

CLONES

By Kevin Faux



*Nemesis' Evil clone Shinzon
(Tom Hardy)*

In the latest *Star Trek* movie adventure, the war-like Romulans clone Jean-Luc Picard to create a doppelganger of our good captain. Shinzon - the clone - is bred to square off against Picard in a battle of both brawn and brains. But would such a scheme of genetics harnessed to create the perfect antagonist actually work in real-life? Though you might think such a thing impossible, the 24th-century technology seen in *Star Trek Nemesis* is actually loosely based on technology being developed today.



Sci-fi versus reality

In the summer of 2002, an Italian doctor announced that a woman in his clinic's care was eight-weeks' pregnant with a clone. Plus, earlier in the year, an American biotech company claimed to have successfully cultured a cloned human embryo. Almost immediately, scientists complained that the Italian doctor's claims could not be confirmed and the doctor, himself, has been tight-lipped about it ever since. Likewise, some

experts have hotly rejected the success of the American announcement. They said when the experiment ended, the five-day-old embryo was several times too small to be considered 'normal'.

Even so, most scientists agree that someone, somewhere will eventually succeed in cloning a human being. They also agree it won't be easy.

How to clone a nemesis

According to Ian Wilmut, of the Roslin Institute, it took 276 tries to create his famous cloned sheep, 'Dolly.' And no one knows whether it will be any easier with people.



*'Dolly' and her first lamb
'Bonnie'*

First off, to create a clone, you need to transfer the desired genetic information - the strands of genes called chromosomes - from a donor to a specially prepared cell. Today, this involves a lot of trial and error and is anything but easy. Then, you have to nourish and grow the cell until it is ready to be implanted. Finally, you have to put it into a surrogate host and hope that it will develop normally until its birth. So far, scientists haven't had a lot of luck in growing embryos for more than a few days outside of a living womb. In 1997, researchers at Tokyo's Juntendo University managed to construct an 'artificial womb.' Using it, they managed to keep a goat fetus alive for three weeks. Similar efforts are being made in the United States today, though one of the main goals is not what you might expect. Rather than freeing women from the burden of pregnancy or childbirth, most research seems aimed at helping embryos develop in vitro for a few weeks longer

than normal before being implanted in the womb. The longer development time may be of particular help for women that have had previous trouble with In Vitro Fertilization.



Assuming the technique was successful, could the cloned being stand head-to-head with a real person, matching or even exceeding their physical and intellectual prowess? Again, this may not be as easy as the *Star Trek* creators would have you think.

Ready to take on the universe?

First, no one knows yet whether clones live as long as their genetic donors. Early research suggests that cloned animals age faster, develop adult diseases sooner and die at an earlier age. In the spring of 2002, Japanese scientists writing in the journal *Nature Genetics* said their study of 12 cloned male mice showed that more than 80 per cent of them had died within their first 800 days, compared to just eight per cent of similar non-cloned mice. But Mark Westhusin, Associate Professor at Texas A&M University's College of Veterinary Medicine disagrees. He also made headlines, shortly before the release of the *Nature Genetics* article, after he successfully produced a clone kitten named 'CC'. He tells EXN.ca there is still no scientific evidence that cloned animals age faster. Certainly, he says, CC appears to be a perfectly normal and healthy cat at this point.



In any case, perhaps premature aging is the last of your worries if all you want is a battle-ready soldier and you don't particularly care about it surviving to retirement age. Producing obedient, aggressive, smart clones is probably higher on your list. Here too there is disagreement on whether cloning is the way to go. Not all scientists think that genetics play much of a role in determining complicated human behaviour patterns, such as obedience, compared with the influence of environmental factors. Certainly, in *Star Trek Nemesis*, clones can be raised to do the bidding of whoever engineered them in the first place. Hopefully, their real-life counterparts will be healthier, friendlier, and less eager to take over the universe.