NeoPrep™ Library Prep System

High-quality, reproducible NGS libraries with low input for all Illumina sequencing systems.

Highlights

- **High Quality With Low Input**
  Generate high-quality, reproducible libraries, even from limited starting material
- **Sequencing-Ready Libraries With Unrivaled Simplicity**
  Prepare, quantify, and normalize in a single run
- **Versatile Library Prep for a Complete NGS Solution**
  Perform DNA and RNA assays, optimized for Illumina sequencing systems and informatics tools, for complete and seamless workflow solutions from one source
- **Accessible System for Every Lab**
  Streamline laboratory infrastructure and reduce costs with any lab, regardless of size, experience, or budget

Figure 1: NeoPrep Library Prep System—By combining the precision of digital microfluidics and the simplest workflow in the industry, the NeoPrep System delivers high-quality DNA and RNA libraries from low input amounts.

Sequencing-Ready Libraries, Simply Delivered

The NeoPrep Library Prep System (Figure 1) is a fully integrated solution with a streamlined, easy-to-use workflow that produces 16 quantified and normalized sequencing-ready libraries per run. This seamless solution delivers high quality and reproducible results, even with low input amounts of DNA or RNA.

There are 3 simple steps in the NeoPrep workflow: run preparation, library card loading, and library collection. The same workflow prepares any type of library, including libraries that require complex workflows when prepared manually, and needs just 30 minutes of hands-on time.

Fully Integrated Workflow, Maximum Walk-Away

After loading input (fragmented DNA or total RNA), the NeoPrep System performs all remaining library preparation processes, including PCR amplification, quantification, and normalization (Figure 2). With pipetting time dramatically reduced, users can walk-away for hours. From system design to installation and operation, every aspect of the NeoPrep System is optimized for efficiency and ease of use. An intuitive, graphical user interface (Figure 3) quickly guides users through the run setup in a few simple steps.

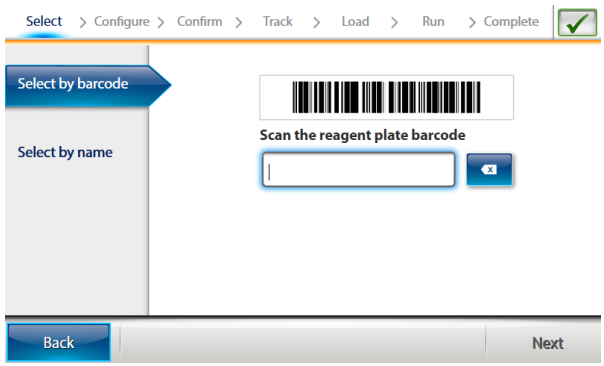
									Total hands-on time
Manual DNA	Mechanical Fragmentation*	Size selection	A-tailing	Ligation	Amplification	Quantification	Normalization	Recover sequencing-ready libraries	~ 4 hours
NeoPrep	Mechanical Fragmentation*				Performed by NeoPrep System			Recover sequencing-ready libraries	30 mins

*Requires Covaris Focused-ultrasonicator

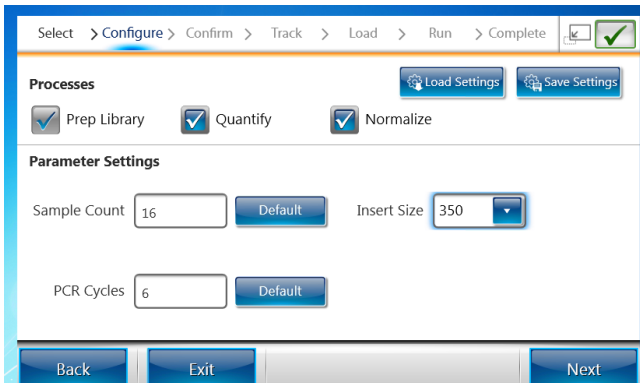
									Total hands-on time
Manual mRNA	Begin manual protocol	cDNA synthesis	A-tailing	Ligation	Amplification	Quantification	Normalization	Recover sequencing-ready libraries	~ 4.5 hours
NeoPrep	Load NeoPrep System				Performed by NeoPrep System			Recover sequencing-ready libraries	30 mins

Figure 2: The NeoPrep System Minimizes Hands-On Time—With built-in components for magnetic bead-based operations, thermal cycling, and optical detection, the NeoPrep System enables users to walk-away from library prep for both DNA (top) and RNA (bottom).

A



B



C

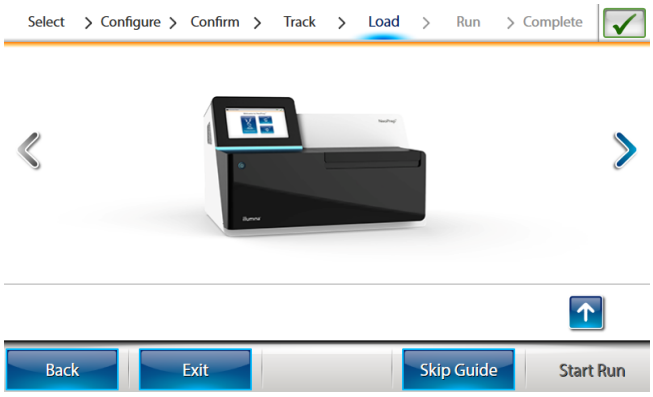


Figure 2: NeoPrep Run Setup—The graphical user interface quickly guides users through a simple setup process that includes (A) selecting an assay, (B) confirming the run settings, and (C) loading the library card.

Excellent Performance and Reproducibility

The NeoPrep System uses digital microfluidics technology to eliminate almost all manual steps during library preparation, quantification, and normalization. This transformative technology precisely manipulates droplets within the NeoPrep library card (Figure 4), reducing operator variability, and human error.

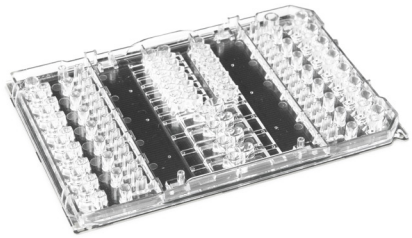


Figure 4: NeoPrep Library Card—The 16-sample NeoPrep library card is designed with a printed circuit board substrate and patterned electrodes to facilitate droplet movement. Libraries are incubated, amplified, and washed inside the card, saving users hours of hands-on time and significantly reducing the potential for human errors.

High Quality With Low Input Amounts

The quality of NeoPrep libraries is comparable to that of libraries prepared manually—but minimum input requirements for the NeoPrep System are 4- to 10-fold lower than those for similar manual methods, making the system the ideal solution for users with limited starting material (Figure 5).

Versatile Library Prep for a Range of Applications

NeoPrep library prep kits include all necessary reagents and require far fewer user-supplied consumables, such as plates and pipette tips, reducing cost per sample. With fewer manual steps, quality control processes are also significantly simplified (Table 1).

While these kits have been optimized to run out of the box, the system allows users to modify some run parameters to fit their experimental needs. For added scheduling flexibility, runs on the NeoPrep System can be started at the end of the workday to run overnight. With run times of ~7.5 hours for some assays, the NeoPrep System can run twice a day, preparing up to 160 libraries per week. Because NeoPrep workflows are the same from kit to kit, labs can quickly adopt new library prep assays for a wide range of applications.

Table 1: Lab Efficiency Comparison

	Manual	NeoPrep
Input	100–1000 ng	25–100 ng
Hands-On Time	~4 hours	30 minutes
Pipetting Steps	40–60	< 10
Walk-away Time	Minimal	Full walk-away
Reagents	Library prep, quantification reagents	NeoPrep kit
Library Quantification Device[a]	Qubit, qPCR, or RT-PCR instrument	N/A

a. Assay dependent

Simplicity, Speed, Support

NeoPrep System runs can be set up and monitored in BaseSpace®, sequenced on any Illumina sequencing platform, and analyzed using BaseSpace Apps. The complete, seamless workflow solution is supported at every step of the process by the industry-leading Illumina service team. With its unparalleled ease-of-use and competitive price, the NeoPrep System allows any lab to prepare NGS libraries with confidence and within budget.

Learn More

For more information and to learn which Illumina library prep kits are currently available for the NeoPrep System, visit www.illumina.com/neoprep.

Ordering Information

Product	Catalog No.
NeoPrep Library Prep System (installation included)	SE-601-1001
TruSeq Nano DNA Library Prep Kit for NeoPrep (16 samples, 24 indexes)	NP-101-1001
TruSeq Stranded mRNA Library Prep Kit for NeoPrep (16 samples, 24 indexes)	NP-202-1001

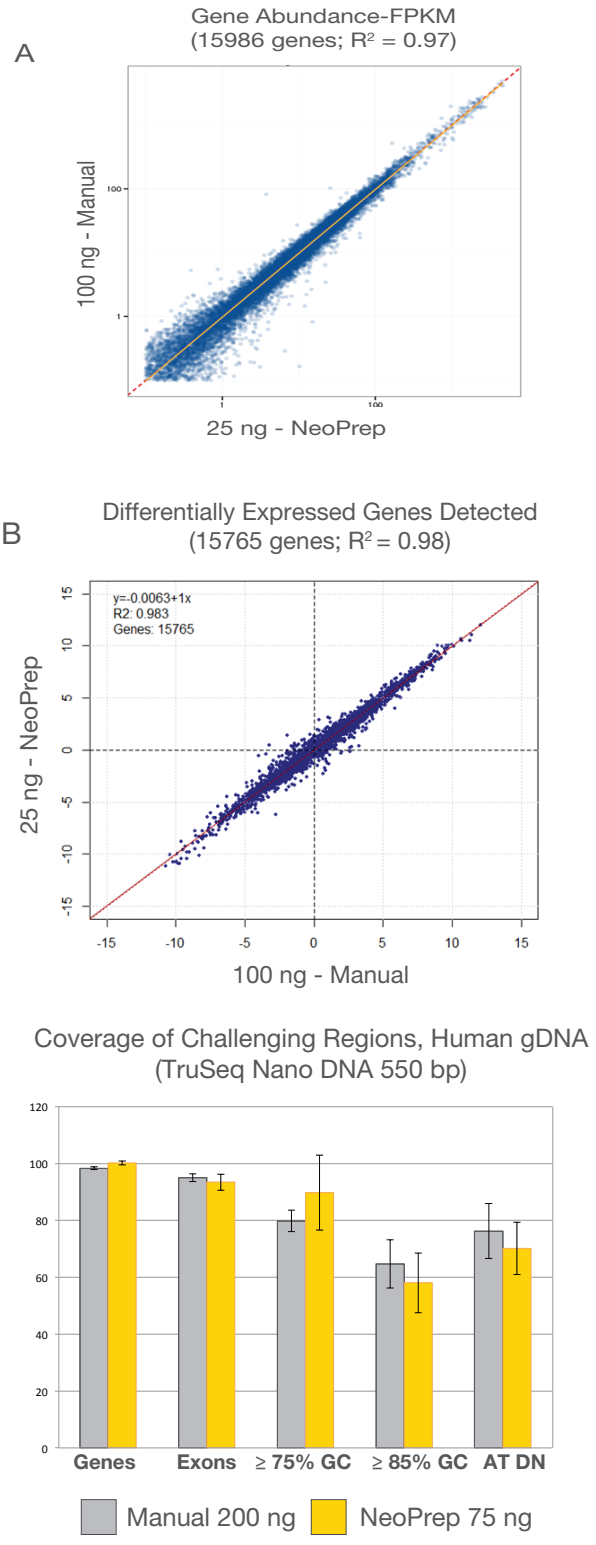


Figure 5: NeoPrep and Manual Library Prep Methods—Libraries prepared with the NeoPrep System show equivalent performance to comparable manual methods using Illumina TruSeq® Nano DNA and TruSeq Stranded mRNA library prep kits, with much lower input amounts.

NeoPrep System Performance Parameters	
Input	gDNA or Total RNA
Input Quantity[a]	25–100 ng Loading volume: 25–45 µl
Output	Quantified and normalized libraries
Library Yield	10–100 nM in 10 µl
Normalized Concentration	TruSeq Nano DNA Kit-NeoPrep: 10 nM TruSeq Stranded mRNA Kit-NeoPrep: 10 nM
Throughput	16 libraries per run Up to 80/160 libraries per week, depending on assay
Run Time[b]	TruSeq Nano DNA Kit-NeoPrep: ~ 7.5 hours TruSeq Stranded mRNA Kit-NeoPrep: ~ 10.5 hours
Hands-On Time	30 minutes per run
Applications	Whole-genome sequencing, whole-transcriptome sequencing See www.illumina.com/neoprep for a complete list.
Reagent Tracking	Via barcode scanner

a. Assay dependent.
b. NeoPrep System run time includes quantification and normalization. If only doing library prep, run time is reduced by ~2.5 hours.

NeoPrep System Specifications	
Instrument Configuration	Integrated touch screen display 2D hand-held barcode scanner with USB cable
Instrument Control[a]	Base unit: Intel Atom N450/D510 1.66 GHz CPU Memory: 2 GB Storage: 16 GB Operating system: Windows embedded standard 7P
Operating Environment	Temperature: 19°C to 25°C (22°C ± 3°C) Humidity: Noncondensing 20%–80% relative humidity Altitude: Less than 2000 m (6500 ft) Ventilation: Pollution degree II environment For indoor use only
Dimensions	W×D×H: 51.3 cm × 41.4 cm × 34.3 cm (20.2 in × 16.3 in × 13.5 in) Weight: 21 kg (~46 lbs) Packaged weight: 30 kg (~67 lbs)
Power Requirements	100–240 VAC 50/60 Hz Power consumption: 220 Watts
Product Safety and Compliance	NRTL certified IEC 61010-1 CE marked Certified to the following standards: UL STD 61010-1 CSA STD C22.2 No. 61010-1 EN/IEC 61010-1 EN/IEC 61326-1 EN/IEC 61326-2-6 Compliant with the following directives: Low voltage directive 2006/95/EC EMC Directive 2004/108/EC

a. Computer specifications are subject to change.

Illumina • 1.800.809.4566 toll-free (US) • +1.858.202.4566 tel • techsupport@illumina.com • www.illumina.com

For Research Use Only. Not for use in diagnostic procedures.

illumina®