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**TEXAS AGRILIFE RESEARCH
EQUINE EMBRYO LABORATORY**



Biopsy of Equine Embryos for Genetic Diagnosis

**Equine Embryo Laboratory
Department of Veterinary Physiology and Pharmacology
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The Equine Embryo Laboratory offers our clients the ability to take a genetic sample from an embryo before it is transferred. Embryos may be shipped by air or overnight courier to the laboratory for biopsy, after being collected from mares on Day 6.5 (preferably) or Day 7 after ovulation.

Embryo biopsy allows the owner to know the genetic makeup of an embryo before it is transferred. Knowing the genetic makeup gives the owner the choice to avoid pregnancies that will result in affected foals (e.g. homozygous for a recessive affected gene) or foals carrying the gene for a disease (heterozygous). In addition, the genetic analysis can determine the sex, coat color, and parentage verification ID markers of the upcoming foal.

The biopsy is performed by taking a small sample of cells from the embryo, using a micromanipulator and micropipette. The cells are collected from the area of the embryo that eventually forms the placenta. Approximately 10 to 20 cells are collected; because the typical embryo at Day 7 contains thousands of cells, there is minimal effect on the embryo.

After the biopsy has been performed, the collected cells are submitted for genetic analysis. The embryo may be shipped to an embryo transfer center for immediate transfer into a recipient mare, or may be vitrified (frozen) to be transferred after the genetic analysis results are available (about one week). If the embryo is transferred immediately, and the results come back with undesirable findings, the pregnancy can be terminated.

The genetic analysis is >95% accurate; however, there is a slight possibility (<5%) of a gene being missed or the DNA not being read.

Embryos that have been subjected to biopsy and are transferred immediately have a normal pregnancy rate (>80% in our studies). There is no increase in pregnancy loss after transfer of biopsied embryos, and foals born from biopsied embryos are normal.

If the owner chooses to vitrify the embryo to wait for the genetic results, vitrification may decrease pregnancy rate somewhat (~5 to 10%).

If you have any questions regarding the equine embryo biopsy program, please contact:

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