

Synthetic Biology Market

Market Report | 2023-02-06 | 441 pages | MarketsandMarkets

AVAILABLE LICENSES:

- Single User \$4950.00
- Multi User \$6650.00
- Corporate License \$8150.00
- Enterprise Site License \$10000.00

Report description:

The global synthetic biology market size is projected to reach USD 35.7 billion by 2027 from USD 11.4 billion in 2022, at a CAGR of 25.6% during the forecast period. Factors such as increasing investment in synthetic biology research, declining cost of DNA sequencing, increasing adoption of synthetic biology across various industries are driving the market growth at faster pace.

"The oligonucleotides and synthetic DNA segment is likely to grow at highest CAGR during the forecast period of 2022-2027." On the basis of tools, the synthetic biology market is segmented into oligonucleotides & synthetic DNA, enzymes, cloning technology kits, synthetic cells, chassis organisms, and xeno-nucleic acids. The oligonucleotides and synthetic DNA segment is projected to grow at highest CAGR during the forecast period. The growth is attributed to increased demand for synthetic DNA, synthetic RNA, and synthetic genes across various industries. Furthermore, launch of novel products in the market is further likely to have positive impact on the segmental growth.

"The gene synthesis segment held dominant share in 2021."

Based on technology, the market is segmented into gene synthesis, genome engineering, sequencing, bioinformatics, cloning, site-directed mutagenesis, measurement and modeling, microfluidics, nanotechnology. The genome engineering segment is expected to grow at faster pace during the the forecast period due to factors such as the use of these techniques in therapeutics development, advancement in CRISPR technologies is increasing adoption.

"in 2021, medical applications segment held dominant share."

Based on application, the synthetic biology market is segmented into medical applications, industrial applications, food & agriculture, and environmental applications. The medical applications segment held domiant share in synthetic biology market . Adoption of synthetic biology in research and drug discovery & development is one of the major factor anticipated to project the market growth.

"Asia Pacific region is likely to grow at faster pace."

The synthetic biology market is divided into North America, Europe, the Asia Pacific, Latin America, and the Middle East & Africa.

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

In 2021, North America accounted for the dominant share in synthetic biology market. The dominance of the region is attributable to various factors such as presence of dominant and key market players in the region coupled augmented use of synthetic biology in various application. Asia Pacific region is likely to grow at faster pace owing to various factors such as rise in demand for synthetic cells across the region, increased research and development funding and emergence of new market players in the synthetic biology market.

The primary interviews conducted for this report can be categorized as follows:

-□By Respondent: Supply Side- 60%, and Demand Side - 40%

-□By Designation (Supply Side): Managers - 45%, CXOs & Directors - 25%, Executives- 15%, Other -15.0%

-□By Region: North America -40%, Europe -25%, Asia-Pacific -20%, Latin America -10%, and Middle East and Africa -5%

Lists of Companies Profiled in the Report:

-□Thermo Fisher Scientific (US)

-□Merck KGaA (Germany)

-□Agilent Technologies (US)

-□Novozymes (Denmark)

-□Ginkgo Bioworks (US)

-□Amyris (US)

-□Precigen (US)

-□GenScript Biotech Corporation (China)

-□Twist Bioscience (US)

-□Synthetic Genomics (US)

-□Codexis (US)

-□Synthego (US)

-□Creative Enzymes (US)

-□Eurofins Scientific (Luxembourg)

-□Cyrus Biotechnology (US)

-□ATUM (US)

-□TeselaGen (US)

-□Arzeda (US)

-□Integrated DNA Technologies (US)

-□New England Biolabs (US)

-□Elevate Bio (US)

-□ZENFOLD (Iosynth) (India)

-□Synbio Technologies (US)

-□Inscripta, Inc. (US)

-□CRISPR Therapeutics (Switzerland).

Research Coverage:

This report provides a detailed picture of the synthetic biology market. It aims at estimating the size and future growth potential of the market across different segments, such as tool, technology, application, and region. The report also includes an in-depth competitive analysis of the key market players, along with their company profiles, recent developments, and key market strategies.

Key Benefits of Buying the Report:

The report will help market leaders/new entrants by providing them with the closest approximations of the revenue numbers for the overall synthetic biology market and its subsegments. It will also help stakeholders better understand the competitive landscape and gain more insights to better position their business and make suitable go-to-market strategies. This report will enable stakeholders to understand the market's pulse and provide them with information on the key market drivers, restraints,

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

opportunities, and challenges.

Table of Contents:

1	INTRODUCTION	56
1.1	STUDY OBJECTIVES	56
1.2	MARKET DEFINITION AND SCOPE	56
1.2.1	INCLUSIONS AND EXCLUSIONS	56
1.2.2	MARKETS COVERED	57
1.2.3	YEARS CONSIDERED	58
1.3	CURRENCY	58
1.4	STAKEHOLDERS	58
1.5	LIMITATIONS	59
1.6	SUMMARY OF CHANGES	59
1.7	RECESSION IMPACT	60
2	RESEARCH METHODOLOGY	61
2.1	RESEARCH APPROACH	61
FIGURE 1	RESEARCH DESIGN	61
2.1.1	SECONDARY DATA	62
2.1.2	PRIMARY RESEARCH	63
FIGURE 2	SYNTHETIC BIOLOGY MARKET: PRIMARY RESPONDENTS	63
2.2	MARKET ESTIMATION METHODOLOGY	64
2.2.1	AVERAGE MARKET SIZE ESTIMATION (2021)	65
2.2.2	REVENUE MAPPING-BASED MARKET ESTIMATION	66
FIGURE 3	MARKET SIZE ESTIMATION: REVENUE-BASED ESTIMATION METHODOLOGY	66
2.3	DATA TRIANGULATION	67
FIGURE 4	DATA TRIANGULATION METHODOLOGY	67
2.4	GROWTH RATE ASSUMPTIONS	68
2.5	GROWTH FORECAST	68
FIGURE 5	GROWTH RATE ANALYSIS FOR SYNTHETIC BIOLOGY MARKET	68
2.6	RISK ASSESSMENT	68
2.7	INSIGHTS FROM PRIMARY EXPERTS	69
2.8	RECESSION IMPACT	69
TABLE 1	GLOBAL INFLATION RATE PROJECTIONS, 2021-2027	69
3	EXECUTIVE SUMMARY	71
FIGURE 6	SYNTHETIC BIOLOGY MARKET, BY TOOL, 2022 VS. 2027 (USD MILLION)	71
FIGURE 7	SYNTHETIC BIOLOGY MARKET, BY TECHNOLOGY, 2022 VS. 2027 (USD MILLION)	72
FIGURE 8	SYNTHETIC BIOLOGY MARKET, BY APPLICATION, 2022 VS. 2027 (USD MILLION)	73
FIGURE 9	REGIONAL SNAPSHOT OF SYNTHETIC BIOLOGY MARKET	74
4	PREMIUM INSIGHTS	75
4.1	SYNTHETIC BIOLOGY MARKET OVERVIEW	75
FIGURE 10	DIVERSE APPLICATIONS OF SYNTHETIC BIOLOGY TO DRIVE MARKET	75
4.2	NORTH AMERICA: SYNTHETIC BIOLOGY MARKET, BY APPLICATION AND COUNTRY (2021)	76
FIGURE 11	US ACCOUNTED FOR LARGEST SHARE OF NORTH AMERICAN SYNTHETIC BIOLOGY MARKET IN 2021	76
4.3	SYNTHETIC BIOLOGY MARKET SHARE, BY APPLICATION, 2021	77
FIGURE 12	MEDICAL APPLICATIONS SEGMENT ACCOUNTED FOR LARGEST MARKET SHARE IN 2021	77
4.4	SYNTHETIC BIOLOGY MARKET: REGIONAL GROWTH OPPORTUNITIES	78
FIGURE 13	ASIA PACIFIC TO WITNESS HIGHEST GROWTH DURING FORECAST PERIOD	78

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

5	MARKET OVERVIEW	79
5.1	INTRODUCTION	79
5.2	MARKET DYNAMICS	79
	FIGURE 14 SYNTHETIC BIOLOGY MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES	79
	TABLE 2 SYNTHETIC BIOLOGY MARKET: IMPACT ANALYSIS	80
5.2.1	DRIVERS	80
5.2.1.1	Diverse applications of synthetic biology	80
5.2.1.2	Increased funding for research in synthetic biology	82
5.2.1.3	Declining cost of DNA sequencing and synthesizing	83
	FIGURE 15 REDUCTION IN COST PER RAW MEGABASE OF DNA SEQUENCING (USD), 2010-2020	83
5.2.1.4	Innovations in synthetic biology	83
5.2.2	RESTRAINTS	84
5.2.2.1	Biosafety, biosecurity, and ethical concerns	84
5.2.3	OPPORTUNITIES	85
5.2.3.1	Increasing demand for fuel alternatives	85
5.2.3.2	Growth in research on synthetic drugs and vaccines	86
	TABLE 3 CLINICAL TRIALS UTILIZING ANTIGENS OR BIOLOGICAL MATERIALS IN VACCINES	86
5.2.3.3	Use of machine learning in research and development	87
5.2.4	CHALLENGES	87
5.2.4.1	Standardization of biological parts	87
5.3	TECHNOLOGY ANALYSIS	88
	TABLE 4 COMPARISON OF MODERN GENE EDITING TOOLS	88
	TABLE 5 MACHINE LEARNING METHODS CURRENTLY APPLIED IN METABOLIC MODELS OF INDUSTRIAL MICROORGANISMS	89
5.4	ECOSYSTEM ANALYSIS	90
	FIGURE 16 ECOSYSTEM ANALYSIS: SYNTHETIC BIOLOGY MARKET	90
	TABLE 6 SYNTHETIC BIOLOGY MARKET: ROLE IN ECOSYSTEM	90
5.5	PATENT ANALYSIS	92
5.6	PRICING ANALYSIS	93
	TABLE 7 AVERAGE SELLING PRICE OF SYNTHETIC BIOLOGY PRODUCTS (2021)	93
	TABLE 8 SELLING PRICE OF VARIOUS PRODUCTS/SERVICES, BY KEY PLAYER	93
5.7	PORTER'S FIVE FORCES ANALYSIS	94
	TABLE 9 SYNTHETIC BIOLOGY MARKET: PORTER'S FIVE FORCES ANALYSIS	94
5.7.1	THREAT OF NEW ENTRANTS	95
5.7.2	THREAT OF SUBSTITUTES	95
5.7.3	BARGAINING POWER OF SUPPLIERS	95
5.7.4	BARGAINING POWER OF BUYERS	95
5.7.5	INTENSITY OF COMPETITIVE RIVALRY	95
5.8	VALUE CHAIN ANALYSIS	96
	FIGURE 17 VALUE CHAIN ANALYSIS OF SYNTHETIC BIOLOGY MARKET: MANUFACTURING AND ASSEMBLY PHASES ADD MAXIMUM VALUE	96
5.9	REGULATORY ANALYSIS	97
5.9.1	REGULATIONS FOR PRODUCTS DEVELOPED USING SYNTHETIC BIOLOGY TECHNIQUES	97
	TABLE 10 REGULATIONS FOR PRODUCTS DEVELOPED USING SYNTHETIC BIOLOGY TECHNIQUES	98
5.9.2	REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS	98
	TABLE 11 NORTH AMERICA: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS	98
	TABLE 12 EUROPE: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS	99
	TABLE 13 ASIA PACIFIC: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS	99

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

5.10	KEY CONFERENCES AND EVENTS IN 2022-2023	100
TABLE 14	SYNTHETIC BIOLOGY MARKET: DETAILED LIST OF CONFERENCES AND EVENTS	100
5.11	KEY STAKEHOLDERS AND BUYING CRITERIA	101
5.11.1	KEY STAKEHOLDERS IN BUYING PROCESS	101
FIGURE 18	INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP THREE APPLICATIONS	101
TABLE 15	INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP THREE APPLICATIONS	101
5.11.2	BUYING CRITERIA	102
FIGURE 19	KEY BUYING CRITERIA FOR TOP THREE APPLICATIONS	102
5.12	TRENDS/DISRUPTIONS IMPACTING CUSTOMER BUSINESS	102
6	SYNTHETIC BIOLOGY MARKET, BY TOOL	103
6.1	INTRODUCTION	104
TABLE 16	SYNTHETIC BIOLOGY MARKET, BY TOOL, 2020-2027 (USD MILLION)	104
6.2	OLIGONUCLEOTIDES AND SYNTHETIC DNA	104
6.2.1	INCREASING DEMAND FOR SYNTHETIC DNA TO SUPPORT MARKET GROWTH	104
TABLE 17	SYNTHETIC BIOLOGY MARKET FOR OLIGONUCLEOTIDES AND SYNTHETIC DNA, BY REGION, 2020-2027 (USD MILLION)	105
TABLE 18	NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR OLIGONUCLEOTIDES AND SYNTHETIC DNA, BY COUNTRY, 2020-2027 (USD MILLION)	106
TABLE 19	EUROPE: SYNTHETIC BIOLOGY MARKET FOR OLIGONUCLEOTIDES AND SYNTHETIC DNA, BY COUNTRY, 2020-2027 (USD MILLION)	106
TABLE 20	ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR OLIGONUCLEOTIDES AND SYNTHETIC DNA, BY COUNTRY, 2020-2027 (USD MILLION)	107
TABLE 21	LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR OLIGONUCLEOTIDES AND SYNTHETIC DNA, BY COUNTRY, 2020-2027 (USD MILLION)	107
6.3	ENZYMES	107
6.3.1	LAUNCH OF NOVEL ENZYMES TO PROPEL MARKET	107
TABLE 22	SYNTHETIC BIOLOGY MARKET FOR ENZYMES, BY REGION, 2020-2027 (USD MILLION)	108
TABLE 23	NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR ENZYMES, BY COUNTRY, 2020-2027 (USD MILLION)	109
TABLE 24	EUROPE: SYNTHETIC BIOLOGY MARKET FOR ENZYMES, BY COUNTRY, 2020-2027 (USD MILLION)	109
TABLE 25	ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR ENZYMES, BY COUNTRY, 2020-2027 (USD MILLION)	110
TABLE 26	LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR ENZYMES, BY COUNTRY, 2020-2027 (USD MILLION)	110
6.4	CLONING TECHNOLOGY KITS	111
6.4.1	NEED FOR CREATION OF ARTIFICIAL DNA AND ASSEMBLY TO DRIVE MARKET	111
TABLE 27	SYNTHETIC BIOLOGY MARKET FOR CLONING TECHNOLOGY KITS, BY REGION, 2020-2027 (USD MILLION)	111
TABLE 28	NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR CLONING TECHNOLOGY KITS, BY COUNTRY, 2020-2027 (USD MILLION)	112
TABLE 29	EUROPE: SYNTHETIC BIOLOGY MARKET FOR CLONING TECHNOLOGY KITS, BY COUNTRY, 2020-2027 (USD MILLION)	112
TABLE 30	ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR CLONING TECHNOLOGY KITS, BY COUNTRY, 2020-2027 (USD MILLION)	113
TABLE 31	LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR CLONING TECHNOLOGY KITS, BY COUNTRY, 2020-2027 (USD MILLION)	113
6.5	SYNTHETIC CELLS	113
6.5.1	RIISING DEMAND FOR SYNTHETIC CELLS TO SUPPORT MARKET GROWTH	113
TABLE 32	SYNTHETIC BIOLOGY MARKET FOR SYNTHETIC CELLS, BY REGION, 2020-2027 (USD MILLION)	114
TABLE 33	NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR SYNTHETIC CELLS, BY COUNTRY, 2020-2027 (USD MILLION)	115
TABLE 34	EUROPE: SYNTHETIC BIOLOGY MARKET FOR SYNTHETIC CELLS, BY COUNTRY, 2020-2027 (USD MILLION)	115
TABLE 35	ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR SYNTHETIC CELLS, BY COUNTRY, 2020-2027 (USD MILLION)	116
TABLE 36	LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR SYNTHETIC CELLS, BY COUNTRY, 2020-2027 (USD MILLION)	116

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

?

6.6 CHASSIS ORGANISMS 117

6.6.1 INCREASING DEMAND FOR FOSSIL FUELS TO PROPEL MARKET 117

TABLE 37 SYNTHETIC BIOLOGY MARKET FOR CHASSIS ORGANISMS, BY REGION, 2020-2027 (USD MILLION) 117

TABLE 38 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR CHASSIS ORGANISMS, BY COUNTRY, 2020-2027 (USD MILLION) 118

TABLE 39 EUROPE: SYNTHETIC BIOLOGY MARKET FOR CHASSIS ORGANISMS, BY COUNTRY, 2020-2027 (USD MILLION) 118

TABLE 40 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR CHASSIS ORGANISMS, BY COUNTRY, 2020-2027 (USD MILLION) 119

TABLE 41 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR CHASSIS ORGANISMS, BY COUNTRY, 2020-2027 (USD MILLION) 119

6.7 XENO NUCLEIC ACIDS 120

6.7.1 GROWING DEMAND FOR BREAKTHROUGH MEDICINES TO SUPPORT MARKET GROWTH 120

TABLE 42 SYNTHETIC BIOLOGY MARKET FOR XENO NUCLEIC ACIDS, BY REGION, 2020-2027 (USD MILLION) 120

TABLE 43 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR XENO NUCLEIC ACIDS, BY COUNTRY, 2020-2027 (USD MILLION) 121

TABLE 44 EUROPE: SYNTHETIC BIOLOGY MARKET FOR XENO NUCLEIC ACIDS, BY COUNTRY, 2020-2027 (USD MILLION) 121

TABLE 45 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR XENO NUCLEIC ACIDS, BY COUNTRY, 2020-2027 (USD MILLION) 122

TABLE 46 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR XENO NUCLEIC ACIDS, BY COUNTRY, 2020-2027 (USD MILLION) 122

7 SYNTHETIC BIOLOGY MARKET, BY TECHNOLOGY 123

7.1 INTRODUCTION 124

TABLE 47 SYNTHETIC BIOLOGY MARKET, BY TECHNOLOGY, 2020-2027 (USD MILLION) 124

7.2 GENE SYNTHESIS 124

7.2.1 GENE SYNTHESIS TO DOMINATE MARKET DURING FORECAST PERIOD 124

TABLE 48 SYNTHETIC BIOLOGY MARKET FOR GENE SYNTHESIS, BY REGION, 2020-2027 (USD MILLION) 126

TABLE 49 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR GENE SYNTHESIS, BY COUNTRY, 2020-2027 (USD MILLION) 126

TABLE 50 EUROPE: SYNTHETIC BIOLOGY MARKET FOR GENE SYNTHESIS, BY COUNTRY, 2020-2027 (USD MILLION) 127

TABLE 51 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR GENE SYNTHESIS, BY COUNTRY, 2020-2027 (USD MILLION) 127

TABLE 52 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR GENE SYNTHESIS, BY COUNTRY, 2020-2027 (USD MILLION) 128

7.3 GENOME ENGINEERING 128

7.3.1 INCREASING DEMAND FOR SYNTHETIC DNA AND GENES TO DRIVE MARKET 128

TABLE 53 SYNTHETIC BIOLOGY MARKET FOR GENOME ENGINEERING, BY REGION, 2020-2027 (USD MILLION) 129

TABLE 54 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR GENOME ENGINEERING, BY COUNTRY, 2020-2027 (USD MILLION) 129

TABLE 55 EUROPE: SYNTHETIC BIOLOGY MARKET FOR GENOME ENGINEERING, BY COUNTRY, 2020-2027 (USD MILLION) 130

TABLE 56 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR GENOME ENGINEERING, BY COUNTRY, 2020-2027 (USD MILLION) 130

TABLE 57 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR GENOME ENGINEERING, BY COUNTRY, 2020-2027 (USD MILLION) 131

7.4 SEQUENCING 131

7.4.1 NGS TECHNOLOGY REQUISITE FOR BIOLOGICAL RESEARCH 131

TABLE 58 SYNTHETIC BIOLOGY MARKET FOR SEQUENCING, BY REGION, 2020-2027 (USD MILLION) 132

TABLE 59 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR SEQUENCING, BY COUNTRY, 2020-2027 (USD MILLION) 132

TABLE 60 EUROPE: SYNTHETIC BIOLOGY MARKET FOR SEQUENCING, BY COUNTRY, 2020-2027 (USD MILLION) 133

TABLE 61 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR SEQUENCING, BY COUNTRY, 2020-2027 (USD MILLION) 133

TABLE 62 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR SEQUENCING, BY COUNTRY, 2020-2027 (USD MILLION) 134

7.5 BIOINFORMATICS 134

7.5.1 RISING NEED FOR DATA MANAGEMENT AND CURATION TO DRIVE ADOPTION OF BIOINFORMATICS TECHNOLOGIES 134

TABLE 63 SYNTHETIC BIOLOGY MARKET FOR BIOINFORMATICS, BY REGION, 2020-2027 (USD MILLION) 135

TABLE 64 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOINFORMATICS, BY COUNTRY, 2020-2027 (USD MILLION) 135

TABLE 65 EUROPE: SYNTHETIC BIOLOGY MARKET FOR BIOINFORMATICS, BY COUNTRY, 2020-2027 (USD MILLION) 136

TABLE 66 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR BIOINFORMATICS, BY COUNTRY, 2020-2027 (USD MILLION) 136

TABLE 67 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOINFORMATICS, BY COUNTRY, 2020-2027 (USD MILLION) 137

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

7.6 CLONING 137

7.6.1 CLONING AIDS IN BUILDING NEW GENETIC MODULES/PATHWAYS, ENABLING RAPID ADVANCES IN RESEARCH ACROSS INDUSTRIES 137

TABLE 68 SYNTHETIC BIOLOGY MARKET FOR CLONING, BY REGION, 2020-2027 (USD MILLION) 138

TABLE 69 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR CLONING, BY COUNTRY, 2020-2027 (USD MILLION) 138

TABLE 70 EUROPE: SYNTHETIC BIOLOGY MARKET FOR CLONING, BY COUNTRY, 2020-2027 (USD MILLION) 139

TABLE 71 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR CLONING, BY COUNTRY, 2020-2027 (USD MILLION) 139

TABLE 72 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR CLONING, BY COUNTRY, 2020-2027 (USD MILLION) 140

7.7 SITE-DIRECTED MUTAGENESIS 140

7.7.1 WIDE APPLICATIONS IN GENETIC ENGINEERING, DNA ASSEMBLY, AND CLONING TECHNOLOGIES TO DRIVE MARKET 140

TABLE 73 SYNTHETIC BIOLOGY MARKET FOR SITE-DIRECTED MUTAGENESIS, BY REGION, 2020-2027 (USD MILLION) 141

TABLE 74 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR SITE-DIRECTED MUTAGENESIS, BY COUNTRY, 2020-2027 (USD MILLION) 141

TABLE 75 EUROPE: SYNTHETIC BIOLOGY MARKET FOR SITE-DIRECTED MUTAGENESIS, BY COUNTRY, 2020-2027 (USD MILLION) 142

TABLE 76 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR SITE-DIRECTED MUTAGENESIS, BY COUNTRY, 2020-2027 (USD MILLION) 142

TABLE 77 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR SITE-DIRECTED MUTAGENESIS, BY COUNTRY, 2020-2027 (USD MILLION) 143

7.8 MEASUREMENT AND MODELING 143

7.8.1 CELL-FREE SYNTHETIC BIOLOGY EMERGING AS POWERFUL TECHNOLOGY 143

TABLE 78 SYNTHETIC BIOLOGY MARKET FOR MEASUREMENT AND MODELING, BY REGION, 2020-2027 (USD MILLION) 144

TABLE 79 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR MEASUREMENT AND MODELING, BY COUNTRY, 2020-2027 (USD MILLION) 144

TABLE 80 EUROPE: SYNTHETIC BIOLOGY MARKET FOR MEASUREMENT AND MODELING, BY COUNTRY, 2020-2027 (USD MILLION) 145

TABLE 81 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR MEASUREMENT AND MODELING, BY COUNTRY, 2020-2027 (USD MILLION) 145

TABLE 82 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR MEASUREMENT AND MODELING, BY COUNTRY, 2020-2027 (USD MILLION) 146

7.9 MICROFLUIDICS 146

7.9.1 DROPLET MICROFLUIDICS GAINING WIDE RECOGNITION IN FIELD OF SYNTHETIC BIOLOGY 146

TABLE 83 SYNTHETIC BIOLOGY MARKET FOR MICROFLUIDICS, BY REGION, 2020-2027 (USD MILLION) 147

TABLE 84 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR MICROFLUIDICS, BY COUNTRY, 2020-2027 (USD MILLION) 147

TABLE 85 EUROPE: SYNTHETIC BIOLOGY MARKET FOR MICROFLUIDICS, BY COUNTRY, 2020-2027 (USD MILLION) 148

TABLE 86 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR MICROFLUIDICS, BY COUNTRY, 2020-2027 (USD MILLION) 148

TABLE 87 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR MICROFLUIDICS, BY COUNTRY, 2020-2027 (USD MILLION) 149

7.10 NANOTECHNOLOGY 149

7.10.1 CONVERGENCE BETWEEN SYNTHETIC BIOLOGY AND NANOTECHNOLOGY AIDS IN BUILDING COMPLEX BODIES 149

TABLE 88 SYNTHETIC BIOLOGY MARKET FOR NANOTECHNOLOGY, BY REGION, 2020-2027 (USD MILLION) 150

TABLE 89 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR NANOTECHNOLOGY, BY COUNTRY, 2020-2027 (USD MILLION) 150

TABLE 90 EUROPE: SYNTHETIC BIOLOGY MARKET FOR NANOTECHNOLOGY, BY COUNTRY, 2020-2027 (USD MILLION) 151

TABLE 91 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR NANOTECHNOLOGY, BY COUNTRY, 2020-2027 (USD MILLION) 151

TABLE 92 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR NANOTECHNOLOGY, BY COUNTRY, 2020-2027 (USD MILLION) 152

?

8 SYNTHETIC BIOLOGY MARKET, BY APPLICATION 153

8.1 INTRODUCTION 154

TABLE 93 SYNTHETIC BIOLOGY MARKET, BY APPLICATION, 2020-2027 (USD MILLION) 154

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

8.2 MEDICAL APPLICATIONS 154

TABLE 94 SYNTHETIC BIOLOGY MARKET FOR MEDICAL APPLICATIONS, BY TYPE, 2020-2027 (USD MILLION) 155

TABLE 95 SYNTHETIC BIOLOGY MARKET FOR MEDICAL APPLICATIONS, BY REGION, 2020-2027 (USD MILLION) 155

TABLE 96 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR MEDICAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 156

TABLE 97 EUROPE: SYNTHETIC BIOLOGY MARKET FOR MEDICAL APPLICATIONS, BY COUNTRY, 2020-2027(USD MILLION) 156

TABLE 98 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR MEDICAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 157

TABLE 99 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR MEDICAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 157

8.2.1 PHARMACEUTICALS 157

8.2.1.1 Largest synthetic biology market for medical applications 157

TABLE 100 SYNTHETIC BIOLOGY MARKET FOR PHARMACEUTICALS, BY REGION, 2020-2027 (USD MILLION) 158

TABLE 101 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR PHARMACEUTICALS, BY COUNTRY, 2020-2027 (USD MILLION) 159

TABLE 102 EUROPE: SYNTHETIC BIOLOGY MARKET FOR PHARMACEUTICALS, BY COUNTRY, 2020-2027 (USD MILLION) 159

TABLE 103 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR PHARMACEUTICALS, BY COUNTRY, 2020-2027 (USD MILLION) 160

TABLE 104 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR PHARMACEUTICALS, BY COUNTRY, 2020-2027 (USD MILLION) 160

8.2.2 DRUG DISCOVERY AND THERAPEUTICS 160

TABLE 105 SYNTHETIC BIOLOGY MARKET FOR DRUG DISCOVERY AND THERAPEUTICS, BY TYPE, 2020-2027 (USD MILLION) 161

TABLE 106 SYNTHETIC BIOLOGY MARKET FOR DRUG DISCOVERY AND THERAPEUTICS, BY REGION, 2020-2027 (USD MILLION) 161

TABLE 107 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR DRUG DISCOVERY AND THERAPEUTICS, BY COUNTRY, 2020-2027 (USD MILLION) 162

TABLE 108 EUROPE: SYNTHETIC BIOLOGY MARKET FOR DRUG DISCOVERY AND THERAPEUTICS, BY COUNTRY, 2020-2027 (USD MILLION) 162

TABLE 109 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR DRUG DISCOVERY AND THERAPEUTICS, BY COUNTRY, 2020-2027 (USD MILLION) 163

TABLE 110 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR DRUG DISCOVERY AND THERAPEUTICS, BY COUNTRY, 2020-2027 (USD MILLION) 163

8.2.2.1 Cancer detection and diagnostics 163

8.2.2.1.1 Increasing investments in cancer research to support market 163

TABLE 111 SYNTHETIC BIOLOGY MARKET FOR CANCER DETECTION AND DIAGNOSTICS, BY REGION, 2020-2027 (USD MILLION) 164

TABLE 112 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR CANCER DETECTION AND DIAGNOSTICS, BY COUNTRY, 2020-2027 (USD MILLION) 165

TABLE 113 EUROPE: SYNTHETIC BIOLOGY MARKET FOR CANCER DETECTION AND DIAGNOSTICS, BY COUNTRY, 2020-2027 (USD MILLION) 165

TABLE 114 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR CANCER DETECTION AND DIAGNOSTICS, BY COUNTRY, 2020-2027 (USD MILLION) 166

TABLE 115 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR CANCER DETECTION AND DIAGNOSTICS, BY COUNTRY, 2020-2027 (USD MILLION) 166

8.2.2.2 Other drug discovery and therapeutic applications 166

TABLE 116 SYNTHETIC BIOLOGY MARKET FOR OTHER DRUG DISCOVERY AND THERAPEUTIC APPLICATIONS, BY REGION, 2020-2027 (USD MILLION) 167

TABLE 117 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER DRUG DISCOVERY AND THERAPEUTIC APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 167

TABLE 118 EUROPE: SYNTHETIC BIOLOGY MARKET FOR OTHER DRUG DISCOVERY AND THERAPEUTIC APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 168

TABLE 119 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR OTHER DRUG DISCOVERY AND THERAPEUTIC APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 168

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

TABLE 120 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER DRUG DISCOVERY AND THERAPEUTIC APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) □169

8.2.3 □ ARTIFICIAL TISSUE AND TISSUE REGENERATION □169

TABLE 121 □ SYNTHETIC BIOLOGY MARKET FOR ARTIFICIAL TISSUE AND TISSUE REGENERATION, BY TYPE, 2020-2027 (USD MILLION) □170

TABLE 122 □ SYNTHETIC BIOLOGY MARKET FOR ARTIFICIAL TISSUE AND TISSUE REGENERATION, BY REGION, 2020-2027 (USD MILLION) □170

TABLE 123 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR ARTIFICIAL TISSUE AND TISSUE REGENERATION, BY COUNTRY, 2020-2027 (USD MILLION) □171

TABLE 124 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR ARTIFICIAL TISSUE AND TISSUE REGENERATION, BY COUNTRY, 2020-2027 (USD MILLION) □171

TABLE 125 □ ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR ARTIFICIAL TISSUE AND TISSUE REGENERATION, BY COUNTRY, 2020-2027 (USD MILLION) □172

TABLE 126 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR ARTIFICIAL TISSUE AND TISSUE REGENERATION, BY COUNTRY, 2020-2027 (USD MILLION) □172

8.2.3.1 □ Biosynthesis □172

8.2.3.1.1 □ Largest market due to increasing need to create artificial genomes □172

TABLE 127 □ SYNTHETIC BIOLOGY MARKET FOR BIOSYNTHESIS, BY REGION, 2020-2027 (USD MILLION) □173

TABLE 128 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOSYNTHESIS, BY COUNTRY, 2020-2027 (USD MILLION) □173

TABLE 129 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR BIOSYNTHESIS, BY COUNTRY, 2020-2027 (USD MILLION) □174

TABLE 130 □ ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR BIOSYNTHESIS, BY COUNTRY, 2020-2027 (USD MILLION) □174

TABLE 131 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOSYNTHESIS, BY COUNTRY, 2020-2027 (USD MILLION) □175

8.2.3.2 □ Stem cell regulation □175

8.2.3.2.1 □ Increased use of synthetic biology in stem cell regeneration and reprogramming somatic cells to drive market □175

?

TABLE 132 □ SYNTHETIC BIOLOGY MARKET FOR STEM CELL REGULATION, BY REGION, 2020-2027 (USD MILLION) □176

TABLE 133 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR STEM CELL REGULATION, BY COUNTRY, 2020-2027 (USD MILLION) □176

TABLE 134 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR STEM CELL REGULATION, BY COUNTRY, 2020-2027 (USD MILLION) □177

TABLE 135 □ ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR STEM CELL REGULATION, BY COUNTRY, 2020-2027 (USD MILLION) □177

TABLE 136 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR STEM CELL REGULATION, BY COUNTRY, 2020-2027 (USD MILLION) □178

8.2.3.3 □ Other artificial tissue and tissue regeneration applications □178

TABLE 137 □ SYNTHETIC BIOLOGY MARKET FOR OTHER ARTIFICIAL TISSUE AND TISSUE REGENERATION APPLICATIONS, BY REGION, 2020-2027 (USD MILLION) □179

TABLE 138 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER ARTIFICIAL TISSUE AND TISSUE REGENERATION APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) □179

TABLE 139 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR OTHER ARTIFICIAL TISSUE AND TISSUE REGENERATION APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) □180

TABLE 140 □ ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR OTHER ARTIFICIAL TISSUE AND TISSUE REGENERATION APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) □180

TABLE 141 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER ARTIFICIAL TISSUE AND TISSUE REGENERATION APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) □181

8.3 □ INDUSTRIAL APPLICATIONS □181

TABLE 142 □ SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL APPLICATIONS, BY TYPE, 2020-2027 (USD MILLION) □182

TABLE 143 □ SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL APPLICATIONS, BY REGION, 2020-2027 (USD MILLION) □182

TABLE 144 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

MILLION) 183

TABLE 145 EUROPE: SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 183

TABLE 146 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 184

TABLE 147 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 184

8.3.1 BIOFUEL AND RENEWABLE ENERGY 184

8.3.1.1 Advantages of using genetically engineered organisms for synthetic production of biofuels to support market 184

TABLE 148 SYNTHETIC BIOLOGY MARKET FOR BIOFUEL AND RENEWABLE ENERGY, BY REGION, 2020-2027 (USD MILLION) 185

TABLE 149 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOFUEL AND RENEWABLE ENERGY, BY COUNTRY, 2020-2027 (USD MILLION) 186

TABLE 150 EUROPE: SYNTHETIC BIOLOGY MARKET FOR BIOFUEL AND RENEWABLE ENERGY, BY COUNTRY, 2020-2027 (USD MILLION) 186

TABLE 151 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR BIOFUEL AND RENEWABLE ENERGY, BY COUNTRY, 2020-2027 (USD MILLION) 187

TABLE 152 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOFUEL AND RENEWABLE ENERGY, BY COUNTRY, 2020-2027 (USD MILLION) 187

8.3.2 INDUSTRIAL ENZYMES 187

TABLE 153 SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL ENZYMES, BY INDUSTRY, 2020-2027 (USD MILLION) 188

TABLE 154 SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL ENZYMES, BY REGION, 2020-2027 (USD MILLION) 189

TABLE 155 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL ENZYMES, BY COUNTRY, 2020-2027 (USD MILLION) 189

TABLE 156 EUROPE: SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL ENZYMES, BY COUNTRY, 2020-2027 (USD MILLION) 190

TABLE 157 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL ENZYMES, BY COUNTRY, 2020-2027 (USD MILLION) 190

TABLE 158 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR INDUSTRIAL ENZYMES, BY COUNTRY, 2020-2027 (USD MILLION) 191

8.3.2.1 Textile industry 191

8.3.2.1.1 Synthetic biology to replace traditional raw materials in textile industry 191

TABLE 159 SYNTHETIC BIOLOGY MARKET FOR TEXTILE INDUSTRY, BY REGION, 2020-2027 (USD MILLION) 192

TABLE 160 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR TEXTILE INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 192

TABLE 161 EUROPE: SYNTHETIC BIOLOGY MARKET FOR TEXTILE INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 193

TABLE 162 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR TEXTILE INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 193

TABLE 163 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR TEXTILE INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 194

8.3.2.2 Paper industry 194

8.3.2.2.1 Increasing use of enzymes in pulp and paper industry to favor market growth 194

TABLE 164 SYNTHETIC BIOLOGY MARKET FOR PAPER INDUSTRY, BY REGION, 2020-2027 (USD MILLION) 195

TABLE 165 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR PAPER INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 195

TABLE 166 EUROPE: SYNTHETIC BIOLOGY MARKET FOR PAPER INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 196

TABLE 167 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR PAPER INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 196

TABLE 168 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR PAPER INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 197

8.3.2.3 Consumer care industry 197

TABLE 169 SYNTHETIC BIOLOGY MARKET FOR CONSUMER CARE INDUSTRY, BY TYPE, 2020-2027 (USD MILLION) 197

TABLE 170 SYNTHETIC BIOLOGY MARKET FOR CONSUMER CARE INDUSTRY, BY REGION, 2020-2027 (USD MILLION) 198

TABLE 171 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR CONSUMER CARE INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 198

TABLE 172 EUROPE: SYNTHETIC BIOLOGY MARKET FOR CONSUMER CARE INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 199

TABLE 173 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR CONSUMER CARE INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) 199

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

TABLE 174 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR CONSUMER CARE INDUSTRY, BY COUNTRY, 2020-2027 (USD MILLION) □ 200

8.3.2.3.1 □ Cosmetics □ 200

8.3.2.3.1.1 □ Increased use of synthetic biology techniques for development of skincare and cosmetics to propel market □ 200

TABLE 175 □ SYNTHETIC BIOLOGY MARKET FOR SKINCARE AND COSMETICS, BY REGION, 2020-2027 (USD MILLION) □ 201

TABLE 176 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR SKINCARE AND COSMETICS, BY COUNTRY, 2020-2027 (USD MILLION) □ 201

TABLE 177 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR SKINCARE AND COSMETICS, BY COUNTRY, 2020-2027 (USD MILLION) □ 202

TABLE 178 □ ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR SKINCARE AND COSMETICS, BY COUNTRY, 2020-2027 (USD MILLION) □ 202

TABLE 179 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR SKINCARE AND COSMETICS, BY COUNTRY, 2020-2027 (USD MILLION) □ 203

8.3.2.3.2 □ Other consumer care products □ 203

TABLE 180 □ SYNTHETIC BIOLOGY MARKET FOR OTHER CONSUMER CARE PRODUCTS, BY REGION, 2020-2027 (USD MILLION) □ 204

TABLE 181 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER CONSUMER CARE PRODUCTS, BY COUNTRY, 2020-2027 (USD MILLION) □ 204

TABLE 182 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR OTHER CONSUMER CARE PRODUCTS, BY COUNTRY, 2020-2027 (USD MILLION) □ 205

TABLE 183 □ ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR OTHER CONSUMER CARE PRODUCTS, BY COUNTRY, 2020-2027 (USD MILLION) □ 205

TABLE 184 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER CONSUMER CARE PRODUCTS, BY COUNTRY, 2020-2027 (USD MILLION) □ 206

8.3.2.4 □ Other industries □ 206

TABLE 185 □ SYNTHETIC BIOLOGY MARKET FOR OTHER INDUSTRIES, BY REGION, 2020-2027 (USD MILLION) □ 207

TABLE 186 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER INDUSTRIES, BY COUNTRY, 2020-2027 (USD MILLION) □ 207

TABLE 187 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR OTHER INDUSTRIES, BY COUNTRY, 2020-2027 (USD MILLION) □ 208

TABLE 188 □ ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR OTHER INDUSTRIES, BY COUNTRY, 2020-2027 (USD MILLION) □ 208

TABLE 189 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER INDUSTRIES, BY COUNTRY, 2020-2027 (USD MILLION) □ 209

8.3.3 □ BIOMATERIALS AND GREEN CHEMICALS □ 209

8.3.3.1 □ Use of synthetic biology for preparing silk-based proteins to support market □ 209

TABLE 190 □ SYNTHETIC BIOLOGY MARKET FOR BIOMATERIALS AND GREEN CHEMICALS, BY REGION, 2020-2027 (USD MILLION) □ 210

TABLE 191 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOMATERIALS AND GREEN CHEMICALS, BY COUNTRY, 2020-2027 (USD MILLION) □ 210

TABLE 192 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR BIOMATERIALS AND GREEN CHEMICALS, BY COUNTRY, 2020-2027 (USD MILLION) □ 211

TABLE 193 □ ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR BIOMATERIALS AND GREEN CHEMICALS, BY COUNTRY, 2020-2027 (USD MILLION) □ 211

TABLE 194 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOMATERIALS AND GREEN CHEMICALS, BY COUNTRY, 2020-2027 (USD MILLION) □ 212

8.4 □ FOOD AND AGRICULTURAL APPLICATIONS □ 212

TABLE 195 □ SYNTHETIC BIOLOGY MARKET FOR FOOD AND AGRICULTURAL APPLICATIONS, BY TYPE, 2020-2027 (USD MILLION) □ 213

TABLE 196 □ SYNTHETIC BIOLOGY MARKET FOR FOOD AND AGRICULTURAL APPLICATIONS, BY REGION, 2020-2027 (USD MILLION) □ 213

TABLE 197 □ NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR FOOD AND AGRICULTURAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) □ 214

TABLE 198 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR FOOD AND AGRICULTURAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) □ 214

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

TABLE 199 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR FOOD AND AGRICULTURAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 215

TABLE 200 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR FOOD AND AGRICULTURAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 215

8.4.1 FLAVORS AND FRAGRANCES 215

8.4.1.1 Manufactured using engineered microbes 215

TABLE 201 SYNTHETIC BIOLOGY MARKET FOR FLAVORS AND FRAGRANCES, BY REGION, 2020-2027 (USD MILLION) 216

TABLE 202 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR FLAVORS AND FRAGRANCES, BY COUNTRY, 2020-2027 (USD MILLION) 216

TABLE 203 EUROPE: SYNTHETIC BIOLOGY MARKET FOR FLAVORS AND FRAGRANCES, BY COUNTRY, 2020-2027 (USD MILLION) 217

TABLE 204 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR FLAVORS AND FRAGRANCES, BY COUNTRY, 2020-2027 (USD MILLION) 217

TABLE 205 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR FLAVORS AND FRAGRANCES, BY COUNTRY, 2020-2027 (USD MILLION) 218

8.4.2 OTHER FOOD AND AGRICULTURAL APPLICATIONS 218

TABLE 206 SYNTHETIC BIOLOGY MARKET FOR OTHER FOOD AND AGRICULTURAL APPLICATIONS, BY REGION, 2020-2027 (USD MILLION) 219

TABLE 207 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER FOOD AND AGRICULTURAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 219

TABLE 208 EUROPE: SYNTHETIC BIOLOGY MARKET FOR OTHER FOOD AND AGRICULTURAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 220

TABLE 209 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR OTHER FOOD AND AGRICULTURAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 220

TABLE 210 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR OTHER FOOD AND AGRICULTURAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 221

8.5 ENVIRONMENTAL APPLICATIONS 221

TABLE 211 SYNTHETIC BIOLOGY MARKET FOR ENVIRONMENTAL APPLICATIONS, BY TYPE, 2020-2027 (USD MILLION) 222

TABLE 212 SYNTHETIC BIOLOGY MARKET FOR ENVIRONMENTAL APPLICATIONS, BY REGION, 2020-2027 (USD MILLION) 222

TABLE 213 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR ENVIRONMENTAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 223

TABLE 214 EUROPE: SYNTHETIC BIOLOGY MARKET FOR ENVIRONMENTAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 223

TABLE 215 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR ENVIRONMENTAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 224

TABLE 216 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR ENVIRONMENTAL APPLICATIONS, BY COUNTRY, 2020-2027 (USD MILLION) 224

8.5.1 BIOREMEDIATION 224

8.5.1.1 Bioremediation helps in cleaning oil spills, preventing chemical pollution, and plugging nuclear leakages 224

TABLE 217 SYNTHETIC BIOLOGY MARKET FOR BIOREMEDIATION, BY REGION, 2020-2027 (USD MILLION) 225

TABLE 218 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOREMEDIATION, BY COUNTRY, 2020-2027 (USD MILLION) 225

TABLE 219 EUROPE: SYNTHETIC BIOLOGY MARKET FOR BIOREMEDIATION, BY COUNTRY, 2020-2027 (USD MILLION) 226

TABLE 220 ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR BIOREMEDIATION, BY COUNTRY, 2020-2027 (USD MILLION) 226

TABLE 221 LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOREMEDIATION, BY COUNTRY, 2020-2027 (USD MILLION) 227

8.5.2 BIOSENSING 227

8.5.2.1 Biosensors utilize microalgae due to high reproductive rates and ease of culturing 227

TABLE 222 SYNTHETIC BIOLOGY MARKET FOR BIOSENSING, BY REGION, 2020-2027 (USD MILLION) 228

TABLE 223 NORTH AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOSENSING, BY COUNTRY, 2020-2027 (USD MILLION) 228

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

TABLE 224 □ EUROPE: SYNTHETIC BIOLOGY MARKET FOR BIOSENSING, BY COUNTRY, 2020-2027 (USD MILLION) □ 229

TABLE 225 □ ASIA PACIFIC: SYNTHETIC BIOLOGY MARKET FOR BIOSENSING, BY COUNTRY, 2020-2027 (USD MILLION) □ 229

TABLE 226 □ LATIN AMERICA: SYNTHETIC BIOLOGY MARKET FOR BIOSENSING, BY COUNTRY, 2020-2027 (USD MILLION) □ 230

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

Synthetic Biology Market

Market Report | 2023-02-06 | 441 pages | MarketsandMarkets

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scotts-international.com

ORDER FORM:

Select license	License	Price
	Single User	\$4950.00
	Multi User	\$6650.00
	Corporate License	\$8150.00
	Enterprise Site License	\$10000.00
		VAT
		Total

*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

** VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*	<input type="text"/>	Phone*	<input type="text"/>
First Name*	<input type="text"/>	Last Name*	<input type="text"/>
Job title*	<input type="text"/>		
Company Name*	<input type="text"/>	EU Vat / Tax ID / NIP number*	<input type="text"/>
Address*	<input type="text"/>	City*	<input type="text"/>
Zip Code*	<input type="text"/>	Country*	<input type="text"/>
		Date	<input type="text" value="2026-03-02"/>
		Signature	

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

