

## Commerical Cloning of the Horse By Karen Bell, Bell Equine Services

Have you ever wondered if your favorite animal can be cloned? Cloning is not science fiction anymore. Since the first foal cloned in 2003, this technology is available for anyone to use. With enough money (\$150,000 by [Viagen](#)), you can recreate your favorite partner or breeding stallion. If that price is out of your reach, you can gene bank your horses's DNA with Viagen instead (\$1500). One caveat - not all associations accept cloned horses into their registry, namely AQHA and Jockey Club (two notable exceptions: National Cutting Horse Association and the Belgium Zangersheide Warmblood Registry).

The cloned foals that have been born are generally healthy, other than the normal incidences of foal illnesses; however, the reported number of total cloned foals is still very low. It will take more cloned foal births to get a sample large enough to determine if abnormalities in that population are significantly more than in uncloned populations.

The technology to produce a cloned foal, called nuclear transfer, is simple to understand. Once you submit a piece of tissue (small ear punch for example) from your horse to Viagen, they grow the cells on a culture dish, remove the DNA from the cells, and transfer it to a recipient "empty" egg (oocyte). The egg or blastocyst from the egg is then implanted into a surrogate dam (See figure below). It is also possible for a mare that got the biopsy and donated her DNA to carry her own foal. Currently, donor eggs are retrieved from slaughter houses in the US (if these

get closed down, they will import them from European slaughter houses). The empty egg has no nuclear DNA from the donor horse, and the phenotype of cloned horses so far- that is, what it looks like, moves like, and acts like- are similar but not always exact replicas of their donor horses, especially in the case of horses with white markings. These foals have variations in white markings that are explained by changes in gene expression due to environmental differences during development (that is, variations in placental environment, etc.) that direct the “white” skin cells to migrate to various places on the body. At this time, it is too early to say whether these identical younger twin horses will also produce foals similar to the older adult animal or if they can perform as athletes to the same degree. However, if the animal is valuable to you, there is no better method to preserving their DNA than to clone their \*almost\* identical twin. For more information, please contact me at [bellequine@comcast.net](mailto:bellequine@comcast.net), and I can send you some reviews.

