

# Next Generation Sequencing Trends (Clinical Applications, Systems Used, Accreditation Status, Regulated Patient Sample Handling and Other Trends)

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## Abstracts

Next generation sequencing is discussed frequently as a key to clinical diagnostics in the future. This report looks at the status of NGS today, and seeks to provide insights on the “on-the-ground” status of clinical sequencing. In the course of doing this, the report seeks to answer the following questions: What is the status of clinical applications for Next Generation Sequencing in laboratories currently? What vendors are winning? What systems are seeing usage and for what applications? How are labs responding to business pressures and regulatory challenges? What disease areas are seeing the most applications? What are labs future purchasing plans and how are clinical applications driving these decisions?

This study focuses on an email and telephone consultation of 110 laboratories which was carried out from April to June of 2013, with the majority in the latter portion. The survey effort targeted labs likely to be doing, or likely to be planning, applications of sequencing in either diagnostic or clinical research settings. Due to the increasing importance of 2nd and 3rd-generation systems in the market, the scope leans towards these types of sequencers. There are only 13 laboratories that have exclusively capillary systems, but these systems are still widely used. About 30% of the systems in the respondents’ labs overall are capillary systems. The mix of labs reached in the surveys provides both a range of industry segments as well as groups of labs with both types of systems.

The survey asked labs about the following trends in Next Generation Sequencing and provides insights into the status of sequencing applications, including the following:

### Number of Sequencers Owned

Models Owned

Applications Run

Number of Samples Run

Outsourcing Trends

Accreditation Status For Regulated Patient Samples

Sequencers Used for Regulated Patient Samples

Volume Change Expected In NGS

Use of Capillary Systems and Expectation for Future

Bottlenecks in Sequencing Process

Future Purchase Plans

Data Analysis and Management Challenges

Regional Differences (Europe, US, ROW)

A particular focus of this report is on the clinical future of sequencing. Questions address how labs are dealing with the handling of regulated patient samples and what disease areas are seeing the most applications and sample runs. Labs were queried on which systems were seeing the most clinical applications and the usage. Capillary systems are covered in the survey's scope, and survey details the extent to which these systems are used vs. NGS and what future purchasing plans are.

The survey effort targeted any lab that uses a sequencer for any application, but with the goal of achieving as close a representative breadth of labs as possible. Due to the increasing importance of next generation systems in the market, the scope leans towards these types of sequencers. However, the market inevitably includes labs that use capillary systems as well.

Labs were mostly contacted by phone and asked to participate in a phone interview/survey for around 10 to 15 minutes. A small fraction of the labs completed the survey on a website set up with the questions. The survey included both open-ended and multiple-choice type questions. In most cases, 49% of labs, the lab manager was the party interviewed. Research scientists or associates were spoken to in 35% of cases. The remaining respondents were technicians, executives, professors or others.

## Contents

### **I: EXECUTIVE SUMMARY**

Scope  
Methodology  
Outline  
Main Findings of the Study

### **II: DEMOGRAPHICS**

Regional Distribution of Respondents  
Industrial Distribution of Respondents  
Laboratory Function of Respondents  
Distribution by Number of Sequencers  
Total Numbers of Systems in Labs  
Numbers of 2nd and 3rd Generation Systems  
Numbers of Capillary Systems  
Brand(s)/ Types(s) of Sequencers Owned, Overall  
Position/ Role of Respondents

### **III: SYSTEM INSTALLATIONS**

Distribution of Sequencer Models  
Installed Base by System Owned  
Number of Systems Owned Per Lab  
Installed Base by Region  
##USA, Europe, Rest of World  
Installed Base, NextGeneration Systems  
Installed Base, Capillary Systems  
Installed Base by Industry Segment  
##Overall Brand/ Type  
####NextGeneration Systems  
####Capillary Systems  
Installed Base by Laboratory Function  
##Overall Brand/ Type  
####NextGeneration Systems  
Capillary / Gel Systems  
Date of Installation

##Distribution by NextGeneration vs Capillary

#### **IV: SEQUENCER APPLICATIONS, CLINICAL APPLICATIONS, AND USAGE TRENDS**

Sequencer Applications and Usage

Applications Run, Overall and by Brand/ Type

Likely Increases in Applications and Volume

by Brand of NextGeneration System Owned

Growth in Sequencing, NGS vs Capillary Systems

Capacity Usage of Systems

Outsourcing

Clinical Applications

Sequencing of CLIA Regulated Patient Samples

Verbatim Comments: Approaching Clinical Applications

Certification for Regulated Samples

Plans, Expectations for Certification & Usage

##Time frame

##Type of Accreditation Planned/ Considered

##Change in Regulated Samples vs. NonRegulated Samples

##Certified Labs

##NonCertified Labs

##Sequencers Used or Planned for Patient/ Human Samples

##Regulated Patient/ Human Samples

##Nonregulated Patient/ Human Samples

Disease/ Therapeutic Areas Where Sequencing Applied

Regulated Patient/ Human Samples

NonRegulated Patient/ Human Samples

Disease Areas Expected to Grow Fastest

Other Technologies Used for Patient/ Human Samples

Challenges for Growth of Clinical Sequencing

#### **V: IMPROVEMENTS AND FUTURE PURCHASE PLANS**

Changes or Improvements, NextGeneration Systems

Difficulty of Data Analysis & Data Management

Data Analysis Difficulty

Data Management Difficulty

TimeFrame of Purchase Plans

Overall

by Brand/ Type Owned

by Laboratory Function

by Region

Systems Likely to Consider for Purchase

Overall

##by Brand/ Type Owned

##by NextGeneration Systems vs Capillary Systems Owned

##by Industry/ Segment

##by Laboratory Function

##by Region

## List Of Exhibits

### LIST OF EXHIBITS

#### II: DEMOGRAPHICS

Table 21: Regional Distribution of Respondent Labs  
Figure 21: Regional Distribution of Respondent Labs  
Table 22: Primary Industry/ Segment Labs Belong To  
Figure 22: Primary Industry/ Segment Labs Belong To  
Table 23: Industry/ Segment(s) Labs Belong To, by Region  
Table 24: Industry/ Segment(s) Labs Belong To, by Region  
Figure 23: Industry/ Segment(s) Labs Belong To, by Region  
Table 25: Major Function(s) of Respondent Labs  
Figure 24: Major Function(s) of Respondent Labs  
Table 26: Major Function(s) of Labs, by Region  
Table 27: Major Function(s) of Labs, by Region  
Figure 25: Major Function(s) of Labs, by Region  
Table 28: Distribution of Total Sequencers in Labs  
Figure 26: Distribution of Total Sequencers in Labs  
Table 29: Number of NextGeneration Sequencers in Labs  
Figure 27: Number of NextGeneration Sequencers in Labs  
Table 210: Number of Capillary Sequencers in Labs  
Figure 28: Number of Capillary Sequencers in Labs  
Table 211: Brand(s)/ Type(s) of Sequencers Owned by Labs  
Table 212: Number of a Given Brand / Type in Labs Owning That Type  
Figure 29: Avg. Number of a Given Sequencer in Labs Owning That Type  
Table 213: Position/ Role of Respondent  
Figure 210: Position/ Role of Respondent

#### III: SYSTEM INSTALLATIONS

Table 31: Sequencer Models in Respondents' Labs  
Figure 31: Sequencer Models in Respondents' Labs  
Table 32: Installed Base of Labs, by System(s) Owned (# of Systems)  
Table 33: Installed Base of Labs, by System(s) Owned (% of Systems)  
Figure 32: Installed Base of Labs, by System(s) Owned (% of Systems)  
Table 34: Installed Base of Labs, by System(s) Owned (% of Systems)  
Table 35: Distribution of NGS vs. Capillary Systems (No. of Labs)

Figure 33: Distribution of NGS vs. Capillary Systems (No. of Labs)

Table 36: No. of NGS Systems by No. of Capillary Systems (% of Labs)

Figure 34: No. of NGS Systems by No. of Capillary Systems (% of Labs)

Table 37: No. of Capillary Systems by No. of NGS Systems (% of Labs)

Figure 35: No. of Capillary Systems by No. of NGS Systems (% of Labs)

Table 38: Number of Systems Installed in Labs, by Region

Table 39: Sequencer Models in Respondents' Labs, by Region (No. of Systems)

Table 310: Sequencer Models in Respondents' Labs, by Region (% of Systems)

Figure 36: Sequencer Models in Respondents' Labs, by Region (% of Systems)

Table 311: NGS Models in Respondents' Labs, by Region (No. of Systems)

Table 312: NGS Models in Respondents' Labs, by Region (% of Systems)

Figure 37: NGS Models in Respondents' Labs, by Region (% of Systems)

Table 313: Capillary Models in Respondents' Labs, by Region (# of Systems)

Table 314: Capillary Models in Respondents' Labs, by Region (% of Systems)

Figure 38: Capillary Models in Respondents' Labs, by Region (% of Systems)

Table 315: Number of Systems Installed, by Industry/ Segment(s)

Table 316: Brand / Type of Sequencer Systems Installed, by Industry/ Segment (# of Systems)

Table 317: Brand / Type of Sequencer Systems Installed, by Industry/ Segment (% of Systems)

Figure 39: Brand / Type of Sequencer Systems Installed, by Industry/ Segment (% of Systems)

Table 318: Brand / Type of Sequencer Systems Installed, by Industry/ Segment (% of Systems)

Figure 310: Brand / Type of Sequencer Systems Installed, by Industry/ Segment (% of Systems)

Table 319: Number of NGS Systems Installed, by Industry/ Segment

Table 320: NextGeneration Models in Respondents' Labs, by Industry/ Segment (# of Systems)

Table 321: NextGeneration Models in Respondents' Labs, by Industry/ Segment (% of Systems)

Figure 311: NextGeneration Models in Respondents' Labs, by Industry/ Segment (% of Systems)

Table 322: NextGeneration Models in Respondents' Labs, by Industry/ Segment (% of Systems)

Figure 312: NextGeneration Models in Respondents' Labs, by Industry/ Segment (% of Systems)

Table 323: Number of Capillary Systems Installed in Labs Owning, by Industry/ Segment



Table 324: Number of Systems Installed by Laboratory Function  
Table 325: Brand / Type of Sequencer System Installed, by Lab Function (# of Systems)  
Table 326: Brand / Type of Sequencer System Installed, by Lab Function(% of Systems)  
Figure 313: Brand / Type of Sequencer System Installed, by Lab Function (% of Systems)  
Table 327: Brand / Type of Sequencer System Installed, by Lab Function(% of Systems)  
Table 314: Brand / Type of Sequencer System Installed, by Lab Function(% of Systems)  
Table 328: Number of NGS Installed in Labs Owning, by Lab Function  
Table 329: NGS Models in Respondents' Labs, by Lab Function (# of Systems)  
Table 330: NGS Models in Respondents' Labs, by Lab Function (% of Systems)  
Figure 315: NGS Models in Respondents' Labs, by Lab Function (% of Systems)  
Table 331: NGS Models in Respondents' Labs, by Lab Function (% of Systems)  
Figure 316: NGS Models in Respondents' Labs, by Lab Function (% of Systems)  
Table 332: Number of Capillary Systems Installed in Labs Owning,by Lab Function  
Table 333: Recent Systems Installed, 2001 Q2 2013 (# of Systems)  
Figure 317: Date of Recent System Installation, 20012013  
Table 334: Recent NGS Systems Installed, 2007 – Q2 2013 (# of Systems)  
Figure 318: Date of Recent NGS Installation (# of Systems)

#### **IV: SEQUENCER APPLICATIONS, CLINICAL APPLICATIONS, AND USAGE TRENDS**

Table 41: NGS Application Volume by Model (% of Sequencing)  
Figure 41: NGS Application Volume by Model (% of Sequencing)  
Table 42: Applications Expected to Increase the Most  
Figure 42: Applications Expected to Increase the Most Overall  
Table 43: Applications Expected to Increase, by NGS Brand Owned (# of Labs)  
Table 44: Applications Expected to Increase, by NGS Brand Owned (% of Labs)  
Figure 43: Applications Expected to Increase, by NGS Brand Owned (% of Labs)  
Table 45: Expected Growth in Sequencing Volume (# of Labs)  
Table 46: Expected Growth in Sequencing Volume (% of Labs)  
Figure 44: Expected Growth in Sequencing Volume (% of Labs)  
Table 47: Avg. Percentage of Systems' Capacity Used, by Brand  
Figure 45: Percentage of Systems' Capacity Used, by Brand  
Table 48: Percentage of Sequencing Volume Outsourced  
Figure 46: Percentage of Sequencing Volume Outsourced

Table 49: Percentage of Sequencing Volume Outsourced, by Region  
Table 410: Percentage of Sequencing Volume Outsourced, by Region  
Table 411: Reasons for Outsourcing  
Figure 47: Reasons for Outsourcing  
Table 412: How Labs Address Sequencing of Regulated Patient Samples(# of Labs)  
Table 413: How Labs Address Sequencing of Regulated Patient Samples(% of Labs)  
Figure 48: How Labs Address Sequencing of Regulated Patient Samples(% of Labs)  
Figure 414: Labs' Certification for Regulated Patient Samples  
Figure 49: Labs' Certification for Regulated Patient Samples  
Table 415: Plans for New or Additional Certification  
Table 416: Plans for New or Additional Certification  
Figure 410: Plans for New or Additional Certification  
Table 417: Type of Accreditation Planned/ Considered (# of Labs)  
Table 418: Type of Accreditation Planned/ Considered (% of Labs)  
Figure 411: Type of Accreditation Planned/ Considered (% of Labs)  
Table 419: Distribution of Samples, Est. 2013 (# of Labs)  
Table 420: Distribution of Samples, Est. 2013 (% of Labs)  
Figure 412: Distribution of Samples, Est. 2013 (% of Labs)  
Table 421: Distribution of Samples, Expected 2014 (# of Labs)  
Table 422: Distribution of Samples, Expected 2014 (% of Labs)  
Figure 413: Distribution of Samples, Expected 2014 (% of Labs)  
Table 423: Volume of Regulated vs. NonRegulated Samples (% of Sequencing)  
Figure 414: Volume of Regulated vs. NonRegulated Samples, Est. 2013 (% of Sequencing)  
Figure 415: Volume of Regulated vs. NonRegulated Samples, Expected 2014(% of Sequencing)  
Table 424: Distribution of Samples, Est. 2013 (# of Labs)  
Table 425: Distribution of Samples, Est. 2013 (% of Labs)  
Figure 416: Distribution of Samples, Est. 2013 (% of Labs)  
Table 426: Distribution of Samples, Expected 2014 (# of Labs)  
Table 427: Distribution of Samples, Expected 2014 (% of Labs)  
Figure 417: Distribution of Samples, Expected 2014 (% of Labs)  
Table 428: Volume of Regulated vs. NonRegulated Samples, Est. 2013(% of Sequencing)  
Figure 418: Volume of Regulated vs. NonRegulated Samples, Est. 2013(% of Sequencing)  
Figure 419: Volume of Regulated vs. NonRegulated Samples, Expected 2014(% of Sequencing)  
Table 429: Distribution of Samples, Est. 2013 (# of Labs)

Table 430: Distribution of Samples, Est. 2013 (% of Labs)  
Figure 420: Distribution of Samples, Est. 2013 (% of Labs)  
Table 431: Distribution of Samples, Expected 2014 (# of Labs)  
Table 432: Distribution of Samples, Expected 2014 (% of Labs)  
Figure 421: Distribution of Samples, Expected 2014 (% of Labs)  
Table 433: Sequencers Used for Regulated Patient Samples  
Figure 422: Sequencers Used for Regulated Patient Samples (% of Systems)  
Table 434: Sequencers Likely to be Used for Regulated Patient Samples (% of Labs)  
Figure 423: Sequencers Likely to be Used for Regulated Patient Samples (% of Labs)  
Table 435: Sequencers Used for NonRegulated Patient/Human Samples  
Figure 424: Sequencers Used for NonRegulated Patient/Human Samples (% of Systems)  
Table 436: Disease Areas Where Sequencing Applied, by NGS vs Capillary (Percentage and Number of Systems)  
Figure 425: Disease Areas Where Sequencing Applied, by NGS vs Capillary  
Table 437: Disease Areas Where Sequencing Applied, by NGS vs Capillary(% of Volume)  
Figure 426: Disease Areas Where Sequencing Applied, by NGS vs Capillary (% of Volume)  
Table 438: Regulated Sequencing Expected to Grow Fastest  
Figure 427: Regulated Sequencing Expected to Grow Fastest (% of Labs)  
Table 439: NonRegulated Patient/ Human Sequencing Expected to Grow Fastest  
Figure 428: NonRegulated Patient/ Human Sequencing Expected to Grow Fastest  
Table 440: Other Technologies Used in Lab  
Figure 429: Other Technologies Used in Lab (% of Labs)  
Table 441: Challenges for Growth of Clinical Sequencing

## **V: IMPROVEMENTS AND FUTURE PURCHASE PLANS**

Table 51: Major Changes or Improvements Wanted by EndUsers  
Figure 51: Major Changes or Improvements Wanted by EndUsers  
Table 52: Bottleneck in Sequencing Process  
Figure 52: Bottleneck in Sequencing Process  
Table 53: Difficulty Level of Data Analysis  
Figure 53: Difficulty Level of Data Analysis  
Table 54: Difficulty Level of Data Management  
Figure 54: Difficulty Level of Data Management  
Table 55: Time Frame for Future Purchase  
Figure 55: Time Frame for Future Purchase

Table 56: Time Frame for Future Purchase, by Brand Owned (# of Labs)

Table 57: Time Frame for Future Purchase, by Brand Owned (% of Labs)

Table 58: Time Frame for Future Purchase, by Lab Function (# of Labs)

Table 59: Time Frame for Future Purchase, by Lab Function (% of Labs)

Table 510: Time Frame for Future Purchase, by Region (# of Labs)

Table 511: Time Frame for Future Purchase, by Region (% of Labs)

Figure 56: Time Frame for Future Purchase, by Region (% of Labs)

Table 512: Sequencer Models Likely to Consider

Figure 57: Sequencer Models Likely to Consider (% of Labs)

Table 513: Sequencer Models Likely to Consider, by Brand/ Type Owned (# of Labs)

Table 514: Sequencer Models Likely to Consider, by Brand/ Type Owned (% of Labs)

Figure 58: Sequencer Models Likely to Consider, by Brand/ Type Owned (% of Labs)

Table 515: Sequencer Models Likely to Consider, by Industry/ Segment Owned (# of Labs)

Table 516: Sequencer Models Likely to Consider, by Industry/ Segment Owned (# of Labs)

Table 517: Sequencer Models Likely to Consider, by Lab Function (# of Labs)

Table 518: Sequencer Models Likely to Consider, by Lab Function (% of Labs)

Table 519: Sequencer Models Likely to Consider, by Region (# of Labs)

Table 520: Sequencer Models Likely to Consider, by Region (% of Labs)

Figure 59: Sequencer Models Likely to Consider, by Region (% of Labs)

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