

## **Cloning, Will it Effect the Mule Industry?**

**By Amy McLean**

Could you imagine going to the Bishop, California to Mule Days and there were not one but two Tim Phillips showing? Whoa, if one is not enough. Really, he's a super nice guy with great mules but what if he had a clone or what if one of his mules like "Tuff Stuff" was cloned. Would that mean double the trouble and competition? Not exactly.

Recently, I've been working with a company at the University of Georgia that is working on cloning cattle and pigs. It is my job to take care of eight cloned Angus calves.

Working around these calves has given me a better understanding of cloning and the effects it has on the individual. So you may be asking yourself exactly what is a clone?

The easiest way to describe a clone is like a Xerox copy. You take the same stuff and copy it. In this case we are talking about genes, or DNA. You have something you want to clone say your jack well, you take his DNA and insert it into an egg and take out the egg's DNA and then use electrolysis and some how or another you get a clone. The clone is the same as its parent clone genetically. Some of the physical markings can be different due to intrauterine environments as well as some other traits.

Cloning is becoming more common in cattle and other livestock species. Horses have been cloned but the procedure is more difficult because horses do not super ovulate, meaning they do not commonly release more than one egg or ovum. A company out of Maryland clones horses and you can pay to have this done. Horses or donkeys unlike cattle only ovulate at one spot on their ovaries known as the fossa or ovulation fossa. Cattle can ovulate at any point on their ovary, making it possible for the cow to ovulate more than one egg at a time. Since the mare and jennet's anatomy is different and they

produce fewer eggs this decreases the chances of cloning. At school it is typical to go through 200 or more eggs before you get a clone that is viable. Then only 50% of the viable cloned embryos survive pass 45 days, 20% of those cloned embryos last 120 days and about 5% will go on to 200 days. Another words, the process is still not very efficient and it would be even harder to work with species that produces fewer eggs.

Besides the physical differences in cattle versus equine, something else to think about is the different purpose the animals are raised for. Cattle are raised to produce a product like meat. That is something that can be measured objectively (with numbers and data). Mules and Donkeys are mainly raised for pleasure and performance a trait measured subjectively (measured by the eye or an opinion). Yes, you can copy the genes but can you copy the environment? The cloned calves at school are all relatively the same age and they are all similar in sizes but still somewhat different. The calves eat the same feed and amounts but they are growing differently. Also, the other interesting thing about these calves is their personalities. Each of these calves expresses different personalities. Some of the calves are friendlier, some more aggressive, and others just lay around and could care less if you pet them or feed them. It is my opinion that cloning mules or horses would prove to be an even more difficult task because of the differences in personalities and the difficulty of cloning the same environment. For example, we have all seen full brother and sister mules before and I'm sure we have witnessed some of them turn into great show mules and the other never really make, same genetics for the most part but different results. The environment they are raised and trained in has a lot to do with their potential performance along with their attitude. Some mules and donkeys are more

willing and learn faster, move better, etc. and others are not. That is the key thing to the cloned calves, the fact that they act different and are responding different due to their environment. So, I think this can ease our minds some knowing that even though the animal has the exact same genetic make-up still does not insurance the exact same performance results. I would like to one-day see a mule or donkey cloned especially a mule since they can not reproduce. I believe that would be a major advantage to the mule industry, but it would still not insurance the same performance results. Another challenge facing the equine world, especially the mule and donkey end of things is the lack of research in reproduction and genealogy. The cloning procedure is somewhat pricey too but if you loose a donkey or mule that means a lot to you and you might be interested in one day cloning that animal make sure and keep a tissue sample of your special long eared friend frozen.

I am not an expert on this subject, I'm a just reporting what I have learned through work and my experiences with these cloned animals. If you have questions or comments please feel free to email me at [amule@bellsouth.net](mailto:amule@bellsouth.net) or you can call at 706-342-4472.