximize participation. Each participant may attend 3 of the 5 modules.

Tentative Schedule

08:00–08:15	Introduction
08:15–10:30	Simultaneous module presentations
10:30–10:45	Break and move to next module
10:45–13:00	Simultaneous module presentations
13:00–14:15	Lunch (on your own; there are 15 restaurants in the hotel)
14:15–16:30	Simultaneous module presentations
16:30–18:30	Wrap-up discussion and reception

Module 1 *In Vitro* Embryo Production in Cattle (Pavilion CD)

Leaders: Peter Hansen and Jeremy Block
Sponsored by University of Florida
Materials supplied by Applied Reproduction Technology LLC; Fisher Scientific; IMV Technologies; Partnar Animal Health; PETS; University of Florida; and WTA.

For each rotation, each group will be divided into 4 stations and rotate through each station:

1. Oocyte collection and maturation (Paula Tribulo and Sofia Ortega)
The objective of this station is to expose participants to techniques for retrieval of cumulus–oocyte complexes (COC) from ovaries and introduce criteria for selecting COCs for maturation. During this station, participants will do three activites:

a. Preparation of materials for COC collection and maturation
b. Collection of COC (slashing)
c. Search and selection of COC for maturation

2. Fertilization (Kyle Dobbs and Anna Denicol)
The objective of this station is to expose participants to the *in vitro* fertilization process. During this station, participants will do 3 activities:

a. Prepare sperm for fertilization
b. Count sperm number and calculate correct sperm concentration
c. Fertilize 5 to 10 COCs with diluted sperm

3. Media Preparation (Jeremy Block and Antonio Ruiz de King)

The objectives are to learn some of the principles of media preparation and practice making a simple medium:

a. Students will break up into groups of 2 and mix up a batch of TCM-199 from powder, add sodium bicarbonate, and then test the pH and osmolarity.
b. Students will participate in a discussion about general guidelines for media preparation and quality control.

4. Quality Control and Troubleshooting (Pete Hansen)

Two objectives: learn techniques for monitoring quality of materials and procedures for IVP and gain practice at trouble-shooting problems that arise in routine performance of IVP.

a. Attendees will be given a lecture regarding the importance of quality control and will be provided with some recordkeeping tools to monitor quality of materials and procedures for IVP
b. Attendees will participate in a problem-solving session in which they will be asked to troubleshoot some actual problems in IVP that arose in the PJH laboratory.

Module 2 Ultrasound-Associated Technologies (Valet Parking Garage)

Leaders: Francois-Xavier Grand and Luiz Nasser

Sponsored by BORN Animal Technology; University of Illinois; and WW Livestock

Materials supplied by L'Alliance Boviteq; Applied Reproduction Technology LLC; BORN Animal Biotechnology; EI Medical; IMV Technologies; Partnar Animal Health; PETS; University of California-Davis; University of Illinois; WTA; and WW Livestock.

1. Ovum Pick-up (Francois-Xavier Grand)

a. Equipment set-up and calibration
b. Ovary imaging and ovarian structures
c. Follicle identification
d. Follicle aspiration
e. Hands-on practice on bovine reproductive tracts
f. Troubleshooting/handling problems that arise

2. Recipient Evaluation (Gabriel Bo)

a. Ovary imaging and ovarian structures (CL, follicular population)
b. Analysis of uterine morphology
c. Hands-on practice on bovine reproductive tracts
d. Troubleshooting/handling problems that arise

3. Pregnancy Detection (Luiz Nasser)

a. Analysis of uterine morphology
b. Identification of fetal membranes
c. Identification of fetus and fetal structures (heartbeat, etc.)
d. Hands-on practice on pregnant bovine reproductive tracts
e. Troubleshooting/handling problems that arise

4. Fetal Sexing (Gregg Adams)

a. Identification of fetal genitalia
b. Determination of fetus sex
c. Hands-on practice on pregnant bovine reproductive tracts
d. Troubleshooting/handling problems that arise

Module 3 Embryo Grading and Manipulation Technologies (Pavilion B)

Leaders: Charles Long and Jennifer Barfield
Sponsored by RI Life Sciences
Materials supplied by Applied Reproduction Technology LLC; Bioniche; iClicker; IMV Technologies; PETS; and RI Life Sciences.

In this rotation, attendees will engage in an interactive embryo grading workshop that will teach basic techniques and refine skills in embryo assessment according to IETS standards. In addition, this session will give participants hands-on experience in embryo manipulations routinely utilized in the industry. Attendees will participate in assisted hatching by laser drilling of the zona pellucida, embryo biopsy, and embryo splitting. Overall, the session will give each attendee an opportunity to improve embryo grading and perhaps learn new techniques in embryo manipulation.

1. Laser-Assisted Zona Drilling (Kaitlin Weegman, RI Life Sciences)

a. Set-up and equipment overview
b. Demonstration and hands-on practice

2. Embryo Biopsy (Charles Long/Kaitlin Weegman)

a. Set up and equipment overview
b. Demonstration and hands-on practice

3. Embryo Splitting (Charles Long)

a. Equipment requirements and set up
b. Embryo bisection demonstration and hands-on practice

4. Embryo Grading (Jennifer Barfield)

a. Interactive embryo grading quiz using iClicker technology
b. Overview of IETS guidelines for grading embryos
c. Tips and techniques for embryo grading and classification
d. Assessment of fixed embryos under microscopes
e. Collective retake of embryo grading quiz (results to be provided for the IETS newsletter)

Module 4 New techniques/technologies in embryo cryopreservation (Pavilion E)

Leaders: Charles Looney and Jane Pryor
Sponsored by Cryologic Pty. Ltd.
Materials supplied by Agtech Inc.; Applied Reproduction Technology LLC; IMV Technologies; and PETS.

Module 4 is organized, directed, and instructed by Cryologic Pty. Ltd. representatives (TBD), IETS member practitioners (TBD), and Agtech Inc. representatives John Curtis and Tom Patterson.

1. Controlled Rate Freezing

a. Equipment set-up (Cryologic CL2200 System) and supplies
b. Embryo selection: *in vitro* and *in vivo*
c. Straw loading methods/column development
d. Straw sealing and seeding preferences
e. Thaw procedure
f. Troubleshooting/handling problems that arise
g. Hands-on practice

2. Vitrification and Thawing

a. Overview of systems currently available
    i. Bioniche straw-type system
    ii. Cryologic CVM system
b. Hands-on demonstration of Cryologic CVM System
c. Thaw procedure
d. Troubleshooting/handling problems that arise
e. Hands-on practice

3. Proper maintenance, use/storage, and documentation of cryopreservation systems, plasticware, and media

a. Best practices/inventory management
b. Recordkeeping and documentation
c. Monitoring system performance
d. Suggested calibration and service intervals

4. Q&A Session

Final session of the seminar, with all participants in a single group. The session will be moderated by panel of seminar presenters and include open-ended questions related to cryopreservation and topics covered above.

Module 5 Current developments in semen technologies (Pavilion A)

Leaders: Patrick Blondin and Brad Stroud
Sponsored by L'Alliance Boviteq and Semex
Materials supplied by L'Alliance Boviteq; BD Bioscience; Fertility Technology Resources; IMV Technologies; Semex; and VWR International.

1. Consequences of Mishandling Frozen Semen and Embryos (Brad Stroud)

a. Define an industry problem
b. Briefly review the science of freezing cells
c. Review the science of thermal exposure damage
d. Show exposures commonly seen with frozen semen
e. Illustrate proper handling techniques
f. Tips for Dewar management
g. Point out common mistakes made by those who routinely handle frozen semen and embryos
h. Debate solutions for handling problems

2. Computer-Assisted Sperm Analysis (CASA) (Patrick Vincent and Patrick Blondin)

Quality control (QC) is a fundamental area of management for semen production centers supplying bovine semen to breeders and producers. Semen production centers are moving away from subjective semen assessment that is largely uncorrelated to field fertility, to objective semen analyses.

a. What is CASA?
b. Limitations of CASA instruments
c. Factors that affect CASA results:
    i. Models of CASA instruments
    ii. Type of specimen chamber temperature
    iii. Sampling conditions
    iv Type of extender in which semen is diluted
d. Hands-on trials and demonstrations

3. Analysis of Sperm Function by Flow Cytometry (Patrick Vincent and Patrick Blondin)

a. What is flow cytometry?
b. Sperm attributes analyzed by flow cytometry
    i. Viability/mortality
    ii. Acrosome integrity
    iii. Mitochondrial activity
    iv. DNA integrity
    v. Calcium influx
c. Limitations of flow cytometry
d. Hands-on trials and demonstrations

4. Multiparametric Approach for Standardization and QC Among SPCs (Patrick Vincent and Patrick Blondin)

a. Use of CASA and flow cytometry as QC tools
b. Specific applications of multiparametric approach in semen evaluation

Exhibit Hall Floor Plan
Rose A (second floor)

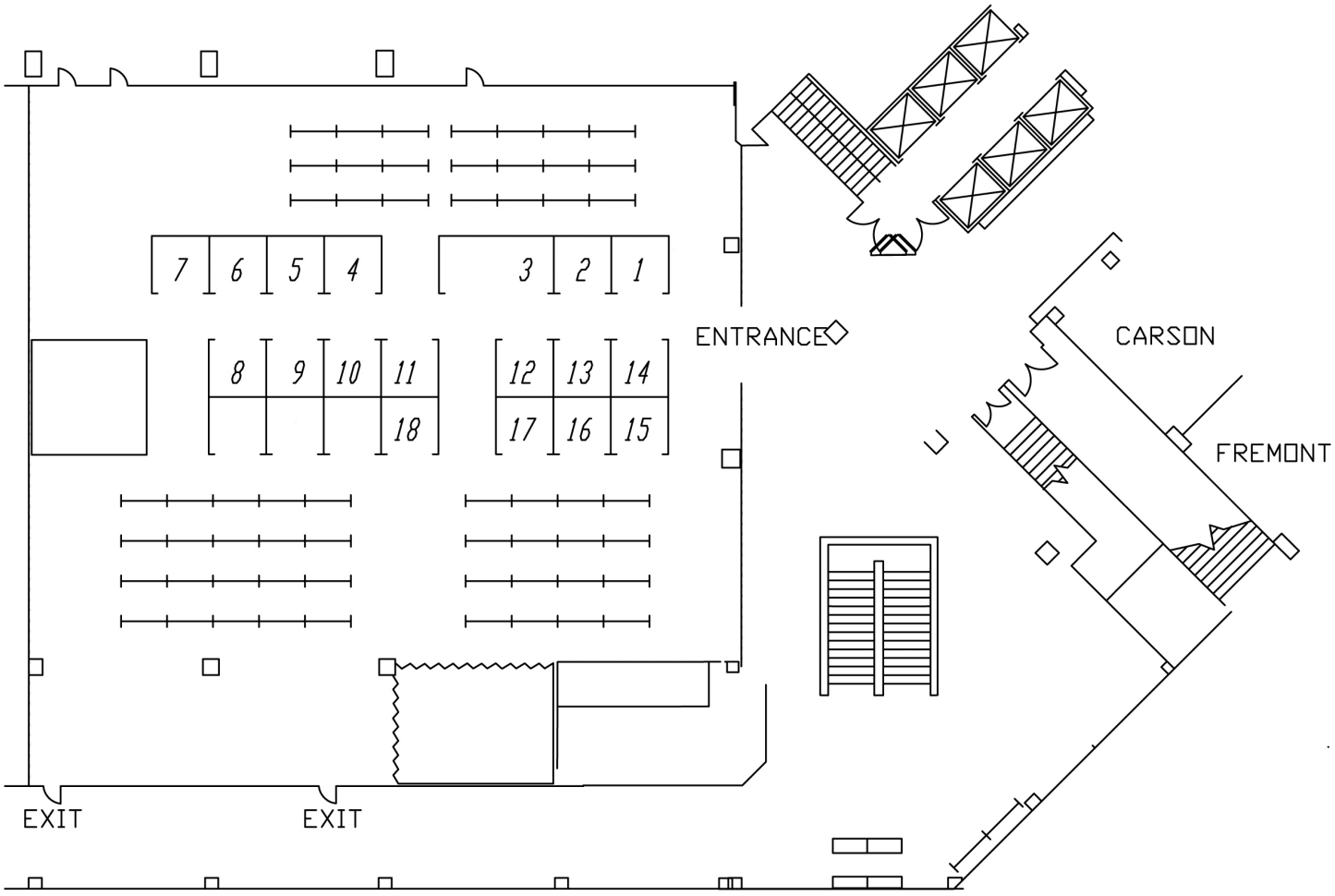


Exhibit Directory

Booth Listing by Number:

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1	Reproduction Resources
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3	Partnar Animal Health and EI Medical Imaging
4	Biogenics
5	ICPbio Reproduction
6	Fertility Technology Resources Inc.
7	Agtech Inc.
8	Cryologic Pty. Ltd.
9	Mariposa Biotechnology Inc.
10	Professional Embryo Transfer Supply Inc. (PETS)
11	RI Life Sciences
12	IMV Technologies
13	WTA, Watanabe Technologies Aplicada
14, 15	Bioniche Animal Health (Global)
16	American Embryo Transfer Association (AETA)
17	Minitube of America
18	Biotech Inc.

Alphabetical Listing of Exhibitors

Agtech Inc.

Agtech is proud to be the embryo transfer and artificial insemination supply source for thousands of reproduction professionals world-wide. We offer a large selection of cattle embryo transfer and artificial insemination products including embryo flushing media, embryo freezing and transferring supplies, ultrasounds, electrojacs, pharmaceuticals and more. For equine and small ruminant reproduction we offer embryo transfer supplies, collection equipment, storage tanks, and more. With over 400 items to choose from, Agtech has the reproduction supplies and equipment you need to succeed. Agtech's sales team has the knowledge to help you select the best reproduction products for your success. Our sales team will use their product and industry experience to assist you in selecting the best supplies for your reproduction program.

8801 Anderson Avenue
Manhattan, KS 66503-9612 USA
Phone: 800-367-4016
Fax: 785-776-4295
www.agtechinc.com
Booth #7

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.

1800 South Oak Street,Suite 100
Champaign, IL 61820
Phone: 217-398-2217
Fax: 217-398-4119
www.aeta.org
Booth #16

Biogenics

Biogenics Inc., has been proactively serving the worldwide embryo transfer community specializing in advanced, reasonably priced cryopreservation systems, application expertise, and technical service for over 25 years. Please visit our booth to see the newest iterations of our industry-benchmark system, the CRYSALYS 9500, including new configurations of cryogenic chambers capable of large straw volumes and very fast rates of coling and thawing.

2797 Napa Valley Corporate Drive
Napa, CA 94558, USA
Phone: USA/Canada 1-800-240-9304
Direct line: +1 707-363-5151
www.biogenics.com
Booth #4

Bioniche Animal Health (Global)

A Canadian Animal Health business which is responsible for researching, developing, manufacturing and marketing innovative animal health biopharmaceutical technologies worldwide. The Company's animal health products are marketed directly in Canada, the United States, Australia and Europe and through selected distributors in the rest of the world. Bioniche Animal Health Inc. operates marketing, production and research facilities in Belleville, Ontario; marketing and manufacturing facilities in Athens, Georgia and in Pullman, Washington in the United States; marketing and manufacturing facilities in Armidale, Australia; and a sales and marketing office in Ireland.

PO Box 1570
231 Dundas Street East
Belleville, ON , K8N 5J2, Canada
www.bionicheanimalhealth.com
Booth #14, 15

Biotech Inc.

Biotech Inc, is an American manufacturer and worldwide distributor of medical devices specialized on Vitrification devices. Cryolock is a versatile, simple and efficient system for vitrification of human and animal oocytes and embryos. Mouth Pieces are plastic adaptors for mouth pipetting with precise control.

11539 Park Woods Cir, Suite 202
Alpharetta, GA 30005 USA
Phone: 678-366-3311
Fax: 678-366-3222
www.biotechinc.com
Booth #18

Cryologic Pty. Ltd.

CryoLogic is a leading manufacturer of innovative products for veterinary and laboratory applications. We have been designing and developing high quality, reliable equipment for more than 20 years. CryoLogic is based in Australian and exports to overseas markets through an international network of distributors. At IETS, we will exhibit our CVM Vitrification Kits, BioTherm microscope warm stages, tube warmer, straw sealer and Transportable Incubators and our Freeze Control modular cryopreservation systems.

1/2 -6 Apollo Court
Blackburn 3130, Victoria, Australia
Phone: +613 9574 7200
Fax: +613 9574 7300
www.cryologic.com
Booth #8

Fertility Technology Resources Inc.

Fertility Technology Resources: serving the fertility/breeder market since 1987. Our premiere line includes: Sperm Class Analyzer® CASA (software for automated semen analysis including Morphology, Motility-Concentration, DNA Fragmentation, Viability and Production modules), microscopes, counting chambers, slides, coverslips and Morphology slides and stains. We also carry an extensive line of disposables at great pricing. Visit us at FertilityStuff.com.

4343 Shallowford Road, Suite D5
Marietta, GA 30062
Phone: 800-533-5113
Fax: 866-641-1560
www.fertilitystuff.com
Booth #6

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 super ovulation of ovine and bovine for Embryo Transfer procedures.

PO Box 39
303 S. McKay Avenue
Spring Valley, WI 54767 USA
Phone: 877-978-5827
www.icpbiorepro.com
Booth #5

IMV Technologies

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. Based on its long and strong experience and expertise, IMV is involved with a wide range of different species, from bovine, porcine, equine and poultry to small animals and camelids. Today, IMV Technologies develops solutions designed to simplify the processes involved in herd improvement programmes around five main areas of expertise:

- Semen collection and analysis
- Sample preparation and dilution
- Packaging and cryopreservation
- Assisted insemination
- Embryo transfer

IMV Technologies uses its own highly-skilled workforce to manufacture 95 % of all its products in France. With nearly 10 % of its turnover reinvested back into Research & Development each year and 300 patents in France and abroad, IMV Technologies has consistently retained its technological lead over its competitors, thanks to its spirit of innovation and its policy of establishing partnerships with leading research laboratories and institutes.

ZI N°1 Est
61300 Saint Ouen sur Iton, France
www.imv-technologies.com
Booth #12

Mariposa Biotechnology Inc.

We have developed, validated and patented a computer controlled, multi-channel, micro-fluidic device to systematically merge cryoprotective agents in a highly accurate and repeatable manner for the cryopreservation and/or reanimation of embryo, blastocytes and oocytes. The Mariposa System is designed to

- Eliminate osmotic shock
- Precisely control processing temperature
- Reduce embryo handling
- Improve overall survival

1235 Puerta Del Sol, #700
San Clemente, CA 92673
Phone: 949-721-1117
Booth #9

Minitube of America

Minitube of America, Inc. (MofA) is a leading provider of assisted reproduction technologies for porcine, bovine, equine, and canine. MofA was established in 1986 to better serve the needs of customers in North America. MofA is active in research and development and has produced many products that are now considered industry standards. MofA's International Center for Biotechnology was founded in 2004 to continue MofA's commitment to learning and innovation. Visit the Minitube of America booth to learn more about the available products for IVF, embryo transfer, embryo cryopreservation and embryo sexing technologies.

PO Box 930187
419 Venture Court

Verona, WI 53593 USA
Phone: 800-646-4882
Fax: 608-845-1522
www.minitube.com
Booth #17

Partnar Animal Health

Partnar Animal Health is a manufacturer and distributor of a wide range of products for the ET and OPU/IVF fields. Please stop by and see the latest in technology we have on offer.

3560 Pine Grove Avenue, Unit 227
Port Huron, MI 48060
Phone: 1-866-690-4998 (within North America)
www.partnaranimalhealth.com
Booth #3

EI Medical Imaging

EI Medical Imaging is a world leader and the only US manufacturer of portable ultrasound solutions specifically engineered for veterinary use. For the past 29 years, the Company's core values have remained intact: putting the customer first and delivering solid, effective ultrasound solutions. EIMI provides the Ibex® portable ultrasound systems.

www.eimedical.com
Booth #3

Professional Embryo Transfer Supply Inc. (PETS)

PETS has been a world leading embryo transfer supply company for the bovine and equine industries for over 2 decades. Our goal all this time has been your success and we work every day to achieve this with quality service and quality E.T. supplies and equipment such as emCare, Vigro, emCon, EZ Way, Wesco, ECM, and many more. Come visit with us for more details.

Box 188
Canton TX 75103 USA
www.pets-inc.com
Booth #10

Reproduction Resources

Reproduction Resources, Inc. has been supplying a full line of embryo transfer and artificial breeding supplies to the worldwide community for nearly thirty years. Now proudly serving as Minitube International AG Germany's distributing partner in the United States and Canada.

400 S. Main Street
Walworth, WI 53184 USA
Phone: 800-331-0195
www.reproductionresources.com
Booth #1

ReproPharm

ReproPharm is a start-up company launched in September 2009 by 3 scientists working at INRA (French National Institute of Agronomic Research) in Tours, France. It is dedicated to the research, development, and marketing of innovative diagnostic kits to better control reproduction in farm animals. ReproPharm's project is to develop innovative products to improve the control of reproduction in breeding animals (bovine, porcine, ovine species), particularly the artificial insemination (AI) performances. In this aim, ReproPharm has developed Predi'Bov® a farm test to predict the ovulation time in cow and heifer and better monitor the AI practice (with sexed and unsexed semen). Predi'Bov optimizes the investment put into reproduction through ensuring that the insemination is carried out at the optimal time for fertilization and produce, for example, higher quality embryos and the greatest possible number of transferable embryos.

Centre INRA – Tours
Domaine de l'Orfrasière
37380 Nouzilly, France
Phone: +33(0)247427935
www.repropharm.com
Booth #2

RI Life Sciences

RI Life Sciences (RI LS) is a progressive and dynamic international company dedicated to serving customers in the Transgenics, Stem Cell, Cell/Developmental Biology and Animal ART sectors. The newest division of Research Instruments Ltd, RI LS specialises in cutting-edge micromanipulation, laser ablation and cell handling technologies. RI LSs' corporate philosophy of "Success through Innovation" permeates throughout the organisation. This commitment to continued improvement, supported by a dedicated Research & Development team and close collaboration with sector specialists, allows us to pioneer new technologies and make them available worldwide. Stop by the RI LS stand to trial the unique Saturn 5 Active™ Laser System, which offers computer-controlled targeting and ablates cells with sub-micron accuracy. Demo the new Integra 3™ micromanipulator featuring Thermosafe™ which, by passing a gentle stream of air under the Petri dish, maintains sample temperature uniformly across the dish. See our extensive consumables range including injection and

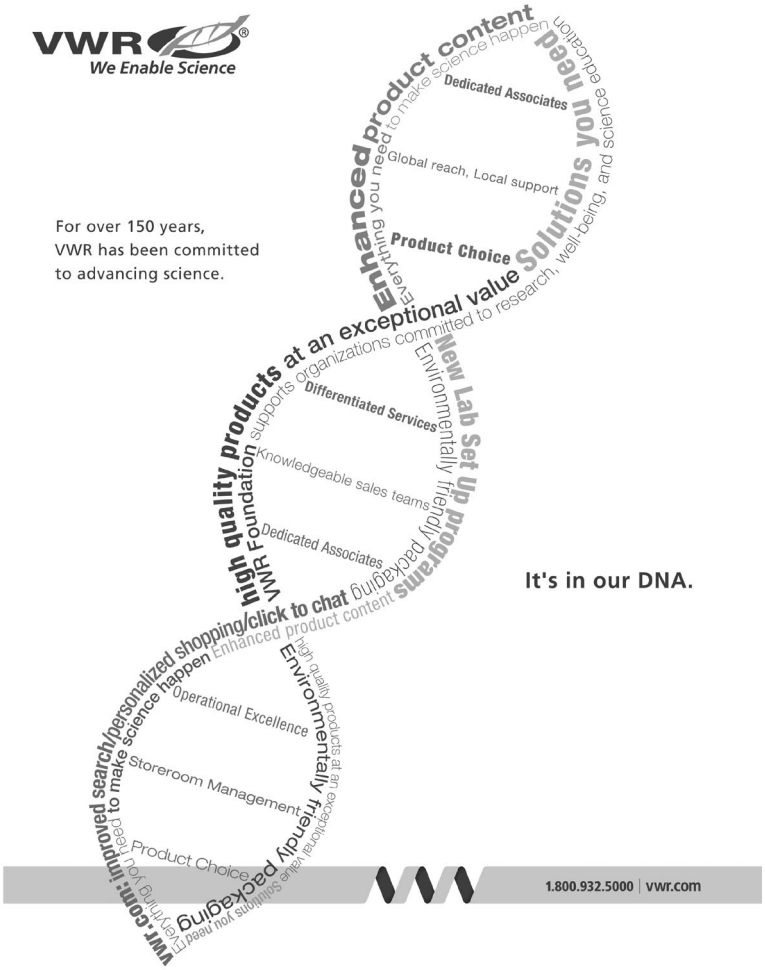
holding micropipettes, the EZ-Range of cell handling devices, the RI sperm Migration Sedimentation Chamber (RI MSC™) and Fertisafe™, a unique embryo-safe disinfectant. RI LS is proud to be a division of Research Instruments (RI), a world leader in the design and manufacture of hardware and consumables for the human ART field. With over 50 years of experience, RI has earned an enviable reputation for quality and innovative design delivered by a dedicated, reliable workforce, which is reflected in the RI LS division.

Bickland Industrial Park
Falmouth, United Kingdom, TR11 4TA
Phone: +44(0)1326 372753
Fax: +44(0)1326 378783
www.research-instruments.com
Booth #11

WTA, Watanabe Technologies Aplicada

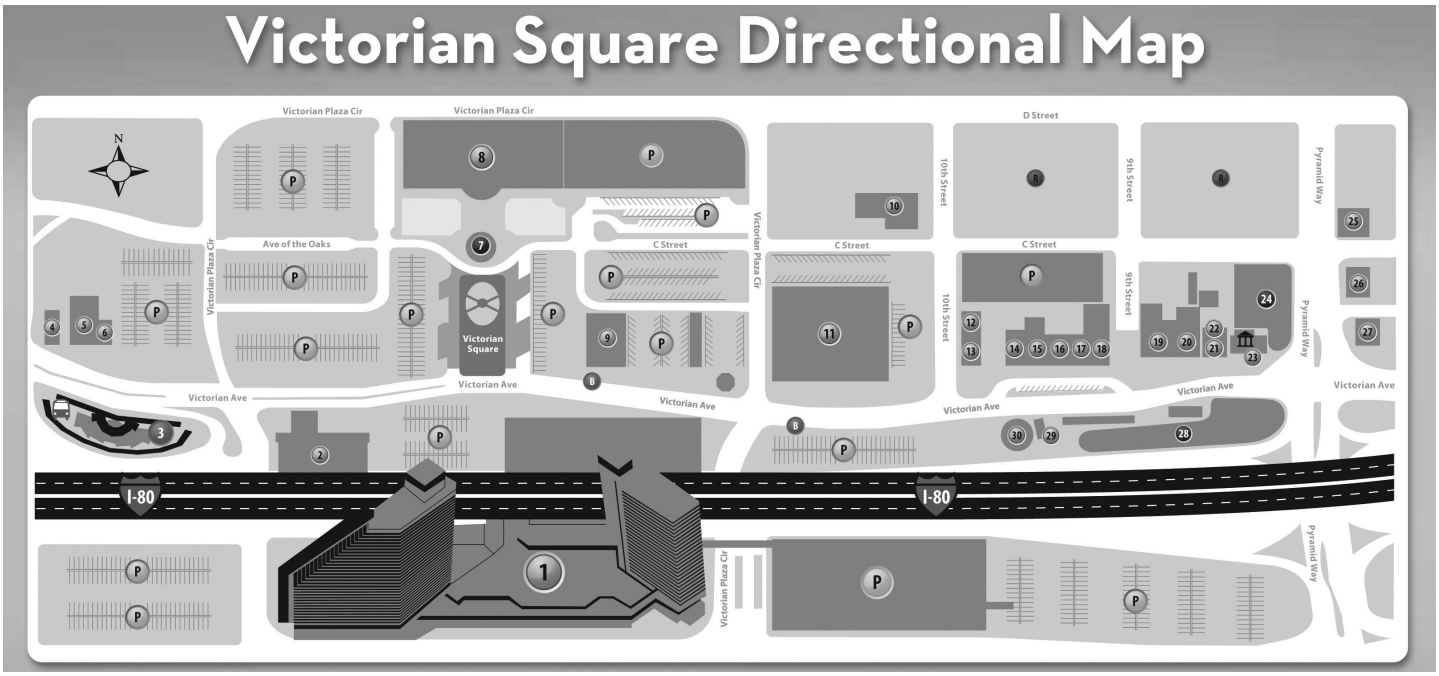
WTA is a Brazilian company specializing in products for IVF, ET and AI, with quality recognized and recommended by top experts in the world. Our products are designed for bovines, equines, and small ruminants.

Av. Cel. Jose Nogueira Terra, 233
14140-000 CRAVINHOS Sao Paulo
Brazil
Phone: +55 16 3951 8161
www.wtavet.com.br
Booth #13



Fun Run

The fun run will be held around the perimeter of the Nugget Hotel (marked 1 on the map below).



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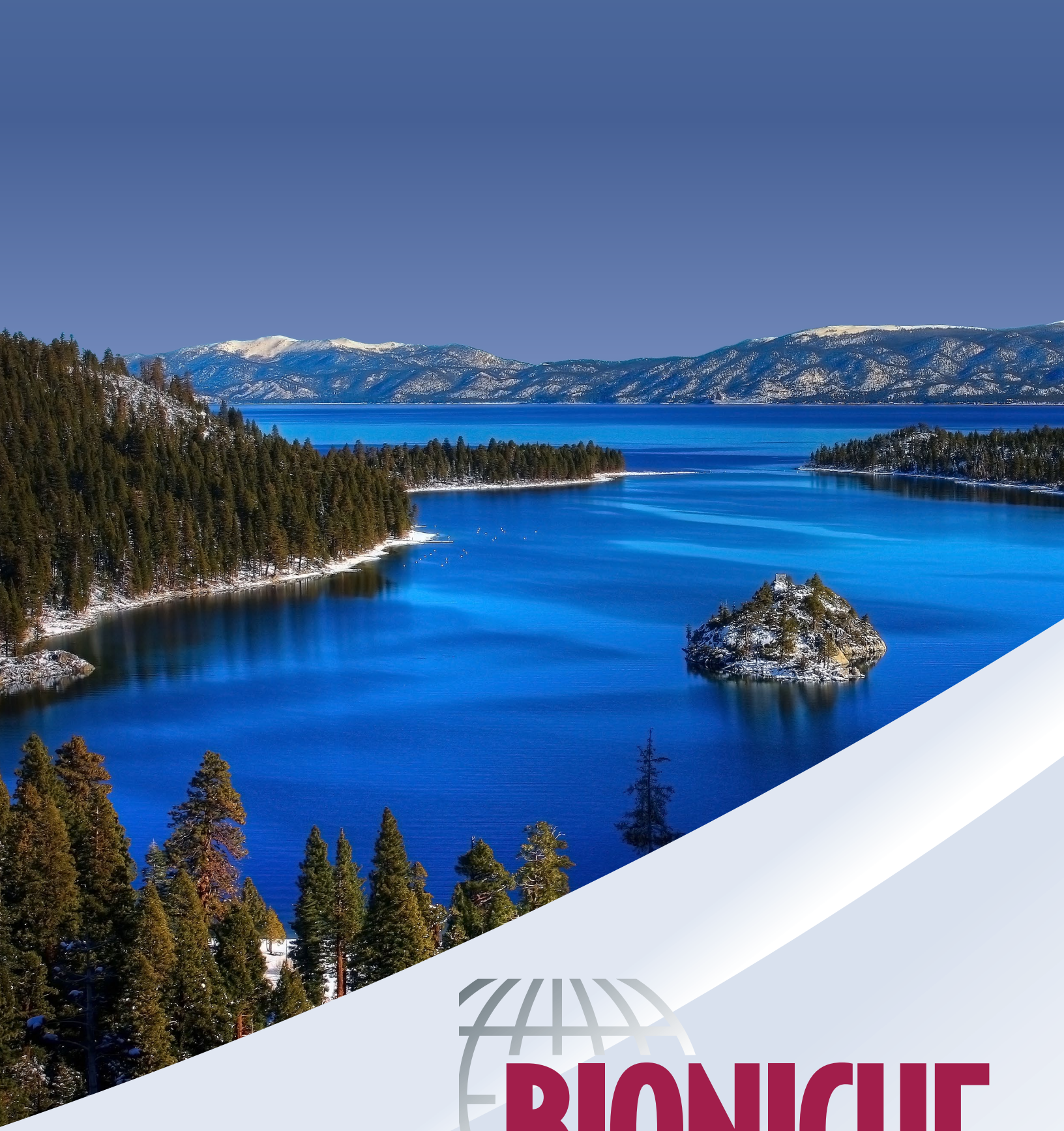

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INTERNATIONAL EMBRYO TRANSFER SOCIETY

International Embryo Transfer Society
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