

TECH SCAN

ORGAN CLONING

Organ cloning technology, a groundbreaking subject in medical research, seeks to develop transplantable organs by cultivating tissues in vitro. The principal objective is to address the scarcity of donor organs through the application of cutting-edge methodologies such as scaffold-based methods and decellularization. Researchers combine cells with growth stimulants and supporting materials to imitate the three-dimensional architecture of native organs.

Regenerative medicine may be advanced, rejection risks could be decreased, and the organ scarcity crisis could be resolved with the help of this technology. Organ cloning aims to improve overall patient well-being and transform healthcare through the application of bioengineering and stem cell research.

In order to ensure responsible and ethical development, patenting is essential for protecting intellectual property, promoting innovation, and fostering ongoing research. Patents' exclusive rights create a competitive atmosphere that encourages continued improvements in the field of organ cloning technologies.



INNOVATION TIMELINE

First successful tissue culture of animal cells by George Gey. (1952)

Creation of the first functional tissue culture for growing cells. (1958)

(1962) Hayflick discovers cell division limit.

(1966) WI-38, first human cell line.

Recombinant DNA Technology (1970)

DNA Sequencing (Frederick Sanger) (1973)

(1977) Polymerase Chain Reaction (PCR) (Kary Mullis)

(1983) Human Genome Project Initiated

Discovery of CRISPR (1990)

Dolly the Sheep (Somatic Cell Nuclear Transfer) (1996)

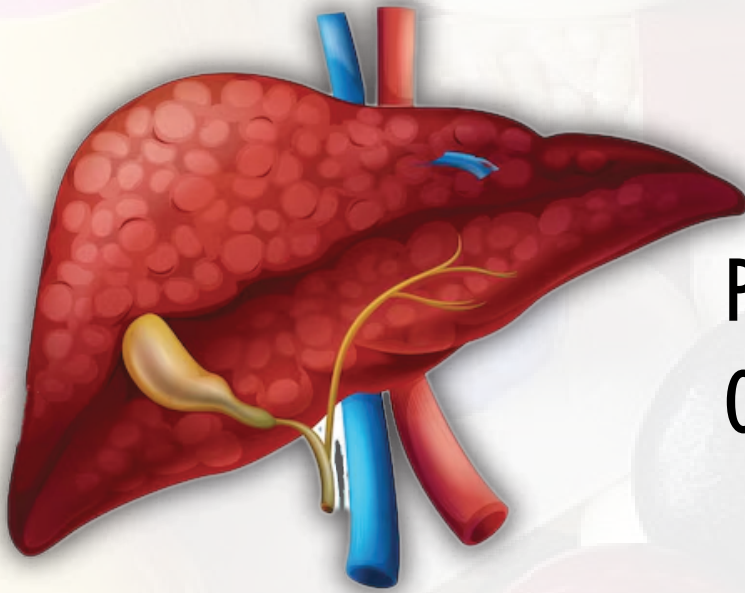
(2007) Induced Pluripotent Stem Cells (iPSCs)

(2013) First Lab-Grown Organ (Rat Kidney)

CRISPR-Cas9 Gene Editing (2015)

Pig-Human Hybrid Embryos (2017)

(2018) Bioengineered Lungs



PATENTABLE ASPECTS OF THE TECHNOLOGY

1

IPSC (induced pluripotent stem cells) generation innovations

2

Directed differentiation for organ lineages

3

3D culture and scaffolding

4

Vascularization strategies

5

Decellularization and recellularization techniques

6

Bio printing technologies

Bioreactors for organ maturation

7

Bioreactors for organ maturation

8

Perfusion methods for recellularization

9

IPSC line management systems

10

Consent and ownership models

11

Safety testing for bioengineered organs

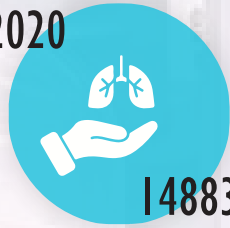
12

PATENT STATISTICS

2019



2020



2021



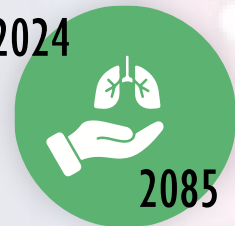
2022



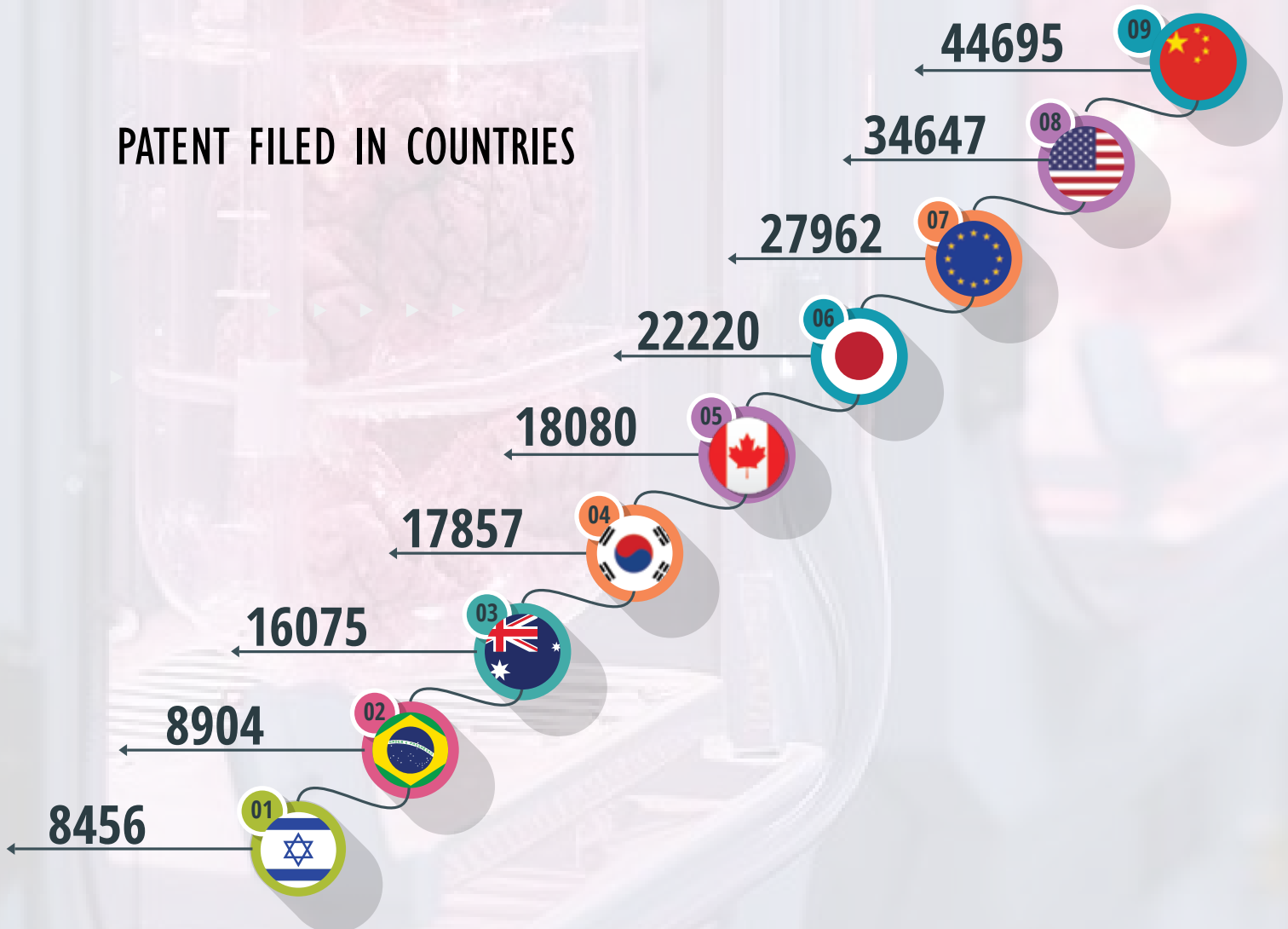
2023



2024



PATENT FILED IN COUNTRIES



TOP APPLICANTS

631

INSERM - INSTITUT NATIONAL DE LA SANTE & DE LA RECHERCHE MEDICALE

626

UNIVERSITY OF CALIFORNIA

512

BOARD OF TRUSTEES OF LELAND STANFORD JUNIOR UNIVERSITY

503

UNIVERSITY OF TEXAS

413

MIT - MASSACHUSETTS INSTITUTE OF TECHNOLOGY

399

BROAD INSTITUTE OF MIT & HARVARD

387

HOFFMANN LA ROCHE

374

REGENTS OF THE UNIVERSITY OF CALIFORNIA

360

REGENERON PHARMACEUTICALS

339

CNRS - CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE

NOTABLE INNOVATIONS

Patent Application	Priority Date	Title	Assignee
US11479819	Dec 15, 2017	Non-Invasive Method For Monitoring Transplanted Organ Status In Organ-Transplant Recipients	Acrannolife Genomics Pvt
US20220290186	Jun 12, 2018	Gene Editing Using A Modified Closed-Ended DNA (Cedna)	Generation Bio
US11819520	Feb 22, 2019	Cultured Thymus Tissue Transplantation Promotes Donor-Specific Tolerance To Allogeneic Solid Organ Transplants	Duke University
US20210155904	April 18, 2019	Production Of A Bioengineered Lung	University Of Texa
US20230338468	Sep 27, 2019	Cellular Reprogramming To Reverse Aging And Promote Organ And Tissue Regeneration	Harvard College
US20210340562	Oct 21, 2019	Engineered Long Interspersed Element (Line) Transposons And Methods Of Use	University of Texas
US20200392541	Feb 25, 2020	Delivery And Use Of The Crispr-Cas Systems, Vectors And Compositions For Hepatic Targeting And Therapy	Broad Institute of MIT & Harvard MIT - Massachusetts
US20230203573	May 27, 2021	Methods For Detection Of Donor-Derived Cell-Free DNA	Natera Natella
CN113430210	Sep 06,2021	Corn Lateral Organ Boundary Protein Gene Zmlbd24 And Application Thereof	Jilin University
WO2023/234319	May 31,2022	Method For Producing Transgenic Pig, Somatic Cell Cloning Materials, Transgenic Pig, Established Somatic Cells, And Tissue Or Organ	Pormedtec

WHITESPACES

Scale up stem cells efficiently

Explore non-embryonic cell sources

Enhance 3D bio printing precision

Develop biocompatible temporary scaffolds

Address immune rejection effectively

Promote vascularization and neural connections

Assess long-term safety protocols

Assess long-term safety protocols

Ensure equitable access and affordability

Ensure equitable access and affordability

Consider societal impact and ethics

If you would like to learn more about any of these areas or have specific questions we're here to provide further information and insights. Our team is dedicated to driving progress and staying at the forefront of Organ Cloning Technology.

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