Nextera™ DNA Sample Preparation Kits

Sequencing's fastest and easiest sample preparation workflow, delivering libraries in 90 minutes.

Highlights

- **Fastest time to results**
  Go from DNA to data in less than 8 hours with MiSeq™ system
- **Easiest to use**
  Prepare sequencing-ready samples in 1.5 hours with 15 minutes hands-on time
- **Lowest DNA input**
  Use just 50 ng DNA per sample, enabling use with samples in limited supply
- **Highest throughput**
  Index up to 96 samples and use master-mixed reagents to manually process > 500 samples per week

Figure 1: Nextera DNA Sample Preparation Kit

Nextera DNA Sample Preparation Kit (96 Samples).

DNA to Data in Record Time

Nextera DNA Sample Preparation kits provide the fastest and easiest workflow, enabling sequencing-ready libraries to be generated in less than 90 minutes, with less than 15 minutes of hands-on time. DNA is simultaneously fragmented and tagged with sequencing adapters in a single step, using standard lab equipment. Libraries prepared with Nextera kits are compatible with all Illumina® sequencers (Table 1).

Table 1: Nextera DNA Sample Prep Specifications

Specification	Value
Input DNA	50 ng
Available indices	Up to 96
Compatible sequencers	HiSeq® 1000/2000, HiScanSQ®, Genome Analyzer IIx and MiSeq systems
Read lengths supported	Supports all read lengths on any Illumina sequencing system, including 2 × 150 reads on the MiSeq System
Typical median insert size	~250 bp
Sample DNA input type	Genomic DNA and PCR amplicons

Breakthrough Chemistry

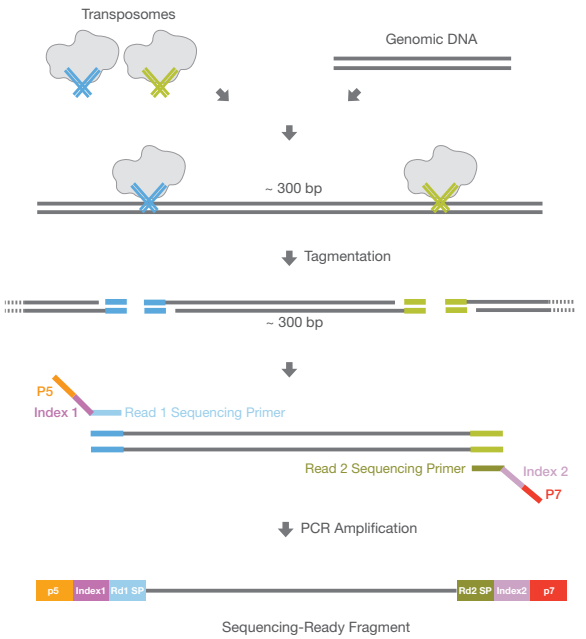
Nextera technology employs a single "tagmentation" reaction to simultaneously fragment and tag DNA with adapters (Figure 2). This process occurs in a single step using master-mixed reagents to provide PCR-ready templates in as little as 15 minutes. Sequencing adaptors and indices are then added to the gDNA fragment by PCR. The optimized Nextera PCR protocol leads to improved performance with GC regions. From start to finish, the complete Nextera sample preparation protocol is over 80% faster than any other method available.

Improved Multiplexing

Nextera DNA Sample Preparation kits feature an innovative indexing solution for processing and uniquely barcoding up to 96 samples. Multisample studies can be conveniently managed using the Illumina Experiment Manager, a freely available software tool that provides easy reaction setup for plate-based processing.

Following the addition of two indices to each gDNA fragment, up to 96 uniquely indexed samples can be pooled and sequenced together in a single lane on any Illumina sequencer. After sequencing, the unique combination of the two indices is used to demultiplex the data and assign reads to the proper sample in the pool. Using this dual barcode approach, Nextera Index Kits only require 20 unique index oligos to process up to 96 samples, making this an easily scalable approach for sample indexing.

Figure 2: TruSeq™ Custom Amplicon Biochemistry



Nextera chemistry simultaneously fragments and tags DNA in a single step. A simple PCR amplification then appends sequencing adapters and sample indices to each fragment.

Accelerated Applications

Nextera DNA Sample Preparation kits are ideal for experiments where speed and ease are paramount. The low 50 ng DNA input also makes this method amenable to precious samples available in limited quantity. This sample preparation workflow can shorten the overall sequencing workflow time for a wide variety of established applications[1-7] and can be automated for even greater throughput. The combination of the MiSeq system and Nextera sample preparation kits provide rapid DNA to data in as little as 8 hours, enabling rapid applications such as small genome and amplicon sequencing (Table 2).

Summary

Illumina's Nextera DNA Sample Preparation kit provides sequencing's fastest and easiest sample preparation workflow, delivering completed libraries in 90 minutes that are compatible with all Illumina sequencing systems. Nextera enables high-throughput studies with a built-in solution for indexing up to 96 samples with ultra low DNA input. Combined with the MiSeq system, Nextera DNA Sample Preparation Kits enable the fastest DNA to data—all in a single day.

Table 2: Representative Nextera Applications

Examples of Nextera Applications
Small-genome resequencing
Small-genome *de novo* sequencing
Amplicon sequencing
Clone or plasmid sequencing

References

1. Ramirez MS, Adams MD, Bonomo RA, Centrón D, et al. (2011) Genomic analysis of *Acinetobacter baumannii* A118 by comparison of optical maps: Identification of structures related to its susceptibility phenotype. Antimicrob Agents Chemother, 55(4): 1520–6.
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4. Kitzman JO, Mackenzie AP, Adey A, Hiatt JB, Patwardhan RP, et al. (2010) Haplotype-resolved genome sequencing of a Gujarati Indian individual. Nat Biotechnol 29: 59–63.
5. Linnarsson, S. (2010) Recent advances in DNA sequencing methods - General principles of sample preparation. Exp Cell Res 316: 1339–43.
6. Sudmant PH, Kitzman JO, Antonacci F, Alkan C, Malig M, et al. (2010) Diversity of human copy number variation and multicopy genes. Science 330: 641–646.
7. Voelkerding KV, Dames S, and JD Durtschi (2010) Next generation sequencing for clinical diagnostics-Principles and application to targeted resequencing for hypertrophic cardiomyopathy. J Mol Diagn 12: 539–551.

Ordering Information

Product	Catalog No.
Nextera DNA Sample Preparation Kit (96 Samples)	FC-121-1031
Nextera DNA Sample Preparation Kit (24 Samples)	FC-121-1030
Nextera Index Kit (96 Indices, 384 Samples)	FC-121-1012
Nextera Index Kit (24 Indices, 96 Samples)	FC-121-1011
TruSeq Dual Index Sequencing Primer Kit, Single Read (single-use kit)	FC-121-1003
TruSeq Dual Index Sequencing Primer Kit, Paired-End Read (single-use kit)	PE-121-1003

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