

Here, Kitty-Kitty-Kitty-Kitty

Sausalito firm offers clones for \$50,000, signs up 5 cat owners

By Carolyn Said

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- 1 It sounds like science fiction, but it's not.
- 2 Any cat owner with \$50,000 to spare can pay a Sausalito company, Genetic Savings & Clone, to clone Fluffy or Frisky this year.
- 3 The company already sponsored the first domestic cat clone—a calico named CC (for “Carbon Copy”)—two years ago. Now, it is the first to go commercial, this time in its own laboratories, and five paying customers are lined up.
- 4 It has promised to produce nine cloned kittens by November. Six will be for clients and three for staff members, who will show off their clones at veterinary shows. None of the customers agreed to be interviewed.
- 5 The company got its start when iconoclastic octogenarian John Sperling, who made millions as founder of the University of Phoenix, backed research called “the Missyplicity Project” to clone a beloved husky mix, Missy.
- 6 The project was deluged by interested pet lovers, even though dog cloning continues to elude scientists. Genetic Savings says it is on track to clone Missy, who died in 2002 at age 15, this year.
- 7 “We would have had to be dumb not to see a business there,” said Genetic Savings CEO Lou Hawthorne, a longtime family friend of Sperling, who suggested they turn the project into a for-profit venture.
- 8 Hawthorne is cloning his own pet, Tahini, a 6-month-old Bengal cat who likes to stalk deer in her Mill Valley backyard.
- 9 Hawthorne says he thinks the world is packed with pet lovers eager to follow suit. Studies show that a quarter of the 60 million pet-owning households would consider cloning their furry friends, he says. Genetic Savings hopes to be cloning thousands of pets annually in five years, when the cost should be down to \$10,000 for cats, \$20,000 for dogs, he says.
- 10 “A great pet is like a work of art, especially if it's a one-of-a-kind mixed breed,” Hawthorne said. “To replicate these qualities adds to the sum of joy in the world.”
- 11 But critics say that's faulty logic.
- 12 “Cloning undermines the sacred and intrinsic value of what a unique life is all about in the world,” said Jeremy Rifkin, author of “Biotech Century,” a cautionary work about the Pandora's box that scientific advances like cloning might open.
- 13 “We just had a German shepherd who passed away, who was the love of our life,” Rifkin said, speaking for himself and his wife. “We'd love to see that dog again, but we would never clone it. It would be a complete betrayal of our unique relationship with that beautiful companion animal to clone another animal from it.”

- 14 David Magnus, co-director of the Center for Biomedical Ethics at Stanford University, agreed.
- 15 “My cocker spaniel, who we had for 15 years, just passed away, and I would do anything to have him back and young again, but it can’t happen,” he said.
- 16 “The people who want this are spending huge sums of money to get their pet immortalized or to guarantee they’re getting a pet exactly like the one they had before, and it’s simply not possible,” Magnus said.
- 17 Despite the criticisms, animal cloning is legal in the United States, although human cloning is not.
- 18 To be sure, Genetic Savings & Clone sounds straight out of the Arnold Schwarzenegger techno thriller “The 6th Day,” set in the year 2010, in which a pet-cloning company called RePet was as ubiquitous as Kinko’s.
- 19 Hawthorne, 43, a Princeton grad and former multimedia producer with a mop of salt-and-pepper curls and a quick wit woven with whimsy, is quick to correct misperceptions.
- 20 Unlike the fictional RePet, his company will produce unique, newborn animals, not full-grown exact replicas, he said. A cloned animal will have its own personality and memories. It will closely resemble the original animal in physical appearance and behavioral tendencies. The company says it will never experiment with human cloning.
- 21 He pointed to some potential benefits for society: cloning working animals, such as seeing-eye dogs and search-and-rescue dogs.
- 22 Cloning is not a substitute for the grieving process, Hawthorne said. It’s best suited for mutts—“a breed of one”—which are past breeding age or spayed or neutered.
- 23 Several hundred people have signed up to have Genetic Savings preserve tissue from their cat or dog for future cloning. They pay about \$900 plus \$150 a year for maintenance. Cells are harvested through a skin biopsy done by a veterinarian, who removes a pencil-eraser-sized skin sample from the pet’s belly and from inside its mouth.
- 24 Menlo Park resident Jayne Lange, 47, has banked tissue from two Shiba Inu dogs, one still living and one deceased. The breed evolved from ancient Japanese fighting dogs, she said. “They tend to be fiercely loyal and are very cute little dogs, red with a curly tail,” she said.
- 25 She was motivated to do it for her three teenage children.
- 26 “It’s almost like creating a family tradition,” she said. “We love our dogs so much. If at some future point my children thought back about Akeya and wanted a dog like it, they’d have the opportunity.”
- 27 Tom Minot, 56, a vice president of marketing at a Silicon Valley company, also used the word “family” in describing why he banked tissue from his dog, Fred, an 8-year-old Australian shepherd and border collie mix.
- 28 “I’m single, and he’s my family,” Minot said. “He’s an exceptional dog.”

- 29 The world’s first cloned cat, CC, by contrast, is just a regular cat, according to her owner, Duane Kraemer, a professor of veterinary medicine who was on the Texas A&M team that cloned her.
- 30 “She’s a very good house pet,” he said. Kraemer hopes to breed her—the old-fashioned way—“whenever we find a worthy male.”
- 31 CC also demonstrates some limits of cloning. As Hawthorne ruefully said, the calico cat is “a problem child, the first clone that doesn’t resemble its genetic mom.”
- 32 Calicos are essentially a three-dimensional mosaic of two cell types, one with genes for black-and-white coat patterns, the other with genes for orange and white. Because CC was cloned from a single cell, she got only the black- and-white gene, unlike her “mom,” the typical calico mix of both types.
- 33 Genetic Savings is no longer affiliated with Texas A&M. Instead, it has its own labs in Austin, Texas, and San Diego, and it plans one in Madison, Wis.
- 34 Sperling’s deep pockets have helped Genetic Savings vault ahead of competitors. So far, it has spent \$10 million and expects to spend another \$5 million by the time it breaks even, which Hawthorne predicts will be next year.
- 35 Its scientists use the cloning procedure familiar to the world since Dolly the sheep was born in 1997: They take the nucleus of a cell from the original animal and inject it into an egg whose own nucleus has been removed. (Eggs are purchased from spay clinics.) The resulting embryo is then implanted into a surrogate mother.
- 36 Most cloning failures occur either in the test tube, if the egg and cell fail to develop, or shortly after implantation, if the embryo is spontaneously aborted. It took 87 tries to produce CC, for example, Kraemer said.
- 37 Genetic Savings has licensed an innovation, already used in cattle cloning, that it says increases the success rate. The technique, called chromatin transfer, removes all the “adult factors” associated with the cell to be transferred, essentially regressing that cell back to an embryonic stage. That means the egg doesn’t have to do the extra work of reprogramming the donor cell into an embryo.
- 38 Not surprisingly, pet metaphors seem to creep into Hawthorne’s speech. “I’m like a pit bull. I can be relentless in focusing until the problem can be resolved,” he said. The intense public interest in his business makes it “like working in a fishbowl.”
- 39 As for his company’s success: “The proof is in the puddy-cat.”

Cloning kitty

1. Cloning process begins with a tissue biopsy from the cat to be cloned.
2. The sample is cultured and cells are frozen.
3. A host cat’s egg is enucleated, meaning the genetic material is removed.
4. The host cat’s cell is treated to remove differentiation. Differentiation is when cells are assigned to develop specialized functions such as muscle cells, neurons or skin cells.

5. The treated donor cell is combined with the enucleated egg by electrofusion, resulting in a singlecelled cloned embryo.
6. The surrogate mother cat, in estrus, has the cloned embryos implanted in her oviduct.
7. The surrogate mother carries the pregnancy to term, giving birth to cloned kittens.

Source: Genetic Savings & Clone