

3D Bioprinted Human Tissue Market Forecasts to 2030 – Global Analysis By Technology (Magnetic Levitation Bioprinting, Inkjet Bioprinting, Syringe/Extrusion Bioprinting and Laser-Assisted Bioprinting), Application (Drug Testing and Development, Tissue Engineering, Cosmetic Surgery, Food Testing, Other Applications) and By Geography

<https://marketpublishers.com/r/3B7CC9DD18D4EN.html>

Date: February 2025

Pages: 150

Price: US\$ 4,150.00 (Single User License)

ID: 3B7CC9DD18D4EN

Abstracts

According to Statistics MRC, the Global 3D Bioprinted Human Tissue Market is accounted for \$2.59 billion in 2024 and is expected to reach \$4.67 billion by 2030 growing at a CAGR of 10.3% during the forecast period. 3D bioprinted human tissue is a revolutionary development in regenerative medicine and biomedical research. This technique uses bioinks—mixtures of living cells, biomaterials, and growth factors—to create tissue constructs layer by layer. These engineered tissues are very useful for testing drugs, simulating diseases, and understanding how cells interact with each other because they are very similar to natural human tissues in terms of structure, function, and biology. Additionally, in order to address the severe lack of donor tissues, research is being conducted to scale this innovation for clinical applications, such as producing patient-specific grafts or even entire organs for transplantation.

According to a review in *Frontiers in Mechanical Engineering*, '3D bioprinting, which is an extended application of additive manufacturing, is now being explored for tissue engineering and regenerative medicine as it involves the top-down approach of building the complex tissue in a layer-by-layer fashion'.

Market Dynamics:

Driver:**Growing interest in customized treatment**

The field of personalized medicine is expanding as medical practitioners seek to customize care to each patient's unique needs. Drug testing and disease modeling can be done more accurately owing to the development of patient-specific tissue models made possible by 3D bioprinted tissues. These models can be used to improve therapeutic efficacy and reduce side effects by simulating how various patients will react to particular treatments. Moreover, the demand for 3D bioprinted tissues in clinical and research settings is being driven by the capacity to print tissues that are genetically matched to patient profiles, which creates new possibilities for precision medicine.

Restraint:**Expensive bioprinting supplies and equipment**

One major barrier to the market for 3D bioprinting technology is still its cost. The cost of the specialized bioprinters needed to print human tissues can reach hundreds of thousands of dollars. Furthermore, the biopinks used in the printing process are expensive and need to be compatible with living cells and made for tissue growth. Smaller businesses or academic institutions that might not have the funds to invest in this technology find 3D bioprinting less accessible due to these costs. Furthermore, the high initial costs restrict the widespread use of bioprinted tissue, particularly in developing nations, and impede its scalability.

Opportunity:**Development in tailored healthcare**

3D bioprinting is positioned to be a key component of the quickly expanding field of personalized medicine. Doctors may be able to increase the success rates of organ transplants and medical treatments by producing tissues that are specifically suited to each patient's genetic composition. Physicians could test medications on these customized tissues before giving them to patients by using bioprinted tissues to simulate a patient's illness or genetic condition. This would improve the accuracy of medical treatments, decrease the amount of time spent in clinical trials, and help prevent adverse reactions. Additionally, more effective treatments for diseases that is currently hard to treat, like rare diseases and genetic disorders, may be developed as a

result of personalized tissue printing.

Threat:

Regulatory obstacles and approval hold-ups

The lengthy and intricate regulatory process is one of the biggest risks facing the 3D bioprinting industry, especially in the medical sector. Using living cells to create 3D bioprinted tissues and organs raises a number of ethical and regulatory issues. Bioprinted tissues must pass stringent testing to guarantee they adhere to safety, effectiveness, and ethical guidelines before being approved for use in human patients. These regulatory pathways are still unclear in many nations, which cause uncertainty for businesses creating bioprinting technologies. Moreover, slow regulatory approval processes for medical applications can postpone market entry and limit the possibility of quick expansion.

Covid-19 Impact:

The market for 3D bioprinted human tissue was affected by the COVID-19 pandemic in a variety of ways. On the one hand, the pandemic slowed down the advancement of bioprinting technologies by interfering with research and development activities because of lockdowns, travel restrictions, and resource reallocation to fight the virus. Due to the temporary closure of manufacturing facilities and laboratories, many businesses experienced delays in their clinical trials and production processes. However, the pandemic highlighted the need for alternatives to organ transplantation, tissue engineering, and conventional drug testing, which sparked interest in 3D bioprinted human tissues for disease modeling, drug discovery, and vaccine development.

The Inkjet Bioprinting segment is expected to be the largest during the forecast period

The Inkjet Bioprinting segment is expected to account for the largest market share during the forecast period because of its exceptional precision and accuracy in creating high-resolution tissue structures. By placing cells and biomaterials using droplet-based deposition, this technology makes it possible to create intricate tissue structures. Because of its affordability, scalability, and adaptability, inkjet bioprinting is highly preferred for uses such as tissue engineering, personalized medicine, and drug testing. Moreover, its dominance in the 3D bioprinting industry is a result of its versatility in working with bioinks and its proven track record in medical and research applications.

The Drug Testing and Development segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the Drug Testing and Development segment is predicted to witness the highest growth rate. The growing need for sophisticated drug testing platforms that more closely resemble human tissue responses than conventional models is driving this market. Pharmaceutical companies can create medications with greater accuracy and effectiveness by using 3D bioprinted tissues, which provide a more dependable and moral substitute for animal testing. Additionally, these tissue models also enable personalized medicine strategies, which lower development costs and expedite the release of new medications.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, propelled by substantial expenditures in cutting-edge biotechnology research, a robust presence of important industry participants, and the expanding use of 3D bioprinting technologies across a range of industries, including tissue engineering and drug testing. Furthermore, the region's market growth is further fuelled by established healthcare infrastructures, government programs that encourage medical innovation, and the presence of top academic and research institutions. As a center for bioprinting innovations, the United States stands out in particular, promoting the quick commercialization of 3D bioprinted tissue applications.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR. Rapid biotechnology advancements and a growing number of initiatives to improve medical research and healthcare capabilities are occurring in the region. Growing pharmaceutical and biotechnology industries in nations like China, Japan, and India, as well as rising investments in healthcare infrastructure, are major forces behind this growth. Moreover, the adoption of 3D bioprinting technologies is also being fuelled by the growing need for personalized medicine and better drug testing techniques, which is helping to drive the region's robust market expansion.

Key players in the market

Some of the key players in 3D Bioprinted Human Tissue market include 3D Systems, Inc., General Electric, Organovo Holdings, Inc., Vivax Bio, LLC, The Pexion Group,

Materialise NV, EnvisionTEC, Inc., Stratasys Ltd., Oceanz 3D printing Inc, Prellis Biologics Inc, SOLS Systems Inc and Inventia Life Science PTY Ltd.

Key Developments:

In June 2024, 3D Systems announced the signing of a multi-year purchase agreement, with a value estimated to approach a quarter-billion dollars through 2028, in support of the indirect manufacturing process for clear aligners. The contract builds upon the exceptional legacy the Company has established as a key supplier of 3D printing technology to the clear aligner industry.

In June 2024, Stratasys Ltd. and Aviation manufacturing pioneer AM Craft announced that they are partnering to align the two companies' efforts to grow the demand for flight-certified 3D printed parts in the aviation industry. The companies signed a definitive commercial collaboration agreement, along with Stratasys' strategic investment in AM Craft.

In January 2022, Prellis Biologics, Inc. (Prellis) announced that it has entered into multi-target drug discovery collaboration and licensing agreement with Bristol Myers Squibb utilizing Prellis Biologics' first-in-class externalized human immune system (EXIS™) based on human lymph node organoids (LNO™).

Technologies Covered:

Magnetic Levitation Bioprinting

Inkjet Bioprinting

Syringe/Extrusion Bioprinting

Laser-Assisted Bioprinting

Applications Covered:

Drug Testing and Development

Tissue Engineering

Cosmetic Surgery

Food Testing

Other Applications

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2022, 2023, 2024, 2026, and 2030
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations

- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

2 PREFACE

- 2.1 Abstract
- 2.2 Stake Holders
- 2.3 Research Scope
- 2.4 Research Methodology
 - 2.4.1 Data Mining
 - 2.4.2 Data Analysis
 - 2.4.3 Data Validation
 - 2.4.4 Research Approach
- 2.5 Research Sources
 - 2.5.1 Primary Research Sources
 - 2.5.2 Secondary Research Sources
 - 2.5.3 Assumptions

3 MARKET TREND ANALYSIS

- 3.1 Introduction
- 3.2 Drivers
- 3.3 Restraints
- 3.4 Opportunities
- 3.5 Threats
- 3.6 Technology Analysis
- 3.7 Application Analysis
- 3.8 Emerging Markets
- 3.9 Impact of Covid-19

4 PORTERS FIVE FORCE ANALYSIS

- 4.1 Bargaining power of suppliers
- 4.2 Bargaining power of buyers
- 4.3 Threat of substitutes
- 4.4 Threat of new entrants
- 4.5 Competitive rivalry

5 GLOBAL 3D BIOPRINTED HUMAN TISSUE MARKET, BY TECHNOLOGY

- 5.1 Introduction
- 5.2 Magnetic Levitation Bioprinting
- 5.3 Inkjet Bioprinting
- 5.4 Syringe/Extrusion Bioprinting
- 5.5 Laser-Assisted Bioprinting

6 GLOBAL 3D BIOPRINTED HUMAN TISSUE MARKET, BY APPLICATION

- 6.1 Introduction
- 6.2 Drug Testing and Development
- 6.3 Tissue Engineering
- 6.4 Cosmetic Surgery
- 6.5 Food Testing
- 6.6 Other Applications

7 GLOBAL 3D BIOPRINTED HUMAN TISSUE MARKET, BY GEOGRAPHY

- 7.1 Introduction
- 7.2 North America
 - 7.2.1 US
 - 7.2.2 Canada
 - 7.2.3 Mexico
- 7.3 Europe
 - 7.3.1 Germany
 - 7.3.2 UK
 - 7.3.3 Italy
 - 7.3.4 France
 - 7.3.5 Spain
 - 7.3.6 Rest of Europe
- 7.4 Asia Pacific
 - 7.4.1 Japan
 - 7.4.2 China
 - 7.4.3 India
 - 7.4.4 Australia
 - 7.4.5 New Zealand
 - 7.4.6 South Korea
 - 7.4.7 Rest of Asia Pacific

7.5 South America

7.5.1 Argentina

7.5.2 Brazil

7.5.3 Chile

7.5.4 Rest of South America

7.6 Middle East & Africa

7.6.1 Saudi Arabia

7.6.2 UAE

7.6.3 Qatar

7.6.4 South Africa

7.6.5 Rest of Middle East & Africa

8 KEY DEVELOPMENTS

8.1 Agreements, Partnerships, Collaborations and Joint Ventures

8.2 Acquisitions & Mergers

8.3 New Product Launch

8.4 Expansions

8.5 Other Key Strategies

9 COMPANY PROFILING

9.1 3D Systems, Inc.

9.2 General Electric

9.3 Organovo Holdings, Inc.

9.4 Vivax Bio, LLC

9.5 The Pexion Group

9.6 Materialise NV

9.7 EnvisionTEC, Inc.

9.8 Stratasys Ltd.

9.9 Oceanz 3D printing Inc

9.10 Prellis Biologics Inc

9.11 SOLS Systems Inc

9.12 Inventia Life Science PTY Ltd

List Of Tables

LIST OF TABLES

Table 1 Global 3D Bioprinted Human Tissue Market Outlook, By Region (2022-2030) (\$MN)

Table 2 Global 3D Bioprinted Human Tissue Market Outlook, By Technology (2022-2030) (\$MN)

Table 3 Global 3D Bioprinted Human Tissue Market Outlook, By Magnetic Levitation Bioprinting (2022-2030) (\$MN)

Table 4 Global 3D Bioprinted Human Tissue Market Outlook, By Inkjet Bioprinting (2022-2030) (\$MN)

Table 5 Global 3D Bioprinted Human Tissue Market Outlook, By Syringe/Extrusion Bioprinting (2022-2030) (\$MN)

Table 6 Global 3D Bioprinted Human Tissue Market Outlook, By Laser-Assisted Bioprinting (2022-2030) (\$MN)

Table 7 Global 3D Bioprinted Human Tissue Market Outlook, By Application (2022-2030) (\$MN)

Table 8 Global 3D Bioprinted Human Tissue Market Outlook, By Drug Testing and Development (2022-2030) (\$MN)

Table 9 Global 3D Bioprinted Human Tissue Market Outlook, By Tissue Engineering (2022-2030) (\$MN)

Table 10 Global 3D Bioprinted Human Tissue Market Outlook, By Cosmetic Surgery (2022-2030) (\$MN)

Table 11 Global 3D Bioprinted Human Tissue Market Outlook, By Food Testing (2022-2030) (\$MN)

Table 12 Global 3D Bioprinted Human Tissue Market Outlook, By Other Applications (2022-2030) (\$MN)

Table 13 North America 3D Bioprinted Human Tissue Market Outlook, By Country (2022-2030) (\$MN)

Table 14 North America 3D Bioprinted Human Tissue Market Outlook, By Technology (2022-2030) (\$MN)

Table 15 North America 3D Bioprinted Human Tissue Market Outlook, By Magnetic Levitation Bioprinting (2022-2030) (\$MN)

Table 16 North America 3D Bioprinted Human Tissue Market Outlook, By Inkjet Bioprinting (2022-2030) (\$MN)

Table 17 North America 3D Bioprinted Human Tissue Market Outlook, By Syringe/Extrusion Bioprinting (2022-2030) (\$MN)

Table 18 North America 3D Bioprinted Human Tissue Market Outlook, By Laser-

Assisted Bioprinting (2022-2030) (\$MN)

Table 19 North America 3D Bioprinted Human Tissue Market Outlook, By Application (2022-2030) (\$MN)

Table 20 North America 3D Bioprinted Human Tissue Market Outlook, By Drug Testing and Development (2022-2030) (\$MN)

Table 21 North America 3D Bioprinted Human Tissue Market Outlook, By Tissue Engineering (2022-2030) (\$MN)

Table 22 North America 3D Bioprinted Human Tissue Market Outlook, By Cosmetic Surgery (2022-2030) (\$MN)

Table 23 North America 3D Bioprinted Human Tissue Market Outlook, By Food Testing (2022-2030) (\$MN)

Table 24 North America 3D Bioprinted Human Tissue Market Outlook, By Other Applications (2022-2030) (\$MN)

Table 25 Europe 3D Bioprinted Human Tissue Market Outlook, By Country (2022-2030) (\$MN)

Table 26 Europe 3D Bioprinted Human Tissue Market Outlook, By Technology (2022-2030) (\$MN)

Table 27 Europe 3D Bioprinted Human Tissue Market Outlook, By Magnetic Levitation Bioprinting (2022-2030) (\$MN)

Table 28 Europe 3D Bioprinted Human Tissue Market Outlook, By Inkjet Bioprinting (2022-2030) (\$MN)

Table 29 Europe 3D Bioprinted Human Tissue Market Outlook, By Syringe/Extrusion Bioprinting (2022-2030) (\$MN)

Table 30 Europe 3D Bioprinted Human Tissue Market Outlook, By Laser-Assisted Bioprinting (2022-2030) (\$MN)

Table 31 Europe 3D Bioprinted Human Tissue Market Outlook, By Application (2022-2030) (\$MN)

Table 32 Europe 3D Bioprinted Human Tissue Market Outlook, By Drug Testing and Development (2022-2030) (\$MN)

Table 33 Europe 3D Bioprinted Human Tissue Market Outlook, By Tissue Engineering (2022-2030) (\$MN)

Table 34 Europe 3D Bioprinted Human Tissue Market Outlook, By Cosmetic Surgery (2022-2030) (\$MN)

Table 35 Europe 3D Bioprinted Human Tissue Market Outlook, By Food Testing (2022-2030) (\$MN)

Table 36 Europe 3D Bioprinted Human Tissue Market Outlook, By Other Applications (2022-2030) (\$MN)

Table 37 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Country (2022-2030) (\$MN)

Table 38 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Technology (2022-2030) (\$MN)

Table 39 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Magnetic Levitation Bioprinting (2022-2030) (\$MN)

Table 40 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Inkjet Bioprinting (2022-2030) (\$MN)

Table 41 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Syringe/Extrusion Bioprinting (2022-2030) (\$MN)

Table 42 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Laser-Assisted Bioprinting (2022-2030) (\$MN)

Table 43 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Application (2022-2030) (\$MN)

Table 44 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Drug Testing and Development (2022-2030) (\$MN)

Table 45 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Tissue Engineering (2022-2030) (\$MN)

Table 46 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Cosmetic Surgery (2022-2030) (\$MN)

Table 47 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Food Testing (2022-2030) (\$MN)

Table 48 Asia Pacific 3D Bioprinted Human Tissue Market Outlook, By Other Applications (2022-2030) (\$MN)

Table 49 South America 3D Bioprinted Human Tissue Market Outlook, By Country (2022-2030) (\$MN)

Table 50 South America 3D Bioprinted Human Tissue Market Outlook, By Technology (2022-2030) (\$MN)

Table 51 South America 3D Bioprinted Human Tissue Market Outlook, By Magnetic Levitation Bioprinting (2022-2030) (\$MN)

Table 52 South America 3D Bioprinted Human Tissue Market Outlook, By Inkjet Bioprinting (2022-2030) (\$MN)

Table 53 South America 3D Bioprinted Human Tissue Market Outlook, By Syringe/Extrusion Bioprinting (2022-2030) (\$MN)

Table 54 South America 3D Bioprinted Human Tissue Market Outlook, By Laser-Assisted Bioprinting (2022-2030) (\$MN)

Table 55 South America 3D Bioprinted Human Tissue Market Outlook, By Application (2022-2030) (\$MN)

Table 56 South America 3D Bioprinted Human Tissue Market Outlook, By Drug Testing and Development (2022-2030) (\$MN)

Table 57 South America 3D Bioprinted Human Tissue Market Outlook, By Tissue

Engineering (2022-2030) (\$MN)

Table 58 South America 3D Bioprinted Human Tissue Market Outlook, By Cosmetic Surgery (2022-2030) (\$MN)

Table 59 South America 3D Bioprinted Human Tissue Market Outlook, By Food Testing (2022-2030) (\$MN)

Table 60 South America 3D Bioprinted Human Tissue Market Outlook, By Other Applications (2022-2030) (\$MN)

Table 61 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Country (2022-2030) (\$MN)

Table 62 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Technology (2022-2030) (\$MN)

Table 63 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Magnetic Levitation Bioprinting (2022-2030) (\$MN)

Table 64 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Inkjet Bioprinting (2022-2030) (\$MN)

Table 65 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Syringe/Extrusion Bioprinting (2022-2030) (\$MN)

Table 66 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Laser-Assisted Bioprinting (2022-2030) (\$MN)

Table 67 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Application (2022-2030) (\$MN)

Table 68 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Drug Testing and Development (2022-2030) (\$MN)

Table 69 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Tissue Engineering (2022-2030) (\$MN)

Table 70 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Cosmetic Surgery (2022-2030) (\$MN)

Table 71 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Food Testing (2022-2030) (\$MN)

Table 72 Middle East & Africa 3D Bioprinted Human Tissue Market Outlook, By Other Applications (2022-2030) (\$MN)

I would like to order

Product name: 3D Bioprinted Human Tissue Market Forecasts to 2030 – Global Analysis By Technology (Magnetic Levitation Bioprinting, Inkjet Bioprinting, Syringe/Extrusion Bioprinting and Laser-Assisted Bioprinting), Application (Drug Testing and Development, Tissue Engineering, Cosmetic Surgery, Food Testing, Other Applications) and By Geography

Product link: <https://marketpublishers.com/r/3B7CC9DD18D4EN.html>

Price: US\$ 4,150.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/3B7CC9DD18D4EN.html>