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FACULTY OF ENGINEERING & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY

# IMPORTANCE OF TRANSGENIC ANIMALS

## Medical importance

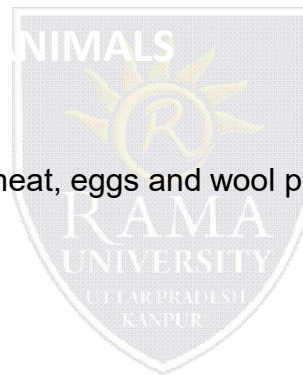
- Disease model
- Bioreactors for pharmaceuticals

## Agricultural importance

- Disease resistant animals
- For improving quality and quantity of milk, meat, eggs and wool production.

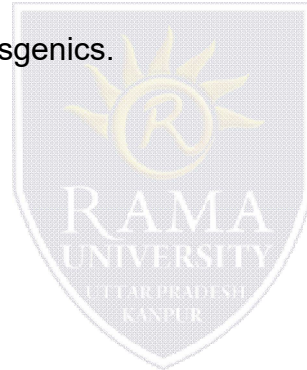
## Industrial importance

- Toxicity sensitive transgenic animals to test chemicals.
- Spider silk in milk of goat
- Xenotransplantation



# ISSUES

- ❖ Blurring the lines between species by creating transgenic combinations.
- ❖ There may be long term effects on the environment when transgenic animals are released into the field.
- ❖ Various bioethicist argue that it is wrong to create animals that would suffer as a result of genetic alteration.
- ❖ There may be health risks associated with transgenics.



# HUMAN CLONING

Cloning is creating an exact genetic copy of an organism

The creation of a genetically identical human, human cell, or human tissue

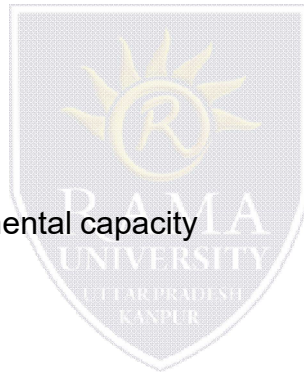
## History of cloning

- ❖ In 1996 a sheep named Dolly was the first animal cloned
- ❖ No documented cases of human cloning have ever been recorded.
- ❖ Other animals have also been cloned since Dolly



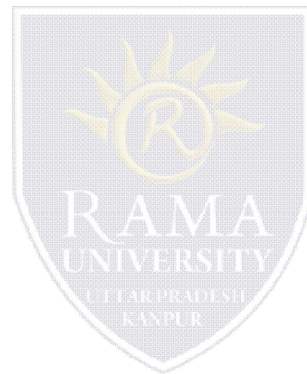
## Benefits of human cloning

- ❖ Humans can achieve more work
- ❖ No death, a human could just be replaced
- ❖ Sickness can be cured
- ❖ genetic diseases can be removed.
- ❖ cures for debilitating diseases
- ❖ Clones can be produced with lower or higher mental capacity
- ❖ Conduct research on human diseases.



## Disadvantages

- ❖ “Morally wrong”
- ❖ Offspring maybe treated badly.
- ❖ “Cloning is unnatural”
- ❖ Risks to mother
- ❖ offspring die quickly.
- ❖ Ethical issues
- ❖ Interference with nature
- ❖ Interference with God
- ❖ There are bans in many countries
- ❖ Safety



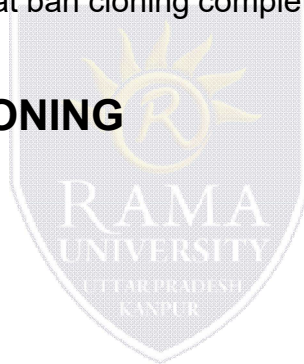
## Laws on Human Cloning

- ❖ Illegal in the U.S. to use federal funds to create a cloned
- ❖ human embryo, but you can use private funds
- ❖ In the United States there are not any laws that ban cloning completely

## ETHICAL ISSUES OF HUMAN CLONING

### Religious issues

- ❖ Some people believe that cloning is similar to playing God. They believe that God should be the creator of all living and natural things.
- ❖ It is believed that a human has the right for the full human development in a natural environment and that the human embryo should be left alone after the 14th day of fertilization.
- ❖ Some religious people believe that if you clone a human being it has no soul.
- ❖ People believe human cloning takes away from an Individual being unique and stresses Psychological and social development.



## MEDICAL ISSUES

- ❖ Cloned animals that do survive tend to be much bigger at birth than their natural counterparts. Clones with LOS (Large Offspring Syndrome) have abnormally large organs. This can lead to breathing, blood flow and other problems. .
- ❖ Technically, human gene grows older with age. It's feared that the cloned individual would retain the age of the donor's genes.

## BIOETHICAL ISSUES REGARDING HUMAN CLONING

1. Technical and medical safety
2. Undermining the concept of reproduction and family
3. Ambiguous relations of a cloned child with the progenitor
4. Confusing personal identity and harming the psychological development of a clone
5. Concerns about eugenics (idea that one can improve the human race by careful selection of those who mate and produce offspring)
6. Promoting trends towards designer babies and human enhancement
7. Contrary to Human Dignity