Tissue engineering and regeneration: Technologies and global markets

The global market for tissue engineering and regeneration technologies was valued at $4.8 billion in 2024 and is expected to grow at a compound annual growth rate (CAGR) of 12.8% to reach $9.8 billion by the end of 2030.

Tissue engineering and regeneration is a multidisciplinary field focused on producing biological substitutes to restore, maintain, or enhance tissue and organ function. Several emerging technologies are gaining ground as main areas for research and development:

- **3D bioprinting** combines bioinks (natural or synthetic) with living cells to build tissue-like structures.
- **Organs-on-chips** are microfluidic systems that contain engineered or natural miniature tissues, allowing precise control of the cell environment to replicate human physiology.
- **Smart biomaterials** respond to physiological changes and external stimuli, such as temperature and pH.
- **Artificial intelligence** aids in biomaterial development by analyzing vast datasets to simulate biological behavior, personalize treatments, and reduce regulatory delays.

The high prevalence of musculoskeletal disorders, combined with a growing geriatric population, contributes to the dominance of the orthopedics and musculoskeletal disorders segment (Table 1).

The competitive landscape of the tissue engineering market comprises many companies, with the top five leading manufacturers in 2024 shown in Table 2.

The Asia-Pacific region has one of the highest burdens of non-communicable diseases worldwide. As a result, the region has witnessed an expanding biotechnology sector and more government policies supporting tissue engineering research.

Table 1. Global market for tissue engineering and regeneration, by application, through 2030 ($ millions)

Application	2024	2025	2030	CAGR % (2025–2030)
Orthopedics and musculoskeletal disorders	2,062.1	2,349.0	4,578.4	14.3
Dermatology and wound care	1,581.9	1,777.7	3,215.0	12.6
Dental disorders	446.6	489.8	778.7	9.7
Cardiovascular diseases	379.5	422.1	722.0	11.3
Others*	331.8	358.6	542.1	8.6
Total	4,802.0	5,397.2	9,836.2	12.8

*Other applications include neurological, ocular, reconstruction surgery, and gastrointestinal disorders.

Table 2. Top five leading manufacturers of tissue engineering and regeneration market, 2024

Ranking	Company	Strengths
1	Organogenesis Inc.	Leverages robust R&D and established platform technologies, including bioengineered cellular products and antimicrobial solutions, to support a diverse product portfolio.
2	Integra LifeSciences	Provides solutions to complex wounds, surgical reconstruction, and nerve repair through a regenerative platform based on bovine collagen, bovine dermis, porcine urinary bladder, human amniotic tissue, and resorbable synthetic mesh.
3	Smith+Nephew	Has an advanced skin substitute portfolio that support wound healing across acute, chronic, and surgical applications.
4	MiMedx	Offers a broad portfolio of placental-based allografts, supported by extensive clinical evidence and reimbursement services.
5	Johnson & Johnson	Leverages its global MedTech leadership, advanced biomaterial expertise, and strong bone tissue engineering portfolio to support tissue repair and regeneration.

About the author

BCC Publishing Staff provides comprehensive analyses of global market sizing, forecasting, and industry intelligence, covering markets where advances in science and technology are improving the quality, standard, and sustainability of businesses, economies, and lives. Contact the staff at utkantha.srivastava@bccresearch.com.

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