AETE
Association Européenne de Transfert Embryonnaire
European Embryo Transfer Association

December 2013 **A.E.T.E. NEWSLETTER N°40** **Editor: Dimitrios Rizos**

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Dimitrios Rizos, Editor
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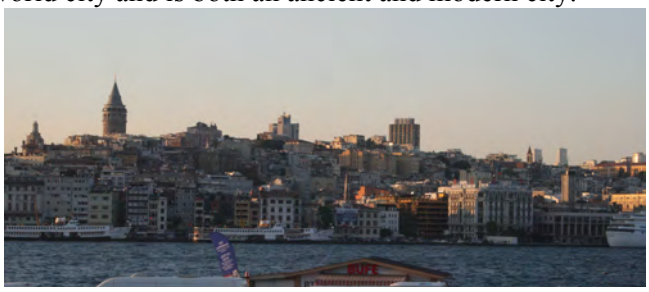
Letters to the Editor are welcomed.
Please include name, address,
telephone, FAX, and E-mail address

President's letter

Dear Colleagues, dear friends,

Looking to the thermometer – there are + 10 °C; but it is December, it is Advent and time is flying. Life is a constant Advent season: we are continually waiting and looking to develop, to discover and to complete. There are expectations, reflections, fulfillment and possibly some stress. Looking back, it is unbiased to say that the bygone year 2013 has been a very good one with respect to our ET activities as well as our annual scientific conference. Hiemke Knijn provided us few weeks ago with the newest data of the ET- statistics from 2012. As we can see, the number of flushes is stable, the number of flushed embryos increased and that of OPU sessions did increase for the fourth year. Furthermore, the number of countries submitting statistical data to the AETE has again increased to 27.

Our annual AETE conference, which was held for the first time in Istanbul - the "capital of the world" to repeat again my quote from my opening speech originated from Napoleon Bonaparte. Istanbul is truly a world city and is both an ancient and modern city.



We could really spot that Istanbul's history and thus culture is apparent in its buildings. The international significance of many of the places like Hagia Sophia, Topkapi Palace, the Blue and Süleymaniye Mosques, Basilica Cistern or the Galata Tower is recognized by their inclusion in UNESCO's World Heritage Site. I

guess this atmosphere overwhelmed all participants and nobody will forget the boat tour on the Bosporus, despite we missed the sunset at the Black Sea. At this junction, special thanks go to the Local Organizing Committee, especially to Ebru Emsen and Sezen Ocak who organized our 29th conference. I would like to acknowledge the excellent organization of the meeting and of the social and cultural program. Furthermore our long-lasting sponsors are reliable and generous. We are supported by well-organized companies that keep the administrative AETE-machine running. In this way I would like to thank on behalf of the society and myself all sponsors and exhibitors for the granted support cordially.

From the scientific point of view - the conference provided an adequate highlight. Despite we organized our 29th meeting at the European periphery, we used the Eurasian bridge and we welcomed nearly 140 participants and achieved our goal to attract also some Asian colleagues from "nearby" regions. The scientific program was structured in four sessions including 17 oral presentations, two workshops and poster sessions including more than 60 posters.

Henry W. Vivanco-Mackie made a long journey from Peru to Istanbul and reported about "Strategies for superovulation, embryo production and transfers in sheep and alpaca".

Commercial sheep embryo transfer has been around for more than four decades and is still considered a costly exercise in relation to the individual value of the animal. The high costs are mainly due to the relatively low and variable embryo yields, which have been improved but still need to be optimized to achieve economic justification for routine use. In alpacas the technology is relatively new and there are still several aspects that need to be developed especially under the focus that alpacas are quite different in their reproductive physiology. Henry William underlined all these physiological aspects with a lot of interesting statistical and economic data.

Olivier Sandra from INRA, France, concluded in his presentation that determining the limits of endometrial plasticity at the onset of pregnancy represents difficult tasks and that is obvious that the endometrium has to be considered as a critical epigenetic contributor for the embryonic trajectory from the very earliest stages of pregnancy.

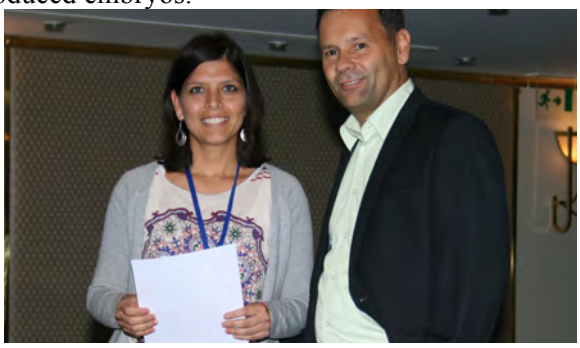
In the fourth invited lecture Pilar Coy from Murcia, Spain, asked why the oviduct is becoming the focus of attention for researchers working in ART´s. She concluded that proteomics and functional genomics are providing a number of proteins and genes up or down regulated in the oviduct during the fertilization period and that we only partially clarified the mechanism by which several proteins affect the fertilization process, particularly under the focus of ZP hardening and the duration of sperm contact.

A special moment during the conference - especially for me - was to overhand the AETE Pioneer Award. In Istanbul, the award was given to Tom McEvoy from UK due to his outstanding contributions in countless fields of embryology and biotechnology.

Our board member Ian Kippax gave the introductory speech in which a convincing impression was given of Tom´s research activities and his pioneering developments and discoveries.

Traditionally, four students were selected to join the Student Competition. The AETE –Board selected Amanda Cordova from INRA, France, as the prize winner with a presentation with results of in vitro studies regarding modifications of gene expression profiles of

bovine oviduct epithelial cells induced by in vitro produced embryos.



Furthermore our workshops are an essential part of our scientific program mainly organized by recognized practitioners. The first workshop focused on applied aspects of semen sexing and insemination, coordinated by Juan Moreno from SEXING TECHNOLOGIES, USA. He created a very inspiring view how new sperm technologies will change the AI business. This was the basis for a very constructive discussion also about the combination of semen sexing and its application in MOET programs. It was impressive to see these results and the different experiences presented from ET teams from France, Germany and the Netherlands. Sema Birler delivered an important impact on this conference correspondingly as a part of the Turkish community and Turkish hosts with the organization of the second workshop about biotechnologies in small ruminants.

I am sure; all members do agree that the success of our meetings is determined by the combination of both an interesting scientific program as well as an exceptional social and cultural program. The latter gives us the opportunity to learn more about other regions of Europe and their special cultures. “A little learning is a dangerous thing” and this quotation (by Alexander Pope) is never more true than when we are dealing with detailed information about cultures that are not our own. I am convinced that our meetings will raise the already mentioned mutual respect and makes us an open and genuine European society. To finish a conference means to be before the next meeting(s). I am sure many of us will be in Reno for an anniversary IETS meeting.

Our next AETE meeting will be held in Dresden, Germany, on the 12th and 13th of September. The Local Organizing Committee, as chaired by Frank Richter and by myself is already working and I guarantee you an interesting and enjoyable meeting. More information will be placed on the AETE website, soon. So let us all meet each other at least next year in my home country.

Finally I wish you all a peaceful and relaxing Christmas season and a happy New Year, and I hope, of course, to see you again in 2014.

Sincerely

Frank Becker
President A.E.T.E

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A "visual" update of the last A.E.T.E. Scientific Meeting

Dear Colleagues, I am taking this opportunity by putting some photos together to remind you the success (scientifically and socially) of the previous meeting of the Association that was held in Istanbul, Turkey at 6th and 7th of September 2013. It was a pleasure to visit Istanbul, a wonderful city between Europe and Asia. I would like to thank Prof. Ebru EMSEN, Ataturk University and, Prof. Sezen OCAK, Zirve University as a Local Organising Committee, and their colleagues for the organization of the fantastic meeting. I am confident that it will be another productive year for the Society and its members. The president and the board members of the society wishing you a Merry Christmas and a Happy New Year 2014.

Dimitrios Rizos, AETE Board Member
Editor of the Newsletter

Welcome Reception

Lecture Hall

Student Competition

E. Dovolou, Greece

A. Veshkini, Iran

A. Cordova, France

F. krania, Greece

Gala Dinner

Selected Abstracts for Oral Presentation

Dr. M. Hoelker, Germany

Dr. J. Leroy, Belgium

V. Ghaffarilaleh, U.K.

Dr. S. Ruiz, Spain

SA. Valckx, Belgium

C. Richard, France

L. Ballester, Spain

R. Lopera, Spain

O. Eissa, Egypt

Bosporus Dinner Cruise

The president of AETE Frank Becker with LOC Ebru EMSEN (left) and Sezen OCAK (right) at closure of the meeting

Winner of the STUDENT COMPETITION

Amanda Cordova, France

Bovine in vitro produced embryos induce modifications of gene expression profile of bovine oviduct epithelial cells *in vitro*

Cordova A[1,2]., Perreau C[1]., Schmaltz-Panneau B[3].,Doret S[1]., Corbin E[1], Locatelli Y[1,4]., Uzbekova S[1]., Ponsart C[2]., Mermillod P[1].

(1)Physiologie de la Reproduction et des Comportements, Institut National de Recherche Agronomique (INRA), UMR7247, Nouzilly, France. (2) Union Nationale des Coopératives d'élevage et d'insémination animale (UNCEIA), Maisons-Alfort, France (3) Biologie du Développement et Reproduction, INRA, UMR1198, Jouy en Josas, France, ENVA, Maisons Alfort France. (4) Museum National d'Histoire Naturelle (MNHN)

In vivo, the oviduct provides the optimal environment to allow the successful development of the early mammalian embryo. A molecular dialogue may take place between the embryo and its maternal milieu, modulating the embryo microenvironment during its migration towards the implantation site. To produce a developmentally competent embryo, an efficient communication between the embryo and its surrounding somatic environment may have to take place. The signals emitted by the embryo have to be recognized by the maternal environment to make it aware of the presence of the embryo. Indeed, the preimplantation embryo is able to cooperate with the oviductal cells in the production of active embryotrophic iC3b, ensuring that the unstable iC3b can act efficiently [3]. *In vitro* coculture with bovine oviduct epithelial cells (BOEC) has been widely used to mimic this maternal environment and to study its effect on embryo development. While other types of coculture have been also tested, BOEC is known as being able to secrete embryotrophic and growth factors [3], detoxify the media [1] and regulate embryo metabolism [2], although the exact mechanisms of BOEC action on embryo development have not been fully elucidated yet. Even if several studies have been aimed at improving embryo development conditions, *in vitro* embryo production has been proved to produce still relatively low blastocyst rate with impaired quality (cryoresistance). Our laboratory has been investigating the dialogue taking place between the embryo and its surrounding cells using BOEC embryo coculture as an *in vitro* model of these interactions. Then, the purpose of this research was to evaluate the BOEC embryotrophic activity and *in vitro* responsiveness to embryos, according to the regional origin of the oviduct cells (isthmus vs. ampulla). For that matter, oviducts ipsilateral to ovaries with sign of recent ovulation were brought to the laboratory. In experiment 1 the ampulla and isthmus regions were dissected, washed thoroughly in TCM199 and epithelial cells were scrapped out using a sterile glass slide. BOEC from Ampulla (A-BOEC) or Isthmus (I-BOEC) were seeded separately in 4 well NUNC plates and cultured to confluence (7 days) to be used for *in vitro* embryo development (IVD) in coculture. Immature cumulus oocyte complexes were aspirated from slaughterhouse ovaries. Zygotes produced by *in vitro* maturation and fertilization were cultured in 500 µL of SOF medium supplemented with 5 % FCS at 38.8°C with 5% CO_2 in humidified air, in the presence of A-BOEC, I-BOEC or without cells (control). Some A- and I-BOEC wells were cultured without embryos. Cleavage rate was recorded at Day 2 pi and blastocyst rate at Days 6, 7 and 8 pi. At Day 8 pi, BOEC RNA was extracted (Trizol). Both I- and A-BOEC increased cleavage rate and blastocyst rate at Days 6, 7 and 8 over the control. However, I-BOEC allowed to produce more

blastocysts than A-BOEC at days 6 and 7 and a tendency remained at Day 8 (Table 1). In experiment 2, confluent BOEC in 4 well NUNC plates were stimulated by synthetic recombinant INFtau (0, 1, 10 and 100 ng/mL) for 6 or 24 hours and RNA were extracted (Trizol). All RNA samples were treated with DNAse and RT was performed (MMLV RT kit). The level of expression of some known oviduct expressed genes (*GPX4, OVGP* - Figure 1a- and *C3* - Figure 1b -), as well as some genes related to IFN signaling (*STAT1, IFIT5, ISG15* - Figure 2 -, *OAS1, IFITM1, MX1, OAS1, USP18*), were evaluated by RT-qPCR. Data were analyzed by Mann Whitney non parametric test using PRISM 5 software. The relative abundance of all IFNt related genes was significantly upregulated when epithelial cells (either A-BOEC or I-BOEC) were exposed to embryos during 8 days *in vitro*. The IFNt stimulation reproduced this embryo effect, whatever the concentration and duration of treatment. Furthermore, a regional difference in expression level was found for OVGP (higher in I-BOEC, $p<0.05$) and C3 (higher in A-BOEC, $p<0.05$), without effect of the presence of embryos. GPX4 mRNA abundance was not significantly different among the culture conditions tested. In conclusion, this study demonstrates the existence of the specialization of oviductal regions with differential gene expression profile, resulting in different ability to support early embryo development. This finding highlights the specificity of some cell types (I-BOEC) effect on early development. We also showed the ability of oviduct cells to respond to embryo signaling through IFN-like pathway in our *in vitro* model, by modulating gene expression profile, thus supporting the existence of a real dialog between early embryo and oviduct.

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2. Rieger D, Grisart B, Semple E, Van Langendonckt A, Betteridge KJ, Dessy F. Comparison of the effects of oviductal cell co-culture and oviductal cell-conditioned medium on the development and metabolic activity of cattle embryos. J Reprod Fertil 1995;105: 91-98.
3. Tse PK, Lee YL, Chow WN, Luk JM, Lee KF, Yeung WS. Preimplantation embryos cooperate with oviductal cells to produce embryotrophic inactivated complement-3b. Endocrinology 2008;149: 1268-1276.

Table 1 :Blastocyst and cleavage rates according to the different culture systems.

			Blastocyst Rate					
Condition	**n**	**Cleavage**	**Day 6**		**Day 7**		**Day 8**	
		(%)	n	%	n	%	n	%
Control	519	79% [(a)]	68	13% [(a)]	104	20% [(a)]	97	19% [(a)]
A - BOEC	599	85%[(b)]	89	15% [(b)]	162	27% [(b)]	187	31% [(a)]
I - BOEC	520	88% [(b)]	102	20% [(b)]	177	34% [(c)]	180	35% [(b)]

a, b, c : different superscripts indicate significant differences in column ($p<0.05$).

Figure 1 : Relative mRNA expression of oviductin (OVGP) and complement C3 (C3) in BOEC from isthmus and ampulla region, in absence or after the coculture of embryos until day 8 of development. mRNA relative expression data is presented (Mean ± ES). Mann Whitney non parametric test was used. a,b ($p<0.05$).

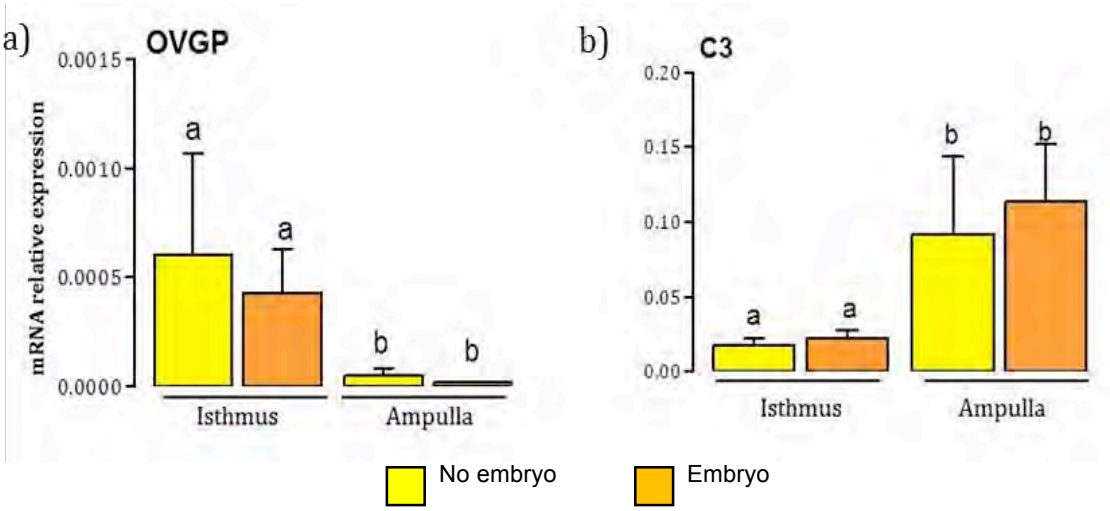
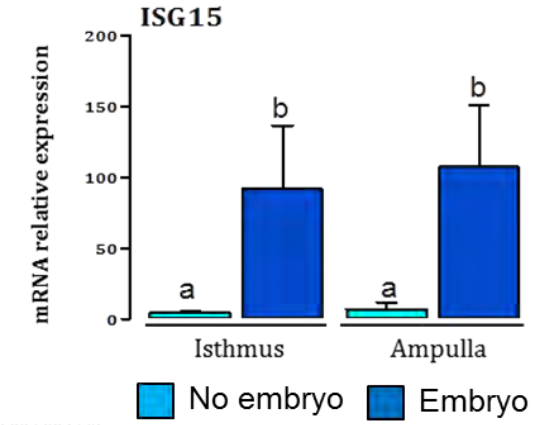


Figure 2 : Relative mRNA expression of ISG15 in BOEC from isthmus and ampulla region, in absence or after the coculture of embryos until D8 of development. mRNA relative expression data is presented (Mean ± ES). Mann Whitney non parametric test was used. a,b ($p<0.05$).



WORKSHOP II

Reproductive biotechnology in small ruminants: How to improve the success rates?

Organiser: Dr. Sema Birley, Turkey

This workshop has been designed to present the problems and some probable solutions to increase the success rates of somatic cell nuclear transfer (SCNT) and transgenesis. Eighteen years after Dolly, little improvement has been done. For creating Dolly 277 reconstructed oocytes were used and the success rate was under 1%. Currently the success rate has not gone beyond 6%. However, despite very low success rates, nearly all species of animals could be cloned. Even, as shown by Tachibana et al. (2013) embryonic stem cells have been produced in humans after SCNT.

In in vitro technologies we try to mimic in vivo processes and environments. We can rather easily mimic the gas, pH and temperature of the in vivo environment, but the journey of an oocyte or embryo in female reproductive tract is also very important. Microfluidics techniques (Heo et al., 2010) and somatic cells can be used to mimic the in vivo journey of oocytes and embryos.

There are some unidentified factors to be found. We (Evecen et al., 2011) had tried using hormones sequentially for in vitro maturation of dog oocytes and got higher maturation rates than conventional or control groups. Changes in hormonal status affect oocytes and embryos in vivo just before the ovulation until embryo(s) enters the uterus. If we desire better results we have to establish new complex culture environments which mimic all aspects of in vivo conditions.

The question of "**How to improve the success rates?"** is not easy to answer. No one knows the magic formula or conditions to achieve perfect success rates, but we pooled our knowledge and discussed the issues which will hopefully bring us one step closer. To get better results in reproductive biotechnological techniques, especially in SCNT and transgenesis, "epigenetic effects" were discussed by Professor Niemann and "effects of in vitro conditions" by Professor Pabuccuoglu.

Professor H.Niemann

Epigenetic changes play a crucial role in defining the temporal and tissue specific gene expression profile. While the genetic code is considered to be static in most cells of an organism during its entire life, the epigenetic code is highly dynamic and tissue-specific.

The practical application of assisted reproductive technologies (ARTs) has had a positive economic impact on meat and milk production. However, ARTs involve several steps that may put the gametes and early embryos under environmental stress. Animal studies revealed a link between ARTs and imprinting disorders, primarily via altered DNA-methylation patterns. This is a main reason for the growing interest in the putative risks of these techniques, primarily via epigenetic modifications related to changes in gene expression profiles and imprinting disorders.

Epigenetic reprogramming of the transferred somatic cell nucleus from its differentiated status into the totipotent state of the early embryo is the most critical factor for the success of SCNT based cloning. This involves erasure of the gene expression profile of the respective donor cell and the establishment of the well orchestrated sequence of expression of an estimated number of 10,000–12,000 genes regulating embryonic and fetal development. SCNT may be associated with pathological changes in the fetal and placental phenotype in a certain proportion of cloned offspring, specifically in ruminants, that are likely caused by aberrant epigenetic reprogramming. (Niemann et al., 2008)

Genes of the insulin-like growth factor (IGF) family are subject to imprinting and are critically involved in embryonic and fetal development and epigenetic

errors caused by SCNT are likely have profound effects during pre- and postnatal development. As in other species, the bovine IGF2 gene is controlled by an extremely complex regulatory mechanism based on multiple promoters, alternative splicing and genomic imprinting which can be severely perturbed in cloned fetal, neonatal and adult tissue. H19 and IGF2 expression are closely linked, as they are expressed in the same tissues during fetal development, albeit from differing parental alleles. We had discovered a differentially methylated region (DMR) in exon 10 of the bovine IGF2 gene that provides a diagnostic tool for in-depth studies of bovine imprinting. Using bisulfite sequencing, we have investigated sex-specific DNA methylation patterns within this DMR in bovine blastocysts produced *in vivo*, by *in vitro* fertilization and culture, by SCNT, or by androgenesis or parthenogenesis. As expected, in *in vivo* embryos, DNA methylation was removed from this intragenic DMR after fertilization and was partially replaced by the blastocyst stage. DNA methylation was significantly lower in female than in male blastocysts and this sexual dimorphism was maintained in SCNT embryos providing evidence for correct methylation reprogramming. This observation demonstrates that current SCNT protocols are compatible with even subtle sex specific epigenetic reprogramming in an important genomic locus. (Gebert et al., 2006, 2009)
Further improvements in our understanding of the dramatic epigenetic reprogramming event will be instrumental in realizing the great potential of SCNT for basic biological research and for various agricultural and biomedical applications.

Professor S.Pabuccuoglu
As well as general problems such as technician and equipment based, oocyte source (donor's species, age and body conditions, and season), oocyte quality and in vitro culture conditions are very important issues for reproductive biotechnologies in small ruminants. All aspects were widely discussed.
There were some important suggestions to improve the success rates of SCNT:

- Calibrate the instruments carefully
- Cover all media with mineral oil
- Avoid to keep the embryos outside of the incubators for long time.
- Discover your best conditions step by step
- Be sure the oocyte quality
- If possible, prefer in vivo matured oocytes in sheep
- Transfer embryos to oviducts at early stage in sheep (Birler et al., 2010)

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European Statistical data of bovine embryo transfer activity 2012

Hiemke Knijn

The embryo transfer activities in Europe, as presented during the 29th AETE meeting in September 2013 in Istanbul, Turkey, are summarised in this report. The presented data are based on embryo transfer activities for breeding and commercial embryo production reported by 27 European countries (countries that have at least part of their country in Europe). Information of three countries, Ukraine, Russia and Kazakhstan, could be included for the first time. The data presented here are slightly different compared to the data presented in the proceedings of the meeting due to the fact that information from some countries was not received after the deadline of the publication of the proceedings. This year it was not possible to collect the data from the UK. Together with Ian Kippax an estimation of the data was made according to the data of the last three years and this estimation is included in the presented data. Activities in relation to research purposes are not included. The presented data include numbers on embryo production (MOET and OPU-IVP) and transfers (fresh and frozen) for bovine and other species (sheep, swine, goat and horse). These data are included in the report of the Embryo Transfer Association (IETS Data Retrieval Committee) on embryo transfer activities worldwide.

Embryo production

The total number of flushed donors was 20,884, which was a slight decrease in activity compared to the previous year. This resulted in a collection of 120,472 transferable embryos. The mean number of transferable embryos per flush was 5.8. The results of embryo flushing from 2012 and previous years are shown in Figure 1.

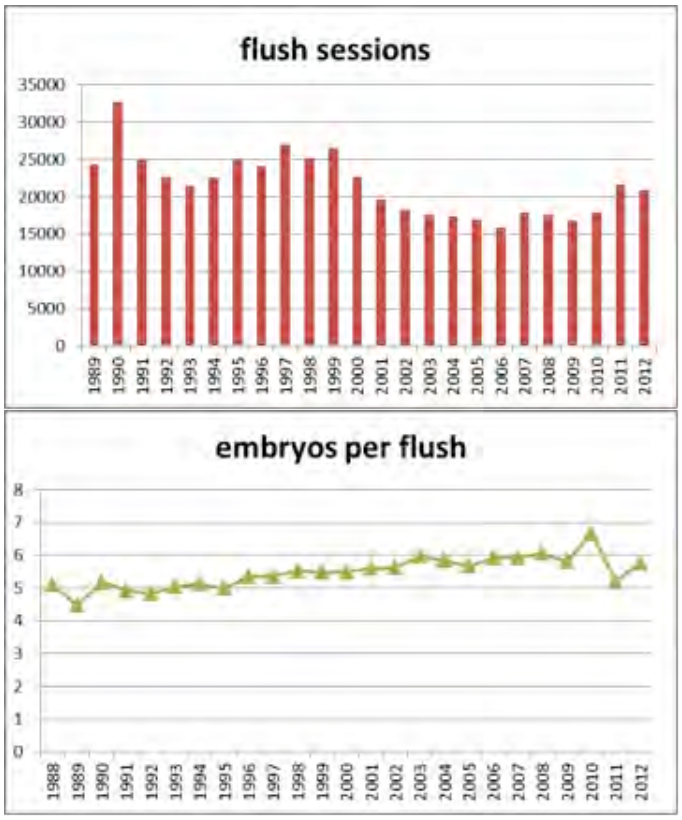

Fig. 1: In vivo embryo production in Europe (number of flushes and number of embryos per flush).

In 2011, four countries applied OPU for commercial reasons and in 2012 two more countries reported OPU activities. The total number of OPU sessions was 5,361 a small increase compared to last year. This resulted in a production of 8,034 transferable embryos. The mean embryo production was 1.5 embryos per session. This is very comparable with the results of 2011 but between 2005 and 2009 the results were better. The cause of the increase in mean embryo production cannot be analysed from the collected data but many aspects in OPU logistics can influence the mean embryo production like, usage of FSH, number of OPU sessions per week, selection of donors etc.. OPU IVP results from 2012 and previous years are shown in Figure 2.

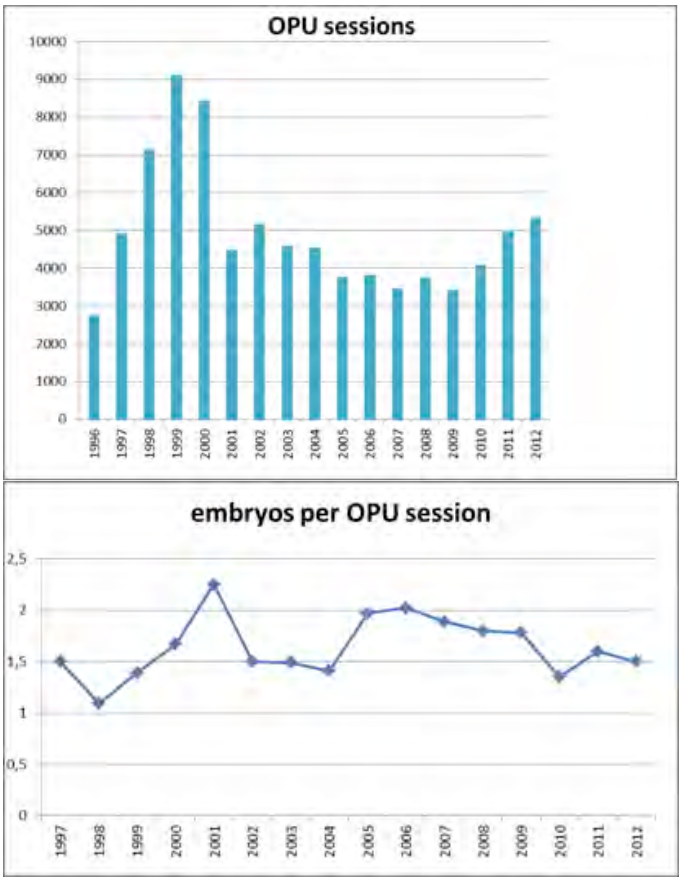

Fig. 2: In vitro embryo production in Europe (number of OPU sessions and number of embryos per session).

Embryo transfers

The number of embryos transferred amounts to 115,909 (Figure 3). The proportion of IVP embryos was 8.1%. The proportion of frozen embryos was 62% and 25% for the in vivo and in vitro embryos, respectively.

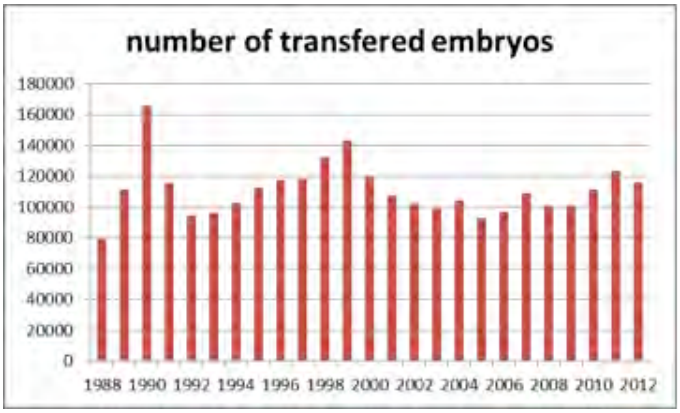

Fig.3: Total number of embryos transferred in Europe.

The European countries that transferred more than 1000 embryos in 2012 are listed in Table 1 together with the number of transfers that were done in 2011.

Table 1: The European countries with more than 1000 embryos transferred in 2012 and the number of transfers of these countries in 2011.

Countries	Embryos Transferred in 2012	Embryos Transferred in 2011
France	**30,830**	*29,747*
Netherlands	**25,553**	*24,275*
Germany	**19,915**	*16,295*
UK	**14,959**	*13,451*
Belgium	**4,698**	*5,178*
Spain	**1,922**	*2,662*
Switzerland	**2,897**	*2,982*
Denmark	**2,939**	*1,504*
Ireland	**3,306**	*3,306*
Finland	**3,654**	*4,033*

Other species

Data for embryo transfer activities in sheep, swine, goat and equine are shown in Figure 4. This year 9 countries reported embryo activities in species other than bovine. Embryo activities were reported in sheep, horses and goats. No activities were reported in swine. There are large fluctuations in activities over the years possibly caused by incomplete data collection.

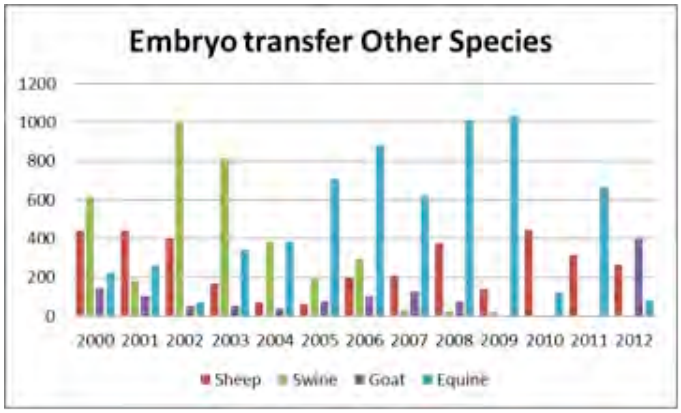

Fig. 4: Number of embryos transferred in Europe; other species

Summary

- This year the data were collected in 27 countries, this is a record.
- The number of embryos collected and transferred in Europe is quite stable the last years. A small increase in number of countries performing OPU and in vitro produced embryos is reported.
- The activities in other species than bovine that are reported to AETE fluctuate a lot. No activities in swine were reported and the activities in horses that are reported to AETE decreased dramatically in 2012. It is very well possible that this is not caused by a real decrease in activities but due to the fact that the activities are not reported to the collectors of the data in the different European countries.

Acknowledgements:

I would like to thank all participants who collected the embryo transfer statistics for their country and helped me to make an overview of the activities in Europe. In the meanwhile I would like to encourage all AETE members to help me collect embryo transfer data from all European countries. If you have a contact that is able to collect the data in one of the European countries that did not provide data this year please contact me (Hiemke.Knijn@CRV4all.com).

Hiemke Knijn
C RV, The Netherlands

Upcoming Events

40th Annual Conference of the International Embryo Transfer Society (IETS)
January 11-14, 2014
Reno, Nevada
For more information, please visit the IETS web site at: http://www.iets.org/2014/

2014 International Cow Fertility Conference "New Science-New Practices"
May 18-21, 2014
Castlecourt Hotel, Westport, Mayo, Ireland
For more information, please visit the IETS web site at: http://www.bsas.org.uk/events

EPICONCEPT-Epigenetics and Periconceptional Environment – Cost Action FA1201
Workshop 2014
Epigenomic Toolbox: from Methods to Models
07-09 May 2014,
Las Palmas, Spain
For more information, please visit the COST-EPICONCEPT web site at:
http://cost-epiconcept.eu/ or
http://cost-epiconcept.eu/workshop_2014.html

American Embryo Transfer Association (AETA) & Canadian Embryo Transfer Association (CETA/ACTE)
Joint Scientific Convention
October 7-9, 2014
Marriott Madison West
Middleton, Wisconsin, USA
For more information, please visit the CETA/ACTE web site at: http://www.ceta.ca/
or the AETA web site at: http://www.aeta.org

New science, new practices

International Cow Fertility Conference
Castlecourt Hotel
Westport, Mayo, Ireland
Sunday 18 - Wednesday 21 May 2014

Helping to tackle the major challenge facing farmers and animal health professionals around the world

Topics to be covered:
- Global fertility trends
- Optimising reproductive performance in beef cows and replacement heifers
- Cyclicity post-calving (Uterine tract recovery, immune response and coping with infection)
- The embryo-maternal dialogue
- Progesterone - embryo survival and pregnancy loss
- Heifer fertility for life-time production
- Genetic improvement
- Expression and detection of oestrus - new technologies
- Semen sexing - current technologies, application and cost benefits
- Better semen diluents
- Fertility Management programmes and herd monitoring to optimise fertility

Plus workshops including:
Uterine infection - Dry cow nutrition - Breeding soundness examination of the Bull - Synchronisation and ovulation control regimens - Superovulation and embryo transfer

And special symposium:
What have "omics" contributed to our understating of cow fertility?

Speakers include:
Michael G Diskin, Stephen Butler, Mark Crowe, Pat Lonergan, Donagh Berry, Laurence Shalloo, Ian Hutchinson, Stephen Carrington (Ireland), Claire Wathes, Bob Smith (UK) Jim Drackley, Milo Wiltbank, Matt Lucy, Paul Fricke, George Seidel, Jose Santos, Victor Cabrera (USA), Gabriel Bo (Argentina), Scott McDougal (New Zealand), Steve LeBlanc (Canada)

For more details and information, go to www.bsas.org.uk/events

Jointly hosted by:

bsas british society of animal science
eagasc
BRITISH CATTLE VETERINARY ASSOCIATION
CAVI Veterinary Ireland Cattle Association of Veterinary Ireland
UCD DUBLIN

The 30th Scientific Meeting of the A.E.T.E

Will be held in

Dresden, Germany

12TH-13TH SEPTEMBER 2014

Invitation

On behalf of the European Embryo Transfer Association, the local organizing committee cordially invites you to the 30th scientific meeting of the organization in Dresden, Germany, from the 12th to the 13th of September 2014.

The Local Organizing Committee will be chaired by Dr. Frank Richter Masterrind, GmbH Sachsen D-09569 Schönerstadt and Dr. Frank Becker, Leibniz Institute for Farm Animal Biology (FBN), 18196 Dummerstorf, Germany.

Welcome to Dresden….a wonderful city

Dresden is the capital city of the Free State of Saxony in Germany. It is situated in a valley on the River Elbe, near the Czech border. The Dresden conurbation is part of the Saxon Triangle metropolitan area with 2.4 million inhabitants.

Dresden has a long history as the capital and royal residence for the Electors and Kings of Saxony, who for centuries furnished the city with cultural and artistic splendour. The city was known as the Jewel Box, because of its baroque and rococo city center.

Before and Since German reunification in 1990, Dresden was and is one of the most cultural, educational, political and economic centers of Germany and Europe. The Dresden University of Technology is one of the 10 largest universities in Germany and part of the German Universities Excellence Initiative.

How to travel to Dresden?

By plane
Dresden-Klotzsche Airport is located north of the city and can be reached by bus (line 77 and 97) and tram line 7. Even faster is the connection with local train lines (S-Bahn, line S2) which reach the main station.
Flights leave to nearly all important German cities and a few European destinations, like Moscow, Zurich and London.

By train
Dresden is served by two big train stations, one on the northern side of the Elbe, Dresden Neustadt, and one on the southern side of the Elbe, Dresden Hauptbahnhof or "main railway station".
Regular trains leave the main train station for the rest of Germany (Berlin, Frankfurt, Munich) and to Prague, Budapest and Wroclaw.

By car
Dresden can be reached without problems by car from the rest of Germany. It is well connected with the German highway system.

By Bus
BerlinLinienbus operates seven to eight buses from Berlin to Dresden on a daily basis. The central bus station is at Hauptbahnhof station and some of the buses stop at Schlesischer Platz in front of the Neustadt station.

We look forward to seeing you in 2014 in Dresden.

Local Organizing Committee

Language
The official language of the conference is English.

Scientific Secretariat
AETE board

REGISTRATION FEES

Dresden, Germany 2014	Euros
Full/Associate Member **Before** *15th July 2014*	**290 €**
Full/Associate Member **After** *15th July 2014*	**340 €**
Student Member **Before** *15th July 2014*	**140 €**
Student Member **After** *15th July 2014*	**155 €**
2014 Membership Fee ***Members who pay their annual fee but do not attend the Meeting will receive a copy of the proceedings***	**90 €**
2014 Accompanied Person	**120 €**

This price includes:
- membership fee
- participation at the Meeting (two full days)
- two workshops
- published proceedings
- lunch and coffee breaks
- social events

Fees for Sponsoring AETE Meeting

Main Sponsor	**7 500 Euros**
General Sponsor	**4 500 Euros**
Exhibitors	**1 900 Euros**
Supporters	**1 000 Euros**

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Full color back page	**800 Euros**
Full inside color page	**600 Euros**
Half inside color page	**400 Euros**

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