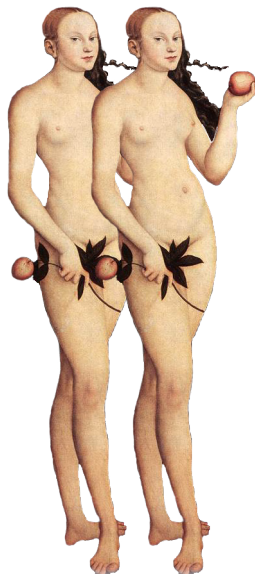


# **The Raelians: Visionary Science or Quackery?**

***A Case Study Exploring the Scientific  
Method and Human Cloning***



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## Part I—The Scientific Method and Unusual Claims



On the morning of December 13, 1973, Claude Vorilhon, a French auto racing journalist, was on his way to work in Clermont-Ferrand. On an impulse, he drove to a nearby volcano. While hiking around the crater, Mr. Vorilhon claims he was contacted by a four-foot-tall being with long dark hair, almond shaped eyes, and olive skin. This entity said he was an extraterrestrial and called himself Yahweh Elohim. Yahweh Elohim told Mr. Vorilhon, in fluent French, that people from another planet created humans in laboratories through genetic engineering. He also said that the Elohim, the people to whom Yahweh belonged, were the ones who made all life on Earth and that ancient peoples mistook them for gods (the name Elohim is an ancient Hebrew word meaning “those who came from the sky” and is used in Jewish prayers to refer to God). Mr. Vorilhon was told to spread the word of the Elohim on Earth in preparation for their return.

As a result of this experience, Mr. Vorilhon changed his name to Rael and founded the Raelian cult (<http://www.rael.org/int/english/>). The movement currently claims 60,000 members in 90 countries.

In 1997, Rael founded Clonaid, a genetic engineering company with the goal of cloning a human being. The Raelians’ interest in cloning stems from their belief that the human soul perishes when the body dies. They believe that the key to eternal life is not the soul but the recreation of individuals from their DNA. Raelians believe that immortality can be achieved through cloning an individual so that upon dying their “being” will pass from their old body into the new body. Clonaid claims to have produced the first cloned humans (born in December 2002 and January 2003).

### *Questions*

1. How could you identify an extraterrestrial? What evidence would you need to be convinced that a being had extraterrestrial origins?
2. Claims—
  - a. What steps would be involved in scientifically analyzing the claims of extraterrestrial origins for human beings? What experiments could you design to test this claim?
  - b. How could you scientifically analyze the Raelian claims linking DNA to eternal life? What experiments could you design to test their claims?

## Part II—Human Cloning: Concepts and Issues



The U.S.-based company Clonaid claimed in December 2002 that it had produced the world's first cloned human being. Clonaid alleged that a healthy cloned baby girl, nicknamed "Eve" by scientists, was born by Caesarean section on December 26, 2002, to a 31-year-old U.S. mother. The location of the alleged birth has been kept secret. The DNA for the cloning was taken from the mother's skin cells. The scientist leading Clonaid's efforts, Dr. Brigitte Boisselier, said she was "celebrating a scientific success" and "Science can be used for the best and the worst. I believe that this is the best. I hope that you remember ... [to] talk about this baby, not like a monster, not like some results [sic] of something that is disgusting. She is a very healthy baby." [1] Dr. Boisselier is the former deputy director of research at the Air Liquid Group, a French producer of industrial and medical gases.

At the time of the announcement of "Eve" the company said that independent DNA testing of mother and child would be allowed in "eight or nine days." However, on January 2, 2003, on the television show *Crossfire*, Rael said, "If there is any risk that this baby is taken away from the family, it is better to lose your credibility; don't do the testing." [2] Clonaid then announced that no testing would be done on either "Eve" or her mother. Rael said he made the decision after a "judge in Florida signed a paper saying that the baby Eve should be taken from the family, from her mother." [3] However, no Florida judge had made such a ruling.

During the December 26th announcement, Dr. Boisselier also said another cloned baby was due in northern Europe in early January, and three others shortly thereafter. Two of the expected babies were copies of dead children made using preserved cells. [4] Dr. Boisselier said that five other attempts had ended in miscarriage. On January 2nd the birth of a second clone, to a Dutch woman, was announced. [5]

Michael Guillen, former science editor for ABC's *Good Morning America*, has been following Clonaid since 1997. Initially, he was skeptical of Clonaid but claims their science credentials are legitimate, "It would be unwise to dismiss these people offhand." [6]

A White House spokesman said that U.S. President George W. Bush had found the news "deeply troubling," adding that the news underscored the need for legislation to ban all human cloning in the U.S. Also, Fred Eckhard, a spokesman for U.N. Secretary-General Kofi Annan, said that in the absence of any scientific proof "we can't automatically accept it as a fact." [7]

Clonaid has been racing against the Italian fertility doctor Severino Antinori to produce the first cloned baby. Dr. Antinori has claimed that one of his patients will give birth to a cloned baby in January. Dr. Antinori brushed off Clonaid's claims, saying they were "not substantiated on a scientific basis" and "only risk engendering confusion." [8]

A variety of people have weighed in with their opinions:

Dr. Patrick Dixon, an expert on the ethics of human cloning, described the news as "totally inevitable," but expressed fears over the morality of the project and the possibility that many abnormal fetuses would have been aborted before a healthy one survived. He said: "There's a global race by maverick scientists to produce clones, motivated by fame, money and warped and twisted beliefs." [9]

BBC science correspondent Richard Black says most scientists doubt Clonaid's ability to clone a human and their motives, pointing to the company's intention to charge around \$200,000 for each cloned child. Cattle, mice, sheep and some other animals have been cloned with mixed success. But some animals have shown defects as they age—and scientists fear the same could happen with humans.[10]

Dr. Robert Lanza, Advanced Cell Technologies, has said that: “Without any scientific data, one has to be very, very skeptical. This is a group, again, that has no scientific track record [and has] never published a single scientific paper in this area. They have no research experience in this area—in fact, [they] have never even cloned a mouse or a rabbit. I have to say that I think this is appalling and scientifically irresponsible. Again, I think that we should not dismiss them outright. I think we do have the technology at present to clone human embryos, and it may be simpler than scientists think.”[11]

Alta Charo, Associate Dean, University of Wisconsin Law School, has said that: “Nobody knows what it is, except for medical grandstanding. If this is false, it's one of the great hoaxes on the public and the media. If it happens to be true, which I sincerely doubt—but like others, I'll wait for proof—it was an irresponsible experiment on humans and children prior to having any sound basis in animal work. And finally, it's a political and public relations catastrophe because it will continue the confusion in the mind of the public between irresponsible reproduction applications of this technique and responsible, already regulated applications for the cure of disease—applications that do not involve making babies, but also go by the name of cloning.”[12]

Glenn McGee, Ph.D., University of Pennsylvania Center for Bioethics, has said that: “If it's possible that Brigitte Boisselier and unknown scientists, unknown obstetricians, and others in an unknown country were able to successfully give birth to Eve—without the kind of hundreds and hundreds of mistakes and medical problems that we saw with Dolly and other cloned animals—then I think that suggests that we may be entering a new world in which just about anyone can make a clone. Although I myself very much doubt that she has succeeded in this effort.”[13]

## ***Questions***

### 1. Scientific Issues—

- a. What would “proof” of successful cloning be?
- b. Are the technical claims for Clonaid's cloning process consistent with the known technology (e.g., use of skin cells, use of cells from deceased people)? Are the five miscarriages to be expected?
- c. Other organisms, such as plants, mice, and sheep, have been cloned. Why has it taken longer to clone humans, or any other primates?
- d. Why does cloning require so many attempts? Why are birth defects and abnormalities common in clones?

### 2. Ethics—

- a. Are there any reasons to promote or allow human cloning?
- b. Why would a successful clone be “deeply troubling” to anyone? Why is human cloning controversial?
- c. As a for-profit company, is it ethical for Clonaid to charge people to produce clones?

- d. Why is there a race to develop the first human clone? Will the first group/individual who produces a human clone benefit in any way?
3. Your Conclusions—
    - a. Do you believe that Clonaid is a reputable company with the expertise to successfully clone a human being?
    - b. Is it likely that Clonaid is/will be the first to produce a human clone?
    - c. Should all human cloning be banned?

### ***Endnotes***

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Image Credit: Based on a detail of “Adam and Eve” by Lucas Cranach the Elder, 1531, Lime wood, 170 x 69,5 cm, Gemäldegalerie, Dresden.

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