

# NimbleGen Sequence Capture – Full Service Solution

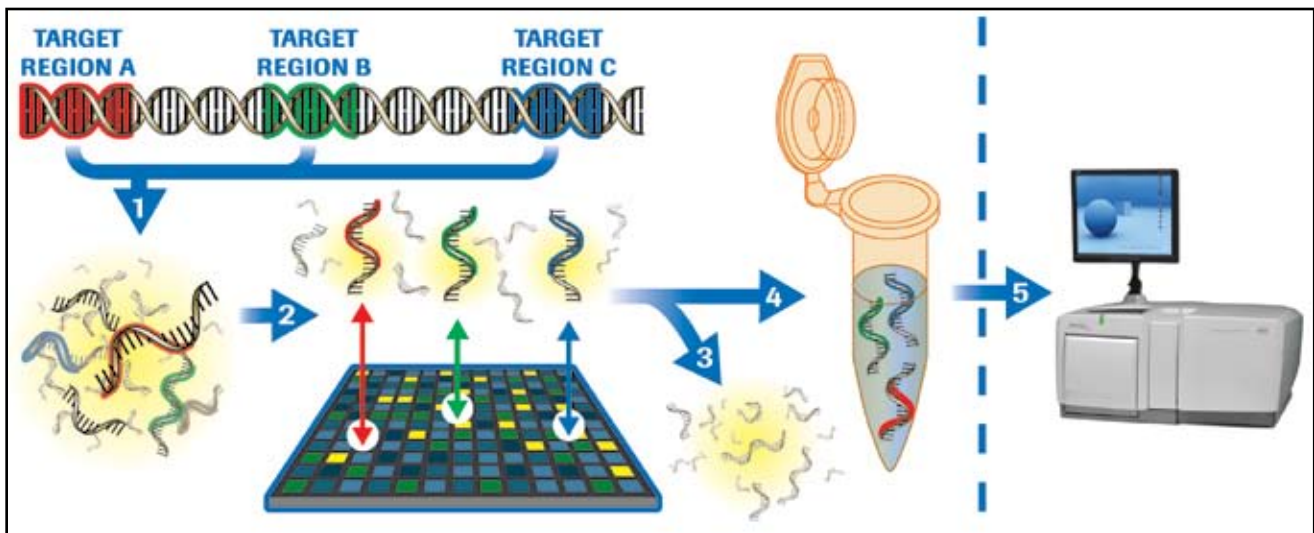
## *Seize the Genome*



### A Revolutionary Way to Perform Targeted Sequencing

*Transform your sequencing project with this highly efficient and cost-effective method for capturing targeted regions of the genome.*

NimbleGen Sequence Capture technology is a revolutionary process that enables the selective enrichment of up to 5Mb of selected genomic regions from full-complexity human genomic DNA in a single enrichment step. The process utilizes high-density, long-oligo NimbleGen arrays for the targeted hybridization and elution of only those genome regions you specify. The method is applicable to large contiguous or noncontiguous genomic regions, whole exomes, or any other targeted regions you want to sequence. NimbleGen Sequence Capture technology offers enormous advantages over current PCR-based methods for targeted enrichment in both speed and cost, producing an amplified, sequencing-ready sample of only your targeted regions, quick and easy.



**▲ Figure 1: The NimbleGen Sequence Capture Protocol**

1. The genomic DNA sample is fragmented.
2. The sample is hybridized to a custom NimbleGen Sequence Capture array.
3. Unbound fragments are removed.
4. The target-enriched pool is eluted and amplified.
5. The enriched sample is ready for high-throughput sequencing, such as with a Genome Sequencer FLX Instrument of 454 Life Sciences.

## No More Tedious and Costly PCR Reactions

NimbleGen Sequence Capture technology has clear advantages for large-scale, targeted sequencing when compared to traditional PCR-based methods, for example:

- **Select Large Genomic Regions:** For a 1Mb disease-associated region identified by a genome-wide association study, a traditional long-range PCR approach requires 200 work days to optimize all the PCR conditions. With NimbleGen Sequence Capture technology, this region can now be easily captured in a few weeks. In addition, you can target regions up to 5Mb with a single array.
- **Capture Exonic Regions:** Sequencing a panel of 1,000 cancer genes with ~7,000 exons requires the design and synthesis of 14,000 PCR primers at a cost of >\$30,000. Plus, 7,000 PCR assays are required at a cost of >\$10,000 per sample. Thus, a PCR approach is cost-prohibitive for most researchers. However, a single NimbleGen Sequence Capture array can target all 7,000 exons easily, in a single enrichment cycle, providing substantial cost and time savings.

## Advantages of NimbleGen Sequence Capture

- **High Performance:** Capture up to 5Mb total regions on a single array with high coverage and specificity.
- **Embedded Quality Controls:** NimbleGen Sequence Capture arrays incorporate built-in control probes to ensure system performance.
- **Maximum Flexibility:** Tailor the array design to capture your genomic regions or thousands of exons in parallel.
- **Substantial Savings:** Save time and cost compared to PCR-based methods.

## Using the NimbleGen Sequence Capture Service

Simply specify target regions and ship the genomic DNA to the Roche NimbleGen Service Lab. We will generate highly enriched DNA from your sample that is ready for downstream high-throughput sequencing.

Steps for NimbleGen Sequence Capture Service		Notes:
1	Roche NimbleGen designs a NimbleGen Sequence Capture array that targets regions specified by the researcher.	Researcher can specify regions from the human (hg18) genome, up to 5Mb total.
2	Researcher sends genomic DNA samples to the Roche NimbleGen Service Lab.	21µg of high quality genomic DNA in TE is needed per sample.
3	Roche NimbleGen Service Lab captures and amplifies the targeted regions using NimbleGen Sequence Capture technology.	The rigorously monitored process ensures that the targeted regions are selectively enriched.
4	Researcher receives sequencing-ready samples of enriched, amplified genomic regions. Roche NimbleGen also provides: <ul style="list-style-type: none"><li>• Yield and quality control report</li><li>• File of targeted regions and visualization software</li><li>• User's guide, including how to perform sequencing with the Genome Sequencer FLX Instrument of 454 Life Sciences.</li></ul>	Typical yields of captured sample provide sufficient material for multiple runs on the 454 GS FLX instrument using standard protocols.

*"We are extremely pleased with the capabilities and efficiencies the NimbleGen Sequence Capture technology has brought to our sequencing research efforts. There are huge advantages when this technology is compared to PCR based methods. This is the most exciting next phase in bringing genetic discovery to medicine."*

**Richard Gibbs, PhD**  
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05227852001 • Reprinted 10/08 • Publication 03/08

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