

Cost effective conservation programs – Somatic Cells

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Cryo Preservation Material

- Semen
 - Embryos
 - Oocytes
- proven techniques
 - developed (to a different degree) for a number of species
 - clear path for breed reconstitution
 - can be used to support conservation programs

Somatic Cell Cryo Conservation (SCCC)

- Diploid body cells available on all animals
- Skin cells
- Hair follicles
- Tissues in general
- Thus → available on (all) species

SCCC

the general principle

- The collection process
 - Collect somatic cells on animal
 - Put into deep freezer
 - Document

SCCC

the general principle

- The reconstitution process
 - Take out of freezer
 - Create fibroblast cell lines
 - Perform cloning of somatic cells from the fibroblast lines
 - Reconstitute animal

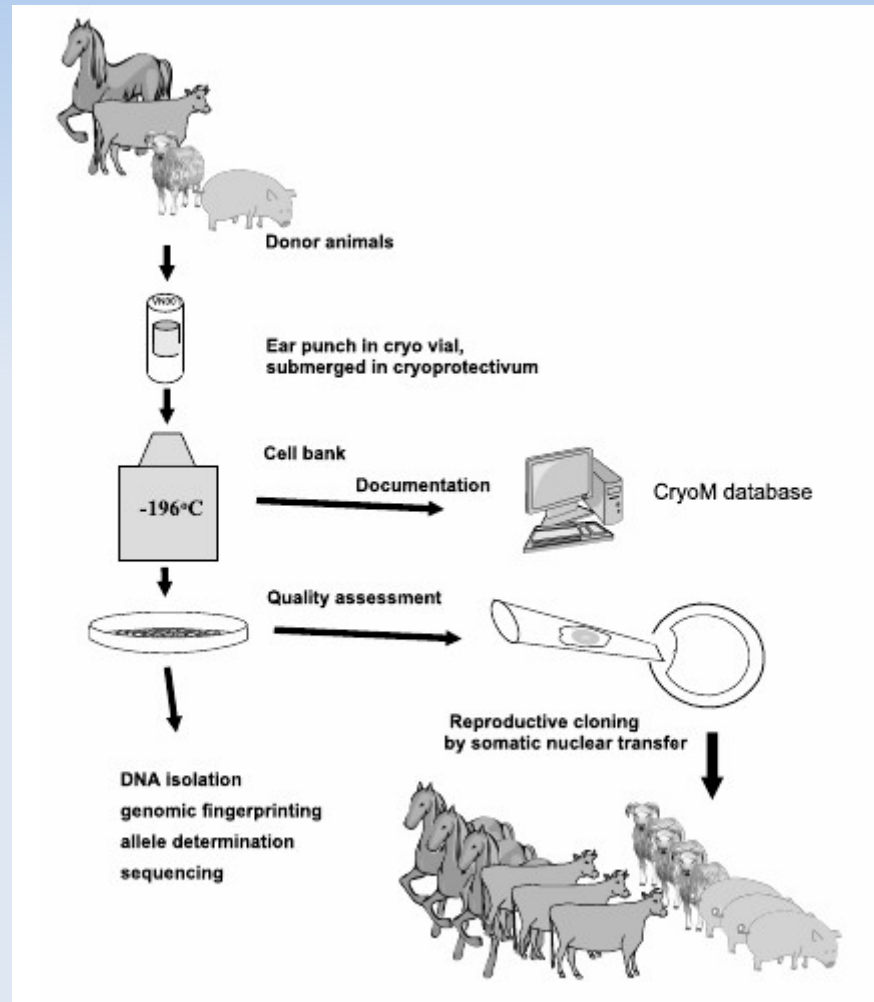
Somatic Cell Cryo Conservation

- Use ear clippings from tagging
- Tissue sample from the ear placed in numbered vial
- Do for 25 males and 25 females from population
- Put sample in travel container in liquid nitrogen

Collection of somatic cells ..

- Collect minimal data (foto, GPS coordinates)
- Put sample in final storage container
- Enter data in central database (CryoWEB)
- Verify sample quality
- Same procedure for sheep, pigs, goats, cattle..

The process ..



What needs to be done?

- Training
- Equipment
- Collection
- Ownership

Required: Training

- Learn how to take samples
- Handle samples
- Cell lines check for viability
- Training course in Mariensee took one week

Required: Equipment

- Tagger
- Transportation
- Ruler
- Camera
- GPS
- CryoWEB

Equipment: tagger



Equipment: tags



Equipment: syringe



Equipment: transport tank



Equipment: final tank



Equipment: ruler



The Pilot Study

- The proposal is published in *AGRI*, 2005, 36:1–6
- Test of feasibility: joint project between IAS (VN) and FAL (D)
- The Objective
 - Perform in the field collection of SC on 4 breeds from 3 species
 - Remote area

Fixed costs

Item	Amount(€)
GPS device	100
Digital camera	260
Transportation cryo tank	317
Main cryo tank	900
computer	1630
tagger	15
scale	15
syringe etc	15
training of crew	50
total costs	3302

Variable costs

Item	Amount(€)
400 ear tags/vials	850
Liquid nitrogen	200
Consumables	317
Transportation	900
accommodation	1630
incentives for animal owners	15
incentives for crew	15
 total costs	 4247

Populations sampled

breeds/species	young ♂	adult ♂	young ♀	adult ♀	total
Bach Thao Goat	20	5	3	23	51
Co Goat	25	-	-	25	50
Phan Rang Sheep	18	7	7	18	50
Ninh Thuan-Co Pig	41	5	45	8	99
Binh Thuan-Co Pig	22	3	20	5	50
Total	126	20	75	79	300

Collecting the samples



Collecting the samples..



Collecting the samples..



Summary Pilot

- Initial investment – €3000
- Cost per breed (50 samples) – €1000
- Collection procedure – 2 months

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Ownership

- Can be complicated without end
- Should consider simpler ways
- Buy lamb
- Have material donated
- CRYO-BREHM: Fraunhofer Institut, Lübeck

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- Die Zoos und Tierparks stellen die Gewebeproben zur Verfügung
- Die Zoos und Tierparks stellen die für die Herstellung von Zellkulturen benötigten Gewebeproben zur Verfügung
- Carcasses, ear punch
- Material: no cost, donations
- Do create cell lines right away

What now?

- Thus far: ..emergency program..
- Costs for cloning is going further down
- Do we need to reconsider our options?
- Only collect semen to be used in breeding programs?

Proposal

- Should collect SC where cheaply possible
- Within ERFP: have someone to who knows the process
- Discuss the legal issues
- Find an easy way
- Could make this an ERFP project

Thank you for your attention