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Cloned Puppies Push the Boundaries of Science and Love

by Samantha Drake

Laura Jacques couldn't imagine life without her beloved dog, Dylan. Although she didn't set out to clone her dog, the \$100,000 price tag was worth what turned out to be a harrowing ordeal.

As it turned out, Jacques and her partner, Richard Remde, would help make cloning history in the process. Dylan's DNA was successfully cloned nearly two weeks after his death; scientists previously believed they had just five days to complete the procedure after a donor's death.

Jacques of Silsden in West Yorkshire in England adopted Dylan, a quiet, purebred Boxer, when she was 20-years-old and he was just a pup of 8 weeks. Dylan was the first dog she had as an adult. "We went through so much. I was besotted with him from the beginning," she says.

Sadly, Dylan developed a brain tumor when he was 8-years-old. Jacques says she was hoping treatment would prolong the dog's life another six months but he died unexpectedly at the vet's office following a cardiac arrest. "It was the most painful thing I ever had to hear," she says. "I was in shock."

In the days after Dylan's death, Jacques confesses that she was so distraught that she couldn't eat or drink. She initially told no one about the dog's passing, she says, because saying it out loud would make it real. At one point, Remde even suggested cloning Dylan, but Jacques says she didn't take him seriously.

Still, she checked out the website for the Sooam Biotech Research Foundation (<https://web.archive.org/web/20160204065757/http://en.sooam.com/index.html>) in South Korea anyway. Sooam Biotech is currently the only facility cloning people's pets. Jacques saw she could store a dog's DNA for potential use later and found the idea of preserving Dylan's DNA comforting. "I never thought we'd actually go ahead with [cloning]," she adds.

Cloning Controversies

To date, Sooam Biotech has reportedly cloned an estimated 700 dogs.

To clone an animal, scientists inject an unfertilized egg from a surrogate with the DNA from the animal being cloned. The cells begin dividing with the help of a small jolt of electricity. The resulting embryo is then implanted in the surrogate to gestate. The first cloned animal, a sheep named Dolly, was born in 1996. Since then, scientists have cloned cats, bulls, goats and pigs. Sooam Biotech cloned the first dog, an Afghan hound called Snuppy, in 2005.

Cloning companion dogs is highly controversial and seen as unethical for a variety of reasons.

According to the Humane Society of the United States (<https://web.archive.org/web/20160204065757/http://www.humanesociety.org/>), a "tremendous number of animals" are needed to produce one clone.

"Because 99 percent of cloning attempts fail to produce a healthy cloned animal, thousands of embryos and hundreds of egg 'donors' and surrogate mothers are used in cloning ventures," says the Human Society. Further, few cloned animals are born healthy. "Of the few who are born alive, many suffer health problems and die soon thereafter," it says. There is also "little to no oversight" of cloning activities, the Humane Society points out.

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Questions surround the fate of cloned animals born with deformities, any "surplus clones" that don't look identical to the original pet, and the egg donor and surrogate animals once they are no longer needed, says John Woestendiek, the author of *Dog, Inc.: The Uncanny Inside Story of Cloning Man's Best Friend* (<https://web.archive.org/web/20160204065757/http://www.doginthebook.com/>), published in 2011, about the commercial dog cloning industry.

"People also fear cloning is 'playing God' and that cloning pets will lead to cloning humans," says Woestendiek.

"Commercial cloning of pets is also criticized as unethical in terms of what's being promised to the customers," says Woestendiek, adding, "Cloning produces a physical copy of the original, but there's no guarantee the animal's personality, which is shaped by a variety of factors, will be the same as the original pet's. Although customers understand this on an intellectual level, their hearts are very likely hoping otherwise. It's pretty clearly exploiting people's grief."

Timeline of Troubles

A dog can be cloned from cells taken from a living or deceased donor. Up until now, in cases where the donor dog is deceased, no more than five days has elapsed between the animal's death and the extraction of the cells to be used. Jacques prepared for a company representative to talk her through performing the biopsy on the deceased dog herself on the kitchen table and then preserving the tissue sample to send to the facility in South Korea.

However, nothing went according to plan.

Dylan died on June 13, 2015, a Tuesday during a week-long heat wave. Jacques and Remde immediately borrowed a refrigeration unit from a local business to store the dog's body—Sooam Biotech states the animal's body must be refrigerated, not frozen—but the unit didn't work. The dog's body wasn't properly refrigerated until Friday, when the couple borrowed another unit from a funeral parlor.

Jacques recalls she was consumed with worry—that Dylan's body hadn't been refrigerated soon enough, that the biopsy tools and supplies she picked up at the pharmacy and online weren't right, and that the fat and muscle cells she extracted weren't usable because Sooam Biotech preferred skin cells. The only upside was Jacques had no time to think about Dylan's death.

Remde took a flight to South Korea to deliver the tissue sample while Jacques stayed home and cared for their other four dogs. Upon his return, the couple bought a freezer to store Dylan's body until they could bury him when they moved to their new home in a few months.

Then Sooam Biotech called to report that the tissue sample wasn't usable. So Jacques steeled herself to partially defrost the dog's body and take another sample. By the time Remde flew back to South Korea, Dylan had been dead for nearly two weeks, long past the five-day cloning deadline.

According to Sooam Biotech, the cells had begun growing despite their poor condition, but freezing the cells for later use might destroy them. If Dylan was to be cloned, it had to take place now. Remde voted to go ahead with the cloning, reasoning that they had put so much effort in and, at this point, successful cloning would constitute a scientific breakthrough.

"We in no way thought it would work," she admits. "It was a miracle the cells started growing at all."

Chance and Shadow

And yet it did work. On December 26, 2015, a surrogate dog gave birth the puppy Jacques named Chance and on December 29, 2015, a second surrogate gave birth to Shadow. Both puppies have similar markings to those Dylan had when he was a puppy, says Jacques.

Asked if she's concerned that the puppies will develop brain tumors like Dylan did, Jacques points out that, "Boxers are more prone to brain tumors than any other breed so I think it's always a worry of any boxer dog owner." "Cancers are usually caused by a mix of genetic and environmental factors," she notes, adding that "Chance and Shadow will grow up in different environments than Dylan, with different life experiences, diets and exercise habits."

Chance and Shadow will remain at the facility until they are seven months old because they aren't allowed to enter the United Kingdom before then, Jacques explains, adding that she plans to visit as much as she can to help socialize the puppies. She is also adopting the puppies' two surrogate mothers and will bring all four dogs home at the same time. Jacques created Twitter accounts @WeLovedDylan, @Chanceismytwin and @Shadowismytwin to provide updates about the dogs.

"It's not the natural order of things but so many good things in the world aren't," she admits, citing medical interventions such as organ transplants. "Chance and Shadow also represent a significant advancement in cloning technology that could help bring back extinct species or revive endangered ones."

While the process of cloning Dylan proved to be a welcome distraction from her grief, it's also given Jacques a new perspective. Reflecting on her deep attachment to Dylan, Jacques says she gave all of her love to her dog probably because she has no children of her own. But she plans to build a relationship with Chance and Shadow that's less intense than the bond she shared with Dylan.

"It won't be the same as having Dylan back," Jacques acknowledges, but the puppies are a living, comforting reminder of him. "I feel like I have my piece of Dylan and it just makes me feel so much better."

Images via @WeLovedDylan Twitter
(https://web.archive.org/web/20160204065757/https://twitter.com/weloveddylan)

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