Cloning-Is it Ethical?

ABOUT ME

Imaginative, knowledgeable, and dedicated research scientist with over 20 years of experience in ion channels research which are essential to nerve function. With a PhD in the field of biological sciences, I managed a robust diabetic lab at the University of Pennsylvania for over a decade. Possess a proven record of scientific innovation and novel discovery, skilled at designing and overseeing advanced experiments of ion channels involved in renal disease, diabetes, cystic fibrosis and cardiovascular diseases for discovery and drug development purposes. Very passionate about sharing my knowledge of science especially with students. For the past 4 years, I have been mentoring high school students, encouraging them to take an active interest in various fields of science such as Microbiology, Medical Sciences, and Ecology. Students I have mentored have won many awards in their science fairs, both at the local and regional levels, with one of the group projects ultimately qualifying for the INTEL International science fair. I enjoy being involved in both the corporate and non-profit worlds of science discovery.

EDUCATION & RESEARCH EXPERIENCE

June 2020-present
Co-Founder and Chief Scientific Officer YARD Sciences
Co-Founder RAY Sciences, USA

July 2024-present
Co-Partner Bracetek orthotics Services, LLC, USA

January 2022-present
Co-Founder and Managing partner, KRYSP-R LLC USA and Gene2Go PVT LTD, Bangalore, INDIA.
Gene 2 Go is headquartered in the USA. Gene2Go PVT LTD, Bangalore, INDIA is a subsidiary of Gene 2 Go.
Our mission is to revolutionize the service sector of CRISPR technology. Our vision is to provide affordable, fast, and accurate genome editing services to our clients, and to bring the power of CRISPR technology within the reach of every laboratory.

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- CRISPR Gene Editing
- Science Fair Projects
- Medical Research
- College Placement Counseling

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Science Reimagined

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SCAN the QR code to the right.

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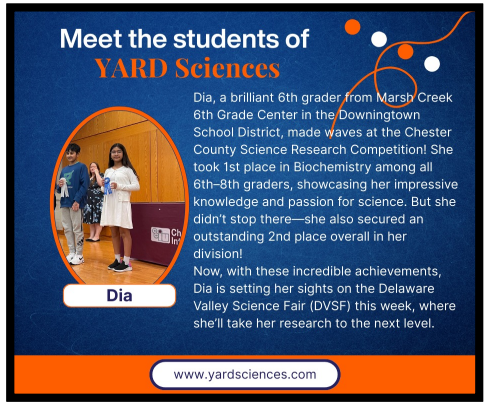
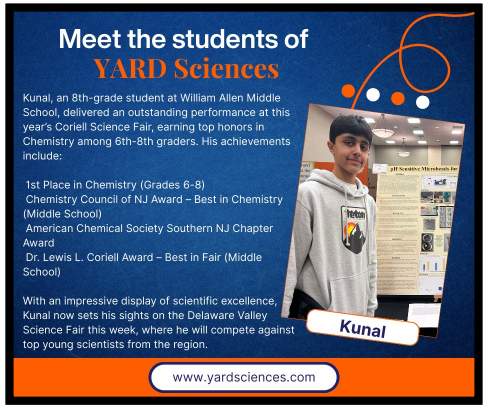
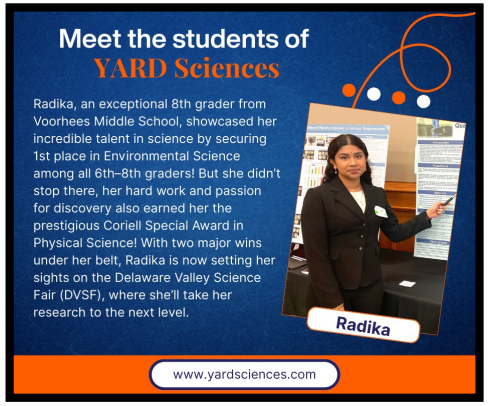
856-800-YARD

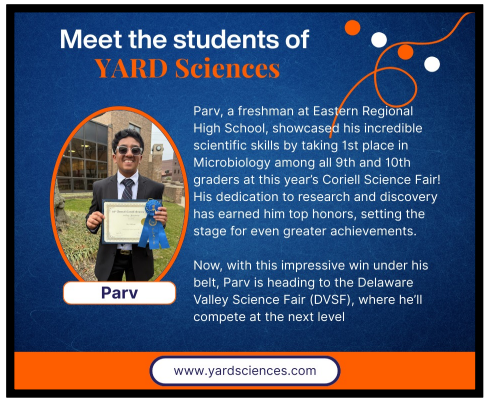
SCAN ME

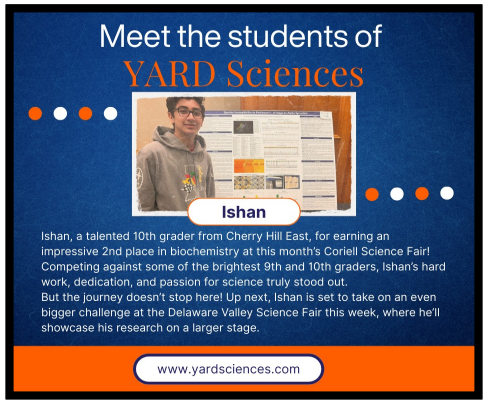


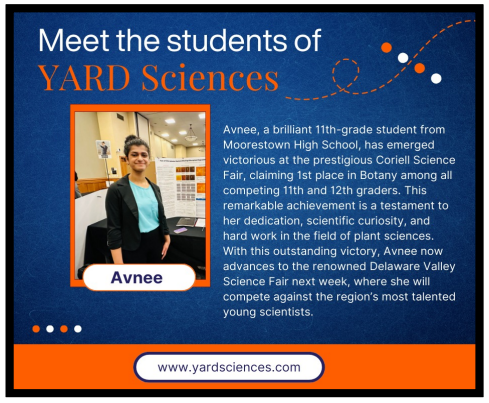


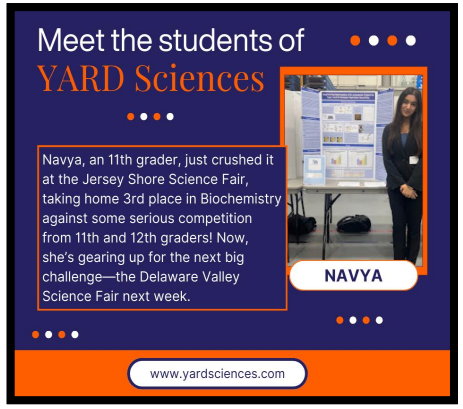


2024-2025 Science Fair Students





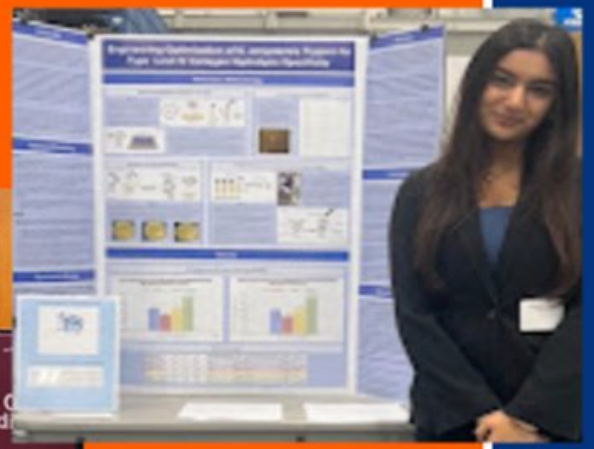


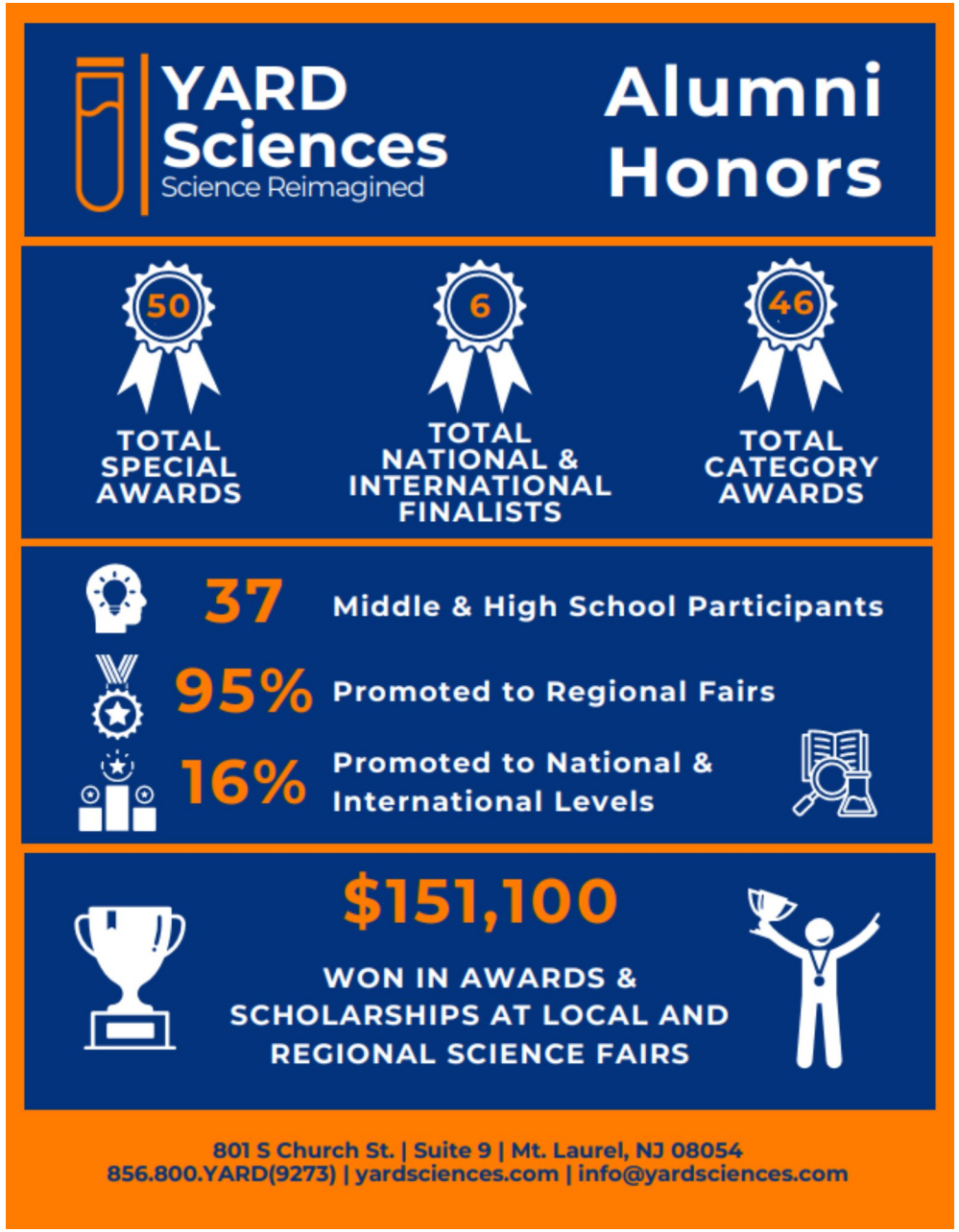


For their student's exceptional achievements in this year's Coriell Science Fair, Jersey Shore Science Fair, and Chester County Science Research Competition

Congratulations to

YARD Sciences





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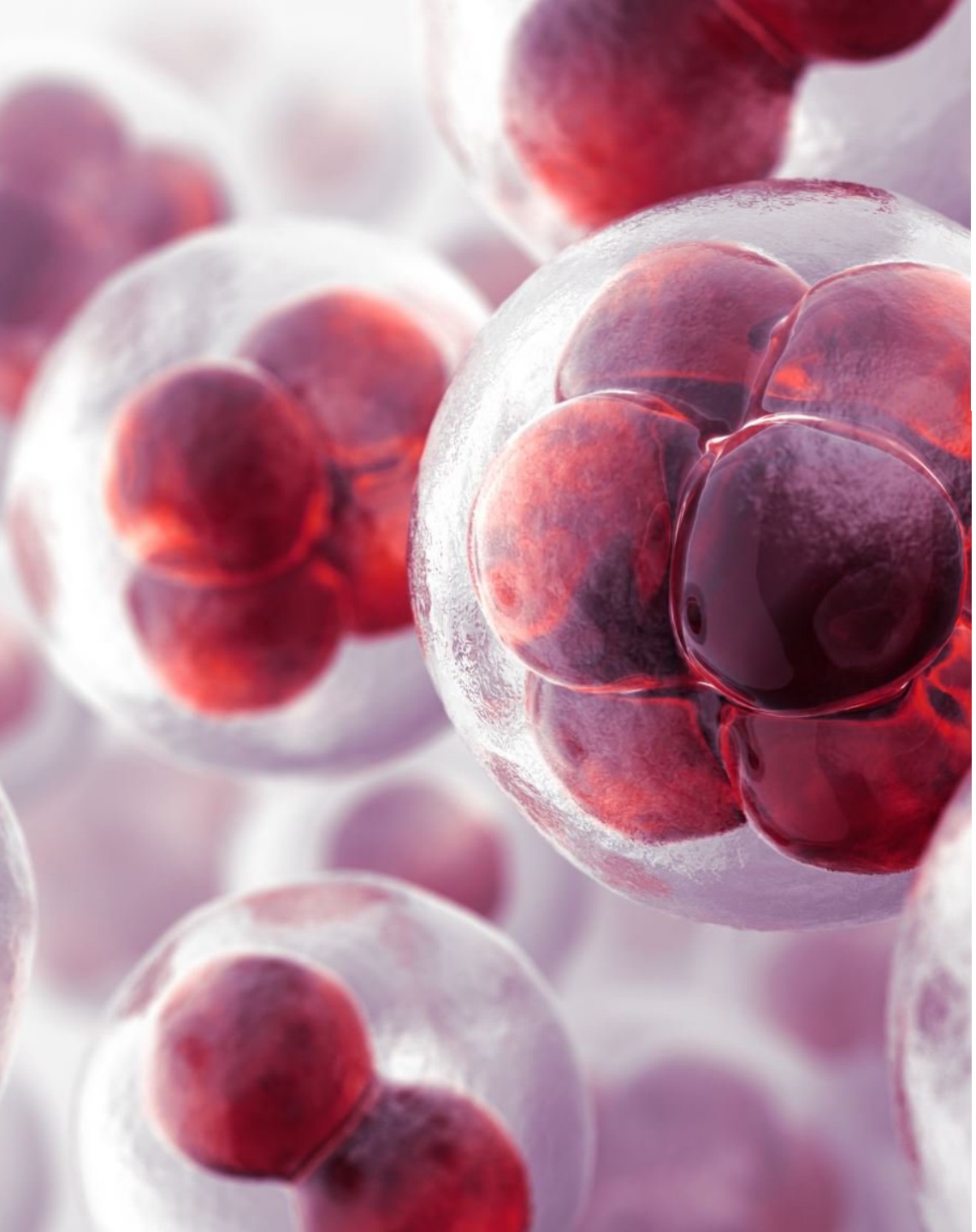
loning

Cloning

Clonin

Roslin Institute, Edinburgh

Dolly and first-born lamb, Bonnie.

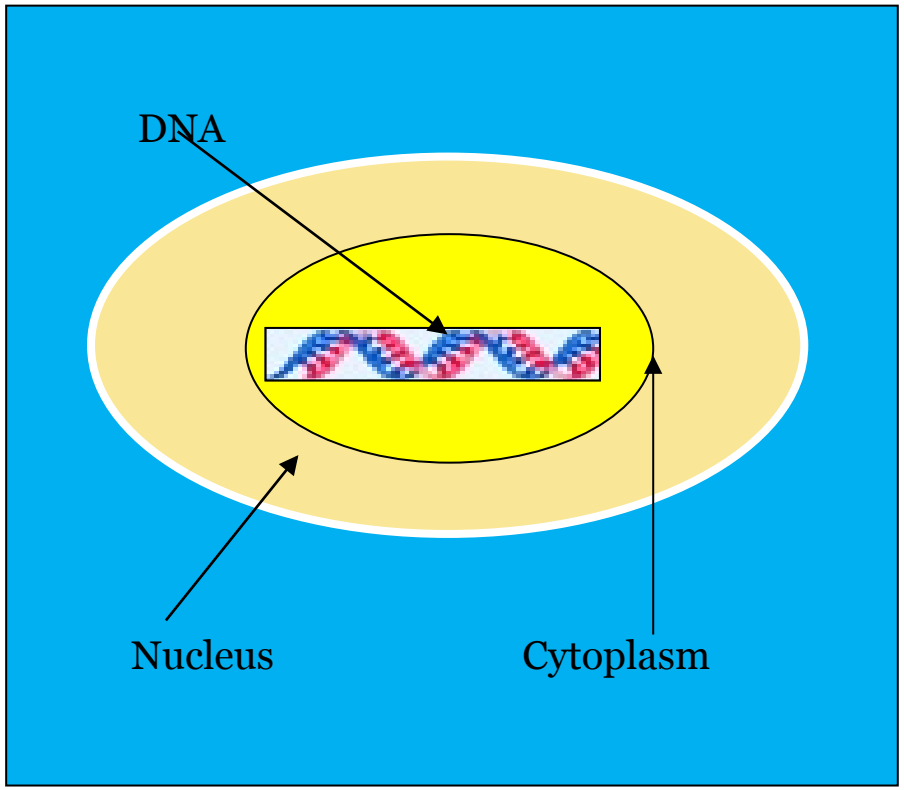


Overview

- What are cells? Cells are the fundamental, structural, and functional units of living organisms.
- What is cloning? The term, “cloning,” describes several different processes of making identical copies of biological material.
- Why is cloning important? Because it has the potential to treat a wide range of diseases by generating “self ” tissues.

What Is a Cell?

- Cells are the fundamental structural, and functional units of living organisms.
- Organisms, except bacteria, are made of cells, in which the nucleus is surrounded by a membrane (eukaryotic cells).
- The nucleus contains DNA, which provides instructions for the entire organism.
- As a cell specializes, only DNA related to the particular functions of that cell remains active.

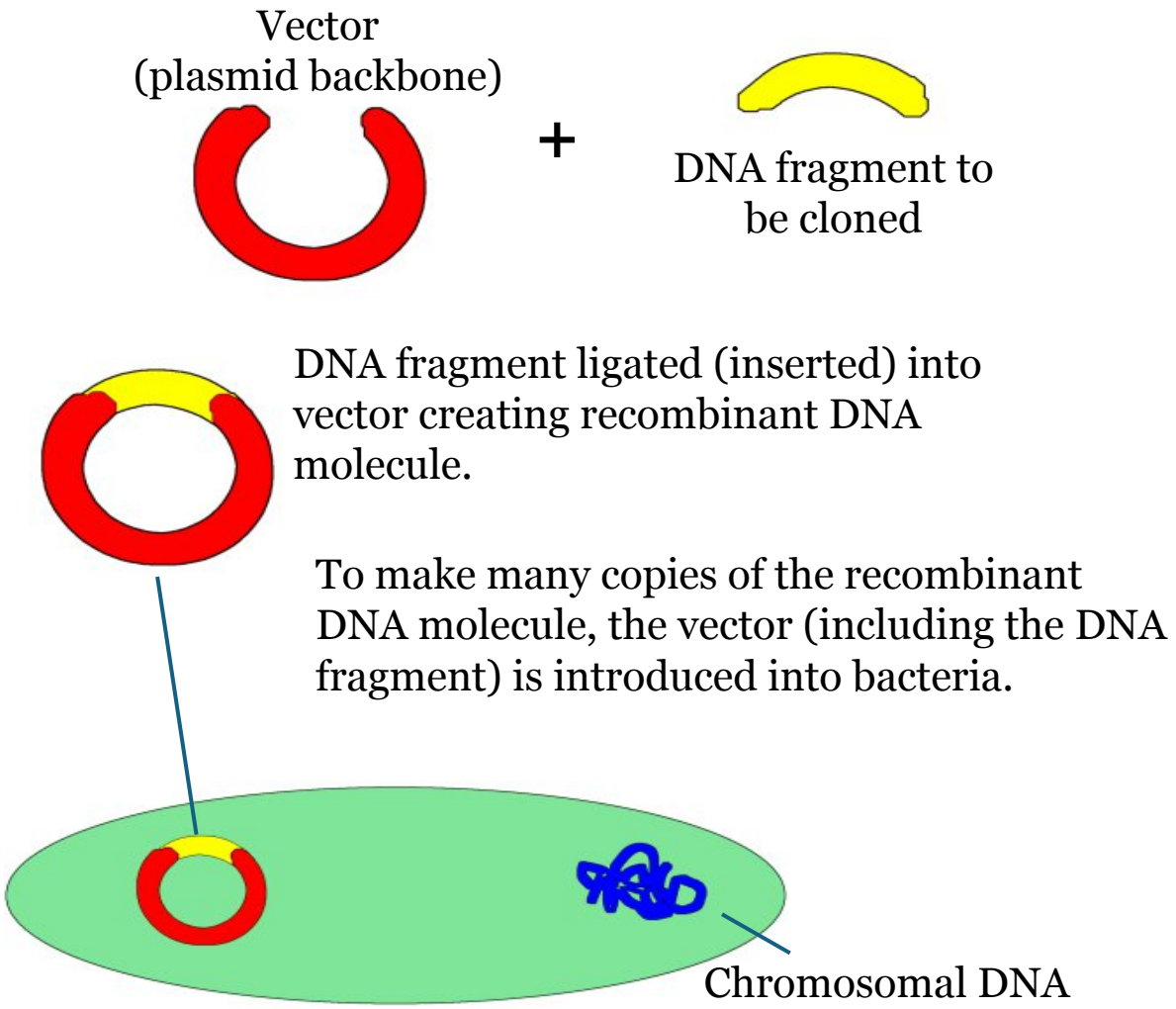


Cloning Involves Making Identical Copies

"Cloning" can mean several things:

- To make many identical copies of a DNA molecule or a particular stretch of DNA (DNA cloning or molecular cloning).
- To replicate an entire organism (reproductive cloning).
- To produce undifferentiated cells (stem cells) for the purpose of studying and treating diseases (therapeutic cloning).

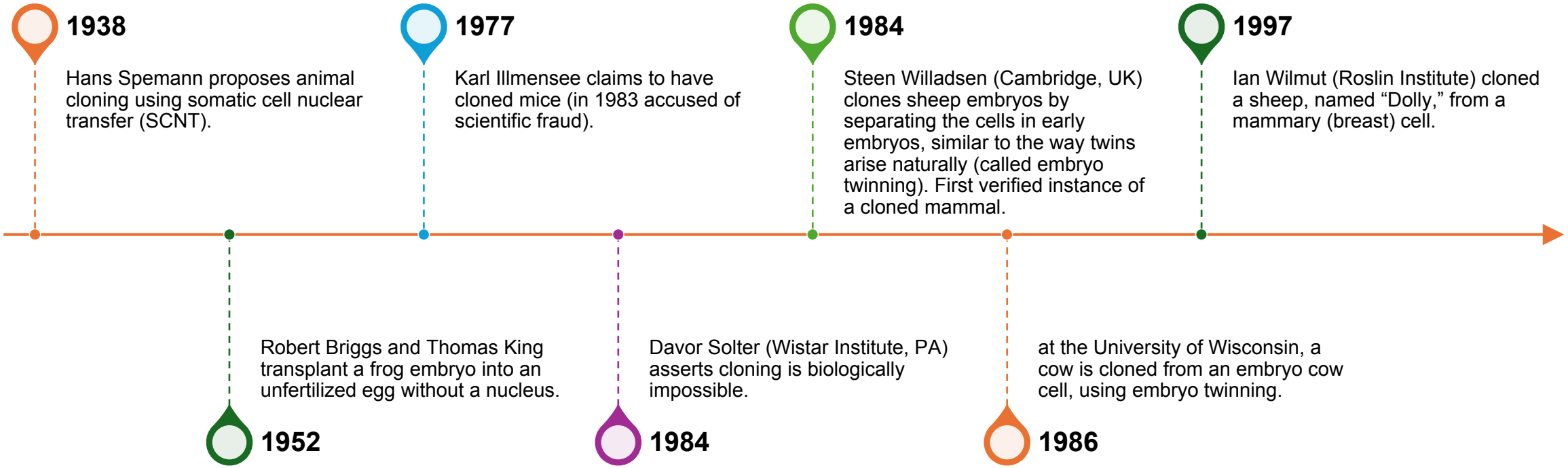
Recombinant DNA Technology



Recombinant DNA technology includes DNA cloning, gene cloning and molecular cloning.
DNA from one organism is transferred to a bacterial plasmid for replication.

Although viruses, bacterial artificial chromosomes, and yeast artificial chromosomes also may be used for replicating DNA, bacterial plasmids are most commonly used in this technology and are called vectors.

Brief History of Modern Cloning

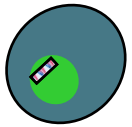


Somatic Cell Nuclear Transfer (SCNT)

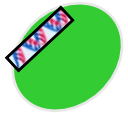
- A somatic cell is a any cell that is not a germ cell (egg or sperm).
- Somatic Cell Nuclear Transfer (SCNT) involves:
  - removing the nucleus from a somatic cell;
  - inserting the nucleus into an egg cell from which the original nucleus has been removed; and
  - “shocking” the implanted cell (chemically or electrically) so it will grow and multiply.
- The new cell is genetically identical to the donor.
- SCNT was first demonstrated in 1983 using amphibians.
- This process was attempted with mammals in 1986, but these experiments were limited to developing embryos.
- In 1997, the first successful mammal clone from an adult somatic cell was a sheep named Dolly. She was produced by implanting an embryo created by SCNT into a mother sheep.

Nuclear Transfer in Progress

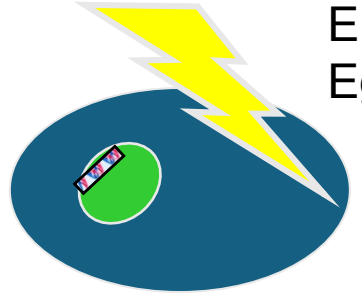
Somatic Cell Nuclear Transfer (SCNT): Dolly—The First True Clone (1997)



Breast Cell
(six-year-old Sheep)



Get the nucleus



Empty
Egg Cell

+

Cloned Sheep!

434

Number of successfully reconstructed eggs

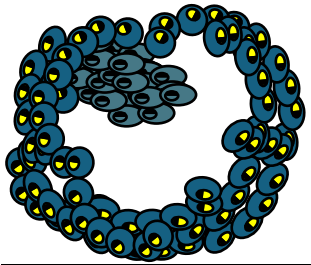
29

Number of reconstructed eggs that were able to be implanted in pseudo-pregnant sheep

1

Number of cloned sheep actually born

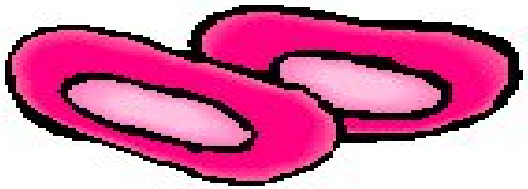
Embryonic Stem Cells Can Become Any Tissue in the Body



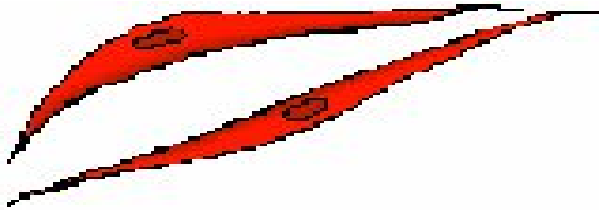
Blastocyst

Cultured Laboratory Stem Cells

Scientific manipulations entice stem cells to become specialized tissues (blood, muscle, brain etc.).



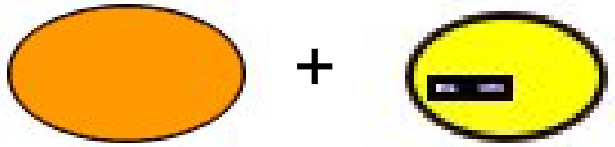
Blood Cells



Muscle Cells

Neuron (Brain) Cells

Stem Cells and Therapeutic Cloning



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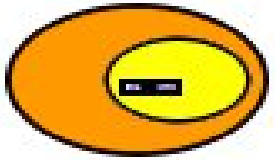
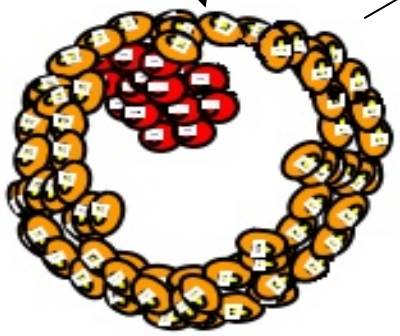




Blastocyst

Cultured laboratory stem cells

Replacing damaged cells
(i.e., after aggressive treatment)

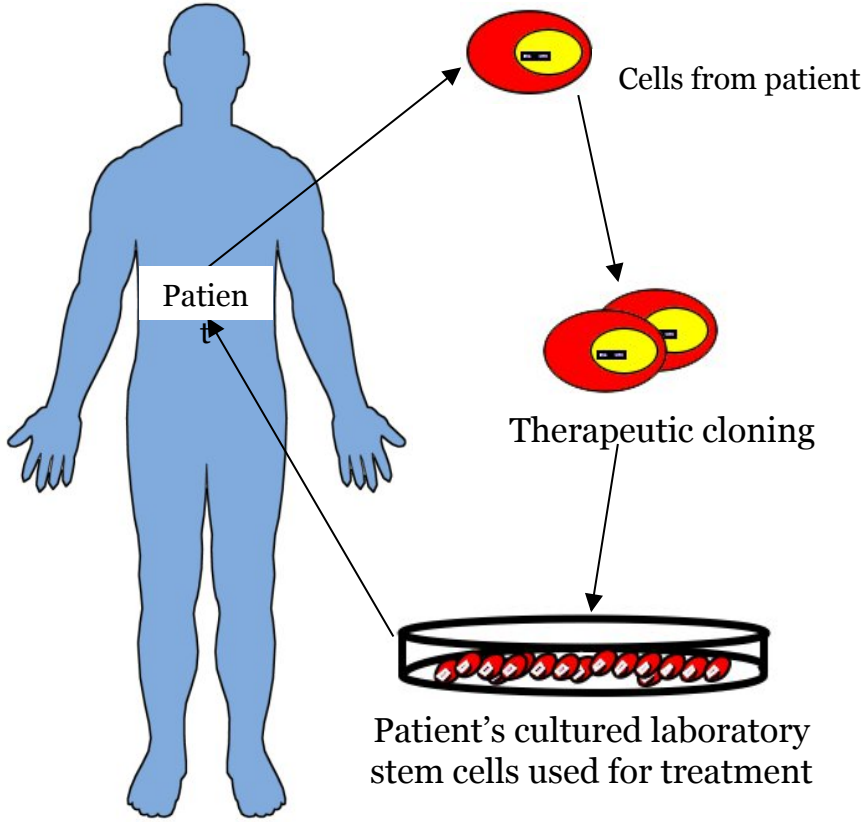
Tissue repair
(repairing diabetic pancreas)

Tissue engineering
(potentially growing a new organ)

Why Use Cloning Technology?

- Using the body's own cells to generate tissues not only provides a plentiful supply but also eliminates tissue rejection.

- The technology potentially could be used to treat a wide range of conditions, from heart damage to diabetes.



Therapeutic Cloning vs. Reproductive Cloning

- Yields stem cells that have the potential to repair damaged, diseased, or degenerating tissue.
- Could potentially offer a cure for a wide range of diseases.
- No tissue rejection problems.
- Practical clinical applications could take more than 10 years to develop.
- Aimed at production of stem cells only.

- Not generally condoned by scientists.
- Previous cell damage/exposure (UV light, toxic chemicals) is transferred to the clone.
- Potential for a wide range of health problems.
- Shortened life span (cells age more quickly).
- No potential for the treatment of disease. Not practical as a solution for fertility problems.
- Aimed at producing a completely new individual.

YARD Sciences
Science Reimagined

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