



International Embryo Transfer Society Parent Committee on Companion Animals, Non-Domestic & Endangered Species

Report from the Annual Open Meeting
11th January 2004

In association with the 30th Annual Conference of the IETS
Doubletree Hotel – Jantzen Beach, Portland, Oregon, USA

Report to the IETS Board of Governors

A total of 25 IETS CANDES Parent Committee members were present, representing 8 countries. Unfortunately, due to the severe ice storms that occurred just before the start of the IETS annual conference, the CANDES Research and Technology Subcommittees were not able to meet at their scheduled time on 9 January but nine members were present to hold a joint meeting of the Regulatory and Health and Safety Subcommittees on 10 January. Chairman Loskutoff explained that only the Health and Safety Subcommittee had a working meeting in 2003 in order to formulate action plans for assessing disease risks and biomaterial transport. Chairman Loskutoff announced two changes to the CANDES Executive Committee: Bill Swanson (CREW, Cincinnati Zoo) had asked to resign of his duties as Co-Chairman of the Research Subcommittee. He will be replaced with Monique Paris (Murdoch Research Institute, Victoria, Australia). Furthermore, Amanda Pickard had asked to resign because of a change in employment and her role of Secretary to the CANDES Parent Committee will be replaced by Rebecca Spindler (Toronto Zoo, Canada). The Subcommittee Co-Chairmen were then asked to present summaries from their activities since January 2003.

Regulatory Subcommittee: Co-Chairmen Crichton and O'Brien reported on the progress of their Subcommittee to compile a country-by-country list of contacts and permit agencies and identifying the processing required for the import and export of biomaterials to and from different countries. Import/export information has been completed and is now available for several countries on the CANDES homepage on the IETS website.

Health & Safety Subcommittee: Co-Chairman Holt reported on their mid-year meeting held in November 2003 on formulating strategies and tools necessary for quantifying the risk of transmitting specific diseases via semen and other biomaterials from CANDES. The report/workbook resulting from this workshop has been completed and is now available on the CANDES homepage of the IETS website (see attached pdf file). A second workshop is in the process of being organized to fine-tune this workbook as well as to document the relative risks associated with moving live animals versus biomaterials in order to provide a more rationale basis to governmental regulatory officials for transporting biomaterials.

Research Subcommittee: Co-Chairman Krisher reported that the collection process was ongoing for standard operating procedures (or protocols) for embryo transfer and related technologies in CANDES. Currently there are 18 submissions in a 92 page Resource Manual available on the CANDES homepage of the IETS website. Different strategies for obtaining additional protocols were discussed including the drafting of a letter by Co-Chairman Monique Paris asking fellow scientists to contribute to the Resource Manual. Taxon leaders are needed for "Birds" and "Marine Mammals". The Subcommittee considered its future activities, once protocol collation was successfully underway. It concluded that some of its objectives will be to identify priority areas for research, based on areas where technology is lacking. It needs to consider whether this prioritisation should target technologies, taxa or species. It should also incorporate the priorities of the NGO bodies, e.g., IUCN, and tailor its activities to meet the needs of other organisations.

Technology Subcommittee: Neither Co-Chairmen Phil Damiani or Damien Paris were able to attend the CANDES meetings due to unforeseen circumstances. Co-Chairman Paris did conduct a survey of their members to prioritize which reproductive technologies should receive more attention and promotion for research and development. The results of this survey are provided as Appendix 1 of this report.

Position Statement on Cloning: A final draft of the IETS CANDES position statement on cloning was submitted to the IETS Board of Governors who approved it in December 2003 (see Appendix 2). This statement will be posted on the CANDES homepage on the IETS website in March 2004. Although all CANDES members had multiple opportunities to discuss and debate the statement over the past two years, there was still some criticism raised as to some of the wording used in the approved statement. Chairman Loskutoff informed the members present that because of the dynamic nature of this technology, we will make a point to review the current statement on an annual basis and, if necessary, will request that a revised statement be presented to the IETS Board of Governors for approval.

Future Meetings: The next working meeting of the IETS CANDES Parent Committee will be held on 12 November 2004 at the Henry Doorly Zoo in Omaha, Nebraska, USA just preceding the Third International Symposium on Assisted Reproductive Technology for the Conservation and Genetic Management of Wildlife. The program for this symposium has been completed and it will be posted on the CANDES homepage as soon as we receive confirmations from the invited speakers.

Respectfully Submitted,
Naida M. Loskutoff, Chairman of the IETS CANDES Parent Committee

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APPENDIX 1

Novel Assisted Reproduction Technologies List for Development in Companion Animals, Non-Domestic & Endangered Species (CANDES)

First posting March 2004; update and new information to be posted September 2004
To vote on existing or nominate further priority technologies for development, contact the
IETS CANDES Technology Subcommittee Co-Chairmen:
Philip Damiani, E-mail: pdamiani@genetics.utah.edu or
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Animal Health:

- improved pediatrics (1)
- stress reduction methods (2)

Cloning:

- production of reconstructed ova by nuclear transfer (3)
- somatic cell reprogramming (2)
- intra-species nuclear transfer (1)

Cryopreservation:

- freeze-drying or room temperature preservation (4)
- oocyte & ovarian tissue preservation (5)
- sperm & testicular tissue cooling & cryopreservation in difficult species (eg. macropodids, etc.)(5)
- improved conventional and novel embryo storage techniques (eg. using embryonic diapause factors at body temperature) (4)
- somatic cell freezing and banking (2)

Embryo Transfer:

- embryo transfer approaches (4)

Fertilization Techniques:

- AI procedures (3)
- IVF procedures (2)
- elongated & rounded spermatid intracytoplasmic injection (1)
- Micro-incubation chamber, culture medium replacement (1)
- Intra-uterine/trans-vaginal semen capsule containing viable, dormant sperm that breaks down and releases sperm at ovulation (3)

Field Technology:

- mobile liquid nitrogen generator (1)
- remote endocrine assessment device (eg. catheter or external EIA unit - radio collar combination, that transmits info along with geographical coordinates to satellite) (2)
- novel instrumentation and methodologies for field use (2)

Gamete Rescue:

- spermatogonial transplantation (2)
- ovarian tissue transplantation (3)
- pre-antral follicles culture & oocyte maturation (5)

Oestrus:

- non-invasive detection of oestrus, LH or ovulation (7)
- novel and efficient ovulation induction, super-ovulation or oestrus synchronization independent of seasonal effects (7)
- species-specific gonadotropins or tolerance induction to cross-species super-ovulation hormones (4)

Pheromones:

- pheromone detection (4)

CANDES Bio-Phenomena: (unique bio-phenomena that exists in CANDES animals that may lead to an advance in ART)

- embryonic diapause in macropodids, roe deer & bears (2)
- identical offspring production as in 9-banded armadillo (2)
- body-temperature female sperm storage in bats (1)
- sperm pairing in American marsupials and co-operative sperm chain formation in wood mice (2)
- giant sperm of drosophila (2)
- parthenogenesis in reptiles (1)
- sex reversal in fish and reptiles (2)
- social suppression of reproduction in certain primates and naked mole rats (1)

Top 10 Priority Technologies

Rank	Technology	No. Votes
Equal 1 st	non-invasive detection of oestrus, LH or ovulation	7
Equal 1 st	novel and efficient ovulation induction, super-ovulation or oestrus synchronization independent of seasonal effects	7
Equal 2 nd	oocyte & ovarian tissue preservation	5
Equal 2 nd	sperm & testicular tissue cooling & cryopreservation in difficult species (eg. macropodids, etc.)	5
Equal 2 nd	pre-antral follicles culture & oocyte maturation	5
Equal 3 rd	freeze-drying or room temperature preservation	4
Equal 3 rd	improved conventional and novel embryo storage techniques (eg. using embryonic diapause factors at body temperature)	4
Equal 3 rd	embryo transfer approaches	4
Equal 3 rd	species-specific gonadotropins or tolerance induction to cross-species super-ovulation hormones	4
Equal 3 rd	pheromone detection	4

Contributors:

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Rebecca Spindler

† numbers in parenthesis () indicate the number of votes.

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APPENDIX 2

IETS CANDES POSITION STATEMENT ON CLONING

Approved by the IETS Board of Governors (December 2003)

The Parent Committee on Companion Animals, Non-domestic and Endangered Species (CANDES) of the International Embryo Transfer Society (IETS), in its efforts to oversee the great diversity of taxa under its banner, recognizes that some species may serve as appropriate models for nuclear transfer or "cloning" research. Furthermore, such research could ultimately have broader application and benefit to other species under its purview (e.g., for conservation or therapeutic reasons). Therefore, the Committee supports, in principle, research and development of this technology. At the same time, the Committee cautions that the maintenance of genetic diversity is the underlying principle of long-term population management and species conservation; thus the practical application of nuclear transfer may be contraindicated for the vast majority of these species. Nevertheless, there may be certain exceptions where species known to be genetically compromised (e.g., highly inbred populations) may benefit from cloning technology developed in species with a history of cloning success (e.g., amphibians) or in closely related domestic counterparts (e.g., ruminants) or in other species where embryo technologies are advancing (e.g., primates and felids).

Furthermore, because basic principles of reproduction are yet to be established for most CANDES, cloning research should not proceed at the expense of research directed towards understanding basic physiology. The continued development and application of assisted reproduction technologies (e.g. artificial insemination, in vitro fertilization, embryo transfer and gamete/embryo cryopreservation) that are potentially more effective and thus have greater immediate application to species conservation, should be given higher priority than cloning research. Meanwhile, although there are major technical hurdles to overcome, the overall efficiency of cloning is advancing and researchers must remain vigilant to the possible future application of this technology to CANDES as an additional tool for the propagation or conservation of these animals. Thus, the Committee strongly encourages the organized collection and storage of biomaterials for use in future cloning efforts and stresses that exploration of cloning technology be conducted on the basis of sound scientific principles and with the ethical care and use of CANDES. Finally, and especially in the case of critically endangered or extinct species, the Committee urges that researchers be cognizant of dwindling global habitat issues and responsibly address the implications of their research for our overall commitment to species conservation and the preservation of biodiversity.

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