YOUR WORLD IS CHANGING
OUR COMMITMENT REMAINS SOLID

Since 1933 we have been a family owned company, exclusively dedicated to animal health.

To make efficient animal care easier worldwide, we expand our offer of innovative products and services, and we remain true to why customers choose us:

Our commitment to listen, understand and deliver on your needs, globally and locally.

vetoquinol.com
Program Book

43rd Annual Conference of the
International Embryo Technology Society

From Molecules to Animals:
Small Things Make Big Things Happen

Renaissance Austin Hotel
Austin, Texas
January 14–17, 2017

Scientific Program Co-Chairs:
Tiziana A. L. Brevini and Charles R. Long
YOU PROVIDE THE GENETICS, WE PROVIDE FOLLTROPIN® EMBRYO TRANSFER WITHIN YOUR REACH

FOLLTROPIN®
25 YEARS OF REPRODUCIBLE RESULTS

Folltropin® is supported by a wide body of scientific literature spanning 25 years with extensive publications in North America and around the world.

vetoquinol.com
# Table of Contents

Preface and Acknowledgments................................................................. 1  
2017 Recipient of the IETS Pioneer Award.................................................. 3  
Map of the Venue.......................................................................................... 4  
General Information...................................................................................... 6  
Program.......................................................................................................... 8  
Section Editors and Manuscript and Abstract Reviewers.............................. 14  
Poster Session Information............................................................................ 16  
Poster Session Order by Topic.......................................................................... 17  
Author Index................................................................................................... 33  
2017 Recipient of the IETS Distinguished Service Award................................. 40  
Special Events................................................................................................. 41  
Exhibit Hall Layout.......................................................................................... 44  
Exhibit Directory............................................................................................. 45  
Morulas Preconference Workshop: How to Write an Effective Grant Proposal........................................ 56  
DABE Preconference Symposium: Workshop on the Use of CRISPR-Cas9 for Gene Editing:  
Principles and Practices................................................................................... 57  
Thank You to Our Sponsors............................................................................. 59

## 2016 IETS Board of Governors

Patrick Blondin, Immediate Past President  
Christine Wrenzycki, President  
Fulvio Gandolfi, Vice President  
Barbara S. Durrant, Treasurer  
Irina A. Polejaeva, Governor  
Dimitrios Rizos, Governor  
Pablo J. Ross, Governor  
Daniel F. Salamone, Governor
Connected to...
Embryo Transfer

BENCHTOP INCUBATOR BT37
The ultimate cell culture environment

- Accurate temperature
- Battery backup
- Accepts wide selection of culture dishes
- Built in 2-line display
- Network ready

imv-technologies.com
The 43rd Annual Meeting of the International Embryo Technology Society will be held at Renaissance Austin Hotel in Austin, Texas, USA, from January 14 to 17, 2017. This year’s program theme is “From molecules to animals: Small things make big things happen.” When we defined this year’s main theme, we were inspired by a quote from John Wooden, the legendary American basketball player and one of the most revered coaches in the history of sports, which states “Little things make big things happen.” We feel this addresses two fundamental points in science: 1) the importance of observations carried out at the molecular level to obtain a better understanding of the whole and 2) the impact of team building to gather all expertise and disciplines, which is indispensable for good laboratory work, to investigate complex problems in a multidisciplinary approach.

The annual conference of the IETS is organized with five plenary sessions featuring 10 invited speakers who will provide in-depth overviews of different aspects related to the main theme, together with short oral presentations selected from the submitted abstracts. This year, the major topics include gene editing, molecular mechanisms regulating fertility, ART logistics and biosecurity for commercial embryo production, nutritional control of oocyte and embryo quality, and embryo communications. Poster sessions address recent advances in animal biotechnology. In addition, R. Michael Roberts will give the keynote lecture presentation, titled “Exploring early differentiation and pluripotency in domestic animals.”

We are grateful to many people for their valuable contributions of time and effort in organizing this scientific meeting.

Special thanks go to Mark Westhusin, Chair of the Local Organizing Committee, for arranging the closing party and social events. We also thank Cesare Galli and Charles Looney for organizing the Practitioners’ Forum, titled “What do you want to know about OPU/IVF in Cattle?” Jorge Piedrahita for organizing the preconference DABE Symposium, and Gabriela Mastromonaco for organizing the CANDES Forum.

We would like to thank the main session speakers and their co-authors, the authors of the abstracts, and the participants in the student competition for providing excellent scientific material. This year, 240 abstracts were submitted and 213 were accepted for the journal. We sincerely appreciated the timely help of the manuscript reviewers and we are particularly grateful to all the section editors and abstract reviewers for their generous efforts during the summer, a time usually devoted to more pleasant occupations. We also thank Charles Rosenkrans for his leading role in selecting the student competition finalists. We are indebted to our colleagues and students who have responded to our invitations to volunteer their time and accepted the responsibility of chairing the various presentation sessions, as this is an important task for the smooth running of any meeting.

We would like to take this opportunity to thank the Morulas, who have developed into a very active and enthusiastic group, representing the bright future of our society, and we encourage all students to participate in the organized events.

We also send our appreciation to the IETS Board of Governors and Executive Board for their support in preparing for the 2017 Annual Conference. Enough thanks cannot be expressed to Debi Seymour, the Executive Secretary of IETS, and to Graeme Martin, Editor-in-Chief, and Jenny Foster, 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 all for attending and contributing to the conference and hope that you have an exceptionally rewarding time at the 43rd Annual Conference of the IETS.

Hope to see y'all in Austin!

Tiziana A. L. Brevini & Charles R. Long
2017 IETS Program Co-Chairs
2017 Recipient of the IETS Pioneer Award

Heiner Niemann

Award Presentation: Tuesday, January 17, at 09:35

Previous Recipients

Map of the Venue
Renaissance Austin Hotel
9721 Arboretum Boulevard, Austin, Texas 78759

Atrium Level (Lobby Level)
Map of the Venue
Renaissance Austin Hotel
9721 Arboretum Boulevard, Austin, Texas 78759

Plaza Level (Lower Level)
General Information

Meeting Room Directory
Main Conference Sessions  Ballroom A; Concurrent Sessions: Ballroom B, Practitioners’ Forum
Exhibits  Rio Exhibit Hall B
Poster Displays  Rio Exhibit Hall B
Please see the Scientific Program on page 8 for additional room assignments.

Registration Desk Hours
The registration desk is located at Concho on the Atrium Level.

Pick up of preregistration packets
Friday, January 13  16:00–19:00

On-site registration hours
Saturday, January 14  07:00–18:00
Sunday, January 15  07:00–18:00
Monday, January 16  07:30–16:00
Tuesday, January 17  08:00–15:00

Exhibit Information
Rio Exhibit Hall B

Setup
Saturday, January 14  09:00–17:00

Exhibits open
Sunday, January 15  09:00–17:00
18:00–19:00 (Reception)
Monday, January 16  08:00–17:00
Tuesday, January 17  08:30–13:00

Teardown
Tuesday, January 17  13:00–17:00

Details on the exhibitors can be found in the Exhibit Directory on page 45.

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.

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 Rio Exhibit Hall B.

Dining and Entertainment
There are restaurants and lounges located in the Renaissance Austin Hotel. In addition to the hotel restaurants, the Aboretum Mall is located right next to the hotel for your shopping and dining pleasure.

Services and Amenities
The Renaissance Austin Hotel has a fitness center, indoor and outdoor pools, and a whirlpool. Security, a business center, restaurants and lounges, valet parking, and many more services and amenities are offered to make your stay feel as if you were in the comfort of your home. The Renaissance Austin offers complimentary wi-fi in all public areas and wireless Internet in the guest rooms.
Program

Thursday, January 12
08:00–17:00  IETS Board of Governors meeting (Frio)

Friday, January 13
08:00–17:00  IETS Board of Governors meeting (Frio)
09:00–13:00  HASAC Research Subcommittee meeting (San Antonio)
13:00–17:00  W-3171 Committee meeting (Pecos)
14:00–18:00  HASAC Regulatory Subcommittee meeting (San Antonio)
16:00–19:00  Registration (Concho)

Saturday, January 14
07:00–18:00  Registration (Concho)
08:00–12:00  AETA Certification Exam (for initial certification) (Pecos)
09:00–17:00  Commercial Exhibit Setup and Poster Setup (Rio Exhibit Hall B)
14:00–17:15  Morulas Workshop, program listing on page 56 (Sabine)

Sunday, January 15
07:00–08:30  Poster Setup (Rio Exhibit Hall B)
07:00–18:00  Commercial Exhibition (Rio Exhibit Hall B)
07:00–08:30  Past President’s Breakfast (Pecos)
07:00–08:30  Graduate and Undergraduate Student Competition Presenters Breakfast, with IETS Foundation Education Chair (Frio)
09:00–17:00  Affiliates Lounge (Sans Saba)
09:00–18:00  Commercial Exhibition (Rio Exhibit Hall B)
08:45–09:00  Opening and Welcome - Tiziana Brevini, Charles Long, and Mark Westhusin (Grand Ballroom A)

Session I: Gene-Editing: Concepts, Tools, and Achievements (Grand Ballroom A)
Session co-chairs: Daniel Salamone, Universidad de Buenos Aires, and Paul Kordowitzki, Friedrich-Loeffler-Institut
09:00–09:40  Concepts and tools for gene editing
   Lluis Montoliu, National Centre for Biotechnology, Spain
09:40–10:20  Gene editing in livestock
   Kevin Wells, University of Missouri, USA
10:20–10:35  Invited Abstract Oral Presentation (Grand Ballroom A)
   Efficient generation of myostatin promoter mutations in bovine embryos using the CRISPR/Cas9 system
   C. A. Pinzon*, M. Snyder, J. Pryor, B. Thompson, M. Golding, and C. Long  (Abstract 207)
10:35–11:00  Refreshment Break/Poster Exhibit and Exhibition (Rio Exhibit Hall B)
Session II: Molecular Mechanisms Regulating Male and Female Fertility (Grand Ballroom A)
Session co-chairs: Matthew Wheeler, University of Illinois, and Bruna Rodrigues Willhelm, Universidade Federal do Rio Grande do Sul

11:00–11:40 Potential role of microRNAs in mammalian female fertility
Dawit Tesfaye, University of Bonn, Germany

11:40–12:20 Expression of microRNA in male reproductive tissues and their role in male fertility
Scott Pratt, Clemson University, USA

12:20–12:35 Invited Abstract Oral Presentation (Grand Ballroom A)
Next generation sequencing discloses differences in microRNA expression profiles of buffalo (Bubalus bubalis) embryos produced by hand-made cloning and in vitro fertilization

12:35–14:00 Lunch Break

IETS Foundation Student Competition Presentation (Grand Ballroom A)
Session chair: Charles F. Rosenkrans, University of Arkansas

14:00–14:15 Insulin treatment during in vitro oocyte maturation leads to different gene expression and methylation patterns of key genes associated with metabolism and steroid synthesis in the bovine blastocyst
D. Laskowski, P. Humblot, M. A. Sirard, Y. Sjunnesson, G. Andersson, and R. Bage (Abstract 1)

14:15–14:30 Bovine embryonic stem-like cells derived from in vitro-produced blastocysts
Y. S. Bogliotti, J. Wu, M. Vilariño, K. Suzuki, J. C. Belmonte, and P. J. Ross (Abstract 2)

14:30–14:45 SIRT1–A possible marker for reproductive aging of in vivo-derived bovine oocytes?
P. Kordowitzki, S. Klein, K.-G. Hadeler, P. Aldag, M. Nowak-Imialek, A. Lucas-Hahn, and H. Niemann (Abstract 3)

14:45–15:00 Subfertility in bulls carrying a nonsense mutation in TMEM95 is due to failure to penetrate the zona pellucida
B. Fernandez-Fuertes, S. Kölle, and P. Lonergan (Abstract 4)

15:00–15:15 Testicular GnRh-II receptor knockdown impairs diurnal testosterone secretion in the boar

15:15–15:30 Aneuploidy tolerance in rhesus macaque pre-implantation embryos via micronuclei formation, cellular fragmentation, and blastomere exclusion

15:30–16:00 Refreshment Break/Poster Exhibit and Exhibition (Rio Exhibit Hall B)

Concurrent Forum
16:00–18:00 Practitioners’ Forum (Grand Ballroom B)
Co-chairs: Cesare Galli, AVANTEA, Italy, and Charles Looney, OvaGenix LP
Sponsored by Partnar Animal Health Inc.

What do you want to know about OPU/IVF in cattle?
IETS Foundation Early Career Achievement Award Winner (Practitioner)
Concurrent Forum
16:00–18:00  CANDES (Grand Ballroom A)
Chair: Gabriela Mastromonaco, Toronto Zoo, Canada, and Pierre Comizzoli, Smithsonian Conservation Biology Institute

16:00–16:15  Business update
16:15–17:00  Epigenetic changes due to environmental and social challenges

David Crews, University of Texas, Austin

Successful reproduction is more than sperm meets egg. Much goes before and after, and much of that is mediated by behavior. For centuries agriculturists used complementarity, or mutual choice, as standard practice. Modern science has revealed that complementarity is necessary at all levels of biological organization (molecules, hormones, brain and behavior). Mutual choice sometimes is not possible with threatened and endangered species or with certain breeds. In the former there might not be the numbers, and indeed, only gametes may be available. As a long-time member of the IUCN and on the Crocodilian Specialist Group, I have first-hand knowledge of the daunting task this can present. In the latter, the coefficient of harm to profit may not make it an acceptable risk. My purpose is to provide entry into the area of behavioral endocrinology that may be useful in your own practice.

Propagation efforts with any species draw upon knowledge and skills of reproductive physiology, immunology, behavior, and the brain. Adding the microbiome, we are speaking of the total organism, its’ life history and present conditions. Some significant discoveries in basic research experimental work do not appear to have penetrated the field of assisted reproduction in many species, particularly as it relates to behavior. For example, (a) Norman Adler documented that in laboratory rats intromission, including cervical stimulation, in a patterned manner that resembles the natural mating sequence, is essential for catapulting the sperm from the sperm cap in the mating plug into the uterus; Milton Diamond subsequently found evidence for species differences, amounting to a vaginal code particular to the species. Cynthia Bluhm demonstrated that self-selection by both the male and the female canvasbacks is essential for the surge in luteinizing hormone (LH); in forced pairings the female never exhibited a LH surge necessary for ovulation. Many experiments with reptiles, birds, and mammals show pronounced reproductive success with mutual mate choice. (b) Conspecifics can serve as social buffers and, with a modicum of emphasis in predictability and control, stress can be minimized. Such information can modulate the now serious effects of environmental contamination. (c) Beginning with the Industrial Revolution, the Chemical Revolution has been particularly pernicious. Endocrine disrupting chemicals (EDCs) are ubiquitous and have well-documented effects on both sex determination and sexual differentiation, often to the extent that exposed individuals, or even those descended from exposed individuals, are functionally sterile. (d) It is particularly important to appreciate that organisms are not exposed to pure chemicals, but to mixtures of chemicals, often unique to particular geographies. Little is known about these effects at the level of individuals, even though population level effects are obvious. (e) A classic principle in environmental toxicology is that for every chemical there is a threshold level, below which there is no response. There is now clear evidence that for at least three EDCs there is no threshold. Because transitions between critical life stages (e.g., conception, birth, and adolescence) are modulated by a delicate balance of naturally occurring hormones, any EDC contamination changes endocrine signalling systems with severe consequences to development. (f) We know that adult individuals with high body burdens of EDCs have compromised immune systems and reproductive difficulties. (g) However, focusing only on EDCs is overly narrow. Habitat loss, air pollution, hypoxic water, and open pit mining for metals and minerals are just a few of the other permanent changes in our ecosystems. Taken together, anthropogenic changes to the environment, most often acting through epigenetic mechanisms, represent a rapidly accelerating evolutionary force with unpredictable outcomes. Even chemicals no longer in production (for example, polychlorinated biphenyls or PCBs) and banned in the USA, Canada, and Europe for decades, continue to be detectable in body tissues of virtually all wildlife (including humans).
17:00–18:00 Short talks from CANDES travel award winners
Maternal obesity at conception and insulin sensitivity in late gestation alters placental structure but no fetal biometry at birth in the horse
M. Robles, E. Noveau, L. Wimel, C. Dubois, M. Dahirel, A. Tarrade, and P. Chavatte-Palmer (Abstract 67)

First llama born by in vitro fertilization

Incorporation and developmental toxicity of quantum dot nanoparticles in amphibian larvae

18:00–19:00 Welcome Reception (Rio Exhibit Hall B)
Sponsored by Professional Embryo Transfer Supply Inc. (PETS)

Monday, January 16
07:00–18:00 Registration (Concho)
08:00–17:00 Commercial Exhibits (Rio Exhibit Hall B)
09:00–17:00 Affiliates Lounge (Sans Saba)

Session III: ART Logistic and Biosecurity for Commercial Embryo Production (Grand Ballroom A)
Session co-chairs: Carol Keefer, University of Maryland, and Jesus Manuel Palomino, University of Guelph

08:00–08:40 Logistic of large scale commercial IVF embryo production
Patrick Blondin, Boviteq-Semex, Canada

08:40–09:20 Caprine arthritis encephalitis: An example of risk assessment for embryo trading
Francis Fieni, Oniris, France

09:20–10:20 Invited Abstract Oral Presentations (Grand Ballroom A)
Influence of estrus expression and treatment with gonadotropin-releasing hormone on pregnancy rates in recipients synchronized with progesterone devices and estradiol and transferred at a fixed time

Freezing bull semen in a synthetic medium

Survival of Holstein in vitro-produced embryos cultured in novel synthetic oviductal fluid media (SCF1) and dehydrated prior to cryopreservation
C. M. Owen*, M. Barceló-Fimbres, J. L. Altermatt, and L. F. Campos-Chillon (Abstract 45)

Near-infrared spectroscopy and aquaphotomics analysis of serum from mares exposed to the fungal mycotoxin zearalenone

10:20–10:45 Distinguished Service Award (Grand Ballroom A)
10:45–11:15 Refreshment Break/Poster Exhibit and Exhibition (Rio Exhibit Hall B)
10:45–12:45 Poster session I (Rio Exhibit Hall B)
12:45–14:00 Lunch Break
12:45–14:00 Exhibitors’ Luncheon with IETS Board of Governors (San Antonio)
12:45–14:00  IETS Data Retrieval Committee Meeting (Pecos)
12:45–14:00  Morulas Career Luncheon (Sabine)
  Sponsored by CSIRO

Session IV: Food for Thought: Nutritional Control of Oocyte and Embryo Quality (Grand Ballroom A)
Session co-chairs: Rebecca Krisher, National Foundation for Fertility Research, and Kathryn Polkoff, University of Illinois
14:00–14:40  Epidemiological evidence for metabolic programing in dairy cattle
  Geert Opsomer, Ghent University, Belgium
14:40–15:20  Effects of dry matter and energy intake on quality of oocytes and embryos in ruminants
  Roberto Sartori, University of São Paulo, Brazil
  Effect of progesterone supplementation of day 4 after timed artificial insemination on pregnancy rate of lactating dairy cows
  G. Tortorelli*, A. J. Azrak, V. da Costa Andrade, R. dos Santos Ramos, A. S. Moraes,
15:35–16:00  Refreshment Break/Poster Exhibit and Exhibition (Rio Exhibit Hall B)
16:00–16:30  IETS Business Meeting (Grand Ballroom A)
16:30–17:00  Peter Farin Trainee Award Winners Presentations (Grand Ballroom A)
17:00–18:00  HASAC Open Meeting (Grand Ballroom A)
17:00–18:00  Morulas Forum (Grand Ballroom B)
18:30–19:30  Morulas Student Mixer, Knotty Deck & Bar, Renaissance Austin Hotel

Tuesday, January 17
07:00–08:00  Sunrise Sponsor Session, Sexing Technologies (Sabine)
07:00–08:30  Organizational Meeting of the IETS Board of Governors (Frio)
08:00–15:00  Registration (Concho)
09:00–15:00  Affiliates Lounge (Sans Saba)
08:00–12:30  Commercial Exhibits (Rio Exhibit Hall B)

Session V: Embryo Communications: Who is Talking to Whom? (Grand Ballroom A)
Session co-chairs: Dimitrios Rizos, National Institute for Agriculture and Food Research, and Technology, Spain,
  and Andressa Varella Gonsirooski, Universidade Federal do Rio Grande do Sul
08:00–08:40  Emerging role of extracellular vesicles in communication of preimplantation embryos in vitro
  Ann Van Soom, Ghent University, Belgium
08:40–09:20  Insights into conceptus elongation and establishment of pregnancy in ruminants
  Thomas E. Spencer, University of Missouri, USA
09:20–09:35  Invited Abstract Oral Presentation (Grand Ballroom A)
  Improvement of an in vitro canine oocyte maturation by oviductal secretome
  A. Lange-Consiglio*, C. Perrini, P. Esposti, and F. Cremonesi (Abstract 188)
09:35–10:00  Pioneer Award (Grand Ballroom A)
10:00–10:30  Refreshment Break/Poster Exhibit and Exhibition (Rio Exhibit Hall B)
10:00–12:00  Poster session II (Rio Exhibit Hall B)
12:00–12:30  15th Annual IETS Running Competition
12:00–14:00  Lunch Break
12:00–14:00  Organizational Lunch Meeting of the IETS Foundation (Frio)
12:00–14:00  2017, 2018, 2019 IETS Program Committee Lunch (Sabine)
13:00–17:00  Commercial Exhibit and Poster Takedown (Rio Exhibit Hall B)

Session VI: Keynote Lecture (Grand Ballroom A)
Session chair: Christine Wrenzycki, Justus-Liebig-Universität Gießen
14:00–14:45  Exploring early differentiation and pluripotency in domestic animals
             R. Michael Roberts, University of Missouri, USA

Awards Presentations and Updates (Grand Ballroom A)
14:45–15:15  IETS Foundation Early Career Achievement Award Winner (Scientist)
15:15–16:15  IETS Foundation Student Competition Awards, CANDES, DABE, and HASAC Updates
16:15–16:30  Closing Ceremony (Grand Ballroom A)
19:00–23:00  Closing Party, The Pecan Grove, catered by The Salt Lick BBQ Company

ENABLING
COMMERCIAL IVF
THROUGH INNOVATIVE
TECHNOLOGIES

Ovum Pick Up & IVF Supplies

Laboratory Equipment

Precision, Temperature Controlled
Transport & Shipping Devices

Visit us at Booth #4 for new products and the latest technologies.
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
Marcelo Bertolini, 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
Rebecca Krisher, Oocyte Maturation
Vish Vishwanath, Sexing
Cesare Galli, Sperm Injection
Tiziana Brevini, Stem Cells
Osamu Dochi, Superovulation
Carol Keefer, Transgenesis
Charles Rosenkrans, Undergraduate Poster Competition

Manuscript and Abstract Reviewers

Tomas J. Acosta
Gregg Adams
Paulo L. Aguiar
Ramiro Albeiro
Jennifer Barfield
Marcelo Bertolini
Urban Besenfelder
Romina Bevacqua
Mario Binelli
Patrick Blondin
Gabriel Bo
Vilceu Bordignon
Fernando Bortolozzo
Jerry Bouma
Tiziana Brevini
Carla Buemo
Jose Buratini
Stephen Butler
Henrik Callesen
Lino Fernando
Charles Looney
Pierre Comizzoli
Siska Croubels
Bradford Daigneault
Amanda Davis
Duane Davis
Simon de Graaf
Sebastián Demyda-Peyrás
Ina Dobrinski
Barbara Durrant
Alan Ealy
Lannett Edwards
Judith Eckert
Jose Luzardo Estrada
Trudee Fair
Laura Falchi
Richard Fayrer-Hosken
Alireza Fazeli
Rafael Fernandez
Roseli Fernandes Gonzalez
Hiroaki Funahashi
Amalia Gallegos
Andres Gambini
Fulvio Gandolfi
Bianca Gasparini
John Gibbons
Angelica Giraldo
Michael Golding
Marta Gomez
Martha Gomez
Andres Gonzalez Serrano
Hanna Grothmann
Alfonso Gutiérrez-Adán
Mary Hagedorn
Carol Hanna
Thomas Hansen
Yutaka Hashiyada
Karim Hendriks
Jose Henrique
Jason Herrick
Katrin Hinrichs
Ali Honoramooz
Toshitaka Horiiuchi
Patrice Humblot
Carol Keefer
Iłł Hwa Kim
Yoshioka Koji
Rebecca Krisher
Cicera Lazzarotto
Sergio Ledda
Kiho Lee
Fabio Lima
Charles Long
Pat Lonergan
Barbara Loureiro
Alberto Luciano
Reuben Mapleton
Ayanda Maqhashu
Satoko Matoba
Melanie McDowall
Pascal Mermillod
Marcella Milazzotto
Kazuchika Miyoshi
Sergio Morado
Lucia Moro
Peter Morrow
Lucky Nedambale
Heiner Niemann
Sofia Ortega
Irma Caroline Oskam
Rolando Pasquariello
Jennifer Patterson
Georgia Pennarossa
George Perry
Jorge Piedrahita
Carlos Pinzon
Earle Pope
Guilherme Pugliese
Sandeep Rajput
Marcelo Ratto
Poster Session Information

Location
Posters are located in Rio Exhibit Hall B of the Renaissance Austin Hotel on the Plaza Level (see map on page 4).

Poster Numbers
Posters are identified by the number corresponding to the abstract number in *Reproduction, Fertility and Development* 2017; 29 (1). Numbering of the posters begins at 1 and ends at 213.

Setup
Posters can be put up from 08:00 to 17:00 on Saturday, January 14, 2017, and from 06:30 to 08:00 on Sunday, January 15, 2017. **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* 2017; 29 (1); the Student Competition finalist; and Undergraduate finalist poster presentations will take place Monday, January 16, 2017, 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* 2017; 29 (1), will take place Tuesday, January 17, 2017, from 10:00 to 12:00.

Teardown
Poster teardown will take place from 12:00 to 13:00 on Tuesday, January 17, 2017. Posters that are not taken down by 13:00 on Tuesday will be taken down and discarded.
Poster Session Order by Topic

Poster number = abstract number in Reproduction, Fertility and Development 2017; 29 (1)

Student Competition

1. Insulin treatment during in vitro oocyte maturation leads to different gene expression and methylation patterns of key genes associated with metabolism and steroid synthesis in the bovine blastocyst
   D. Laskowski, P. Humblot, M. A. Sirard, Y. Sjunnesson, G. Andersson, and R. Bage

2. Bovine embryonic stem-like cells derived from in vitro-produced blastocysts

3. SIRT1—A possible marker for reproductive aging of in vivo-derived bovine oocytes?
   P. Kordowitzki, S. Klein, K.-G. Hadeler, P. Aldag, M. Nowak-Imialek, A. Lucas-Hahn, and H. Niemann

4. Subfertility in bulls carrying a nonsense mutation in TMEM95 is due to failure to penetrate the zona pellucida
   B. Fernandez-Fuertes, S. Kölle, and P. Lonergan

5. Testicular GnRH-II receptor knockdown impairs diurnal testosterone secretion in the boar

6. Aneuploidy tolerance in rhesus macaque pre-implantation embryos via micronuclei formation, cellular fragmentation, and blastomere exclusion

Artificial Insemination

7. Influence of estrus expression and treatment with GnRH on pregnancy rates in beef cattle synchronized with progesterone devices and estradiol and inseminated at a fixed-time

8. Anti-Müllerian hormone at weaning and breeding as a predictor of beef heifer fertility

9. Evaluation of a modified GnRH-based timed artificial insemination protocol associated with estrus detection in cyclic beef heifers inseminated with sex-selected semen
   M. G. Colazo, P. R. Whittaker, D. J. Bignell, and R. J. Mapleton

10. Prediction of calving time using body-surface temperature sensors and pedometers in beef cattle
    Y. Nishimura, M. Mise, K. Imai, and O. Dochi

11. Pregnancy rates and ATP1A1 polymorphism in thermotolerant Holstein cows during summer in Brazil
    T. F. Lacerda, R. B. G. C. Carvalho, M. G. Favoreto, and B. Loureiro

12. Ovarian structures, estrus expression, and pregnancy rate in beef heifers using estradiol cypionate or GnRH as ovulation inductors in timed AI protocol
Effects of nerve growth factor-β, purified from bull seminal plasma, on corpus luteum function and conceptus development in cows

J. L. Stewart, V. R. G. Mercadante, I. F. Canisso, and F. S. Lima

Enhancement of the early recovery of ovary and uterus functions by treatment of ECG and povidone-iodine in postpartum Japanese Black cattle

H. Matsuda, T. Yamanouchi, Y. Goto, M. Ohtake, and Y. Hashiyada

Quantification of bull sperm traits as assessed by computer-assisted semen analysis and the relationship to pregnancy rate following controlled breeding


Comparative study on epididymal sperm traits of Bonsmara and Nguni bulls


Sperm fertility rate assessed by embryo production in vivo and in vitro in South African bulls

M. H. Mapeka, F. V. Ramukhithi, C. M. Pilane, D. Norris, C. Banga, and K. C. Lehloenyana

SemenRate: The use of computer-assisted semen analysis and flow cytometry for objective bovine semen analysis in the United Kingdom

M. W. Spilman, K. L. Burton, and J. M. E. Statham

A novel approach to comparing reproductive stage serum profiles in mares using near-infrared spectroscopy and aquaphotomics


Effect of penicillamine, hypotaurine, and epinephrine treatment on motility, hyperactivity, and acrosome reaction of ram spermatozoa

K. El-Shahat, T. Ismail, M. Badr, and K. Zaki

Evaluation of semen extenders for short-term storage of ram semen at 4°C

M. Acharya, J. M. Burke, C. Hansen, and R. W. Rorie

Dynamic of synchronized follicular wave in ewes subjected to different doses of 17β-oestradiol given at beginning of the progesterone protocol


The effect of withdrawal timing of controlled internal drug release (CIDR) on ewe reproductive performance

A. Swelum, A. Moumen, and A. Alowaimer

Relationship between boar sperm traits and fertility rate following artificial insemination under smallholder production systems


Cloning/Nuclear Transfer

Production of transgenic pigs with CreER-mediated astrocytic-specific recombination system for neurological disease models

S.-U. Hwang, J. D. Yoon, K. Eun, H. Kim, and S.-H. Hyun

The use of paired CRISPR guide RNAs and the Cas9 system does not always produce site specific deletions of gene sequence in porcine cell and embryo culture

A. M. Spate, K. M. Whitworth, C. W. O’Gorman, A. K. Byrne, R. S. Prather, and K. D. Wells
Oxidative stress of liver in transgenic piglets with multiple copies of transgenes soluble human tumour necrosis factor receptor type IIG-FC and human heme oxygenase-1

Improved hatch rate after partial dissection of zona pellucida in cloned pig embryo

Positron emission tomography imaging of brain metabolism and dopaminergic neuron destruction in Parkinson’s disease model pig

Oxygen deprivation does not further augment mitochondrial membrane potential in pharmacologically treated fibroblasts for use in somatic cell nuclear transfer
B. R. Mordhorst, S. N. Bogue, K. D. Wells, J. A. Green, and R. S. Prather

Efficient generation of Klotho mutations in porcine somatic cell nuclear transfer embryos using a delivery of Cas9 ribonucleoproteins

Next-generation sequencing discloses differences in microRNA expression profiles of buffalo (Bubalus bubalis) embryos produced by hand-made cloning and in vitro fertilization
S. Lagah, T. J. Sood, P. Palta, M. Mukesh, R. S. Manik, M. Chauhan, and S. K. Singla

Buffalo (Bubalus bubalis) embryos produced by hand-made cloning and in vitro fertilization differ in their global transcriptome profile
T. J. Sood, S. Viviyan, S. K. Singla, M. Mukesh, M. S. Chauhan, R. S. Manik, and P. Palta

Production of transgenic cloned buffalo embryos containing overexpressed stearoyl Co-A desaturase gene following efficient transfection
T. Sharma, D. Dua, N. Saini, M. K. Singh, S. K. Singla, P. Palta, R. S. Manik, A. Alam, and M. S. Chauhan

Use of metaphase donor cells and activation with roscovitine for somatic cell nuclear transfer in bovine
G. V. Landschoot, V. Savy, N. Canel, S. Ferraris, and D. Salamone

Serial somatic cell nuclear transfer increases pregnancy losses in goats
M. Yang, J. Hall, Q. Meng, Z. Fan, and I. Polejaeva

Normality of neonatal reflex in cloned dogs

Production of transgenic dogs that overexpress peroxisome proliferator-activated receptor-alpha in a muscle-specific manner

Cryopreservation/Cryobiology

The effects of resveratrol during in vitro maturation on the developmental competence of porcine oocytes vitrified at the immature stage
The effect of exposure time on toxicity of vitrification solution on porcine cumulus-oocyte complexes before in vitro maturation
R. Appeltant, T. Somfai, E. C. S. Santos, and K. Kikuchi

The effect of ultrarapid vitrification for sheep oocyte viability
M. Toishibekov, Y. Toishibekov, and M. Yermekova

The effect of various cryoprotective agents and slow cooling rate on viability of sheep ovarian tissue

Correlations of methods of sperm analysis in fresh semen of South African indigenous goat
O. A. Ajao, F. Fushai, D. O. Owiny, and D. M. Barry

Successful kidding after ultrarapid vitrification of goat embryos
Y. Toishibekov and M. Yermekova

Survival of Holstein in vitro-produced embryos cultured in novel synthetic oviductal fluid media (SCF1) and dehydrated prior to cryopreservation
C. M. Owen, M. Barceló-Fimbres, J. L. Altermatt, and L. F. Campos-Chillon

Vitrification of immature and mature bovine oocytes
P. T. Hardin, F. A. Diaz, B. A. Foster, E. J. Gutierrez, and K. R. Bondioli

Cryopreservation of bovine germ cell using antifreeze polyamino-acid (carboxylated poly-l-lysine)

Effect of dimethyl sulfoxide- or glycerol-based vitrification protocols on the DNA methylation of bovine cumulus-oocyte complexes
E. J. Gutierrez, F. A. Diaz, B. A. Foster, P. T. Hardin, and K. R. Bondioli

Successful cryopreservation using low ethylene glycol concentration for in vitro-produced bovine embryos
M. Takayama, S. Sato, Y. Nishimura, K. Imai, and O. Dochi

Survival of sexed IVF-derived bovine embryos frozen at different preimplantation stages of development
L. Ferré, C. Fresno, M. Kjelland, and P. Ross

Caspase-3 inhibitor Z-VAD-FMK enhances cryotolerance of in vitro-produced bovine pre-implantation embryos
M. E. Pero, G. Zullo, C. De Canditiis, G. Albero, V. Longobardi, A. Salzano, R. Varchetta, and B. Gasparrini

Cryopreservation of bovine somatic cell using antifreeze polyamino-acid (carboxylated poly-l-lysine)

Freezing bull semen in a synthetic medium

Single layer centrifugation before cryopreservation improves bull sperm quality
T. Nongbua, A. Utta, N. Am-In, J. Suwimonteerabutr, A. Johannisson, and J. Morrell

Seminal plasma components and their relationship with stallion semen freezability
A. Usuga, G. Restrepo, and B. Rojano

The viability and longevity of Ogye chicken frozen semen with mitotempol, mitochondria-specific antioxidant
S. W. Kim, M. S. Kim, C.-L. Kim, D. Kim, and H.-H. Seong
Effect of seminal plasma removal on sperm characteristics and mitochondrial membrane following cryopreservation of South African indigenous buck semen

Radio-frequency identification Inteli-Straws: Gametes and embryo packaging, storage, and information recovery
M. E. Kjelland, T. Loper, C. Woodley, T. M. Swannack, T. K. Stroud, and S. Romo

Effect of pellet volume and thawing temperature on vitrification efficacy with domestic cat semen collected via urethral catheterization
A. Moresco, H. L. Bateman, J. Newsom, and W. F. Swanson

Developmental Biology

Effects of concanavalin A on the progesterone production by bovine steroidogenic luteal cells in vitro
F. C. Destro, I. Martin, F. D. C. Landim-Alvarenga, R. Sartori Filho, J. L. Pate, and J. C. P. Ferreira

Reversible inhibition of bovine minor embryonic genome activation impairs pre-implantation development
R. P. Nociti, R. V. Sampaio, V. F. M. H. de Lima, R. M. Schultz, and P. J. Ross

Bovine OCT4 (POU5F1) knockout embryos fail during the second lineage differentiation due to loss of Nanog
K. Simmet, N. Klymiuk, V. Zakhartchenko, T. Güngör, M. Reichenbach, H.-D. Reichenbach, and E. Wolf

Effect of endometrial biopsy on uterine health of tropically adapted beef cattle

Effects of nanopurified boar semen for artificial insemination on protein detection in swine offspring muscle and fat tissue

Ovulation of immature oocytes with high competence rates

Developmental health assessment of offspring produced from magnetic nanoparticles using near infrared analysis of plasma

Maternal obesity at conception and insulin sensitivity in late gestation alters placental structure but not fetal biometry at birth in the horse
M. Robles, E. Nouveau, L. Wimel, C. Dubois, M. Dahirel, A. Tarrade, and P. Chavatte-Palmer

Growth and market quality of pigs born from magnetic nanoparticle-treated boar spermatozoa

Blastocysts developed from embryos that spent up to 2-cell stage in vivo exhibited massive DNA methylation dysregulation including imprinted genes and DNA methyltransferases
XBP1 dysregulation by CRISPR/Cas9-mediated gene editing during porcine embryo early development
K. Gutierréz, W. G. Glanzner, N. Dicks, R. C. Bohrer, L. G. Currin, L. Michalovic, L. B. Agellon, and V. Bordignon

Melatonin improves porcine in vitro maturation via sonic hedgehog signalling

**Early Pregnancy**

Effect of progesterone supplementation on Day 4 after timed artificial insemination on pregnancy rate of lactating dairy cows

Spatial differences in metabolites and energy substrates in the bovine oviduct
V. Maillo, C. Simintiras, R. Sturme, P. Lonergan, and D. Rizos

The bovine embryo influences the proteome of the oviductal fluid
V. Maillo, O. S. Acuña, M. Aviles, P. Lonergan, and D. Rizos

Placenta protein profile characterization by placome size and gestational age in cattle
M. M. Ramirez, J. F. Martins, P. R. Villamil, M. Bertolini, L. R. Bertolini, and A. A. Moura

CLOCK mutant mice having a diminished circadian clock show abnormal implantation
T. Amano

**Embryo Culture**

Transcriptome profiling in oocytes-embryo and granulosa cells from bovine
M. A. Sirard, É. Fournier, I. Dufort, I. Gilbert, and C. Robert

Supplementation with carnosine during in vitro culture improves the quality of in vitro-produced bovine embryos
D. Le Bourhis, M. Verachten, P. Salvetti, M. Hochet, and L. Schibler

The cell-cycle related nuclear localization of platelet-activating factor in bovine and murine embryo development
L. T. M. Vandenberge, C. De Schauwer, B. Heindryckx, and A. Van Soom

Effect of bovine oviductal fluid on DNA methylation of bovine blastocysts produced in vitro
A. D. Barrera, E. V. García, M. Hamdi, M. J. Sánchez-Calabuig, D. Rizos, and A. Gutiérrez-Adán

Improvement of developmental competence of bovine in vitro-produced embryos by adding 2-methoxystypandrone in maturation media

How low can you go? Defining the minimal nutrient requirements for bovine embryos in culture
J. R. Herrick, A. F. Greene, J. Becker, W. B. Schoolcraft, and R. L. Krisher

Bone morphogenetic protein signaling during interaction of the bovine embryo with oviductal epithelial cells in vitro
E. V. García, M. Hamdi, A. D. Barrera, M. J. Sánchez-Calabuig, A. Gutiérrez-Adán, and D. Rizos
Pterostilbene can reduce the percentage of lipids and reactive oxygen species in in vitro-produced bovine embryos
F. Sosa, J. Fernando de la Torre, H. Álvarez, S. Pérez, M. E. Kjelland, and S. Romo

Regulation of stearoyl-coenzyme A desaturase by fatty acids is essential to porcine early embryo development

In vitro-matured gilt oocytes can have equal or better developmental competence than sow oocytes with new maturation media
L. D. Spate, S. L. Murphy, J. A. Benne, A. Giraldo, D. Hylan, and R. S. Prather

Effects of human recombination granulocyte–colony stimulating factor (HRG-CSF) on in vitro culture of porcine cloned embryos derived from thin cumulus cell layer of oocytes matured in vitro

Effect of bicarbonate/CO₂ level during embryo culture on equine blastocyst rate after intra-cytoplasmic sperm injection
Y. H. Choi, P. Tinetti, J. G. Brom-de-Luna, and K. Hinrichs

Methylation status of IGF2/H19 DMR3 region affects in vitro blastocyst production in goat (Capra hircus)

Oviductal epithelial cells co-culture promotes goat (Capra hircus) in vitro parthenogenetic embryo development

Embryo Manipulation

Disruption of TET1 during porcine embryogenesis using CRISPR/Cas9 system
K. Uh, J. Ryu, C. Ray, and K. Lee

Does blastocentesis affect cryopreservation survival of in vitro-produced bovine embryos?
D. A. Tutt, R. E. Lyons, and M. K. Holland

Blastocyst bisection to multiply biopsied and vitrified bovine embryos
F. C. Oback, J. Wei, L. Popovic, L. T. McGowan, J. E. Oliver, S. R. Delaney, and D. N. Wells

Feasibility of whole-genome amplification of lysed cells from embryo biopsies for pre-implantation genetic diagnosis
S. Lanjewar and K. Bondioli

The use of a rearing-fasting program as an alternative bio-stimulation method to hormonal equine chorionic gonadotropin treatment to control the embryo recovery of rabbit females
G. M. K. Mehaisen and A. O. Abbas

In vitro fertilization in mouse as a reprotoxicity model for xenobiotics
Y. Liu, H. S. Pedersen, L. Foldager, H. Callesen, and M. T. Sørensen

Embryo Transfer

Preliminary descriptive study of equine placenta generated after transfer of in vivo- and in vitro-produced embryos
A. Lanci, J. Mariella, B. Merlo, C. Castagnetti, and E. Iacono
Influence of injection altrenogest in uterine tone and embryonic vesicle growth in recipient mares
*V. H. Vallejo Aristizabal, H. D. Mogollón Garcia, and J. A. Dell’aqua Junior*

Birth of the first bovine embryo transfer calf in the Republic of Kosova
*B. Behluli, M. Jahnke, J. K. West, and C. R. Youngs*

Factors affecting pregnancy rates in the transfer of *in vitro*-produced Japanese Black cattle embryos
*T. Nishisouzu, A. Abe, S. Matoba, O. Dochi, and K. Okamura*

Dose and timing of administration of prostaglandin F$_2$α during fixed-time embryo transfer in an *in vitro*-production program
*R. V. Sala, A. Garcia-Guerra, L. C. Carrenho-Sala, M. Fosado, E. Peralta, R. D. Tosta, L. C. C. Tosta, J. F. Moreno, P. S. Baruselli, and M. C. Wiltbank*

Unilateral and bilateral transfer of 2 *in vitro*-produced embryos increases pregnancy loss between 30 and 60 days
*L. C. Carrenho-Sala, A. Garcia-Guerra, R. V. Sala, M. Fosado, D. C. Pereira, A. Lopez, J. F. Moreno, and M. C. Wiltbank*

Factors affecting pregnancy rates and embryo/fetal losses in recipients receiving *in vitro*-produced embryos by fixed-time embryo transfer

**Epidemiology/Diseases**

Near-infrared spectroscopy and aquaphotomics analysis of serum from mares exposed to the fungal mycotoxin zearalenone

Assessment of anti-bacterial effects of pegylated silver-coated carbon nanotubes on causative bacteria of bovine infertility using bioluminescence imaging system
*S. Park, A. A. Chaudhari, S. Pillai, S. R. Singh, S. T. Willard, P. L. Ryan, and J. M. Feugang*

Research priorities for safe sanitary trade of embryo and semen
*F. Fieni, C. Grant, J. Gard-Schnuelle, G. Perry, C. Wrenzycki, and P. Blondin*

Is the binding of *Coxiella burnetii* to the zona pellucidae following *in vitro* infection of *in vitro*-produced goat embryos concentration dependent?
*F. Fieni, A. Alsaleh, J. M. de Souza-Fabjan, P. Mermillod, E. Corbin, P. Nascimento, J. F. Bruyas, and J. L. Pellerin*

**Exotic Species**

Reproductive performance parameters in a large herd of confined free-roaming white rhinoceroses (*Ceratotherium simum*)
*C. Ververs, M. Hostens, M. van Zijll Langhout, M. Otto, J. Govaere, and A. Van Soom*
Effect of melatonin treatment on libido and endocrine function of dromedary camel bulls out of the breeding season
A. Swelum, I. Saadeldin, H. Ba-Awadh, and A. Alowaimer

Biochemical composition of follicular fluid in relation to the stimulus to induce ovulation in alpacas (Vicugna pacos)
W. Huanca, A. Castro, N. Gomez, and A. Cordero

Hormonal supplementation strategies for improvement of preganacy rates in embryo transfer in alpacas

Developing a cryopreservation protocol for desert tortoise sperm (Gopherus agassizzi)
N. Ravida, C. Young, L. Gokool, and B. S. Durrant

Getting the yolk out: The use of a soy lecithin-based cryomedium for semen banking in the Pallas’ cat and fishing cat
L. M. Vansandt, H. L. Bateman, J. Newsom, and W. F. Swanson

Role of the ovary and uterus for the Plains Viscacha (Lagostomus maximus maximus, Chinchillidae) reproduction

Incorporation and developmental toxicity of quantum dot nanoparticles in amphibian larvae

Folliculogenesis/Oogenesis

Fibroblast growth factor receptor-1c, -2c, -3c, and -4 mRNA abundance in granulosa cells during follicular growth in cattle

Exosome-mediated oxidative stress response in bovine granulosa cells

Assessment of ovarian follicular dysplasia utilizing ultrasound and histologic examination
J. A. Gard, J. Roberts, T. Braden, M. Mansour, J. Yelich, K. Irsik, O. Rae, and J. G. Wenzel

Antral follicle count of 2-year-old mares is highly correlated with anti-Müllerian hormone concentrations at 24 to 28 weeks of age
D. Scarlet, J. Kuhl, M. Wulf, N. Ille, and C. Aurich

Three-dimensional assessment of early corpus luteum vascularity in buffalo (Bubalus bubalis)
S. Caunce, D. Dadarwal, G. Adams, P. Brar, and J. Singh

Ovarian follicular dynamics in cross-bred ewes during the rainy season under tropical conditions
E. A. Reyes, D. R. Bergfelt, V. F. Ratto, X. P. Valderrama, E. Arcelay, and M. H. Ratto

Evaluation of luteinizing hormone receptor (LHR) over the estrous cycle in canine ovaries
M. De los Reyes, F. Ramirez, and J. Palomino
Gene Expression

Changes in gene expression following exposure of bovine endometrial epithelial cells (bEEC) to *Escherichia coli* LPS; their possible effect on implantation

Incomplete compensatory up-regulation of X-linked genes in bovine germline, early embryos, and somatic tissues

Expression of the receptor for advanced glycation end products in bovine oocytes and embryos cultured in low and high oxygen
*M. Barandalla, S. Colleoni, C. Galli, and G. Lazzari*

Abundance of mRNA for histone variants, histone, and DNA modification enzymes in bovine *in vivo* oocytes and pre-implantation embryos

Neuronatin transcript analyses as marker to confirm successful fertilization in bovine blastocysts
*J. Stöhr, L. Maurer, B. Zimmer, and C. Wrenzycki*

Knockdown of *WBPI* decreases trophectoderm formation in the pre-implantation bovine embryo
*M. S. Ortega and P. J. Hansen*

A catalog of reference genes with high, medium, and low levels of expression during bovine *in vivo* pre-implantation development
*Z. Jiang, J. Sun, S. Marjani, H. Dong, X. Zheng, J. Bi, J. Chen, and X. Tian*

Effect of prolonged progesterone exposure of beef cows on the expression of oocyte developmental competence-associated genes
*F. A. Diaz, B. A. Foster, P. T. Hardin, E. J. Gutierrez, and K. R. Bondioli*

Overview of fertility traits in Russian Holstein bulls using genome-wide association
*A. A. Sermayagin, E. N. Naryshkina, E. A. Gladyr, I. N. Yanchukov, G. Brem, and N. A. Zinovieva*

Comparison of endometrial transcriptome changes between ipsi- and contralateral horns during diestrous and its relationship with the ability to support conceptus elongation in cattle

Relaxin and its receptors in mature canine spermatozoa

New insights on the role of 17b-estradiol in corpus luteum lifespan of non-pregnant bitches
*A. P. Cardoso, R. Silva, F. Garcia, I. C. Giometti, and P. Papa*

IVF/IVP

Impact of selection system by kinetics on the early embryonic development in bovine ovum pickup-IVF embryos
*M. Takayama, M. Moriyoshi, O. Dochi, and K. Imai*
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>137</td>
<td>Effect of the addition of folic acid to maturation and culture media on development of the bovine blastocyst and its survival rate after freeze-thawing</td>
<td>S. Sato, O. Dochi, and K. Imai</td>
</tr>
<tr>
<td>138</td>
<td>The relationship between the normality of first cleavage, the gene expression in blastomeres, and the ability to develop to the blastocyst stage in IVF-derived bovine 2-cell stage embryos</td>
<td>S. Matoba, M. Kaneda, T. Somfai, K. Imai, and M. Geshi</td>
</tr>
<tr>
<td>139</td>
<td>Bovine preimplantation embryos secrete extracellular vesicles, which may indicate embryo competence</td>
<td>E. Mellisho, A. Velasquez, M. J. Nuñez, and L. Rodriguez-Alvarez</td>
</tr>
<tr>
<td>140</td>
<td>Comparison of 3 different methods to select high sperm quality for IVF</td>
<td>M. Rubessa, S. N. Lotti, R. V. Knox, and M. Wheeler</td>
</tr>
<tr>
<td>141</td>
<td>Bovine embryo development rates are affected when oocytes are matured in different vials containing HEPES/bicarbonate buffered medium</td>
<td>N. Hashem, J. O. Secher, J. H. Pryor, C. R. Long, C. R. Looney, B. Avery, P. Hyttel, and L. Stroebech</td>
</tr>
<tr>
<td>142</td>
<td>Possible benefit of intracytoplasmic sperm injection on the efficiency of embryo production in aged cows</td>
<td>F. Magata, K. Tsuchiya, H. Komaki, M. Konishi, and A. Ideta</td>
</tr>
<tr>
<td>143</td>
<td>Effect of FSH or epidermal-growth-factor-like peptide supplementation to maturation medium on developmental competence of bovine oocytes derived from fully developed follicles induced by super-stimulation</td>
<td>T. Yamanouchi, S. Sugimura, H. Matsuda, M. Ohtake, Y. Goto, S. Kobayshi, and Y. Hashiyada</td>
</tr>
<tr>
<td>146</td>
<td>Heparan sulfate is involved in nuclear sperm decondensation after fertilization in bovine</td>
<td>N. G. Canel, M. Romanato, M. Suva, L. Calvo, D. Salamone, and J. C. Calvo</td>
</tr>
<tr>
<td>147</td>
<td>The developmental characteristics of in vitro-produced Cattle-Wisent (Bos taurus-Bison bonasus) hybrid embryos</td>
<td>E. N. Shedova, G. N. Singina, V. A. Bagirov, and N. A. Zinovieva</td>
</tr>
<tr>
<td>151</td>
<td>Effect of ascorbic acid on oxidative stress and its thermoprotectant role on in vitro embryonic development of buffalo (Bubalus bubalis) embryos</td>
<td>M. Roshan, D. Dua, N. Saini, A. Sharma, T. Sharma, M. K. Singh, S. K. Singla, P. Palta, R. S. Manik, and M. S. Chauhan</td>
</tr>
</tbody>
</table>

*International Embryo Technology Society*
Species-specific differences in the methylation reprogramming during early pre-implantation development
S. Canovas, E. Ivanova, S. Garcia-Martinez, R. Romar, N. Fonseca-Balvis, A. Gutierrez-Adan, D. Rizos, S. Andrews, G. Kelsey, and P. Coy

Supplementation with linolenic acid and l-carnitine during IVM reduced the expression of genes related to lipogenesis but did not alter the lipid content and cryotolerance of in vitro-produced embryos

Comparison of different culture media and incubation methods on culturing murine embryos in vitro using straw as a receptacle

Induction of follicular recruitment using dominant follicle reduction or 2 doses of gonadotropin-releasing hormone
K. A. Lindell, S. C. Bowley, D. J. Matsas, and E. C. White

Oviductal fluid supplementation during maturation and fertilization improves in vitro embryonic development in pigs
A. Goldacker, E. Winn, J. Z. Current, and B. D. Whitaker

Effect of FSH starvation (coasting) following superovulation on oocyte competence and cloning efficiency in goats

First llama born by in vitro fertilization
L. Landeo, J. Mendoza, L. Manrique, E. Taipe, R. Molina, J. Contreras, and J. Ruiz

In vitro development of caprine embryo using cryopreserved black Bengal buck semen
R. Kumar, P. Chandra, P. Konyak, M. Karunakaran, A. Santra, and S. K. Das

Comparative study of in vitro culture media and assisted hatching techniques on mouse embryos

Male Physiology

Effects of liposomes on sperm motility and DNA-binding efficiency
S. N. Lotti, M. Rubessa, R. V. Knox, and M. B. Wheeler

Development and evaluation of an oral contraceptive bait for feral pigs
S. Campbell, C. Long, B. Pyzyna, M. Westhusin, C. Dyer, and D. Kraemer

Evaluation of viability of bull semen collected by electro-ejaculation using commercial semen extender and 2 culture media at controlled room temperature
A. M. Raseona, O. A. Ajao, L. D. Nethengwe, L. R. Madzhie, T. L. Nedambale, and D. M. Barry

Carnitine improves post-thawing sperm motility by increasing adenosine triphosphate content in buffalo (Bubalus bubalis)
V. Longobardi, G. Zullo, G. Albero, C. De Canditiis, A. Salzano, N. D’Onofrio, and B. Gasparrini
The effect of indigenous chicken egg yolk sources and temperatures on short-term preservation of south african indigenous goat semen
M. A. Bopape, T. L. Nedambale, C. M. Pilane, and K. C. Lehloeny

Influence of season on seminal characteristics of alpacas (Vicugna pacos)
J. C. Villanueva, W. F. Huanca, J. Turin, and W. Huanca

Oocyte Activation

Developmental competence of porcine oocytes derived from small- or medium-sized follicles and denuded of cumulus cells before and during in vitro maturation
P. Ferré, K. X. Nguyen, T. Wakai, and H. Funahashi

The developmental potential of parthenogenetic embryos is affected by prolactin during the prolonged culture of bovine cumulus-enclosed oocytes
G. N. Singina, I. Y. Lebedeva, E. N. Shedova, A. B. Lopukhov, and N. A. Zinovieva

Oocyte Maturation

Mature oocytes trigger the release of bovine sperm from an immobilized oviduct glycan
M. M. Elsokary and D. J. Miller

Supplement of growth differentiation factor 8 on porcine oocyte during in vitro maturation activates SMAD2 and cAMP responsive element binding protein signaling
J. D. Yoon, E. Lee, and S.-H. Hyun

Pre-in vitro maturation of porcine oocytes using pituitary adenylate cyclase-activating peptide: Effects on meiosis progression and developmental competence
K.-M. Park and S. H. Hyun

The apoptotic effects of bisphenol a-induced mitochondrial-derived reactive oxygen species on maturation of porcine oocytes in vitro

Melatonin alleviates the endoplasmic reticulum stress through the regulating of unfolding protein response signaling during porcine oocyte maturation in vitro

Effect of human endothelial progenitor cells on in vitro maturation of porcine oocytes and parthenogenetic embryo development competence

Effects of glucuronic acid and N-acetyl-D-glucosamine supplementation on the perivitelline space during the in vitro maturation of porcine oocytes
J. Z. Current and B. D. Whitaker

Regulatory role of Mir-20A during bovine oocyte maturation

Exposure of bovine oocytes to a residual concentration of mono-(2-ethylhexyl) phthalate further impairs blastocyst gene expression
Z. Roth and D. Kalo
Transcriptional differences in genes related to glucose metabolism between competent and incompetent bovine immature cumulus–oocyte complexes selected by BCB
I. Lamas-Toranzo, D. A. Martinez-Corona, E. Pericuesta, and P. Bermejo-Álvarez

Different gonadotropin supplementations alter mRNA expression pattern in bovine oocytes during in vitro maturation
C. Blaschka, B. Zimmer, and C. Wrenzycki

Long-term transportation of bovine oocytes with meiotic blockers: Effects on nuclear maturation

Resveratrol during in vitro maturation improves the quality of bovine oocyte and enhances embryonic development in vitro
V. Torres, L. Muñoz, R. Urrego, J. J. Echeverry, and A. Lopez

Maturation of bovine cumulus-oocyte complexes with follicle fluid varying in estradiol content affects cumulus cell expansion without affecting subsequent embryo development in vitro

Gene expression of in vitro-maturated oocytes can be modulated by follicle exosomes from cows kept under thermoneutral or heat stress conditions

Effect of histone deacetylase inhibitor on development of embryos derived from heat-shocked bovine oocytes

Oviductal co-culture cell did not reduce the rate of chromosomal abnormalities in in vitro-produced bovine embryos
S. D. Peyrás, P. Peral-García, and M. Moreno-Millán

Supplementation with low doses of dimethyl sulfoxide during in vitro maturation results in improved in vitro embryo production in cattle
A. E. Ynsaurralde, M. Suvá, R. Bevacqua, S. Munilla, C. Luchetti, and D. F. Salamone

9-Cis retinoic acid improves maturation rate and alters gene expression of in vitro-matured oocytes in Egyptian buffalo
A. Gad, S. Abu Hamed, M. Khalifa, A. El-Sayed, S. A. Swiefy, and S. El-Assal

Improvement of in vitro canine oocyte maturation by oviductal secretome
A. Lange-Consiglio, C. Perrini, P. Esposti, and F. Cremonesi

Effect of the ovarian stimulation of anestrous cats with eCG on morphological quality and gene expression profile of cumulus-oocyte complexes

Sexing

SexedUltra™, a new method of processing sex-sorted bovine sperm improves conception rates
SexedUltra™, a new method of processing sex sorted bovine sperm improves post-thaw sperm quality and in vitro fertility
C. Gonzalez-Marin, R. W. Lenz, T. B. Gilligan, K. M. Evans, C. E. Gongora, J. F. Moreno, and R. Vishwanath

Stem Cells
Behavior of porcine mesenchymal stem cells on a collagen-glycosaminoglycan hydrogel scaffold for bone and cartilage tissue engineering
S. A. Womack, D. J. Milner, D. W. Weisgerber, B. A. C. Harley, and M. B. Wheeler

Robust propagation of self-renewing porcine neural stem cells isolated from transgenic pigs with a GFAP-CreERT2 system capable of controlling the expression of egfp genes
E. Kim, H. Kim, and S.-H. Hyun

Effect of small molecule inhibitors on OCT-4, NANOG, and SOX-2 expression in bovine fetal fibroblast cells
L. W. C. Gaspard and K. R. Bondioli

Expression of mesenchymal stromal cell (MSC) markers in the equine endometrium and in vitro influence of steroid hormones on endometrial-derived MSC
E. Rink, J. Kuhl, C. Aurich, H. French, R. Nino-Fong, E. Watson, and F. X. Donadeu

Use of a micro-bioreactor to promote 3-dimensional cell rearrangement and induce, maintain, and stabilize high plasticity in epigenetically erased fibroblasts

The effect of zinc on the differentiation of adipose-derived stem cells into osteoblasts
J. C. Bertels, M. Rubessa, S. R. Schreiber, and M. B. Wheeler

Successful transplantation of buffalo (Bubalus bubalis) germ cells to homologous recipients
A. Sharma, A. Kumaresan, S. Singla, P. Palta, R. S. Manik, and M. S. Chauhan

Effects of reprogramming-conditioned medium on ultraviolet ray A–damaged human dermal fibroblasts

Superovulation
The use of long-acting FSH-MAP5 in sheep superovulation programs
R. Fry

Effect of a single subcutaneous injection of FSH and timing of prostaglandin F_{2α} administration on superovulatory response in Japanese Black cows
M. Sugawara, Y. Kaneda, A. Miyoshi, H. Sekizawa, and O. Dochi

Antral follicular counts and superstimulatory response in prepubertal calves

Transgenesis
Single-step gene editing of 3 xenoantigens in porcine fibroblasts using programmable nucleases
Potential of green fluorescent protein locus for gene editing in DNA transposon-produced transgenic cattle  

Production of Cas9-expressing cattle using DNA transposon  

CRISPR/Cas9-mediated repair of the NHLRC2 locus in beef cattle  
K. M. Polkoff, S. N. Lotti, J. E. Beever, and M. B. Wheeler

Efficient generation of myostatin promoter mutations in bovine embryos using the CRISPR/Cas9 system  
C. A. Pinzon, M. Snyder, J. Pryor, B. Thompson, M. Golding, and C. Long

Production of transgenic cloned buffalo (bubalus bubalis) embryos containing human insulin gene through hand-guided cloning  

Production of buffalo (Bubalus bubalis) embryos containing human lysozyme gene  

Generation of APOBEC3CH and APOBEC3H double-knockout cats by site-specific gene targeting  

Undergraduate Poster Competition

Effect of amniotic fluid derived stem cell-conditioned medium on development and post-thaw survival of in vitro-produced Holstein embryos  
K. Krautkramer, C. M. Owen, M. Barceló-Fimbres, and L. F. Campos-Chillon

A simple protocol to extract DNA from small numbers of cells  
N. A. Lopez, S. Schreiber, S. N. Lotti, M. Rubessa, and M. B. Wheeler

Effect of novel SOF medium and l-ascorbic acid during cryopreservation of in vitro-produced Jersey cattle embryos  
A. R. Higginbotham, C. M. Owen, M. Barceló-Fimbres, and L. F. Campos-Chillon
Author Index

Author, Poster = abstract number in Reproduction, Fertility and Development 2017; 29 (1)

Aad, P. Y., 117
Abbas, A. O., 95
Abe, A., 100
Abu Hamed, S., 187
Acharya, M., 8, 21
Acuña, O. S., 74
Adams, G., 121, 202
Agcanas, L. A., 19, 105
Agellon, L. B., 70
Aguiar, L. H., 157
Ahn, C., 27, 28
Ahn, K. S., 28, 199
Ajao, O., 154
Ajao, O. A., 43, 57, 163
Al Naib, A., 182
Alam, A., 34
Albero, G., 51, 164
Aldag, P., 3, 148
Almeida, I. L. G., 134
Alowaimer, A., 23, 110
Alsaleh, A., 108
Altermatt, J. L., 45, 211, 213
Andersson, G., 1, 124
Ando, T., 47, 52
Andrada, S., 7, 103, 104
Andreas, E., 176
Andrews, S., 152
Appeltant, R., 39, 40
Arcelay, E., 122
Asparrin, M., 112
Aurich, C., 120, 195
Avery, B., 141
Aviles, M., 74
Azrak, A. J., 72
Ba-Awadh, H., 110
Badr, M., 20
Bag, R., 1
Bagirov, V. A., 147
Banga, C., 17
Barajas, J. L., 7, 103, 104
Barandalla, M., 126
Barbeito, C. G., 115
Barceló-Fimbres, M., 45, 211, 213
Barrera, A. D., 80, 83
Barreto, R. N., 115
Barry, D. M., 43, 57, 154, 160, 163
Barth, I. R., 101
Bastos, M. R., 72
Bateman, H. L., 59, 114
Batista, R. I. T. P., 184
Baulain, U., 148
Beefer, J. E., 206
Behluli, B., 99
Behura, S., 133
Belmonte, J. C., 2
Benne, J. A., 86
Bergfelt, D. R., 122
Bermejo-Álvarez, P., 178
Bernal, B., 104
Bernal-Ulloa, S. M., 148
Bernardi, M. L., 12
Bertels, J. C., 197
Bertolini, L. R., 75, 157
Bertolini, M., 75, 157
Besenfelder, U., 69
Bevacqua, R., 186
Bi, J., 130
Bignell, D. J., 9
Blaschka, C., 179
Blomberg, L. A., 125, 127
Blondin, P., 107
Bó, G. A., 7, 103, 104
Bodranhien, P., 53
Boglietti, Y. S., 2
Bogue, S. N., 30
Bohrer, R. C., 70
Bondioli, K., 94
Bondioli, K. R., 46, 48, 131, 194
Bongcam-Rudloff, E., 124
Bopape, M. A., 165
Bordignon, V., 70
Borges, J. B. S., 12
Bovula, N., 16
Bowers, S., 19, 105
Bowley, S. C., 155
Braden, T., 119
Brar, P., 121
Brem, G., 132
Brevini, T. A. L., 196
Brom-de-Luna, J. G., 88
Browne, J. A., 133
Bruyas, J. F., 108
Buff, S., 53
Burke, J. M., 21
Burton, K. L., 18
Butler, S. T., 133
Byrne, A. K., 26
Cai, L., 87
Callesen, H., 96
Caloni, F., 117
Calvo, J. C., 146
Calvo, L., 146
Camargo, L. S. A., 149, 184
Camela, E. S. C., 22
Campbell, S., 162
Campos-Chillon, L. F., 45, 211, 213
Canal, N., 35
Canel, N. G., 146
Canisso, I. F., 13
Canovas, S., 152
Carbone, L., 6
Cardoso, A. P., 135
Carreño-Sala, L. C., 101, 102
Carvalho, R. B. G. C., 11
Castagnetti, C., 97
Castillo, A. C. S., 183
Castro, A., 111
Castro, F. O., 189
Caunce, S., 121
Cedeño, A., 7, 103, 104
Cederberg, R. A., 5
Chandra, P., 159
Chanrot, M., 124
Chang, G., 124
Chase, C. C., 144
Chaudhari, A. A., 106
Chauhan, M., 32
Chauhan, M. S., 33, 34, 89, 90, 151, 198, 208, 209
Chavatte-Palmer, P., 67
Chavez, S. L., 6
Chen, J., 125, 127, 130
Chica, A. I., 150
Choi, K.-H., 85
Greene, A. F., 82
Greyling, J. P. C., 15
Güngör, T., 62
Guo, Y., 124
Gutierrez, E. J., 46, 48, 131
Gutierrez, K., 70
Gutierrez-Adan, A., 152
Gutiérrez-Adán, A., 80, 83
Ha, A.-N., 210
Hadeler, K.-G., 3, 148
Hahn, S.-E., 204, 205
Haji, A. I., 65
Hall, J., 36
Hamdi, M., 80, 83
Hansen, C., 21
Hansen, C. R., 8
Hansen, P. J., 129
Hardin, P. T., 46, 48, 131
Harl, A. W., 182
Harley, B. A. C., 192
Hasenpusch, E., 190
Hashem, N., 141
Hashiyada, Y., 14, 143
Havlicek, V., 69
Held, E., 69, 118, 176
Helser, L. A., 190
Heo, S. Y., 199
Herrick, J. R., 82
Herrmann, D., 148
Higginbotham, A. R., 213
Hill, J., 63
Hinrichs, K., 88
Hochet, M., 78
Hoelker, M., 69, 118, 176
Holland, M. K., 63, 92
Hostens, M., 109
Huancas, W., 111, 166
Huancas, W. F., 166, 202
Humblot, P., 1, 124
Hwang, J. Y., 85
Hwang, K.-C., 87
Hwang, S.-U., 25
Hwang, W.-S., 87
Hylan, D., 86
Hyon, S.-H., 47, 52
Hyttel, P., 141
Hyun, S. H., 171
Hyun, S.-H., 25, 87, 170, 193
Iacono, E., 97
Ideta, A., 142
Iglmanov, U. I., 42
Ille, N., 120
Imai, K., 10, 49, 136, 137, 138
Imamura, S., 47
Irsik, K., 119
Ismail, T., 20
Ivanova, E., 152
Jahnke, M., 99
Jang, G., 204, 205
Jeong, Y. W., 87
Jiang, Z., 125, 127, 130
Jimenez-Escobar, C., 150
Jin, J.-I., 81, 210
Jin, J.-X., 27, 71, 174
Jin, Y.-X., 87
Johannisson, A., 54
Joly, T., 53
Joo, M.-D., 81, 210
Jue, N. K., 125
Julien, A. R., 116
Jung, J.-M., 172, 173
Jung, M. H., 31
Kalo, N., 39
Kalo, D., 177
Kalonji, P. V. M., 57
Kaneda, M., 138
Kaneda, Y., 201
Kaneko, H., 39
Kang, J., 199
Kang, J. H., 199
Kanuya, N. L., 15
Karunakaran, M., 159
Kaushik, R., 208, 209
Kelly, A. K., 133
Kelsey, G., 152
Khalifa, M., 187
Khan, I., 81, 210
Kikuchi, K., 39, 40
Kim, C.-L., 56
Kim, D., 56
Kim, E., 193
Kim, G. A., 27, 29, 37, 71, 174
Kim, H., 25, 29, 193
Kim, H.-J., 204, 205
Kim, H.-M., 204
Kim, H.-S., 204, 205
Kim, J. H., 29
Kim, J.-W., 172, 173
Kim, M. J., 37, 38, 174
Kim, M. S., 56
Kim, M.-J., 172, 173
Kim, S., 29, 199
Kim, S. W., 56
Kim, S.-H., 85
Kim, S.-J., 204
Kim, T., 38
Kim, Y. J., 28
Kjelland, M., 50
Kjelland, M. E., 58, 65, 84
Klein, S., 3
Klymiuk, N., 62
Knox, R. V., 140, 161
Kobayashi, S., 143
Kölle, S., 4
Komaki, H., 142
Kong, I.-K., 81, 210
Konishi, M., 142
Konyak, P., 159
Koo, B. C., 38
Koo, D.-B., 172, 173
Koo, O.-J., 31
Kordowitzki, P., 3
Kouba, A. J., 116
Kraemer, D., 162
Kraemer, D. C., 65
Krause, A. R. T., 202
Krautkramer, K., 211
Krisher, R. L., 82
Kubota, C., 47, 52
Kuhl, J., 120, 195
Kumar, A., 209
Kumar, R., 159
Kumar, S., 198
Kwon, M. S., 38
Lacerda, T. F., 11
Lagah, S., 32
Lagutina, I., 203
Lamas-Toranzo, I., 178
Lanci, A., 97
Landeo, L., 158
Landim-Alvarenga, F. D. C., 60
Landschoot, G. V., 35
Lange-Consiglio, A., 188
Lanjewar, S., 94
Larimore, E. L., 182
Laskowski, D., 1
Lazar, N., 6
Lazzari, G., 126, 203
Lazzarotto, C. R., 157
Le Bourhis, D., 78
Leao, B. C. S., 153, 180
Lebedeva, I. Y., 168
Ledda, S., 196
Lee, B. C., 27, 28, 29, 31, 37, 38, 71, 174
Lee, C.-I., 204, 205
Lee, C.-K., 85
Lee, C.-K., 85
Lee, D.-K., 85
Lee, E., 170
Lee, J.-H., 204, 205
Lee, K., 91
Lee, K.-L., 81, 210
Lee, S., 27, 29, 31, 71, 174
Lee, S. G., 199
Lee, S. H., 37, 38, 174
Lee, S. R., 210
Lee, S. Y., 199
Lee, S.-J., 204, 205
Lehloenya, K. C., 17, 145, 165
Lents, C. A., 5
Lenz, R. W., 190, 191
Lester, T. D., 8
Liao, S., 64, 68
Lima, F. S., 13
Lindell, K. A., 155
Lindenn, L., 118
Liu, Y., 96
Lo, E., 199
Lonergan, P., 4, 73, 74, 133
Long, C., 162, 207
Long, C. R., 141
Longobardi, V., 51, 164
Looney, C. R., 141
Loper, T., 58
Lopez, A., 102, 181
Lopez, A., 212
Lopukhov, A. B., 168
Lotti, S. N., 140, 161, 206, 212
Loureiro, B., 11
Lucas-Hahn, A., 3, 148
Luchetti, C., 186
Lyons, R. E., 63, 92
Macedo, G. C., 149
Machado, A. B., 12
Maciel, G. S., 22
Madzhie, L. R., 57, 154, 163
Magata, F., 142
Mahajan, M., 89, 90
Maillo, V., 73, 74
Makhlany, L. G., 16
Manik, R. S., 32, 33, 34, 89, 90, 151, 198, 208, 209
Manrique, L., 158
Mansour, M., 119
Manzoni, E. F. M., 196
Mapeka, M. H., 17
Mapletoft, R., 202
Mapletoft, R. J., 7, 9, 103, 104
Maqhashu, A., 15, 16
Mariella, J., 97
Marjani, S., 130
Martin, I., 60
Martínez-Corona, D. A., 178
Martins, J. F., 75
Martins, L. T., 157
Matabane, M. B., 16, 24
Mathew, D. J., 133
Matoba, S., 100, 138
Matsas, D. J., 155
Matsuda, H., 14, 143
Maurer, L., 128
McGowan, L. T., 93
McGowan, M., 63
McNeill, A. K., 144
Mehaisen, G. M. K., 95
Mehta, P., 208, 209
Mellisho, E., 139
Mendes, V. R. A., 184
Méndez-Calderón, C. E., 157
Mendoza, J., 158
Meng, Q., 36
Mercadante, V. R. G., 13
Merlo, B., 97
Mermillod, P., 108
Mesalam, A., 81
Messe, A. M., 115
Michalovic, L., 70
Miglino, M. A., 115
Miguel-Gonzales, M., 112
Miles, J. R., 144
Müller, D. J., 169
Milner, D. J., 192
Mingot, G. Z., 153, 180
Mise, M., 10
Miyoshi, A., 201
Mogollon García, H. D., 183
Mogollón García, H. D., 98
Molina, R., 158
Monyelote, V., 57
Moon, J., 29
Moorhead, W. A., 64
Moraes, A. S., 72
Mordhorst, B. R., 30
Moreno, J. F., 101, 102, 190, 191
Moreno-Millán, M., 185
Moresco, A., 59
Moriyoshi, M., 136
Morrell, B. C., 117
Morrell, J., 54
Moumen, A., 23
Moura, A. A., 75, 150
Mphaphathi, M. L., 15, 16, 57, 154, 160
Muhsen-Alanssari, S. A., 65
Mukesh, M., 32, 33
Munilla, S., 186
Muñoz, L., 181
Murphy, S. L., 86
Nagai, T., 39
Nagano, C. S., 150
Nagoorvali, D., 89, 90
Naryshkina, E. N., 132
Nascimento, P., 108
Nedambale, T. L., 15, 16, 24, 57, 145, 154, 160, 163, 165
Negota, N. C., 57, 160
Nepahwe, K., 24
Nethengwe, L. D., 163
Nethenzheni, L. P., 57, 154, 160
Nethenzheni, P., 24
Netshirova, T. R., 15, 16, 145
Neuhoff, C., 69, 118, 176
Neven, K. A., 6
Newberry, H. R., 8
Newsom, J., 59, 114
Nguyen, K. X., 167
Niemann, H., 3, 148
Nino-Fong, R., 195
Nishimura, Y., 10, 49
Nishisouzu, T., 100
Nkagoram, M., 145
Nociti, R. P., 22, 61
Nongbua, T., 54
Norris, D., 17, 24
Nowak-Imialek, M., 3
Nowak-Imialek, M., 3
Nunes, G. B., 153, 180
Nuñez, M. J., 139
PETS has been a world leading embryo transfer supply company in the bovine and equine industries for almost 3 decades. Our goal all this time has been your success and we work every day to achieve this with excellent customer service and quality E.T. supplies from multiple reputable companies such as ICPbio, Vetoquinol, MAI, SPI, Wesco, NovaVive and more.

Come by and visit us at Booth # 16 to find out more about our products.
2017 Recipient of the IETS Distinguished Service Award

Pascale Chavatte-Palmer

Pascale Chavatte-Palmer obtained her BS in 1984 and completed her DVM in 1989 with the national veterinary school of Alfort, located in Maisons-Alfort, Val-de-Marne, near Paris. She then went on to complete her residency in theriogenology with the University of Florida School of Veterinary Medicine, Gainesville, FL. Wanting to pursue a career in research, Chavatte-Palmer completed her PhD in 1995 at the University of Cambridge, and her postdoctoral studies in 1997 at the National Institute of Medical Research (INSERM), Paris.

Chavatte-Palmer began her career as a Lecturer from 1998 to 2006 with AgroParisTech, a leading university in life sciences and agronomy and one of the foremost and most prestigious Grandes Ecoles in France. It was after this that she joined INRA (National Institute of Agronomical Research) as a researcher/team leader, and she is still with this fine institute as a research director of the Reproduction and Developmental Biology unit.

Chavatte-Palmer has been an active member of IETS since 1999 and was elected as a member of the Board of Directors of IETS from 2009 to 2014. She was a co-chair of the scientific program for the 38th Annual Conference of the IETS in 2012 held in Phoenix, Arizona. She was also the head of the Local Conference organizing committee for the 41st Annual Conference of the IETS in 2015 held in Versailles, France. Chavatte-Palmer was very actively involved in the sponsorship committee that year, making the Versailles meeting one of the most financially successful meetings held in Europe. One IETS committee that was very dear to Chavatte-Palmer was the HASAC committee, which she chaired from 2010 to 2014 and acted as deputy chair after this. She certainly was an outstanding chair who made certain that HASAC represented IETS’ priorities with the different governing bodies and other influential groups worldwide.

Chavatte-Palmer’s scientific passion has permitted her to significantly advance the field of placental function and pathology. With over 266 publications and over 2,500 citations of her work, she remains an active scientist in reproductive biology. She has researched different areas such as progestogens in horses, bovine cloning and placental pathology, developmental programming and placental adaptations to a high fat diet in rabbits, fetal-placental imaging, effects of air pollution by diesel exhaust on fetoplacental development and offspring health in rabbits, and developmental origins of health and disease in horses and small ruminants. Chavatte-Palmer certainly is an important member of our scientific community and is also a member of different societies and invited speaker to many international meetings.

Because this award is given to recognize individuals who have provided outstanding leadership or service to the International Embryo Technology Society, it is clear why Pascale Chavatte-Palmer is a logical choice for the 2017 Distinguished Service Award. Congratulations!
Special Events

Morulas’ Preconference Workshop
How to write an effective grant proposal
Saturday, January 14
14:00–17:30
Sabine
Sponsored by CSIRO Publishing
This preconference symposium organized by the IETS Morulas Board of Governors explores the necessary field of grant writing. Trainees should plan to arrive one day early and take advantage of this great opportunity by hearing from excellent speakers who are going to share their knowledge of grant writing from different perspectives, including Peter Sutovsky, Patrick Lonergan, and David Miller. All IETS members are welcome to attend this three and a half hour event that will cover the basics of grant writing and where to submit grants 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, January 15 to Tuesday, January 17
07:00–17:00, Daily
Sans Saba
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 15
12:35–14:00
Sabine
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. Our confirmed mentors are Pablo Ross, Marcello Bertolini, Peter Hansen, Gregg Adams, Reuben Mapletoft, Roberto Sartori, Katrin Hinrichs, and Jason Herrick (ticket required).

Practitioners’ Forum
Sunday, January 15
16:00–18:00
Grand Ballroom B
Sponsored by Partnar Animal Health Inc.
What do you want to know about OPU/IVF in cattle?

CANDES Forum
Sunday, January 15
16:00–18:00
Grand Ballroom A

Welcome Reception
Sunday, January 15
18:00–19:00
Rio Exhibit Hall B
Sponsored by Professional Embryo Transfer Supple Inc. (PETS)
A welcome reception will be held in the Rio Exhibit Hall B of the Renaissance Austin Hotel from 18:00 to 19:00. Meet the exhibitors and renew old friendships. Light hors d’oeuvres will be served with a cash bar.
Sunrise Sponsor Session (Invitation Only)
Monday, January 16
07:00–08:00
Sexing Technologies
Sex Sorted Semen—Coming of Age, Application in Artificial Insemination and Embryo Production
After more than two decades of research and progressive commercial application, sex sorted semen has now come of age and it is a very viable option for livestock industries. A sure way to fast track genetic gain as well as multiply animal numbers from desired matings, sex sorted semen is now commonplace in dairy and beef cattle systems. The technology is also gaining acceptance in other livestock industries such as deer, sheep and goats. New research is also targeted at the large porcine industry. This session will feature some key speakers who will highlight recent developments in the technology and also provide examples for application in AI and ET programs (invitation only).

Morulas Career Luncheon
Monday, January 16
12:45–14:00
Sabine
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 from Carrie Hanna from the Oregon National Primate Research Center and François-Xavier Grand from Boviteq, Canada. 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 16
17:00–18:00
Grand Ballroom A

Morulas’ Trainee Forum
Monday, January 16
17:00–18:30
Grand Ballroom B
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 Governors, recognize the 2016 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. Everyone is welcome.

Morulas’ Student Mixer
Monday, January 16
18:30–19:30
Knotty Deck & Bar, Renaissance Austin Hotel
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 will last a lifetime. The mixer will be conveniently located in the Knotty Deck & Bar in the Renaissance Hotel. Registration and tickets are NOT required.

15th Annual IETS Fun Run
Tuesday, January 17
12:00–12:30
Maps will be located at the registration desk.
Even if you do not participate, come and cheer on the runners in a magnificent landscape and even dress up!
**Closing Party**
Tuesday, January 17
19:00–23:00
The Pecan Grove

*Come and join us for the event of the week.* Share a meal, enjoy the surroundings and get reacquainted with old friends. Nestled on the banks of Onion Creek underneath a majestic canopy of pecan trees, Pecan Grove boasts a beautifully manicured lawn and is truly one of the most magical destinations in the Texas Wine Country. Pecan Grove combines function with charm as it is glass enclosed to ensure year-round comfort while still maximizing views of the surroundings. The meal will be all-you-can-eat served family-style with our classic Salt Lick sauce and famous Texas BBQ. There will be music for your listening and dancing pleasure supplied by Mike and the Moonpies. **Shuttle service to and from the Renaissance Austin Hotel to the Pecan Grove will be provided,** beginning at 18:00, from the Renaissance Austin Hotel. **Tickets are required for this event.**
## Exhibit Directory

**Booth Listing by Number:**

<table>
<thead>
<tr>
<th>Booth number</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Professional Embryo Transfer Supply Inc. (PETS)</td>
</tr>
<tr>
<td>2 and 3</td>
<td>Vetoquinol</td>
</tr>
<tr>
<td>4</td>
<td>Partnar Animal Health Inc.</td>
</tr>
<tr>
<td>5 and 6</td>
<td>WTA Technologies</td>
</tr>
<tr>
<td>7</td>
<td>Echo Control Medical</td>
</tr>
<tr>
<td>8</td>
<td>IMV Technologies</td>
</tr>
<tr>
<td>9</td>
<td>Agtech Inc.</td>
</tr>
<tr>
<td>10</td>
<td>Boviteq</td>
</tr>
<tr>
<td>11</td>
<td>IVFtech ApS</td>
</tr>
<tr>
<td>12</td>
<td>IVF Bioscience</td>
</tr>
<tr>
<td>15</td>
<td>MOFA Global</td>
</tr>
<tr>
<td>16</td>
<td>E. I. Medical Imaging</td>
</tr>
<tr>
<td>17</td>
<td>Elsevier</td>
</tr>
<tr>
<td>18</td>
<td>Rafter D Genetics</td>
</tr>
<tr>
<td>19</td>
<td>Misawa Medical Industry</td>
</tr>
<tr>
<td>20</td>
<td>American Embryo Transfer Association (AETA)</td>
</tr>
<tr>
<td>21</td>
<td>ICPbio Reproduction</td>
</tr>
</tbody>
</table>
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 relationship with our customers and 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: 9

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
Phone: 217-398-2217
http://www.aeta.org
Booth: 20

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) labs in Madison, Wisconsin, and Saint-Hyacinthe, Québec.

Working with accredited OPU (Ovum Pick Up) 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, Dr. Patrick Blondin, Ph.D.

This network of accredited OPU centers and vets are 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.

3801 Kipp Street
Madison, WI, 53718
Phone: 608-838-2503
bovitequsa@boviteq.com
http://www.boviteq.com/us-home
Booth: 10

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.eccmscan.com
Booth: 7

E. I. Medical Imaging
E. I. Medical Imaging® is a world leader and the only US manufacturer of portable ultrasound solutions specifically engineered for veterinary use. For the past 33 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.

E. I. Medical Imaging
110 12th Street SW
Unit 102
Loveland, CO 80537
Phone: 1-866-365-6596
http://www.eimedical.com/
Booth: 16
Elsevier
Elsevier is a world-leading provider of information solutions that enhance the performance of science, health, and technology professionals, empowering them to make better decisions, deliver better care, and sometimes make groundbreaking discoveries that advance the boundaries of knowledge and human progress. Elsevier provides web-based, digital solutions—among them ScienceDirect, Scopus, Elsevier Research Intelligence and ClinicalKey—and publishes nearly 2,200 journals, including The Lancet and Cell, and over 26,000 book titles, including a number of iconic reference works.

The company is part of Reed Elsevier Group PLC, a world leading provider of professional information solutions in the science, medical, legal and risk and business sectors, which is jointly owned by Reed Elsevier PLC and Reed Elsevier NV. Its ticker symbols are REN (Euronext Amsterdam), REL (London Stock Exchange), RUK and ENL (New York Stock Exchange).

Elsevier
Radarweg 29
1043 NX Amsterdam
The Netherlands
http://www.elsevier.com/
Booth: 17

ICPbio Reproduction
ICPbio Reproduction is a global supplier of embryo transfer and reproductive products including flushing and embryo handling media for equine, bovine, ovine, caprine and cervine species. ICPbio Reproduction also manufactures and distributes Ovagen™ follicle stimulating hormone for ovarian stimulation/superovulation of bovine and small ruminant species in IVF or conventional in vivo embryo transfer procedures.

PO Box 39
303 South McKay Avenue
Spring Valley, WI 54767 USA
Phone: 877-978-5827
http://www.icpbiorepro.com
Booth: 21

IMV Technologies
IMV Technologies is world leader in reproductive biotechnologies.

IMV Technologies designs and develops equipment, disposable items and preservation media used in animal reproduction. Our areas of expertise include:

• Semen collection and analysis
• Sample preparation and dilution
• Packaging and cryopreservation

• Assisted insemination
• Embryo transfer

IMV Technologies offers a wide range of ET products including collection and freezing media; filtration devices; laboratory equipment; embryo packaging and transfer tools.

Our complete range can be found at www.imv-technologies.com.

11725 95th Avenue North
Maple Grove, MN 55369
http://www.imv-technologies.com
Booth: 8

IVF Bioscience
Bringing a new approach to the animal ART market, IVF Bioscience’s new IVP media range for bovine, caprine and ovine species 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 in booth 12 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: 12

IVFtech ApS
IVFtech is a company producing high quality, customisable equipment for IVF laboratories. The art and science of assisted reproduction often demands personalised 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 secure 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
Phone +45 3940 2565
Fax +45 3940 2564
IVFtech aps -CVR no:20892307
e-mail:info@ivftech.dk
www.ivftech.dk
Booth: 11
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 purposes in Japan and we have 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” intra-uterine horn catheter were developed and manufactured using a special, innovative method. We offer these superior quality products, 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: 19

MOFA Global
MOFA Global is a recognized leader in the field of animal reproduction through the manufacturing and sales of a full line of products and services for advanced reproductive technologies (ART) for livestock and companion animals.

Its success is tied to continual innovation and education. Since inception, MOFA has developed many products which are now considered industry standards for IVF and embryo transfer.

419 Venture Ct
Verona, WI 53593
Phone: 800-646-4882
http://www.mofaglobal.com
Booth: 15

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 aspiration pumps, 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
Phone: 519-666-0033
http://www.partnaranimalhealth.com
Booth: 4

Professional Embryo Transfer Supply Inc. (PETS)
PETS has been a world-leading embryo transfer supply company in the bovine and equine industries for 3 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.

285 FM 16
Canton, TX 75103 USA
www.pets-inc.com
Booth: 1

Rafter D Genetics
Rafter D Genetics is a full service embryo transfer company offering ET service, training and equipment sales.

We are a distributor for the Beltron EFT-3002 portable embryo freezer and the Ramgo nonsurgical caprine AI system.

Rafter D Genetics
7750 Raymond Stotzer Pkwy
College Station, TX 77845
(979) 260-7852
http://rafterdgenetics.com/
Booth 18

Vetoquinol USA, Inc.
Vetoquinol, the manufacturer of Folltropin®, 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 embraces the challenge of finding better ways to help animals and is committed to servicing the assisted reproduction industry with its long-lasting tradition of excellence. The company boasts one of the largest research facilities in the world, where 100 world-class researchers passionately work to develop new products and protocols.

4250 North Sylvania Avenue
Fort Worth, TX 76137
Phone: 800-267-5707
customerserviceusa@vetoquinol.com
www.vetoquinolusa.com
Booth: 2 and 3

WTA Technologies LLC
WTA Technologies LLC is a Brazilian technology company with additional offices in Texas. It is focused on products for animal assisted reproduction, offering high added value solutions for ovum pick-up (OPU), in vitro fertilization (IVF), embryo transfer (ET) and artificial insemination (AI).

Our products are mainly for cattle, horse, and small ruminant reproduction but also attend to different laboratory requirements.
WTA sells throughout Brazil, the United States, and in many other countries, and is recognized as one of the leading companies in its 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 USA: + (979) 324-6168
http://www.wtavet.com.br
Booth: 5 and 6
Thank You to Our Exhibitors
Morulas Preconference Workshop
How to Write an Effective Grant Proposal

Saturday, January 14, 2017
Renaissance Austin Hotel (Sabine)

Sponsored by CSIRO

14:00–14:10 Introduction
Morulas Board of Governors

14:10–15:00 Session I: What Makes a Good Grant?
Peter Sutovsky, University of Missouri, USA

• Before you start writing
• Getting started
• Proposal parts/grant sections
• Peer-review considerations
• What to do when the project does not get funded

15:00–15:45 Session II: Keys to Writing a Successful Grant
Patrick Loneragan, University College Dublin, Ireland

• If at first you don't succeed... try harder!
• Collaboration vs. competition
• Funding opportunities for reproduction-related research in Europe—Agencies and eligibility

15:45–16:00 Refreshment break
Sponsored by CSIRO

16:00–16:45 Session III: Introduction to US Federal Agencies that Fund Research on Reproduction:
Including Types of Grants, Typical Size of Grants, and Amount of Available Funding
David Miller, University of Illinois, USA

• Funding opportunities supported by each agency for graduate students, postdocs, and junior faculty
• How are submitted proposals reviewed?
• How to choose the appropriate funding agency

16:45–17:15 Round Table and Closing Remarks

The IETS Morulas Mission Statement
“To cultivate a supportive organization within the IETS that is dedicated to the personal and professional development of its trainee members. The Morulas Board of Governors shall strive to motivate trainees to become integral participants of the IETS and work to create opportunities that foster their continued investment into the society.”
DABE Preconference Symposium

Workshop on the Use of CRISPR-Cas9 for Gene Editing: Principles and Practices

Saturday, January 14, 2017
Renaissance Austin Hotel (Grand Ballroom B)

08:15–08:30 Introductions to workshop, Jorge Piedrahita, DABE Chairperson

Session I. Introduction to CRISPR-Cas9 Genome Editing & Strategies for Defining and Improving Specificity
Shengdar Tsai, Department of Hematology, St. Jude Children’s Hospital, Memphis, Tennessee, USA

RNA-guided CRISPR-Cas9 nucleases have transformed genome editing due to the simplicity and robustness with which they can be programmed to introduce targeted double-strand breaks (DSB) into the genomes of living cells and organisms. In this workshop session, a broad overview of the landscape of CRISPR-Cas9 genome editing will be provided, and state-of-the-art strategies for both defining and improving the genome-wide specificities of CRISPR-Cas9 nucleases will be discussed. An extensive question and answer session will enable participants to discuss best practices for applying these transformative technologies in their own laboratories.

08:30–09:30 Session I, Part 1
09:30–10:30 Session I, Part 2
10:30–11:00 Coffee break

Session II. Direct CRISPR-Cas9 Microinjection into Mammalian Embryos
Lluis Montoliu, Centro Nacional de Biotecnologia (CNB-CSIC), Campus de Cantoblanco, Madrid, Spain

In this section we will be focusing on the delivery of CRISPR-Cas reagents to mammalian embryos by means of direct microinjection. The workshop will cover the different CRISPR-Cas-related molecules one can microinject, different applications including small insertion and deletions, large deletions, inversions, duplications, and large insertions (knock-ins). This section will also include a reference to single versus multiple simultaneous genetic modifications. Finally, we will discuss the current knowledge on how to minimize nonhomologous end-joining (NHEJ) and boost homology directed repair (HDR). An extensive question and answer session will enable participants to discuss best practices for applying these technologies in their own laboratories.

11:00–12:00 Session II, Part 1
12:00–13:00 Session II, Part 2
13:00–14:30 Box Lunch and Poster Session
As part of the workshop, there will be a poster session to showcase your work. Details to follow.

Session III. Gene Editing Using CRISPR-Cas9 as a Therapeutic Strategy
Deepak Reyon, Editas Medicine, Cambridge, Massachusetts, USA

The continual maturation of this technology supports the transition of gene editing from being a powerful laboratory tool to becoming a viable therapeutic strategy. In this workshop session, we will explore what it takes to transition this revolutionary technology from the laboratory to the clinic. These challenges, along with various strategies and lessons learned, will be discussed using real-world examples. The workshop will be followed by a question and answer session in which participants can discuss not only the use of CRISPR-Cas9 as a therapeutic, but also as a reagent to generate crucial tools that enable drug discovery.

International Embryo Technology Society
14:30–15:30  Session III, Part 1
15:30–16:30  Session III, Part 2
16:30–17:30  Poster Awards and Panel Discussion
18:30–20:30  Social—Location and time to be determined

Gold Sponsor

recombinetics

Silver Sponsors

NSRRC
National Swine Resource & Research Center

IDT
INTEGRATED DNA TECHNOLOGIES

EXEMPLAR GENETICS
Thank You to Our Sponsors

Platinum Level
Bronze Level

CSIRO

ICPbio

TM

REPRODUCTION