Next Generation Sequencing Global Market

[Products (Instruments & Consumables, Services and Work Flow Products), Technology (Targeted Resequencing, Whole Exome Sequencing, RNA Sequencing, Whole Genome Sequencing, ChiP sequencing, De novo sequencing, and Methyl Sequencing), End Users (Academic Research, Hospitals & Clinics, Biotech/Pharma and Others) Applications {Clinical (Oncology, Genetic Screening, Infectious Diseases and Others), Non-Clinical (Oncology, Genetic Screening, Infectious Diseases, Drug & Biomarker discovery, Epidemology, Agriculture and Others)}, Region (North America, Europe, APAC and RoW)],

– Forecast to 2020

2014

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1.1 REPORT DESCRIPTION

Next generation sequencing market is one of the fastest growing segments in the genomics market with an estimated CAGR of around 21% in the next five years. The research study includes the market assessment of various products, technologies, applications, and end-users. The report is definitely one of its kind, includes the data pertaining to the NGS sample volume market analysis by technology, end-users, and applications. The report also includes the installation base of various NGS platforms across the regions. Market analysis of labs performing NGS across the world segmented by lab type such as small, medium and large core.

The major factors such as rapid adoption of this technology by researchers and its usability as a substitute of microarray technology in addition to its higher throughput, increased accuracy, and affordable costs are driving the next generation sequencing market growth. However, factors such as reducing capital expenditure from academic institutions and huge dependability on grants funding from the government are hampering the next generation sequencing market growth. In addition, the analysis of large amount of data generated by sequencers, and data storage and management is posing a major challenge. The growth opportunities of this market include cloud computing, rising demand for pre-sequencing, developments in NGS fully integrated instruments and rising nanopore sequencing technology. There is a huge opportunity for this technology in the field of drug discovery, personalized medicine, agricultural and animal research.

Among the technology market targeted re-sequencing accounted for the largest share in 2013. The fastest growing technology is whole genome sequencing which has the highest CAGR of more than 25% during the forecast period. In the end users segment academic research holds the largest share in 2013. The fastest growing segment is hospitals and clinics during the forecast period. The highest CAGR is due to rising collaborations among hospitals, research institutes and NGS manufacturers leading to immediate transformation of NGS into applications.

The North American region accounts for the largest share of the next generation sequencing market. The European and Asian markets are also expected to grow due to the favorable funding from the government to adopt this technology. The major factors contributing to this market growth include rising adoption by new customers, rising adoption of high-throughput sequencing platforms by government organizations such as Biotechnology and Biological

Sciences Research Council (BBSRC) (U.K.) and NHGRI (National Human Genome Research Institute) (U.S.).

The key players dominating in the next generation sequencing market include Illumina Inc. (U.S.), Life Technologies Corporation (U.S.), Roche Holding AG. (Switzerland), Pacific Biosciences of California Inc. (U.S.), Ambry Genetics Corp. (U.S.), Axeq Technologies Inc. (U.S.), Beijing Genomics Institute (China), GeneDx (U.S.), Fluidigm Corp. (U.S.), Foundation Medicine Inc. (U.S.), Good Start Genetics Inc. (U.S.), Helicos BioSciences Corp. (U.S.), Knome Inc. (U.S.), NABsys Inc. (U.S.), Oxford Nanopore Technologies Ltd. (U.K.), Pathogenica Inc. (U.S.), and QIAGEN N.V. (The Netherlands).

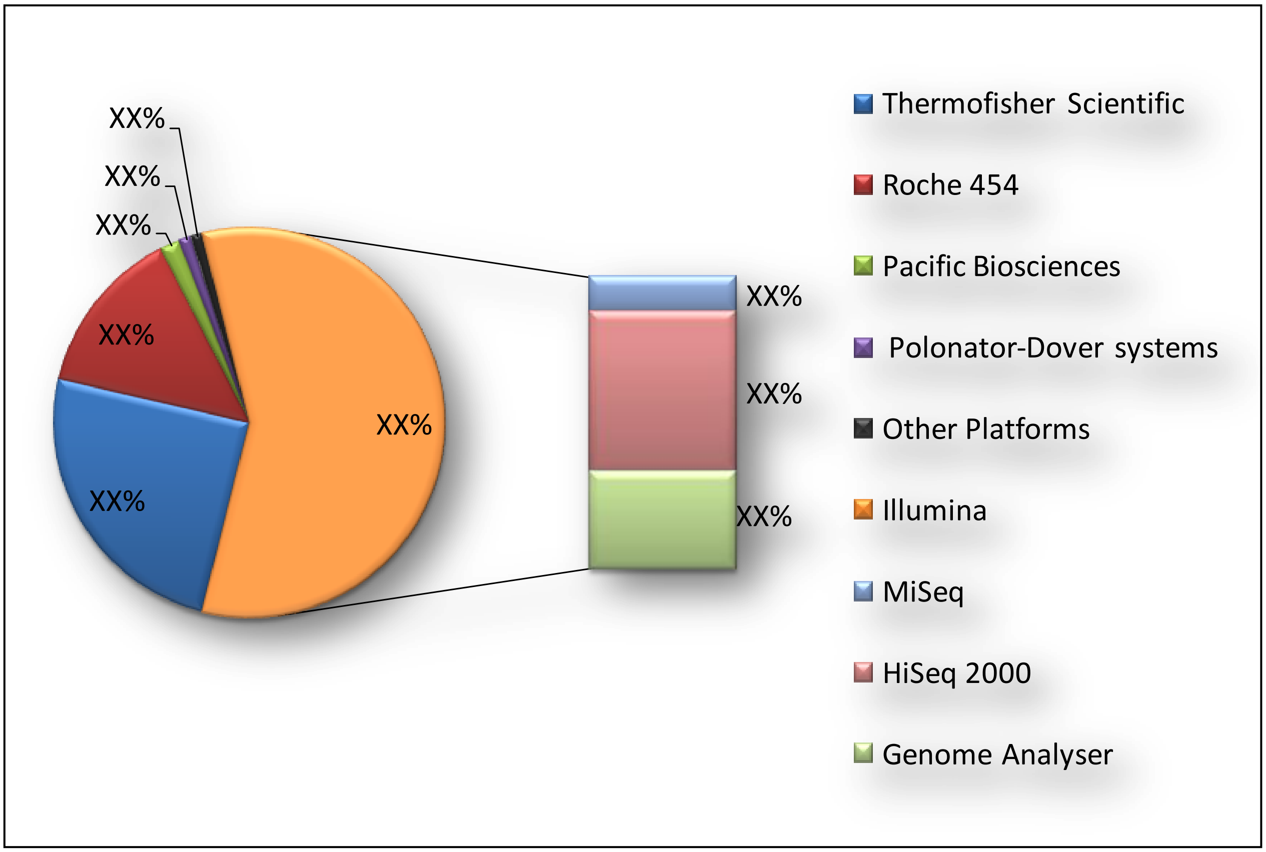
Among the platforms Illumina accounted for the largest market share in 2013. Some of the most widely used platforms for NGS sequencing are Roche/454 Life Technologies (Pyrosequencing), the Illumina/Solexa Genome Analyzer (Sequencing by synthesis) the Applied Biosystems SOLiD System (sequencing by ligation), the Helicos, Heliscope (single molecule sequencing) and Pacific Biosciences SMRT (single molecule real time sequencing). Whole genome sequencing, targeted re-sequencing, de novo sequencing, RNA-Seq, ChIP-Seq and methyl-Seq are the major applications that use NGS data analysis tools and services.

The report provides an in depth market analysis of the above mentioned segments across the following regions:

- North America
- Europe
- Asia-Pacific
- Rest of the World (RoW)

FIGURE 1

NGS PLATFORM INSTALLATION BASE (2013)



Source: National Human Genome Research Institute (NHGRI), National Centre for Genomic Resources (NCGR), Genome Science Centre (GSC), Association of Clinical Research Professionals (ACRP), American Genetic Association (AGA), ASGT, NRCGEB, WHO, and Industry Expert Interviews

TABLE 1

GLOBAL NGS SAMPLES MARKET VOLUME, BY PLATFORM, (2012-2020) (NO'S)

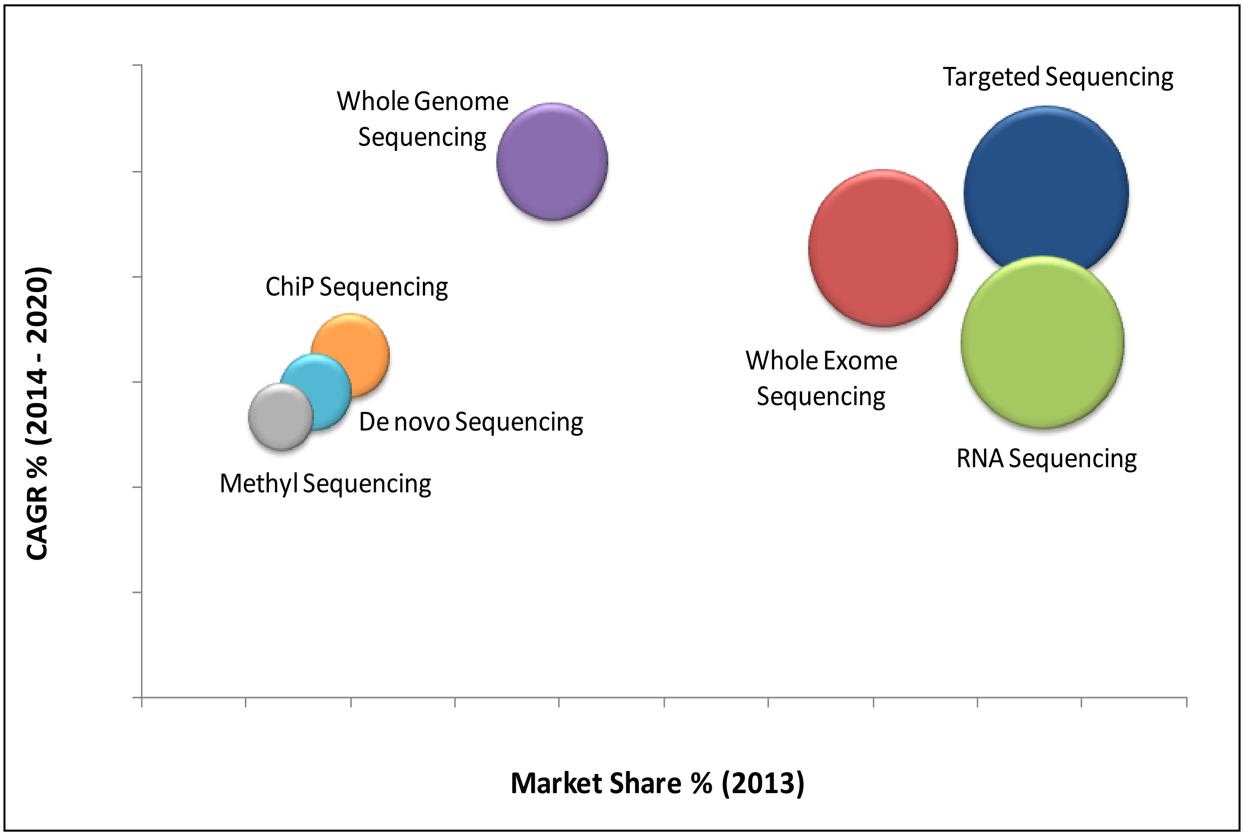
Platform	2012	2013	2014	2020	CAGR % (2014-2020)
Illumina	XX	XX	1,810,608	XX	XX
Thermofisher Scientific	XX	XX	XX	XX	XX
Roche	XX	XX	XX	XX	40.0
Pacific Biosciences	XX	XX	XX	XX	XX
Polonator -Dover systems	1,328	XX	XX	XX	XX
Others	XX	XX	XX	1,291,254	XX
Total	XX	XX	XX	XX	XX

Source: National Human Genome Research Institute (NHGRI), National Centre for Genomic Resources (NCGR), Genome Science Centre (GSC), Association of Clinical Research Professionals (ACRP), American Genetic Association (AGA), ASGT, NRCGEB, WHO, and Industry Expert Interviews

Illumina commanded the largest share of XX% of the global next generation sequencing samples market. It accounted for XX samples in 2013 growing at a CAGR of XX% from 2014 to 2020. Other platforms are expected to grow at the highest CAGR of XX% during the forecast period.

FIGURE 2

NGS TECHNOLOGY MARKET SCENARIO, (2013 - 2020)



Source: National Human Genome Research Institute (NHGRI), National Centre for Genomic Resources (NCGR), Genome Science Centre (GSC), Association of Clinical Research Professionals (ACRP), American Genetic Association (AGA), ASGT, NRCGEB, WHO, and Industry Expert Interviews

TABLE 2

GLOBAL WHOLE GENOME SEQUENCING MARKET REVENUE, BY REGION, (2012-2020) ($MN)

Region	2012	2013	2014	2020	CAGR % (2014-2020)
North America	XX	XX	XX	360.2	XX
Europe	XX	XX	XX	XX	XX
Asia-Pacific	XX	XX	XX	XX	XX
RoW	XX	XX	XX	XX	22.1
Total	126.9	XX	XX	XX	XX

Source: National Human Genome Research Institute (NHGRI), National Centre for Genomic Resources (NCGR), Genome Science Centre (GSC), Association of Clinical Research Professionals (ACRP), American Genetic Association (AGA), ASGT, NRCGEB, WHO, and Industry Expert Interviews

North America accounted for the largest revenue of $XX million of the global whole genome sequencing technology market in 2013. It is expected to grow at a CAGR of XX% from 2014 to 2020 to reach $XX million by 2020. Asia-Pacific is expected to grow at the highest CAGR of XX% during the forecast period.

TABLE 3

GLOBAL NGS SAMPLES MARKET VOLUME, BY END-USERS/LABORATORIES, (2012-2020) (NO'S)

End Users	2012	2013	2014	2020	CAGR % (2014-2020)
Academic Research	XX	XX	XX	XX	XX
Hospitals and Clinics	XX	XX	XX	XX	37.8
Biotech/Pharmacy	XX	XX	XX	1,250,130	XX
Others	XX	XX	XX	XX	XX
Total	1,328,076	XX	XX	XX	XX

Source: National Human Genome Research Institute (NHGRI), National Centre for Genomic Resources (NCGR), Genome Science Centre (GSC), Association of Clinical Research Professionals (ACRP), American Genetic Association (AGA), ASGT, NRCGEB, WHO, and Industry Expert Interviews

Academic Research commanded the largest share of XX% of the global next generation sequencing samples market. It accounted for XX samples in 2013 growing at a CAGR of XX% from 2014 to 2020. Hospitals and clinics are expected to grow at the highest CAGR of XX% during the forecast period.

TABLE 4

GLOBAL NGS LABORATORIES MARKET VOLUME, BY TYPE, (2012-2020) (NO'S)

Lab Type	2012	2013	2014	2020	CAGR % (2014-2020)
Small Core	XX	XX	XX	XX	XX
Medium Core	XX	XX	XX	XX	31.7
Large Core	934	XX	XX	4,731	XX
Total	XX	XX	XX	XX	XX

Source: National Human Genome Research Institute (NHGRI), National Centre for Genomic Resources (NCGR), Genome Science Centre (GSC), Association of Clinical Research Professionals (ACRP), American Genetic Association (AGA), ASGT, NRCGEB, WHO, and Industry Expert Interviews

Large core labs commanded for the largest share of XX% accounting for XX labs of the global next generation sequencing laboratories market in 2013. It is expected to grow at a CAGR of XX% from 2014 to 2020 to reach XX labs by 2020. Medium core labs are expected to grow at the highest CAGR of XX% during the forecast period.

1.1.1 RESEARCH SOURCES

TABLE 5

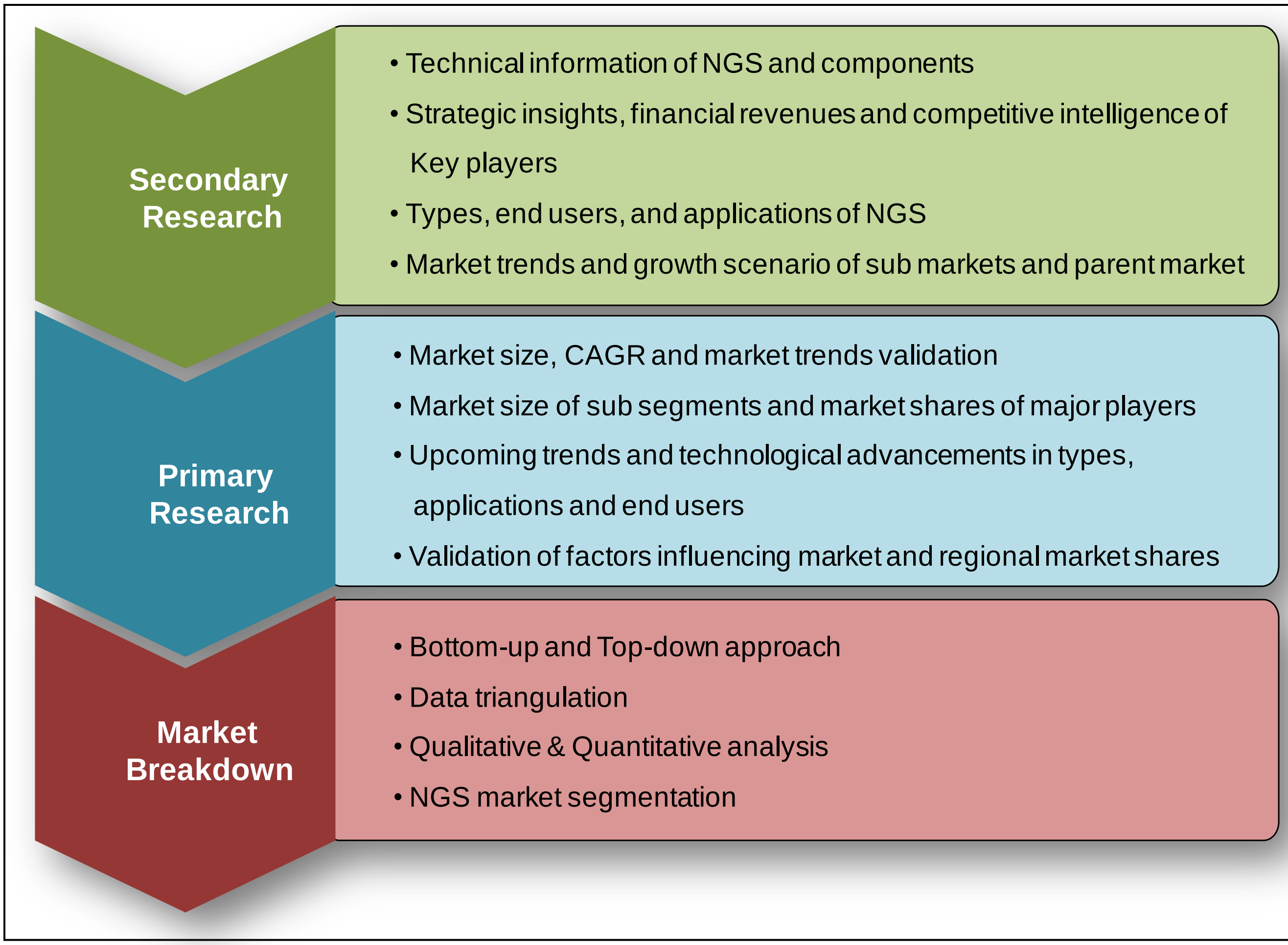
NEXT GENERATION SEQUENCING MARKET: RESEARCH SOURCES

Primary Sources	Secondary Sources
• **Supply Side:** Top-level Executives, Marketing Managers, Sales Managers, Regional Managers • **Demand Side:** Hospital Medical Directors, Laboratory Managers, Research Scientists, Principal Scientists, Purchase/Procurement Managers, Laboratory Technicians, Academic Research • **Others:** Independent Consultants and Freelancers	• IQ4I Repository • NGS Company-Specific annual reports, SEC filings, corporate presentations & Press releases • Associations and Groups : World Health Organization (WHO), National Human Genome Research Institute (NHGRI), National Centre for Genomic Resources (NCGR), Genome Science Centre (GSC), ACRP, AGA, ASGT and NRCGEB • Paid Sources : Factiva, OneSource, Hoovers, Bloomberg • Social Networking & Databases: LinkedIn, Melt-Water, Zintro

1.2 RESEARCH METHODOLOGY

FIGURE 3

NEXT GENERATION SEQUENCING MARKET: RESEARCH APPROACH



1.2.1 MARKET SIZE ESTIMATION

The global Next Generation Sequencing market size, its different segments and sub-segments is analyzed using both top-down and bottom-up approaches. The market size and revenue calculated using research methodology involves primary and secondary research of major players in the market, factors influencing the market, market segmentation and geographical market scenario.

Secondary research of major players include the study of their annual and financial reports, press release while primary research involves interviews from the supply side (CEOs, directors, strategic growth managers, international/regional marketing managers, and marketing executives) and the demand side (reference laboratory heads, hospitals, and purchase managers).

Primary and secondary sources helped in verification of percentage shares, splits, and breakdowns. This data is consolidated with detailed inputs and presented in this report.

FIGURE 4

NEXT GENERATION SEQUENCING MARKET: TOP-DOWN AND BOTTOM-UP APPROACH

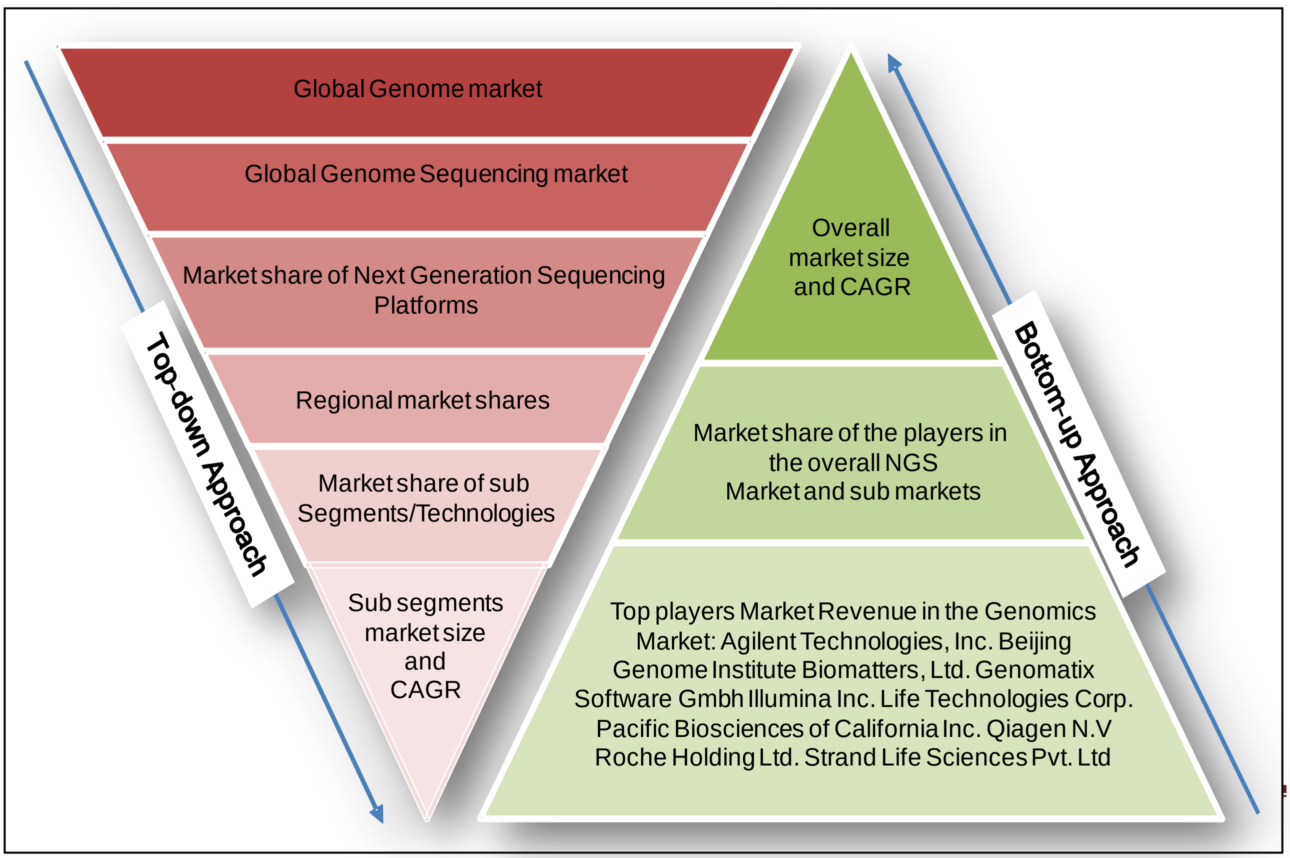
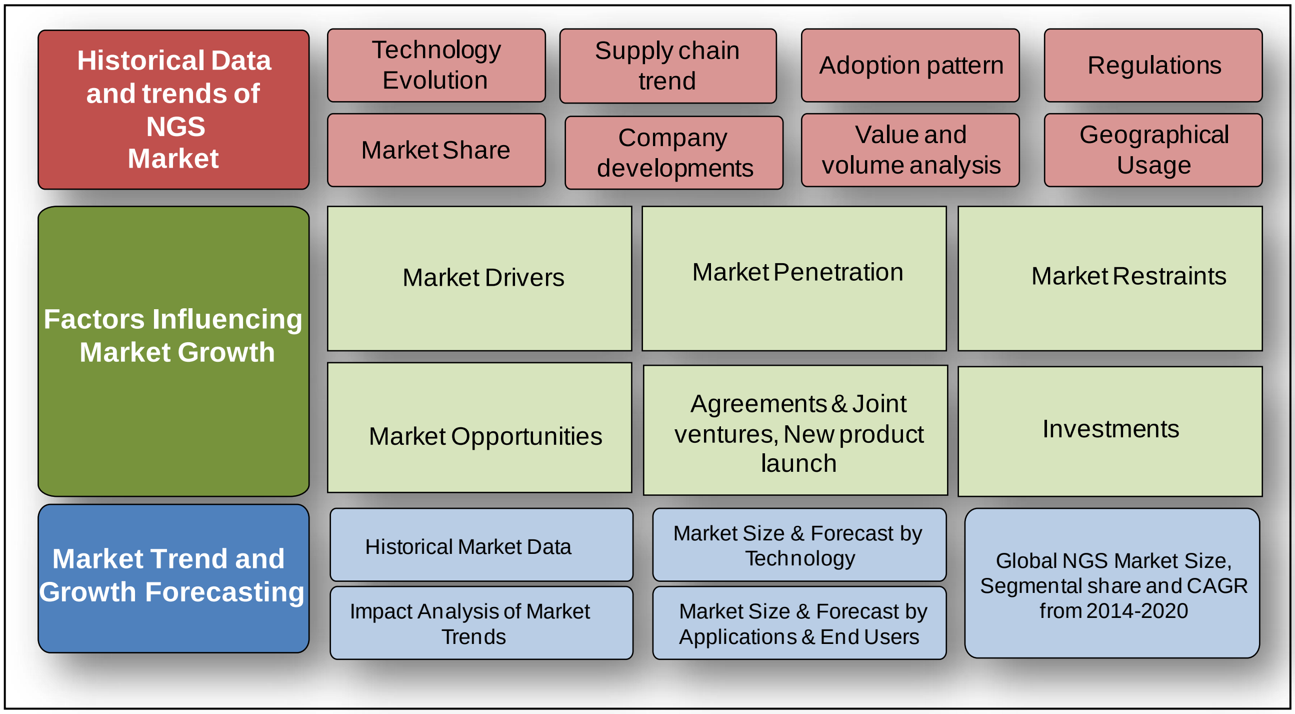


FIGURE 5

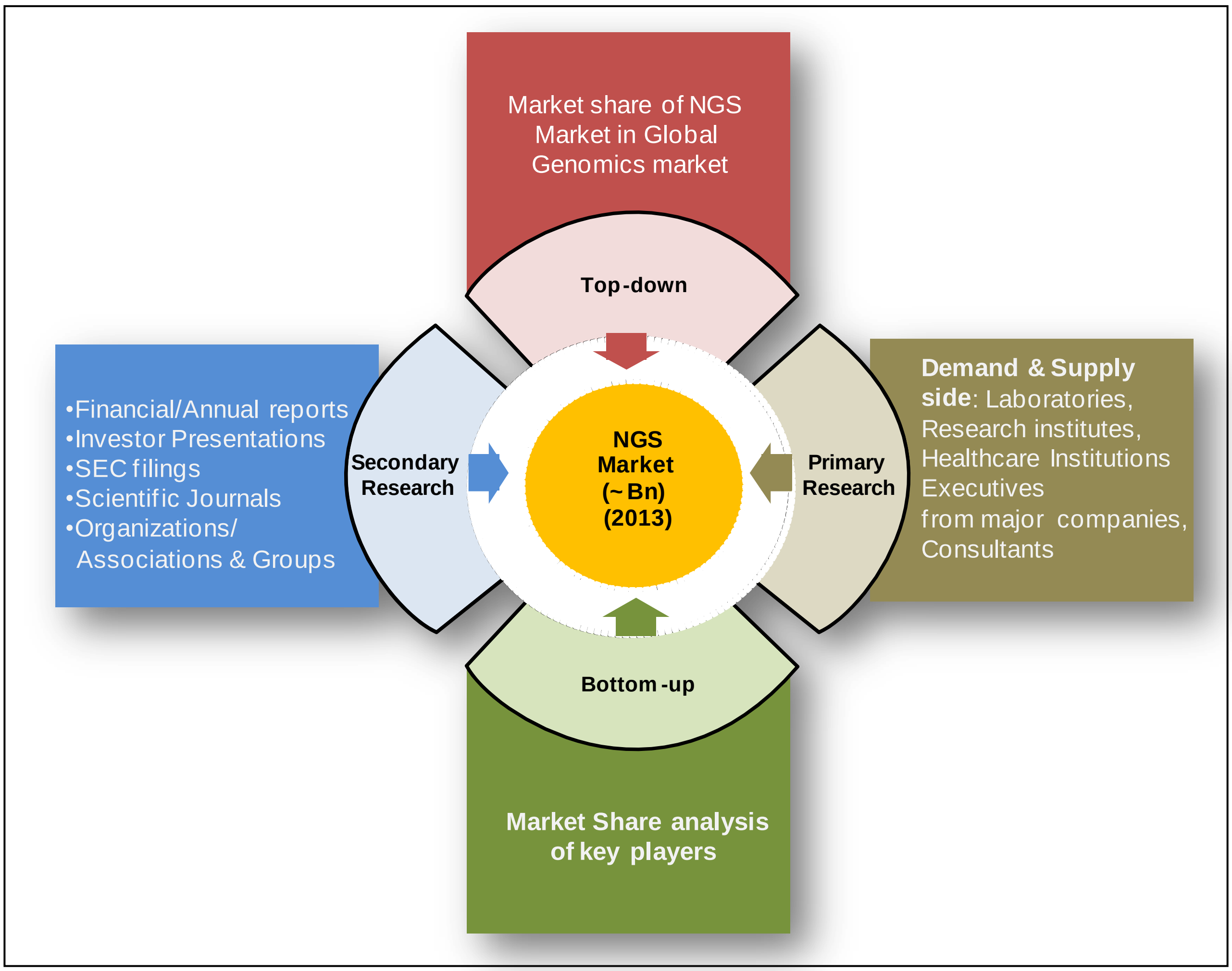
NEXT GENERATION SEQUENCING MARKET: FORECASTING MODEL



1.2.2 MARKET BREAKDOWN & DATA TRIANGULATION

FIGURE 6

NEXT GENERATION SEQUENCING MARKET: MARKET BREAKDOWN & DATA TRIANGULATION



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