Product overview:

RIPTIDE™ HIGH THROUGHPUT RAPID LIBRARY PREP (HT-RLP)

Product Overview

Riptide is an ultra high throughput multiplex library construction for small genomes, plasmids and gene constructs. Each kit contains all necessary reagents to go from DNA samples to sequencer-ready libraries for up to 960 samples.

Key Benefits:

- **High throughput:** Each kit produces up to 960 samples per day
- **Simple workflow:** 5 pipette steps per sample (no fragmentation, repair or ligation)
- **High quality data:** Tunable to diverse gc content
- **Low cost:** Contact iGenomX for introductory pricing (info@igenomx.com)

RLP Chemistry

iGenomX library construction chemistry begins with barcoding of individual samples followed by multiplexed library construction in a single tube. Random primers with 5' barcoded adapters bind to denatured DNA templates (A) . Polymerase then extends the primer, making a copy of the DNA template and terminating polymerization with a biotinylated ddNTP. Products are captured on streptavidin coated magnetic beads and washed to remove excess reactants (B). A second 5' adapter tailed primer is used with a strand displacing polymerase to convert the captured template into a dual adapter library (C). The primer bound closest to the magnetic bead will extend and displace primers bound downstream of the bead. The dual adapter library remains bound to the beads while excess reactants and displaced products are washed away (D). Low cycle PCR is used to amplify the library while incorporating a plate barcode in the index read position (E).

The High Throughput version labels individual samples in a 96 well plate. After the initial labelling, products from all wells are pooled prior to the streptavidin bead capture step. 96 samples are converted into a NGS library in a single tube. An optional plate barcode is added in the index read position to allow for multiple 96 sample plates to be sequenced simultaneously.

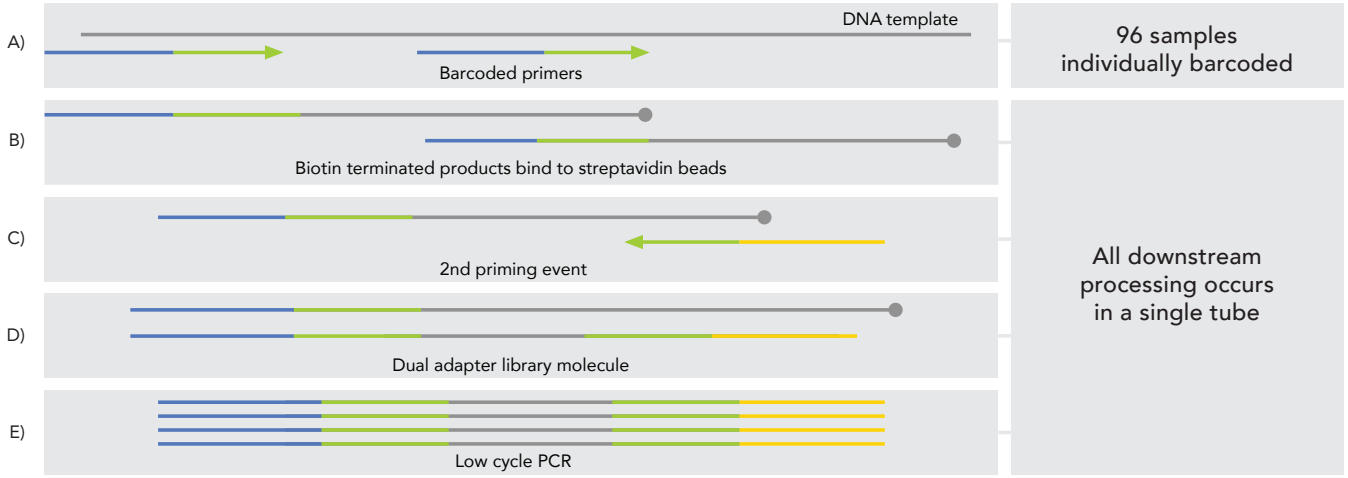

Figure 1: Schematic of RLP chemistry.

High Throughput Workflow: 96-960 samples

Combinatorial barcoding allows for multiple plates of 96 samples to be sequnced on the same flow cell (Figure 2). After the initial primer extension and termination reaction, barcoded products from all 96 samples are pooled. Each plate of 96 samples is further barcoded (index read) during PCR to allow for multiple 96 sample plates to be sequenced simultaneously on the same flow cell. The kit contains enough reagents for 960 samples.

Figure 2: High throughput workflow

HT-RLP Sample De-multiplexing

Demultiplexing reads is efficient with the open source demux tool (igenomx.com/docs/demux-tool.pdf). The first read has 20 bases of synthetic sequence consisting of an 8 base pair barcode and and a 12 base pair random sequence. The remaining bases of the first read are genomic template sequence. Read 2 has 8 bases of synthetic sequence consisting of 8 bases of random sequence. The remaining bases in read 2 are genomic template sequence. The index read corresponds to one of ten Illumina index barcodes. The sample demultiplex tool is recommended for read processing prior to downstream pipelines.

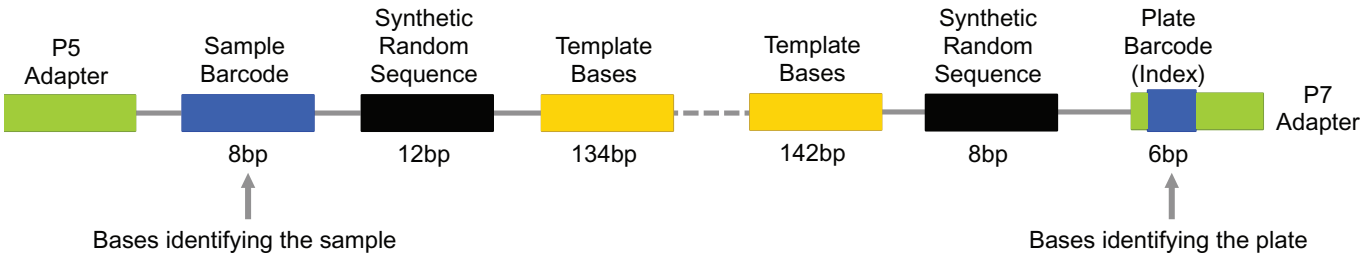

Figure 3: Sample De-multiplexing

To learn more, or to purchase Riptide HT-RLP, visit **igenomx.com/products**