



CRYOZOOTECH S.A.

“FIRST TO CLONE HORSE CHAMPIONS”

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GENERAL PRESENTATION

OUR OBJECTIVE

CRYOZOOTECH SA is a company dedicated to biotechnology applied to horses and other animals. Its targets are 1) the preservation of genetic heritage of valuable animals promised to death without offspring 2) the restoration of their breeding capacity by means of cloning 3) the marketing semen from these clones for the benefit of breeders.

The death of outstanding individuals or breeds or species without progeny is an ultimate loss of genetic heritage not only for the owner of such animals but also for the mankind.

This can be solved by the assisted reproduction techniques (artificial insemination, embryo transfer, GIFT, ICSI, cloning), which are rapidly developing in all animal species. The goal of CRYOZOOTECH is to participate to their development and to market the most advanced of them.

The first target market is the horse, a species where the financial value of genetically superior animals is such that the high cost of advanced technologies can be accepted. The genetic loss is very important in sport horses, which are very often castrated. As a consequence the champion horse being sterile cannot contribute to genetic improvement. Producing stallions that are clones of such champions, by the nuclear transfer technique would allow them to contribute to genetic progress through breeding. Although the racehorse organisations are not ready to accept such techniques (even freezing stallion semen and embryo transfer are forbidden in thoroughbred horses and hardly used in the trotter industry) Sport horse organisations are much more open to progress and they constitute a dynamic market on which CRYOZOOTECH can rely confidently.

Not only gelded animals may benefit of the technique: A top stallion, even old, may be much superior to the others and his clone may continue to bring genetic progress to the breed well after his retirement. Superior mares will also see their contribution to genetic progress enhanced if their production is increased by using their clone as a brood mare.

CRYOZOOTECH wants to include endangered breeds or species in its cell bank and later to try use some for nuclear transfer in order to restore these animals as a contribution to the common effort to preserve genetic heritage. CRYOZOOTECH would therefore prove that cloning is not in opposition with biodiversity.

ACHIVEMENTS

The first action of CRYOZOOTECH has been the preservation of genetic material in a cell bank before the cloning technique becomes practically available. Indeed the culture of skin fibroblasts, their freezing, storage and thawing procedure are well controlled and this type of cells has been used successfully in all species where somatic cloning has been performed. The cell bank is a new service for the horse market. The storage

of some outstanding horse genes in its bank gives to CRYOZOOTECH a commercial advance and a financial value based on a genetic capital. Among the horses in CRYOZOOTECH's cryobank are the famous jumpers Quidam de Revel, E.T. FRH, Calvaro 5, Joli Coeur, the Endurance world champions Pieraz and High Winds Jedi and the triple Dressage World Cup winner RUSTY. Some others of the same quality are present but their identity remains confidential.

The second action of CRYOZOOTECH has been to initiate the cloning of some of the most outstanding horses of our bank and births are expected in 2005.

CRYOZOOTECH now has decided to associate horse breeders from the beginning to the cloning process of two exceptional gelded jumpers E.T. and Calvaro 5. Shares of the future stallions are being sold and will provide mating rights of their stallion clones. Their book might be full before their birth!

FUTURE DEVELOPMENTS

Other commercial developments are planned in other techniques or other markets:

Scientific developments can be expected in the biology of energy metabolism (the role of mitochondrial DNA may be important if we try to raise sport champions) and rapid progresses in the genetics of some disciplines with no history of selection such as endurance may be obtained.

Long-term development of nuclear transfer in the horse may include producing horses for sport (if the phenotype of clones is equal to that of the donor), or making transgenic horses when major genes (QTL) related to sport ability will be discovered. The production of horse stem cells for genetic therapy, if the technique becomes efficient, and if a pathology needing it is identified may also become a prospect.

THE COMPANY

CRYOZOOTECH was created by Eric PALMER, an equine reproductive physiology specialist of world reputation for many applied techniques in horse breeding. His academic career took place in INRA (The French National Institute for Agriculture research) and he was first to publish several innovations: Ultrasound scanning for animal gynaecology, in vitro fertilisation in the horse species, demonstration of the presence of a photosensitive phase during night for the stimulation of ovarian activity. With his laboratory he introduced many techniques in the French horse industry: ovarian stimulation, semen processing for artificial insemination, embryo transfer. He also trained many technicians for the French National studs and founded EQUITECHNIC, the first French company for freezing stallion semen, with Pierre Julienne who was formerly a technician in his laboratory. He left this company when it was no more a start-up and could run routinely. It is still the leader in horse semen freezing in Europe. Eric PALMER also participated to the management of the reform of the French National Studs, a large public organisation in which he managed the department of selection, valorisation and marketing of the 1200 stallions belonging to the organisation. He now has left public service to found CRYOZOOTECH within the context of the new law for innovation ("loi Allegre") that encourages scientists to found start-up companies.

CRYOZOOTECH S.A. was founded on October first 2001 with the participation of scientists, veterinarians, and businessmen of the biotechnology and the horse industries. CRYOZOOTECH SA is now ready to address the world market of equine genetics.

CRYOZOOTECH S.A. collaborates with foreign laboratories who have a good background in biotechnology applied to animal husbandry, but who lack expertise on the horse physiology, genetics and market.

CRYOZOOTECH's project is also supported by GENOPOLE (EVRY), which guarantees the scientific, economical and ethical soundness of the project. This support has arisen after a selection by a committee of scientific and economic experts and to the consultation of the president of the National Ethic Committee. This support is not only financial (GENOPOLE invested 45 K€ in CRYOZOOTECH) but also includes help for management and finance. CRYOZOOTECH endorses the ethic chart of GENOPOLE. Some public help to new job creation and innovation development such as ANVAR grants can be obtained thanks to GENOPOLE's support. The scientific programme of CRYOZOOTECH was approved by the scientific committee of the department of physiology of INRA (National Institute for Agriculture Research) and by the committee for Science and Technology of the French National Studs. These approvals are essential steps to gain the official registration of cloned horses by breeding authorities.

The next step for CRYOZOOTECH is now to convince breeders that its innovative views on Horse genetics will accelerate genetic progress in the different horse breeds and help them in the international competition. The French geneticist Anne Ricard calculated that the genetic improvement could be enhanced by more than 50% in breeds where 80% of performing horses are gelded, making nuclear transfer a very promising tool in horse breeding.

Our offer

In 2004 the offer of CRYOZOOTECH consists in:

- Gene banking (frozen living cells as needed for cloning)
- Horse cloning on behalf of the donor owner with the best technique available at any time, thanks to our multi-centric cooperation programme.
- Sales of shares of E.T STALLION and CALVARO 5 STALLION, clones of the two most famous show jumpers of the last 20 years.
- Sales of stallion's clones of horses of our cryobank (list upon request).
- Opportunity of investment in the company.



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