

Lesson 18. Cloning

Learning Objectives

After this lesson, students will be able to:

1. Discover how the pet cloning procedure is conducted.
2. Explain the basic knowledge of the cloning technology.
3. Argue whether scientists should delve more into the possibility of human cloning.
4. Recognize the use of certain vocabularies from a recording using context clues.
5. Interpret and explain the content of an infographic.
6. Explore the entire chronicle of a clone sheep named Dolly.
7. Assess whether a cloning procedure should be conducted in every given scenario.
8. Identify and correct the error found in each sentence.

Lesson 18. Cloning

Cloned Pets

1. Do you have a pet(s)? If yes, how much do you love your pet(s)? Would you like to have your pet(s) cloned?
2. Watch this following clip and complete these following schematic lists.
[\(7\) The pros and cons of pet cloning. Would you do it? | 60 Minutes Australia - YouTube](#)
3. In summation, under what circumstances would the scientist consider cloning his pet?

Why pet owners clone their pets

?

What pet owners must expect when cloning their pets

?

How the scientist further exemplifies how cloning is

?

How the pet cloning procedures still require improvement

?

Lesson 18. Cloning

In a nutshell

Cloning is the process of producing individuals with identical or virtually identical DNA, either naturally or artificially. In nature, many organisms produce clones through asexual reproduction. Cloning in biotechnology refers to the process of creating clones of organisms or copies of cells or DNA fragments. The copied material, which has the same genetic makeup as the original, is referred to as a clone. Researchers have cloned a wide range of biological materials, including genes, cells, tissues and even entire organisms, such as a sheep. Scientists have explored cloning technology for several reasons. Some use cloned animals to study and fight deadly diseases.

“Cloning may be good and it may be bad. Probably it's a bit of both. The question must not be greeted with reflex hysteria but decided quietly, soberly and on its own merits. We need less emotion and more thought”

– Richard Dawkins

Do you find yourself on the same page with Richard Dawkins on how he perceives the cloning technology?

Lesson 18. Cloning

Debate: Should scientists probe further into the possibility of human cloning?

Points to consider:

- What purpose would a human clone serve.
- Ethical, moral, and spiritual standpoint.
- Density of human population.
- How the human cloning procedure is conducted.
- How much of a breakthrough will the human cloning technology mean to scientific & medical advancement.
- The affordability of the technology/procedure.
- Whether it disrupts the balance of nature/ecological balance.

References:

<https://connectusfund.org/23-major-human-cloning-pros-and-cons>

<https://www.ablison.com/key-pros-and-cons-of-cloning/>

<https://blogs.umass.edu/natsci397a-eross/de-extinction-as-a-means-of-restoring-biodiversity/>

Lesson 18. Cloning

Keen Listening

Look for the following vocabulary in the recording. Define each vocabulary if you are familiar with it. While listening, jot down how each vocabulary is employed and related to the presented topic.

puzzled

scrunchies

likewise

coincide

relay race

flourish

host uterus

extraterrestrial

backed out

ailments

**go above and
beyond**

**spiritual
catastrophe**

drawbacks

**Identify what part of speech each
vocabulary is.**

Lesson 18. Cloning



Listening 18.1

Listen to the recording carefully and answer these questions below.

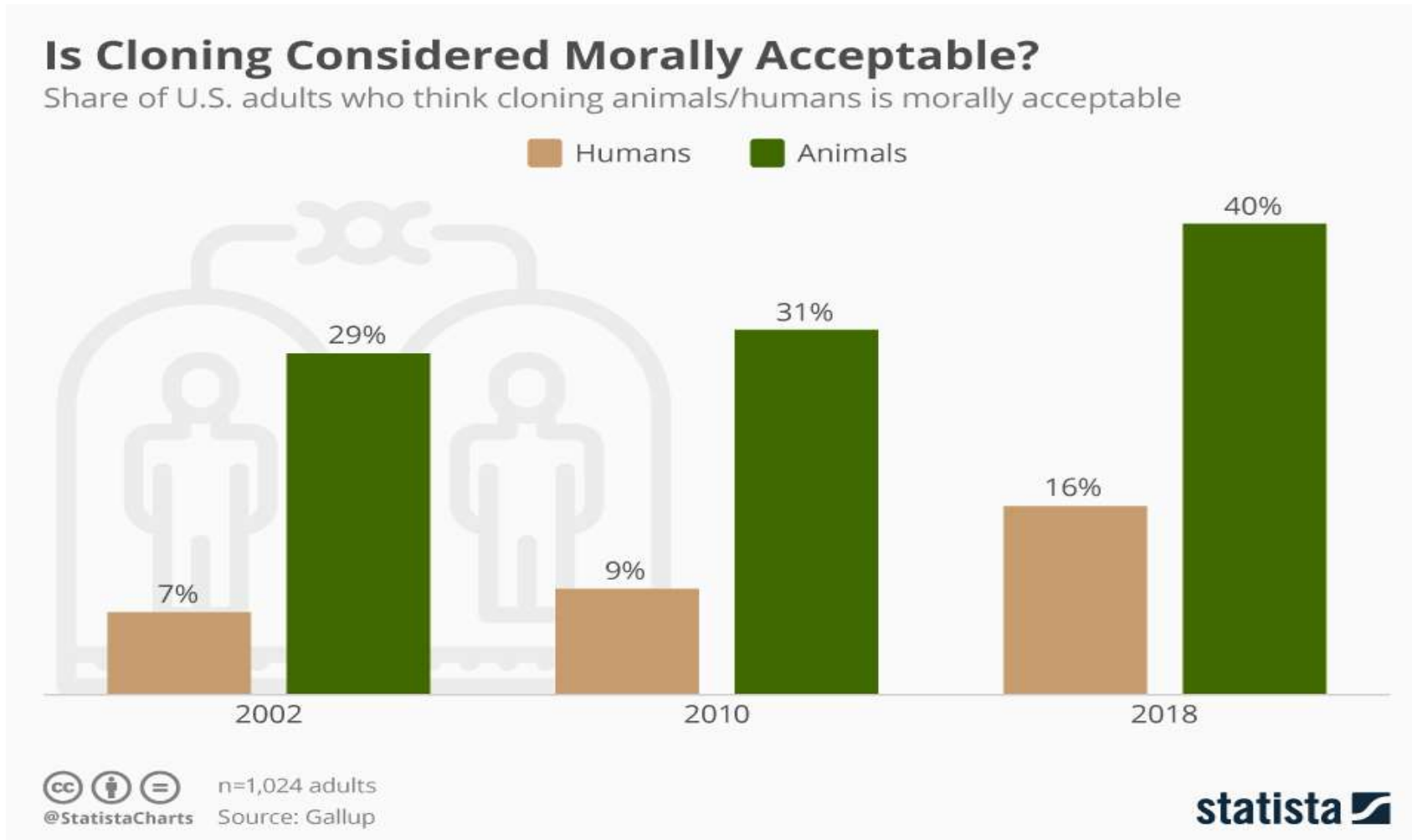
[Cloning | Sarina C | TEDxYouth@LCJSMS](#)

Cloning

1. Name two movies mentioned by the speaker which plot has to do with cloning and genetic engineering.
2. How many types of cloning are there? Explain each type of cloning.
3. **True** or **False**:
 - a. The dog owner who had his pet dog cloned didn't have the support of his family to do so.
 - b. The speaker owns a pet.
 - c. The speaker opines that the cloning technology should be limited to scientific purposes only.
4. According to the speaker, what is the stance of 30 countries on the cloning technology?
5. What is the answer of the riddle she asked in the beginning of her speech?

Lesson 18. Cloning

Study and discuss the graph below



Reference: <https://www.statista.com/chart/14153/is-cloning-considered-morally-acceptable/>

Lesson 18. Cloning

Dolly the sheep, who became famous as the first mammal to be cloned from an adult cell, has died. The news was confirmed on Friday by the Roslin Institute, the Scottish research centre which created her. A decision was taken to “euthanize” six-year-old Dolly after a **veterinary examination** showed that she had a progressive lung disease, the institute said in a statement. Dolly became the first mammal clone when she was born on 5 July 1996. She was revealed to the public the following year.

- **Post-mortem**

Dr Harry Griffin, from the institute, said: "Sheep can live to 11 or 12 years of age and lung infections are common in older sheep, particularly those housed inside. "A full post-mortem is being conducted and we will report any significant findings“. Dolly was a sheep created totally by design - even her name was picked specifically to be appealing. It **came about** during the latter stages of labour when Dolly was born. Stockmen involved in the delivery thought of the fact that the cell used came from a mammary gland and arrived at Dolly Parton, the country and western singer.

- **Cloning row**

Her birth was only announced seven months later and was heralded as one of the most **significant scientific breakthroughs of the decade**.

But it also **prompted** a long-running argument over the ethics of cloning, reaching further levels with the latest allegations of human cloning. Dolly, a Finn Dorset, **bred** normally on two occasions with a Welsh mountain ram called David. She first gave birth to Bonnie in April 1998 and then to three more lambs in 1999. But in January last year her condition caused concern when she was **diagnosed with a form of arthritis**.

Lesson 18. Cloning

- **Museum piece**

The condition would usually be expected in older animals and **another debate erupted over** what could properly be judged as Dolly's true age, and the risks of **premature ageing** in clones. Professor Ian Wilmut, who led the team that created her, said at the time that the arthritis showed their cloning techniques were "inefficient" and needed more work. Dr Patrick Dixon, a writer on the ethics of human cloning, said the nature of Dolly's death would have a huge impact on possibility of producing a cloned human baby.

He said: "The real issue is **what Dolly died from**, and whether it was linked to premature ageing," he said. "She was not old - by sheep standards - to have been put down."

- **Profound effects**

Speaking to BBC News 24 on Friday, Prof Wilmut said Dolly's birth should be the important issue. "The fact that we were able to produce an animal from the cell of another adult - it had profound effects on biological research and in medicine."

Professor Richard Gardner, chair of the Royal Society working group on stem cell research and therapeutic cloning, said: "We must await the results of the post-mortem on Dolly in order to assess whether her relatively **premature death** was in any way connected with the fact that she was a clone.

"If there is a link, it will provide further evidence of the dangers inherent in reproductive cloning and the irresponsibility of anybody who is trying to extend such work to humans."

Dolly has been promised to the National Museum of Scotland and will be **put on display** in Edinburgh in **due course**.

Source: <http://news.bbc.co.uk/2/hi/science/nature/2764039.stm>

Lesson 18. Cloning

ANSWER THE QUESTIONS

1. What was Dolly the sheep known for?
2. Who/what body verified the death of Dolly the sheep?
3. **True** or **False**: Dolly died from the progressive lung disease it sustained from old age.
4. What long-standing debate did Dolly's birth exactly spark?
5. What did Dolly's death have to do with the possibility of human cloning?
6. What did people do with Dolly's carcass after post-mortem examination?

VOCABULARY

1. to come to a decision about something after much consideration.
2. existing as a natural or basic part of something.
3. a person who looks after livestock.
4. to kill an animal because it is very old or sick or because there is no one to take care of it.
5. developing or happening gradually.
6. according to plan : by intention.
7. kill an old animal (phrasal verb).
8. a medical examination of a dead body to discover the cause of death.
9. any of the large compound modified sebaceous glands that in female mammals are modified to secrete milk.
10. the last stage of pregnancy from the time when the muscles of the womb start to push the baby out of the body until the baby appears.
11. to be a sign that something important, and often good, is starting to happen, or to make something publicly known, especially by celebrating or praising it.

- a. euthanize
- b. progressive
- c. post-mortem
- d. by design
- e. labour
- f. stockmen
- g. mammary gland
- h. arrive at
- i. herald
- j. put down
- k. inherent

Lesson 18. Cloning

To Clone or Not To Clone?

Carefully examine these following scenarios and decide whether a cloning procedure in every scenario is appropriate/morally correct and doable.

1. Marley has been serving as a guide dog for a blind man – Mr. Chan – for nearly 10 years. Mr. Chan depends on Marley so much that he feels he cannot live without him. However, Marley is getting older and weaker day by day. Should Mr. Chan be allowed to clone Marley before he dies?
2. Sir Jones is the owner of a champion race horse. He wants to clone the horse to help him make money from racings. Should Sir Jones be allowed to clone the champion race horse to make money?
3. There is only one Giant Panda left on earth. It does not have a partner to breed with, so once it dies the species will be extinct. Should scientists be allowed to clone another Giant Panda to keep the species alive? Should scientists be allowed to clone endangered species?
4. Mother Teresa, a Nobel Peace Prize winner, helped and loved countless deprived, and has stimulated many people's benevolence. Should scientists be allowed to clone Mother Teresa so that her love can prevail on earth?

Take into account these following points:



Lesson 18. Cloning

Identify the error in each sentence and correct it.

1. To develop new medicines for humans, scientists use animals that are as identical as possible. Cloned monkeys could help to improve the development of these medicines.
A B C D
2. Therapeutic cloning works in a similar way from reproductive cloning.
A B C D
3. The first study of cloning took place in 1885, when Germany scientist Hans Adolf Eduard Driesch began researching reproduction.
A B C D
4. In 1963 Chinese scientists reported created the first cloned fish by transferring the DNA from a male carp into the egg of a female carp.
A B C D
5. Clones have exactly the same temperament and personality as the animals from how they were cloned is a popular misconception on cloning.
A B C D
6. In 2004 a South Korean scientist, Woo Suk Hwang, claims to have obtain embryonic stem cells from cloned human embryos.
A B C D

Lesson 18. Cloning

7. The public debate on cloning—and its coverage in the media—often features unreal scenario that are not based on scientific fact, but rather express a diffuse sense of uneasiness.
- A B
C D
8. The world's policy on human cloning seems vary. Some countries support what's called therapeutic cloning.
- A B C D
9. Some individuals and groups have an objection to therapeutic cloning, because it is considered the manufacture and destruction of a human life, even though that life has not developed passed the embryonic stage.
- A B
C D
10. The Raelians (a cult that believes humans are the clones of aliens) claimed in 2002 that they were cloning a baby from a 31-year-old American woman.
- A B C
D
11. It's almost 25 years since the most famous clone on Earth, Dolly the sheep, had been born on a farm in Scotland.
- A B C D

Lesson 18. Cloning

Express Yourself:

1. Are you against or in favor of cloning? Why?
2. Would you like a clone of yourself? Why/why not?
3. Would you like a clone of your loved ones? Why/why not?
4. Do you know what your country's policy on cloning is?
5. If you could clone someone famous, who would it be and why?
6. What problems could cloning people solve?
7. Should extinct animals like the Woolly Mammoth, Dodo bird or Dinosaurs be brought back to life through cloning?
8. What do you think about eating the meat of cloned animals?
9. Having completed this lesson, how do you think is the cloning technology depicted in mainstream Hollywood movies? Are they accurate?
10. Do you think the time will ever come when society finally embrace the cloning technology?

THE END