MiSeq® System

Fully integrated, next-generation sequencing ecosystem for rapid genetic analysis.

MiSeq System Highlights

- **Sequencing at the touch of a button**
  Integrated and automated system requires no intervention, eliminating potential error
- **Most rapid variant detection for time-critical studies**
  Go from DNA to data in less than 8 hours
- **Proven data quality**
  Leverages the industry’s most accurate TruSeq® chemistry for the highest confidence in your data
- **Optimized for key applications**
  Adjustable read lengths and imageable area provide ultimate experimental flexibility across a broad range of applications

Introduction

The MiSeq personal sequencing system enables researchers to go from sample to analyzed data in as little as eight hours with a revolutionary workflow and unmatched accuracy. MiSeq is the only next-generation sequencer that integrates amplification, sequencing, and data analysis in a single instrument with a footprint of approximately 2 feet square (Figure 1). In contrast to sequencing systems that require emulsion PCR, the MiSeq system leverages Illumina’s proven TruSeq chemistry, making it the ideal platform for any lab performing rapid and cost-effective genetic analysis for the widest range of applications.

Push Button Sequencing

The MiSeq system offers the easiest next-generation sequencing workflow. Perform simple instrument operation with an intuitive touch screen interface and plug-and-play reagents with RFID tracking and automated convenience. The compact, all-in-one MiSeq platform incorporates cluster generation, paired-end fluidics, and complete data analysis, eliminating the need for auxiliary hardware and saving valuable lab bench space. Seamless data upload to the BaseSpace™ cloud environment enables unparalleled analysis, collaboration, and security.

Fastest Turnaround Time

For results in hours rather than days, the MiSeq system delivers the simplest and fastest turnaround time of any next-generation personal sequencing system (Figure 2). Prepare your sequencing library in just 90 minutes with Nextera® sample prep reagents, then move to automated clonal amplification and sequencing in as little as three and a half hours directly on the MiSeq system. On the integrated instrument computer, data analysis from quality-scored base calls to variant calling and alignment is complete in less than two hours with no user intervention.

Proven Data Quality

Based on Illumina’s proven sequencing by synthesis technology, massively parallel sequencing of millions of fragments occurs by a proprietary reversible terminator–based method that detects single bases as they are incorporated into growing DNA strands. A fluorescently labeled terminator is imaged as each dNTP is added and then cleaved to allow incorporation of the next base. Since all four reversible terminator–bound dNTPs are present during each sequencing cycle, natural competition minimizes incorporation bias. Base calls are made directly from signal intensity measurements during each cycle, greatly reducing raw error rates compared to other technologies. The end result is highly accurate base-by-base sequencing that eliminates sequence context–specific errors, enabling robust base calling, even within repetitive sequence regions and homopolymers. Illumina sequencing is powered by TruSeq technology, and delivers the highest data integrity, with the highest yield of error-free reads and the most base calls above Q30.

Optimized for Key Applications

Explore the broadest range of sequencing applications. Adjustable read lengths and imageable area and the choice of single or paired-end reads allow you to match experimental needs to your time requirements. Perform rapid and cost-effective capillary electrophoresis (CE) sequencing applications, as well as highly multiplexed amplicon sequencing with TruSeq Custom Amplicon, TruSeq Custom Enrichment, small genome resequencing and de novo sequencing, small RNA sequencing, library QC, and 16S metagenomics studies. For current next-generation sequencing users, complete sequencing projects in a fraction of time and cost using the MiSeq system.

Figure 1: MiSeq System

Illumina’s compact MiSeq system is the ideal platform for rapid, cost-effective next-generation sequencing.
The MiSeq system’s revolutionary workflow enables the fastest turnaround time of any next-generation personal sequencing system.