CANDES Parent Committee

International Embryo Transfer Society

Parent Committee on Companion Animals,
Non-Domestic & Endangered Species
Report from the Working Meeting
27th September 2002
Hosted by Omaha's Henry Doorly Zoo

Report to the IETS Board of Governors

The second working group meeting of the IETS CANDES Parent Committee was held on Friday, 27 September 2002 at the Henry Doorly Zoo in Omaha, Nebraska. The meeting once again overlapped with the working group meeting of the American Zoo and Aquarium Association (AZA) Reproductive Sciences Advisory Group (Repro SAG) and were jointly held in conjunction with the 2nd International Symposium on Assisted Reproductive Technology for the Conservation and Genetic Management of Wildlife. The Henry Doorly Zoo sponsored the accommodations and meals for the joint meetings and provided financial assistance to some CANDES Parent Committee members to participate in the meeting and symposium. A total of 36 CANDES Parent Committee members were present (Godke and Damiani were delayed due to hurricane weather conditions in Louisiana) representing 9 countries (p. 3).

Summary of Activities

1. Chairman Loskutoff reported the outcome of the specific requests presented to the IETS Board of Governors in the April 2002 report (Appendix 2), including:
    a. Approval of the final draft of the CANDES Parent Committee Terms of Reference.
    b. Approval for the inclusion of a CANDES page on the IETS website to provide information on permit requirements for tissue transport, and standardized experimental protocols with references for ART in CANDES (goal for 2003).
    c. Approval of the allocation of limited funds for travel assistance for CANDES Parent Committee members to attend future working meetings (excluding those meetings held in conjunction with the annual IETS conferences), after consideration of specific requests that will include names of individuals, travel itineraries and approximate costs.
2. Summary of the minutes from the April 2002 working meeting (pp. 5-12).
3. Subcommittee progress reports (pp. 6-11).
4. Other business:
    a. Report on Biomaterials Resource Banking workshop in South Africa (P. Bartels).
    b. Future meetings to be held in conjunction with the annual IETS conference in New Zealand
        i. Regulatory and Health & Safety Subcommittees (Friday, 10 January 2003, 17:00 – 21:00, Aotea Centre)
        ii. Research and Technology Subcommittees (Saturday, 11 January 2003, 17:00 – 21:00, Aotea Centre)
        iii. Open meeting of the CANDES Parent Committee (Sunday, 12 January 2003,
        08:00 – 10:00, Aotea Centre, Goodman Fielder Room)
        iv. Report from the CANDES Parent Committee (Tuesday, 14 January 2003, 11:40 – 12:10, Aotea Centre, ASB Theater).

Action Items

1. Research Subcommittee (R. Krisher and W. Swanson, Co-Chairmen)
    a. Draft a specific Terms of Reference for this subcommittee.
    b. Draft a letter to be circulated to colleagues, scientists and researchers requesting that their protocols be shared with the greater scientific community.
        i. This Resource Manual will include protocols referring to all technologies applicable to CANDES with supporting manuscripts/data and contact details for the protocols' author(s). See sample protocol in Appendix 6.
        ii. The Resource Manual will be provided at no cost on the IETS website (goal for 2003).
        iii. Coordinators were identified who would circulate letters and be the contact persons for generating protocols on specific taxa (see p. 6).
2. Health & Safety Subcommittee (W. Holt and N. Loskutoff, Co-Chairmen)
    a. Draft a specific Terms of Reference for this subcommittee.
    b. A thorough literature search is in progress to review all pertinent scientific reports regarding pathogen interactions with embryos in CANDES. The Henry Doorly Zoo sponsored the subscription of an internet search facility (NERAC) to facilitate the literature searches.
    c. A thorough literature search is also in progress using the NERAC facility to review all pertinent scientific reports regarding pathogen interactions with semen in all species. A comprehensive document containing abstracts with literature citations will be distributed for review and discussion at the January 2003 meeting. This subcommittee will be closed to non-members owing to the fact that unpublished data may be discussed. The three main areas of focus will be:
        i. To determine whether specific infectious agents are found in semen.
        ii. If so, whether disease is known to be transmitted via breeding, AI or ET.
        iii. If such pathogens in semen can be removed without affecting sperm viability.
3. Regulatory Subcommittee (E. Crichton and J. O'Brien, Co-Chairmen)
    a. Draft a specific Terms of Reference for this subcommittee.
    b. Members representing different countries are compiling information relating to the import/export of biological material relevant to CANDES.
    c. A database of international regulations will be organized as a quick reference resource and posted on the IETS website (goal: 2003; updated every 6 months).
    d. More discussion needed regarding ownership issues.
    e. Need to increase collaborations by members with other related organizations, e.g., AZA Biomaterials Banking Advisory Group, Wildlife Biological Resource Centre in South Africa.
4. Technology Subcommittee (T. Hildebrandt, Co-Chairman and D. Paris, Secretary)
    a. Continue discussions to define the goals and objectives of this subcommittee and begin to draft a specific Terms of Reference (see Appendix 6).
    b. Draft a position statement on cloning CANDES to be presented for discussion by the CANDES Parent Committee before submission to the IETS Board of Governors for approval.

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

IETS CANDES Parent Committee Members Present

Working Group Meeting, 27 September 2002, Omaha's Henry Doorly Zoo

Naida Loskutoff (CCR, Henry Doorly Zoo, Omaha, NE): Chairman
Amanda Pickard (Institute of Zoology, London, UK): Secretary
Rebecca Krisher (Purdue University): Research Subcommittee Co-Chairman
Bill Swanson (CREW, Cincinnati Zoo, OH, USA): Research Subcommittee Co-Chairman
Thomas Hildebrandt (IZBW, Berlin, Germany): Technology Subcommittee Co-Chairman
Philip Damiani (AICRES, New Orleans, LA, USA): Technology Subcommittee Co-Chairman
Damien Paris (Dept. Zoology, U. Melbourne, VIC, Australia): Technology Subcommittee Secretary
Bill Holt (Institute of Zoology, London, UK): Health & Safety Subcommittee Co-Chairman
Beth Crichton (CCR, Henry Doorly Zoo, NE, USA): Regulatory Subcommittee Co-Chairman
Justine O'Brien (University of Sydney, Australia) Regulatory Subcommittee Co-Chairman

Paul Bartels (WBRC, South Africa)
Todd Bowsher (Dallas Zoo, TX, USA)
Eliza Curnow (U. Washington, WA, USA)
Boris Dzuba (National Academy of Sciences, Ukraine)
Robert A. Godke (LSU, Baton Rouge, LA)
Karen Goodrowe (Point Defiance Zoo & Aquarium, Tacoma, WA)
Marcelo Guimaraes (U. Sao Paulo, Brazil)
Monica Hall-Woods (St. Louis Zoo, MO, USA)
Eric Hayes (U. Washington, WA, USA)
Sandra Hedges (Sea World, Durban, South Africa)
Jason Herrick (Purdue University, IN, USA)
Andrew Kouba (Memphis Zoo, Memphis, TN, USA)
Duane Kraemer (Texas A & M University, TX, USA)
Gaby Mastromonaco (University of Guelph, Canada)
Ronaldo Morato (U. Sao Paolo, Brazil)
Nei Moreira (Federal University of Parana - Campus Palotina, Palotina, Parana, Brazil)
Kari Morfeld (CCR, Henry Doorly Zoo, NE, USA)
Monique Paris (Murdoch Childrens Research Institute, Victoria, Australia)
Linda Penfold (White Oak Conservation Center, Yulee, FL, USA)
Vinicius de Seixas Queiroz (U. Sao Paolo, Brazil)
Dennis Schmitt (Southwest Missouri State University, Springfield, MO, USA)
Brandon Sitzman (University of Maryland, MD, USA)
Rebecca Spindler (CRC, National Zoo, DC, USA)
Carrie Vance (Memphis Zoo, Memphis, TN, USA)
Mathew van Lierop (The Johannesburg Zoo, South Africa)
Buck Williams (Texas A & M University, TX, USA)
Huang Yan (Wolong Nature Reserve, Sichuan, China)

Member Regrets

Mercedes Alvarez
Luis Anel
Barry Bavister
Charlies Bormann
Enrico Casadei
Berenice de Avila Rodrigues
John Diehl
András Dinnyés
Robert Duby
Rachel Durkin
Barbara Durrant
Klaus Eulenberger
Diego Ezcurra
Wenche Farstad
Richard Fayrer-Hosken
Rebecca Harris
Paz Herraez
Weizhi Ji
Brad Lindsey
R. Luzbel Jebsotn
Gaia Cecilia Luvoni
Reuben Mapletoft
Catriona MacCallum
Karine Onclin
Katie Pellican
C. Earle Pope
Cristina Rodriguez
Mitch Schiewe
Kristin Sieren
Laszlo Solti
Jason Swain
Gabor Vajta
John Verstegen
Matthew B. Wheeler

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Minutes from the Working Group Meeting of the IETS CANDES Parent Committee
By Amanda Pickard, Secretary

1. Naida Loskutoff summarised outcomes of the April 2002 CANDES meeting and the response from the IETS Board of Governors in regards to the mid-year report. In a letter dated 19 June 2002 by IETS President Barry Bavister sent soon after their mid-year teleconference (Appendix 2), the IETS Governors approved all requests put to them as a result of the CANDES April working meeting, including:

    a. Financial assistance to facilitate CANDES Parent Committee member attendance at future mid-year working group meetings (beginning 2003).

    b. Approval of the final draft of the CANDES Terms of Reference (Appendix 3).

    c. Approval for the inclusion of a CANDES page on the IETS website. The Board has agreed that this can include standardised experimental protocols, with references, generated through the activities of the Research Subcommittee and information on permit requirements, which is being compiled by the Regulatory Subcommittee. The goal will be to have this in place in 2003.

2. In light of the CANDES collective response to the Tasmanian tiger cloning article (see Appendix 4), IETS President Bavister requested the formulation of a cloning position statement for the Society in regards to those animals covered by CANDES (Phil Damiani has been requested to draft such a statement for discussion at the next CANDES meeting at the IETS conference in New Zealand). Comments by President Bavister are attached as Appendix 5. After discussion by the CANDES Parent Committee, the draft statement will be submitted to the IETS Board of Governors for their consideration and approval.

3. Membership of the CANDES Parent committee will stay open until January 2003, to allow people the maximum opportunity to join. However, all members of the CANDES parent committee must be members of IETS. It was re-emphasised that members of CANDES should join no more than two subcommittees, to allow full participation and to prevent conflicts due to overlapping meetings.

4. The IETS Board has agreed that at each annual conference the HASAC and CANDES will be scheduled a have a slot in the scientific programme to report back to the IETS membership on their activities through the year. A report from each Parent Committee will also be included in the Embryo Transfer newsletter.

5. Subcommittee Progress Reports:

Research Subcommittee (Bill Swanson and Rebecca Krisher)

Membership:

Anita Collins	Gaia Cecilia Luvoni	Terri Roth
András Dinnyés	Reuben Mapletoft	Rebecca Spindler
Wenche Farstad	Gabriela Mastromonaco	Bill Swanson (Co-Chair)
Robert A. Godke	Ronaldo Morato	John Verstegen
Rebecca Krisher (Co-Chair)	Nei Moreira	
Brad Lindsey	Monique Paris	

a. In order to facilitate the publication of a Resource Manual the committee proposed circulating a letter to colleagues, scientists, researchers, requesting that their protocols be shared with the greater scientific community.

b. It was proposed that the Resource Manual should include protocols referring to all technologies applicable to wildlife species, with supporting manuscripts/data and contact details for the protocol's author.

c. Sample protocols were to be included with the letter (see example by the Co-Chairman Swanson in Appendix 6). No specific protocol format would be required. It was felt that this might encourage scientists to contribute to the Resource Manual as they would not need to significantly reformat their working protocols.

d. To distribute the letters, taxa based co-ordinators would be identified, who would then circulate the letters to people known to be working within their field. Initially, efforts would focus on generating protocols for the following taxa:

    i. Carnivores – Bill Swanson
    ii. Ungulates – Rebecca Krisher
    iii. Birds – Julie Long(?)
    iv. Amphibians/Reptiles – Andy Kouba
    v. Non-human primates – Justine O'Brien
    vi. Invertebrates – Anita Collins
    vii. Marsupials – Monique Paris
    viii. Marine Mammals – Sandra Hedges
    ix. Fish – Boris Dzuba
    x. Other taxa will follow once the system is running.

Health and Safety Subcommittee (Naida Loskutoff and Bill Holt)

Membership:

Paul Bartels	Naida Loskutoff (Co-Chair)	Kari Morfeld
Eliza Curnow	Reuben Mapletoft	Linda Penfold
Bill Holt (Co-Chair)	Nei Moreira	Buck Williams

a. The CANDES Health and Safety subcommittee will run a parallel role to the HASAC Research subcommittee, providing references on pathogen-embryo interaction in those animals covered by CANDES.

b. An additional, important role for this subcommittee is to develop a similar program that will focus on pathogen interactions with semen for all species. HASAC advises ***Office Internationale de Epizootiques*** on health and safety regulation relating to embryo transfer in animals. It is proposed that CANDES Health & Safety subcommittee will eventually develop a similar role advising, through the IETS HASAC, on regulations for the transfer and use of *semen in livestock as well as wildlife*.

c. The CANDES Health and Safety subcommittee is in the process of compiling a bibliography of literature relating to pathogens and semen. The three main areas of focus are:

   i. To determine whether specific infectious pathogens are found in the semen.
   ii. If so, whether such pathogens are known to transmit disease via natural breeding, artificial insemination or in vitro-produced embryos.
   iii. If such pathogens in semen can removed without affecting sperm viability.

d. Naida Loskutoff hopes to have a first draft of the bibliography available for the subcommittee members by November 2002 (which was not possible – copies will be made available just prior to the Health & Safety Subcommittee meeting in January).

e. The CANDES Health and Safety subcommittee will be a closed committee to allow unpublished data to be considered, while protecting any confidential results or those subject to intellectual property rights.

f. Omaha's Henry Doorly Zoo has sponsored a subscription to an internet search facility called NERAC to assist with the comprehensive literature search for the Health & Safety Subcommittee. NERAC conducts searches on any topic of your choice, on your behalf. All topics are covered by this facility which searches technical and scientific journals, conference papers, patents and other sources for all citations relevant to a particular topic or author. They can search retrospectively to approximately 1970 or track to receive future publications or submitted patent applications. If there are any ambiguities in your search they will contact you for clarification before proceeding. Any publications in the list of results that are of particular interest can then be ordered through NERAC, and all search information and results are automatically saved to your web page within NERAC.

g. Naida Loskutoff asked the members of the Health & Safety Subcommittee for assistance in generating a comprehensive list of keywords relating to semen and pathogens that could be included in NERAC searches. A half-time person is being appointed by Henry Doorly Zoo to collate the information generated and report back to the Health and Safety Committee.

   Andy Kouba suggested that AZA Repro SAG should investigate the possibility of purchasing a group subscription to NERAC, funded by the zoos that are supporting the Repro SAG with each contributing a proportion of the fee.

Regulatory Subcommittee Report (Beth Crichton and Justine O'Brien)

Membership:

Paul Bartels (Consultant)
Rick Brenneman (Consultant)
Jackie Coulon
Beth Crichton (Co-Chairman)
Eliza Curnow
Wenche Farsted
Ed Louis (Consultant)
Gabriela Mastromonaco
Justine O'Brien (Co-Chairman)
Rebecca Spindler (Consultant)
John Verstegen

Primary goal: Overall to provide a reference source for regulations applying to import/export of biological material from animals covered by CANDES

- To provide a resource for the quick referencing of the varying rules and regulations that apply in different countries for the import/export of biological materials (gametes, tissues, blood, excreta), as well as breeding loan agreements.
- To summarize this information, list web sites and other contact information for relevant organizations and authorities.
- To explore possibility of providing examples or recommendations of contract/agreements for the transfer and ownership of biomaterials from CANDES animals.
- Information will be compiled in a standardized format and made available to the IETS membership through the IETS web site or FASS office.

Action plan/progress and response to specific points presented/proposed in the January and April 2002 meetings:

a. To clarify, on a country by country basis the rules and regulations for the legal transport (import/export) of biological materials /designate priority areas.

   i. Justine O'Brien has produced a template for collation of the import/export permit rules and regulations as they apply to Australia. It includes contacts, web sites etc.
   ii. Gabriela Mastromonaco has used this template to compile similar information for Canada
   iii. Rebecca Spindler has compiled information for Hong Kong and China. She is currently working on Brazil.
   iv. Beth Crichton is compiling information for USA
   v. Beth Crichton will apply information she has garnered for Uganda
   vi. Linda Penfold is supplying information for Kenya
   vii. Paul Bartels has provided information for South Africa
   viii. Wenche Farsted is compiling information for the Nordic countries
   ix. John Verstegen and Wenche Farsted are canvassing support/people in other European countries through their association with EVSSAR

Following the September 2002 CANDES meeting:
Mathew van Lierop to provide information for Namibia and Botswana

b. To compile a list of contact persons (agencies, researchers) in/for different countries that would be willing to supply information about permits.

The database of contact people for researchers who have queries concerning imports and exports is being formed (e.g., for providing information on customs brokers specific to import/export countries; how long a permit is valid or if single transfer only; what agencies should be contacted). First information source will be the template (which has information to be updated every 6 months); if this not yet in place, then contact designated person who has offered themselves as a resource for that country. It will be important that such people can supply up-to-date information on regulatory issues. Rebecca Spindler suggested there should be an "in country" person (if a foreigner is the only contact person) who also provides import and export information). The subcommittee chairpersons will request an "in-country" contact from those providing information for a country they do not reside in. At present the following have agreed to be contact people:

Country	Contact person
Australia	Justine O'Brien
Botswana	Mathew van Lierop
Brazil	Rebecca Spindler
China	Rebecca Spindler
Costa Rica	Rebecca Spindler
Indonesia	Eliza Curnow
Kenya	Linda Penfold
Madagascar	Ed Louis (Henry Doorly Zoo)
Namibia	Mathew van Lierop
New Zealand	Justine O'Brien
Singapore	Eliza Curnow
Uganda	Rick Brenneman (Henry Doorly Zoo)
USA	Beth Crichton

c. Should all transfer agreements in regards to CANDES be considered by this subcommittee? Should this committee investigate standardization of transfer agreements within and between zoos, universities and range countries?

   Short-term goal will be to obtain specific examples of different transfer agreements as a reference source. Standardization of transfer agreements is problematic due to vast country differences in import/export regulations; this would require negotiation with relevant government agencies. However, the proposed CANDES reference resource (template) will highlight the differences and relevant features of regulatory procedures for transfer agreements across countries (in vivo (SSP consultation) versus in vitro use).

d. Investigate regulations that might vary, depending on the sample collection protocol. This is an issue that applies, e.g. to urine that is collected by catheterization versus that collected from the ground. More info required on this topic on a country by country basis. For example, Australia: Permits required regardless of collection method to import urine.

e. Financial value of material and offspring ownership issues.
   Financial value: Need feedback. There will be many different scenarios depending on import/export institutions. Ownership: Ongoing collaboration with AZA BBAG (Cathi Lehn).

f. Specific wording for permits and transfer agreements; implications of recent move by US Fish and Wildlife Service to more stringently interpret applications for endangered permits on the basis that the transport of animals or parts thereof must benefit the species in the wild. Need feedback. Need to identify and address prohibitive regulations such as this.

g. To compile a list of species whose biological materials are not regulated (and clarify regulations for movement of their biological materials). Still require info for different countries. Australia: All animal products are regulated. Regulations will differ country-country

Further discussion addressed:

i. Further clarification of rules and regulations regarding the issue of international shipment of CANDES materials. Spindler suggested that we act to emphasize the benefits of collaborative research between countries. Need to strike up relationships with researchers in range countries.
ii. The need to regularly update rules and regualtions (every 6 months?)
iii. Should the subcommittee consider all CANDES transfer agreements?
iv. Should the subcommittee attempt to standardise regulations/agreements?
v. Methodological variations may affect the need for a permit – this needs investigation on a country-by-country basis.
vi. Financial value and ownership issues need to be addressed. Research may not be of interest to the range country, but the recipient may benefit from a "reciprocal" arrangement. Conflict with CITES regulation. Owner gets reimbursement for the labour involved in keeping the animal in lieu of payment for semen? US zoos trade animals for money therefore indirectly recipient zoos may benefit from sale of the offspring. Would breeding loan agreements be sufficient? US-based CRADA (cooperative research and development agreement) agreement on what/how benefits could accrue overtime and how returns can be captured down the line.
vii. USFWS more stringently interpreting applications for permits – transport of animals or parts thereof must benefit the species in the wild. Difficult for SSP recommended breeding loan transfers. KarenGoodrowe suggested a USFWS liaison interested in meeting AZA organisations in the middle, but Zoos need to tighten up on how they present their cases.
viii. List biological material by species and country that are not regulated. No regulations can prove more problematic that having some.
ix. Bill Holt mentioned that the UK Department of the Environment, Food and Rural Affairs website has comprehensive list of import/export agreements for livestock.

Technology subcommittee (Thomas Hildebrandt and Damien Paris)

Membership:

Paul Bartels	Brad Lindsey
Philip Damiani (Co-Chair)*	Ronaldo Morato
Robert A. Godke	Karine Onclin
Thomas Hildebrandt (Co-Chair)	Damien Paris (Secretary)
Duane C. Kraemer	Rebecca Spindler

*The subcommittee expressed its disappointment that Phil Damiani could not be present due to adverse weather conditions.

See detailed minutes by Damien Paris of the break-out discussion session (Appendix 6).

a. The subcommittee would assume two roles. One would be to solicit the development of novel technology to meet the specific requirements of CANDES. The second would be to explore the adaptation of existing technology in livestock or human medicine to make it appropriate for use in CANDES. After discussion, it was felt that it was best to continue to consider both of these roles within the one committee.

b. Thomas Hildebrandt expressed concerns that the modification of existing technology can be more complicated than the development of equipment or procedures from first principals. He also raised concerns that the issues relating to Intellectual Property are significant and must be taken into account.

h. It was considered whether the Technology subcommittee should solicit legal advice before proceeding with their objectives. This should include issues such as how international patents vary, and how to protect the rights of the researcher who may not have the financial backing to develop their ideas?

Biological Resource Banking (BRB) Workshop Report

The meeting concluded with a report from Paul Bartels on the BRB workshop held 25 – 27 May 2002 in Johannesburg, South Africa. The workshop was organized by the Wildlife Biological Resource Centre and the Endangered Wildlife Trust in South Africa. For more information: info@wbrc.org.za

Future Meetings

The next CANDES working meetings will be held just prior to the IETS Annual Conference in Auckland New Zealand:

Regulatory and Health & Safety Subcommittees
(Friday, 10 January 2003, 17:00 – 21:00, Aotea Centre)

Research and Technology Subcommittees
(Saturday, 11 January 2003, 17:00 – 21:00, Aotea Centre)

Open meeting of the CANDES Parent Committee
(Sunday, 12 January 2003, 08:00 – 10:00, Aotea Centre, Goodman Fielder Room)

Report to the IETS from the CANDES Parent Committee
(Tuesday, 14 January 2003, 11:40 – 12:10, Aotea Centre, ASB Theater).

Reproductive Sciences
Advisory Group

Appendix 1

CANDES Parent Committee

Agenda for the working meeting of the AZA Reproductive Sciences Advisory Group

Friday, 27 September 2002 (Education Classrooms 1 & 2, Henry Doorly Zoo)

07:30 – 08:00: Breakfast (Treetops Restaurant)
08:00 – 08:10: Welcome and Introductions (Goodrowe)
08:10 – 08:20: AAZV Presentation (Loskutoff); see attached April 2002 working meeting report, pages 36-40.
08:20 – 08:40: Review of the minutes from the April 2002 working meeting; attached.
08:40 – 09:00: SSP/TAG Reproductive Advisors (Swanson)
Identifying needs of the SSPs and TAGs
09:00 – 09:10: Invitations to other AZA scientific advisory groups (Goodrowe)
09:10 – 09:30: Network development (Damiani & Loskutoff)
09:30 – 10:00: AZA Repro SAG Promotion:
Development of education tools (Krisher)
Logo designs & Website (Morfeld)
10:00 – 10:30: Position statement on cloning (Swanson)
10:30 – 11:00: Coffee/Tea Break
11:00 – 11:20: Discussion on future dates, venues for working meeting, association with BBAG? (Goodrowe)
11:20 – 11:30: Program and Review Committees for future symposia (Loskutoff)
11:30 – 12:00: Other Business
Report from AZA BBAG (Damiani)
12:00 – 13:00: Lunch (Education Foyer)

Agenda for the working meeting of the IETS CANDES Parent Committee

Friday, 27 September 2002 (Education Classrooms 1 & 2, Henry Doorly Zoo)

13:00 – 13:30: Introductions; review of the minutes from the April 2002 working meeting.
13:30 – 14:00: Progress reports:
13:30 – 14:00: Research Subcommittee (Swanson & Krisher)
14:00 – 14:30: Regulatory Subcommittee (Crichton & O'Brien)
14:30 – 15:00: Health & Safety Subcommittee (Holt & Loskutoff)
Report on NERAC System (Morfeld)
15:00 – 15:30: Technology Subcommittee (Damiani & Hildebrandt)
Position statement on cloning CANDES
15:30 – 16:00: Coffee/Tea Break
16:00 – 17:00: Other Business:
Report on BRB Workshop in South Africa (Bartels)
Date and time of next meeting at the annual IETS conference.

Appendix 2

International Embryo Transfer Society
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Naida Loskutoff, Ph.D. June 19, 2002
Henry Doorly Zoo

Dear Naida,

The Board of Governors wants me to express our thanks for the great job you have done in organizing CANDES! At our telephone conference on June 16, the Board approved the CANDES Terms of Reference as contained in your Report, and your request for inclusion of protocols and permit data on the IETS website.
The Board supports in principle your request for travel funds for CANDES committee members to attend non-IETS Meeting for working groups. However, while we do want to support your efforts as best we can, the Board does not approve a blanket amount of money for travel of CANDES committee members, in view of the Society's very limited resources. Instead, we request that you submit to the President a specific request for support naming the individuals to be supported, their trip data (home and meeting locations) and the approximate costs. This can be rapidly approved by myself or the executive committee so we do not envisage any significant delay. Our rationale is that all official IETS Committees should be treated fairly and equitably in allocating scarce resources, including to HASAC as well as CANDES, and to any new special interest groups that might form. Thus, the Board does not want to commit specific amounts of money for these purposes on an ongoing basis without oversight of the precise needs. I hope that you will understand our position. Please let me know asap what your specific needs are for your next meeting (but I'll be in Europe June 25-July 20 so let Carol Keefer handle this if you need a rapid response).

With best wishes,

Barry D. Bavister

Barry Bavister
President, IETS

29th Annual Conference of the IETS, January 11-14, 2003
Auckland, New Zealand

Appendix 3

INTERNATIONAL EMBRYO TRANSFER SOCIETY (IETS)

TERMS OF REFERENCE OF THE

PARENT COMMITTEE ON

COMPANION ANIMALS, NON-DOMESTIC & ENDANGERED SPECIES (CANDES)

I. PREAMBLE

The Parent Committee on Companion Animals, Non-Domestic and Endangered Species (CANDES) of the International Embryo Transfer Society is an advisory committee, technically specialized in comparative reproductive physiologies and the application of reproductive biotechnologies in companion animals (including cats, dogs, birds, amphibian, reptiles, fish and invertebrates and excluding domestic horses), non-domestic species (including farmed animals such as buffalo, cervids, camelids, ratites and canids, in addition to a diverse array of zoo animals) as well as their endangered species counterparts. It will provide a unique and valuable resource to the IETS membership and will respond to their questions and requests for advice related to those matters both at a national and international level. It will submit recommendations based on current scientific knowledge to the IETS Board of Governors to further provide guidance and advice to international governmental regulatory agencies, recognized animal specialty groups and organized conservation programs, such as those of regional zoo associations as well as the World Conservation Union (IUCN) by direct liaison with the Conservation Breeding Specialist Group, Species Survival Commission.

II. MISSION STATEMENT

The aim of the IETS CANDES Parent Committee is to serve as an informational resource pertaining to the management of reproduction in companion animals and non-domestic species in order to provide a foundation for the safe (from a disease standpoint) and effective application of assisted reproductive technologies. An objective of the Committee will also be to provide the IETS membership informed counsel that can instruct and advise on the technical feasibility and realistic expectations (based on previous scientific evidence) of the application of some of the more basic to the most technically advanced reproductive biotechnologies to companion animals, non-domestic and endangered species. An important goal of this Committee is to assist in the understanding of the unique reproductive strategies of those species and to facilitate the application of assisted reproductive technology to these species. The IETS CANDES Parent Committee will regularly communicate their activities to the IETS Board of Governors in the form of written reports and, with Board approval, will relate information directly to the IETS membership.

III. SCOPE

The activities of IETS CANDES Parent Committee will be wide ranging and will: 1) summarize the results of previous applications of assisted reproductive techniques in companion animals, non-domestic and endangered species and provide details for proven and established protocols; 2) develop and provide instructional information (including thorough reference lists) on the reproductive patterns and strategies of unique species and methods to manage their reproduction; 3) identify areas in need of further research and development to allow the application of embryo

transfer and related technologies to unique species; 4) clearly define international regulatory requirements to provide guidance for the safe and legal transport of tissues and germplasm from companion animals, non-domestic and endangered species for breeding or research purposes; and 5) develop, with approval of the IETS Board of Governors, an electronic system or IETS website link that would transfer pertinent information to the IETS membership.

IV. STRUCTURE

The IETS CANDES Parent Committee will be organized as four Subcommittees:

1. Regulatory Subcommittee. Besides the health and safety concerns when transporting animal tissues, those who work with rare and endangered species have additional restrictions by federal (e.g., United States Fish and Wildlife Department) and international (e.g., CITES, Convention on International Trade of Endangered Species) agencies which are often ill-defined and inconsistent between countries. An important objective of this Subcommittee is to assist in clearly defining conditions and requirements to facilitate and expedite the safe and legal transport of biological materials, while at the same time holding high standards to minimize the potential of inadvertent disease transmission, without unduly restricting technological advances in research and conservation programs. The information will be compiled, organized and made available to the IETS membership through the IETS website or FASS office.

2. Research Subcommittee. The initial objective of this committee will be to compile information on existing protocols proven to be effective for synchronizing ovarian cycles, artificial insemination, embryo collection, production and transfer, as well as sperm and embryo cryopreservation in these species. This information will be compiled for a diverse array of taxa, with updates and new additions included on a regular basis, and written reports will be made available to IETS members through the IETS website or FASS office. A future objective of this Subcommittee will be to identify and prioritize critical areas in need of research to develop protocols for embryo transfer and related technologies in companion animals, non-domestic and endangered species. This information will be made available to research programs to draw upon.

3. Technology Subcommittee. The goal of this Subcommittee is to identify and prioritize important areas that need technological development to broaden the application of embryo transfer and related technologies in companion animals, non-domestic and endangered species.

4. Health & Safety Subcommittee. This Subcommittee will serve several important purposes including: 1) review literature on embryo and pathogen interactions in companion animals, non-domestic and endangered species (which is quite limited at present) and report these to the HASAC Research Subcommittee; and 2) review literature and identify studies on pathogen interactions with semen in all species and report these to the HASAC Research Subcommittee.

V. APPOINTMENT AND PROCESS

The IETS CANDES Parent Committee will be led by a Chairman nominated from the IETS membership by the IETS Board of Governors. The continuation of the appointment will be subject to approval of the IETS Board of Governors after review every two years and renewable for a total of six years. The CANDES Parent Committee Chairman will designate a Secretary from the IETS membership, who will be confirmed by the IETS Board of Governors and whose appointment will be reviewed by the CANDES Parent Committee every two years and renewable for a total of six years. Each of the four Subcommittees will be led initially by two Co-Chairmen, designated by the CANDES Parent Committee Chairman from the IETS

membership and confirmed by the IETS Board of Governors. The Subcommittee Co-Chairmen will serve for a period of two years, renewable for a total of six years by agreement of the CANDES Parent Committee and confirmation by the IETS Board of Governors. The Subcommittee Chairmen will select the members of their respective subcommittees, drawn from the IETS membership, whose appointments will be subject to review by the Subcommittee Chairmen every two years, renewable for a total of six years. The IETS CANDES Parent Committee will, therefore, consist of a Chairman, Secretary, Subcommittee Chairmen and all of the Subcommittee members.

All members of the IETS CANDES Parent Committee will be required to be members of the IETS and to volunteer their participation without any remuneration. Their membership will be approved formally by a letter from the IETS CANDES Parent Committee Chairman. To the extent possible, the IETS CANDES Parent Committee membership will be balanced between geographic areas and continents, between public and private sectors and between various fields of expertise: scientists, practitioners, administration, commerce, etc.

VI. SUPPORTING STRUCTURE

The IETS CANDES Parent Committee is an instrument of the IETS Board of Governors to which it reports to after each of its meetings. No public action or initiative of the IETS CANDES Parent Committee can be taken without the approval of the President of the IETS Board of Governors. Internal communication to the IETS membership is the responsibility of the IETS CANDES Parent Committee Chairman, after receiving approval from the IETS Board of Governors. All members, including the Secretary and Subcommittee Chairmen, will communicate information on behalf of the IETS CANDES Parent Committee only with the formal approval of the IETS CANDES Parent Committee Chairman. External communication is the privilege of the IETS Board of Governors. Only the IETS CANDES Parent Committee Chairman communicates externally and that with the formal approval of the President of the IETS Board of Governors.

VII. FREQUENCY AND LOCATION OF MEETINGS

The IETS CANDES Parent Committee will meet at least once annually at the time and location of the IETS annual conferences. A second meeting will be scheduled each year to accelerate consultations and to respond efficiently to inquiries from the IETS membership and others. The second meeting will be organized as a working meeting that will be held in association with the International Symposium on Assisted Reproductive Technology for the Conservation and Genetic Management of Wildlife. The working meeting will overlap with the annual working meeting of the Reproductive Sciences Advisory Group of the American Zoo and Aquarium Association (AZA). The programs for these symposia will be designed to reflect the interests of both groups. IETS CANDES Parent Committee members will be urged to form associations with their own regional zoo associations worldwide and to encourage their participation in the Wildlife ART Symposia and joint working group meetings.

VIII. SUPPORT

The IETS Business Office will be requested only to relay communications between the IETS CANDES Parent Committee and the IETS Board of Governors. In addition, the IETS Business Office will be requested to communicate Board-approved information to the IETS membership by way of the Embryo Transfer Newsletter or the IETS website. A modest budget allocation will be requested from the IETS to assist CANDES Parent Committee members with travel expenses to attend an annual working meeting (which will be in addition to the annual meeting held in conjunction with the IETS annual conferences).

Appendix 4

RE: CLONING THE TASSIE TIGER

Naida M. Loskutoff, Ph.D.
Chairman, International Embryo Transfer Society (IETS) Parent Committee on Companion Animals, Non-Domestic and Endangered Species (CANDES)

According to Leigh Dayton, Science Writer/Broadcaster, this week the Australian Museum team "will announce that they've extracted 10 fragments of DNA from a Thylacine pup preserved in ethanol; done PCR; characterized the sequences; compared them to short sequences obtained by other researchers from bone and skin; confirmed it's Thylacine, and are getting ready to tackle the problems of creating a DNA bank. The project is the brain child of paleontologist and museum director Mike Archer. He knows it's a big ask, but thinks it may be possible to bring the critter back from extinction. Regardless, he thinks it's worth a try and will likely produce some interesting science along the way." Leigh asked for a "comment about, say the value of such a project, likelihood of success, et al." for an article she is writing for the news section of the journal Science.

With her permission, the note was forwarded to the members of the IETS CANDES Parent Committee who were surveyed for comments. Our collective response to this announcement, approved by the IETS Board of Governors, is as follows:

At best, we are in support of the basic research and honorable efforts to characterize the genetic composition of the Thylacine – a species that went extinct primarily due to human influence. From a basic science and comparative genetics perspective, the effort may have some merit. However, to use such "fragments" of DNA to actually clone the animal – in light of the current state of the art in cloning – is science fiction. There is a big difference between naked DNA (fragments – not an intact genome) and chromosomes or viable cells; the latter of which are vital for producing a clone by nuclear transfer technology, and which most certainly could not be obtained from the ethanol-preserved specimen. Even if it someday becomes possible to use naked DNA fragments to clone an animal – there is no value of this exercise to species conservation. The clone produced would represent one sex and genetic line and would probably serve merely as a scientific curiosity, which would contravene good practice in terms of animal welfare. More importantly is the question of which species can be used for the oocyte donor (to insert the DNA into) and a suitable recipient for embryo transfer. As this is a marsupial, it would require nurturing both *in utero* and then in a pouch. Efforts to cross-foster extant marsupial species historically have been problematic. At worst, we believe that the attempt to clone the extinct Thylacine represents a misallocation of funds (from a very limited pool in Australia) which could be much better spent in the development of basic assisted reproductive techniques and conservation programs for extant marsupial species – many of which are quite rare and endangered.

Appendix 5

Cloning and other advanced ARTs for application to endangered species.
Thoughts from Barry Bavister, IETS President.

1. Promotion and application of advanced "high tech" approaches should be kept in context with the benefits of other strategies including management, disease control, AI. that may be more cost-effective.
2. Any such high tech efforts should be based on sound scientific principles or the extension of existing principles, with proper regard to experimental design and the ethics of animal use.
3. There is a specialized niche for cloning to help these efforts, though its impact will vary widely depending on numerous factors including the species and its specialized reproductive biology and habitat, availability for research, prospects for re-introduction and breeding, etc. It should be recognized that some practical benefits of high tech may be far in the future; this is not a reason to abandon them.
4. Initial "breakthrough" reports, e.g., the first IVF in tigers or cloning in cats, must be kept in perspective:
    a. the value of the work for eventually helping ES depends on the repeatability of the protocol; one lucky outcome after many failures does not help;
    b. the work is only truly valuable if it establishes a reasonably dependable protocol whose details are published for all to copy and improve on;
    c. it is imperative that the work is done for scientific reasons, not just to generate publicity or raise funds for further work;
    d. specialized ART studies should focus on species that have some chance of survival should the technique prove repeatable and applicable; the "Tassie tiger" scenario is the antithesis of this.
    e. such studies should have a realistic prospect for eventual reintroduction of the animals produced into the natural habitat, or at least for enhancing breeding programs to broaden genetic diversity.
5. As an integral part of these efforts, both the general public and the scientific community at large needs to be informed and educated about the promise and pitfalls of specialized ART procedures and their true value for assisting conservation efforts. One strong positive aspect is the intrinsic value of studies with individual ES because they may have unique reproductive or cellular characteristics and once lost, these features may never be found again.

Appendix 6

Sample Protocol to be Included in the Research Subcommittee Resource Manual

ELISA Protocol: Measuring Anti-Gonadotropin Immunoglobulin Titers

W.F. Swanson, Cincinnati Zoo

Updated September 2002

Contact Information for further details:

Bill Swanson at william.swanson@cincinnatizoo.org

Publications using this protocol:

1) Swanson WF, TL Roth, K Graham, DW Horohov and RA Godke. 1996. Kinetics of the humoral immune response to multiple treatments with exogenous gonadotropins and relation to ovarian responsiveness in domestic cats. Amer. J. Vet. Res. 57:302-307.
2) Swanson WF, DW Horohov and RA Godke. 1995. Production of exogenous gonadotrophin-neutralizing immunoglobulins in cats following repeated eCG/hCG treatment and relevance for assisted reproduction in felids. J. Reprod. Fertil. 105:35-41.

ELISA Protocol

1) Exogenous gonadotropins (eCG, hCG) are diluted in 0.06M sodium bicarbonate buffer (pH 9.6) to a concentration of 10 ng protein per µl and pipetted in 50 µl aliquots (containing 500 ng protein) into each well of a 96-well flat-bottom microtiter plate (Immulon 4, Dynatech Labs).

2) Plates are sealed and maintained overnight at 4°C.

3) Plates are washed five times with an automated plate washer (Dynatech MRW) using 0.01 M PBS (containing 0.1% Tween-20; EPBS-Tween) and blotted dry.

4) Thawed serum samples are diluted in EPBS-Tween to concentrations of 1:100, 1:200 and 1:400 (or greater, depending on optical density values) and pipetted (100 µl/well) into test wells in triplicate. For appropriate control wells (see below), add 100 µl of EPBS-Tween to each well.

5) Plates are sealed and incubated at RT (22°C) for one hour.

6) Plates are washed 5X with EPBS-Tween and blotted dry.

7) Peroxidase-conjugated, rabbit anti-cat IgG (affinity purified to whole IgG; Rockland Laboratories, Gilbertsville, PA) is diluted 1:2000 in EPBS-Tween and pipetted (100 µl/well) into test wells.

8) Sealed plates are incubated for 30 minutes at 37°C.

9) Plates are washed 5X with EPBS-Tween and blotted dry.

10) OPD solution [o-phenylenediamine, Sigma; 1 mg/ml dissolved in 0.05M citrate buffer (pH

4.5) and 0.05% hydrogen peroxide) is added to each well (100 µl/well) and plates are maintained in the dark (since light sensitive) for 30 minutes at RT (22°C).

11) The color reaction is stopped with 2.5M sulfuric acid (50 µl/well) and optical density is measured at 492 nm with an automated plate reader (Dynex MRX).

Controls (for each plate - in triplicate)

1) Blank - only buffers added to wells

2) Conjugate control - no cat serum - all else the same as test samples

3) Serum control - add cat serum but no conjugate (anti-cat IgG) - all else the same

4) Substrate control - like blanks except citrate buffer contains OPD

5) Negative standard - serum from known naive cat(s) -usually domestic

6) Positive standard - serum from known positive cat(s) - usually domestic

Reagents

1) eCG or hCG (Sigma) or LH (Sioux Biochemical) - dissolve in 0.06 M sodium bicarbonate buffer (pH 9.6) to a concentration of 10 ng/µl

2) 0.06 M sodium bicarbonate - dissolve 0.5041 g sodium bicarbonate in 100 ml of Millipore water - add ~200 µl 5 N NaOH to adjust pH to 9.6

3) EPBS-Tween - for 2 liters, combine 16 g NaCl, 0.4 g KCl, 2.173 g Na_2HPO_4, 0.521 g KH_2PO_4 and qs with distilled water to 1998 ml. Bring to 2 liters by adding 2 ml of Tween-20 (0.1% solution)

3) Serum samples - dilute in EPBS-Tween (diluted from 1:100 to 1:1600, depending on optical density range)

4) Conjugate (indicator or 2° antibody) - rabbit anti-cat IgG, conjugated to horseradish peroxidase (HRP) - diluted 1:2000 with EPBS-Tween

4) OPD - 10 mg OPD dissolved in 10 ml citrate buffer with 5 µl hydrogen peroxide stock (30%) added

5) Citrate buffer - 0.05 M citrate buffer (pH 4.0 - 4.5) - mix equal molar concentrations of sodium citrate and citric acid solutions (i.e., add 1.676 g sodium citrate to 100 ml water and 0.961 g citric acid to 100 ml water - mix 1:1 and pH to 4.5 with 5 N HCl)

6) Stopping solution - 2.5 M sulfuric acid - qs stock sulfuric acid with distilled water to appropriate molarity (dilute 14 ml of stock sulfuric acid to 100 ml with milipore water)

Assay Notes:

Blocking - If desired, plates may be blocked after the antigen (eCG or hCG) incubation and initial plate wash using a 0.1% BSA solution (in EPBS). Add 100 µl of BSA solution to all wells and maintain at RT for 3 hours before washing and then proceeding with the regular assay. However, in previous studies, blocking plates did not decrease optical density values for any tested domestic cat or nondomestic cat samples and was omitted from the routine assay. For most species, the relatively high Tween concentration, multiple plate washes and use of an affinity-purified conjugate minimize non-specific binding.

Standards - A domestic cat positive and negative standard may be included on each plate to ensure that the assay is working properly and to determine the appropriate serum sample dilution (to obtain values within the linear portion of the optical density curve). For most domestic cat samples, a dilution of 1:100 to 1:400 is suitable.

Determining Positivity - For each nondomestic species, the best approach is to compare gonadotropin-binding levels (mean optical density values) from each female before gonadotropin treatment and then after each treatment and then use the mean OD value (+ 3 SD) for all naive samples as your cut-off value between negative and positive titers. In reality, true naive samples are rarely available from each nondomestic female so samples from the female following the first gonadotropin treatment are used instead. We assume that IgG levels don't increase much between the initial gonadotropin injection and blood sampling (usually ~5-6 days) and that IgM is not bound significantly by the conjugate. To verify this, we usually evaluate serum samples from 2-3 males per species and compare mean OD values to females treated once with gonadotropins. If significantly different, the mean OD values for males (+ 3 SD) can be used as the -/+ cut-off. If not different, the mean OD values (+ 3 SD) of 1X-stimulated females may be used instead.

Appendix 7

International Embryo Transfer Society (IETS) Parent Committee on Companion Animals, Non-Domestic & Endangered Species (CANDES) Technology Subcommittee

Minutes from the meeting held 27 September 2002
Omaha's Henry Doorly Zoo

Dear Technology committee members,

I've taken it upon myself to act as the unofficial 'secretary' for our group in an effort to communicate the outcomes of the Tech committee discussions held during the CANDES working meeting in Omaha Friday 27th September 2002. It is hoped by doing so, we can all keep informed of developments as well as keep to a timetable of productivity expected of us from the IETS and CANDES bodies.

Due to hurricane weather, co-chairman Philip Damiani was unable to attend the CANDES working meeting in time. This resulted in the cancellation of the Tech committee progress report and an adjournment on developing the CANDES position statement on cloning. Technology members in attendance were co-chairman Thomas Hildebrandt, Duane Kraemer, Robert Godke, Paul Bartels, Ronaldo Morato, Rebecca Spindler and Damien Paris. Thomas felt it was important that the Tech committee had a role different and unique to the other CANDES committees. Thus these members met in an attempt to set some goals for the development of NOVEL technology for CANDES animals.

GOAL ONE:
It was decided as the first goal to make a list of technology, equipment, methodology or compounds, that are lacking and would have a significant, universal application in CANDES or other animals. A number of examples were given including the following:
- non-invasive LH or ovulation detection
- pheromone detection
- novel superovulation/synchronization
- novel instrumentation/methodology for field use
- freeze-drying/room temperature preservation
- embryo transfer approaches
- unique bio-phenomena that exist in CANDES animals that may lead to an advance in ART (e.g. embryonic diapause in macropodids)

Thus can I ask you all now to list your top 10 technologies that you consider a major priority for development to advance ART in CANDES animals. Please email this to me and I will summarize the group's collective ideas and produce a final list that we can then prioritize on a scale of importance/significance.

GOAL TWO:
A second goal was to identify a list of CANDES species that demonstrate poor or no reproduction in captivity as targets for novel technology development. To do this, it was decided that each member would be responsible for a region:
Thomas Hildebrandt – Europe
Duane Kraemer – North America

Paul Bartels – Africa
Ronaldo Morato – Latin America (Central & South)
Rebecca Spindler – Latin America (Central & South) & Central Asia
Damien Paris – Australia, New Zealand & Papua New Guinea
Person Needed - Middle East
Person Needed – South East Asia
Person Needed – Artic/Antarctic
Consider mammals first, then birds followed by invertebrates, etc (time/effort permitting). Determine what attempts have been made to get these animals to reproduce (from basic husbandry to ART). Please email this to me and I will summarize the group's collective list of target species for ART by region. We can then decide on a prioritized list of species and determine what is known about the animal's basic reproduction, seasonality, and current state of ART development.

I know Philip has also been working very hard on compiling information on ADAPTIVE technologies for CANDES species and it is hoped he will be able to brief us on these development and further assistance he requires in achieving these goals.

I do hope to hear from you all with at least the goal 1 list by the start of November and we should be looking at getting something together on goal 2 before the IETS CANDES meeting and report to the IETS board of governors in January 2003. Please let me know if you have problems receiving this email or know of someone whom should be included on the email list.

All the best

Damien

--
Damien Paris
Dept. Zoology, University of Melbourne
Parkville, Victoria 3010, AUSTRALIA.
Tel:61(3)8344 4862 Fax:61(3)8344 7909 E-mail:d.paris@pgrad.unimelb.edu.au

Appendix 8

25 October 2002

To: IETS Parent Committee on Companion Animals, Non-Domestic & Endangered Species; AZA Reproductive Sciences Advisory Group
From: Naida Loskutoff
RE: Request from the IETS HASAC Parent Committee to consider drafting a new Appendix for inclusion in the International Animal Health Code (OIE)

On the 19-20 October 2002, the IETS Health and Safety Advisory Committee (HASAC) met for their annual working meeting at the U.S. Animal Health Association annual conference in St. Louis, Missouri, USA. As a member of the HASAC Regulatory and Research Subcommittees representing those with interests in wildlife and other animals covered by CANDES, I was asked by the HASAC Chairman, Prof. Michel Thibier, to explore the possibility of drafting an appendix on a novel genus or taxon that may be added to the OIE International Health Code along with the existing appendices on the embryos of farmed animals, which presently includes llamas (see Appendix 3.3.6, http://www.oie.int/eng/normes/mcode/a_00135.htm) and cervids (see Appendix 3.3.7, http://www.oie.int/eng/normes/mcode/a_00136.htm). For those of you that may not be familiar with the IETS HASAC (originally called the Import-Export Committee), please review the short article on "The risks of disease transmission by embryo transfer in cattle" (http://www.oie.int/eng/publicat/rt/1601/a_r16124.htm) by P. Sutmoller and A.E. Wrathall, or the Manual of the International Embryo Transfer Society: a Procedural Guide and General Information for the Use of Embryo Transfer Technology Emphasizing Sanitary Procedures, 3rd Edition (D.A. Stringfellow and S. Seidel, Eds.): available through the IETS Business Office (Email: iets@assochq.org ; website: http://www.iets.org)

The following is the relevant section from the minutes of the HASAC meeting on 20 October 2002 for your consideration:

> "Issues regarding wildlife conservation.
>
> a. Wrathall presented an article to the HASAC members in which he discussed disease control aspects in the application of reproductive technologies in wildlife conservation.
> b. Delver presented a list of diseases in Felidae which suggested that concern is warranted over the application of embryo technologies to these species.
> c. Loskutoff distributed an article to be published in 2003 regarding the role of embryo technologies in wildlife conservation. Loskutoff also described the goals and objectives of the IETS Parent Committee on Companion Animals, Non-Domestic and Endangered Species (CANDES) which includes a Health and Safety Subcommittee (co-chaired by Loskutoff and Bill Holt of the Zoological Society of London) that will deal with pathogen interactions with embryos and semen for those animals covered by CANDES.
> d. Thibier requested that HASAC explore the notion of preparing an appendix to include in the OIE regarding wildlife if it is indeed relevant. Thibier suggested that focus is placed at first on only one genus or taxon, perhaps felids. Wrathall suggested cervids as an initial focus since protocols for embryo transfer are more developed and utilized for these species. Loskutoff will present this request to the

members of the CANDES Parent Committee to discuss this issue and will provide a report to HASAC in January 2003."

I would like to ask for feedback from all IETS CANDES Parent Committee members and members of the AZA Repro SAG regarding:

1. Is there an interest or a need to begin a process to develop guidelines for the proper handling of embryos (or semen and oocytes for in vitro-produced embryos) to prevent disease transmission ? (or, if not, why not?)
2. What species, genus or taxon should we put initial effort and focus upon?
3. Is there adequate information available to begin the process (in regards to the reproductive biology and technology as well as on pathogen interactions with embryos or gametes in the species, genus or taxon selected) ?
4. Would this warrant the formation of an *ad hoc* Committee that can review the existing database for the species, genus or taxon selected and provide recommendations for further research needed in order to fulfill the requirements for publishing a new Appendix in the OIE International Health Code on embryos and gametes ?
5. Are there any of you who would like to serve on such an *ad hoc* Committee ?

My opinion on this issue is that we are being given an extremely important opportunity to begin a process that may lead eventually to a lessening of international regulatory restrictions for moving embryos (and possibly gametes) from wildlife (or other animals covered by CANDES). Using the domestic cattle model, this can be accomplished by formulating guidelines, based on sound scientific research published in peer-reviewed journals, that can significantly reduce the potential for disease transmission by embryo transfer technology in the selected species, genus or taxon. This should be of interest to all of us, but especially those who have extended the scope of their research programs to include *in situ* populations. In light of this, I see this as an important issue regarding felids, and I would welcome any comments from those working on feline ART.

Another possibility (or an issue that can be addressed ***in addition to*** a feline draft Appendix) would be the development of an *ad hoc* Committee that would specifically focus on pathogen interactions with embryos and gametes in cervids. As mentioned above, there already exists an Appendix in the *Code* on "in vivo-derived" deer embryos; however there is little or no corresponding information available on disease related aspects. Dr. Wrathall, in a recent note, mentioned that at the recent AAVLD/USAHA meetings, there was a great deal of focus and discussion on chronic wasting disease (CWD) in native deer populations that "reminded me of early BSE (bovine spongiform encephalopathy, or mad cow disease) days in the UK". He went on to say that US Fish and Wildlife officials were "out in force" urging for more focus and attention to deer, but that unfortunately "nobody seemed interested in salvaging genetics from infected deer by embryo transfer."

I would welcome any additional comments from CANDES members if this warrants further investigation; and if so, what would be the appropriate plan of action?

I believe this is an important and timely subject that we all need to consider seriously. In light of that, I would like to propose that one of the future joint working meetings of the AZA Repro SAG and IETS CANDES Parent Committee be held in conjunction with a CBSG Disease Risk Assessment Workshop to focus on disease related issues. The goal will be to begin a process to identify critical control and hazard issues, plan out critical areas in need of research, develop

appropriate modeling tools and familiarize ourselves with procedures to perform and interpret disease risk analyses. Doug Armstrong of the Henry Doorly Zoo has been actively involved in the development of the Disease Risk Assessment Workshops with the CBSG in regards to animal movement (see current draft of the handbook at: http://www.cbsg.org/toolkit/disease_risk_handbook.php). I will be attending the next workshop scheduled in November 2002 in South Africa to explore with the trainers/facilitators how we might use or modify this tool to apply to the international movement of embryos and/or gametes for use in assisted reproductive technology applications in wildlife conservation programs.

Please respond before the end of November 2002. In early December, I will send a follow-up report summarizing not only your comments on these issues, but my conclusions from the workshop.

Thanks and warm wishes

Naida

Naida M. Loskutoff, Ph.D.
Chairman, IETS CANDES Parent Committee
Co-Chairman, AZA Reproductive Sciences Advisory Group

Cc: Prof. Michel Thibier, Chairman, IETS HASAC Parent Committee
Dr. L. Delver, Chairman, IETS HASAC Regulatory Subcommittee
Dr. A.E. Wrathall, IETS HASAC
Dr. P. Sutmoller, IETS HASAC
Dr. D.A. Stringfellow, IETS HASAC Research Subcommittee
Dr. B.D. Bavister, President of the IETS
Jennifer Gavel, IETS Executive Secretary
Dr. W.V. Holt, Co-Chairman, IETS CANDES Health & Safety Subcommittee
Dr. W. Swanson, Co-Chairman, IETS CANDES Research Subcommittee
Dr. R. Krisher, Co-Chairman, IETS CANDES Research Subcommittee
Dr. K. Goodrowe, Co-Chairman, AZA Repro SAG
Dr. D.L. Armstrong, Facilitator, CBSG Disease Risk Assessment Workshop

Appendix 9

Agenda for the Open Meeting of the
IETS Parent Committee on
Companion Animals, Non-Domestic and Endangered Species (CANDES)

Sunday, 12 January 2003, 08:00 – 10:00 am, Aotea Centre, Goodman Fielder Room

08:00 – 08:10: Welcome and introductions (Loskutoff)

08:10 – 08:20: Review of the minutes from the September 2002 working meeting (Pickard)

08:20 – 09:40: Subcommittee progress reports

08:20 – 08:40: Research Subcommittee (Krisher and Swanson)

08:40 – 09:00: Regulatory Subcommittee (Crichton and O'Brien)

09:00 – 09:20: Technology Subcommittee (Hildebrandt, Damiani and Paris)

09:20 – 09:40: Health & Safety Subcommittee (Holt and Loskutoff)

1. Disease Risk Assessment Workshop (tentatively November 2003) to be held cooperatively with CBSG-SA, EWT and the WBRC in South Africa.

09:40 – 10:00: Other Business:

2. Discussion of draft position statement on cloning CANDES.

3. Program, venue and date for the 2004 Symposium.

4. Proposal by Reproduction, Fertility and Development to publish proceedings (see attached letter from Managing Editor, Dr. Camilla Myers).

5. Web page development.

6. Venue, date and time of next working meeting.

From: Dr. Camilla Myers,
Managing Editor, Reproduction, Fertility and Development
CSIRO Publishing
PO Box 1139 (150 Oxford Street - for couriers)
Collingwood, Victoria 3066, Australia
Tel: +61 (0)3 9662 7629; Fax: +61 (0)3 9662 7611

Dear Dr Loskutoff

Jeremy Thompson (University of Adelaide), as a member of the Editorial Advisory Board of the journal Reproduction, Fertility and Development, suggested that I contact you with respect to publishing the proceedings of your 'ART in Conservation Biology Symposia'.

I am the managing editor of Reproduction, Fertility and Development, which is an international journal publishing original research in reproduction and early development in domestic animals and wildlife. We have recently realigned our scope to focus on assisted reproductive techniques in wildlife and conservation biology and I would be most interested in discussing with you the possibility of publishing the proceedings of your symposia in the
journal.

Reproduction, Fertility and Development is published by CSIRO Publishing, a not-for-profit, scientific and technical publisher owned by CSIRO, the Australian government scientific research organisation. We have published the proceedings of many symposia over the years, the most recent being 'From Elephants to AIDS', a symposium to honor the life and work of Professor Roger Short (http://www.publish.csiro.au/books/bookpage.cfm?PID=3137). As a not-for-profit publisher with a mission to serve the scientific community, we aim to work in partnership with symposium organisers and to keep costs to lowest possible levels without compromising quality.

If you would like to consider the possibility of publishing the proceedings of the 'ART in Conservation Biology Symposia' in RFD, I should be very pleased to talk to you further and to provide cost estimates and a clearer indication of the services we could provide. I shall be attending the IETS meeting in Auckland in January and would be happy to meet with you there if you are attending.

I hope this idea is of interest to you and I look forward to hearing from you.

Yours sincerely
Dr Camilla Myers
Email: camilla.myers@csiro.au

NOTE TO CANDES Parent Committee Members: Dr. Myers will be at the CSIRO Publishing/RFD stand (no. 15) in the IETS trade exhibition hall at the annual conference in New Zealand. I would urge anyone interested to please visit with her about this idea and express your opinions to the other members.

Appendix 10

List of E-mail Addresses

Please notify Naida Loskutoff of any changes, errors or omissions

Gregg P. Adams, PhD	adams@sask.usask.ca
Mercedes Alvarez, PhD	dsanag@unileon.es
Luis Anel, PhD	dsalar@unileon.es
Dr. Paul Bartels	paulb@wbrc.org.za
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