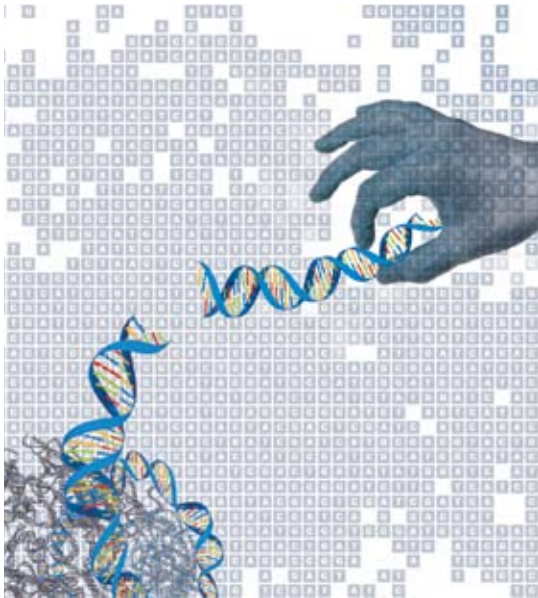


NimbleGen Sequence Capture 385K Version 2.0 Arrays: Custom Human Arrays for Delivery

Seize the Genome



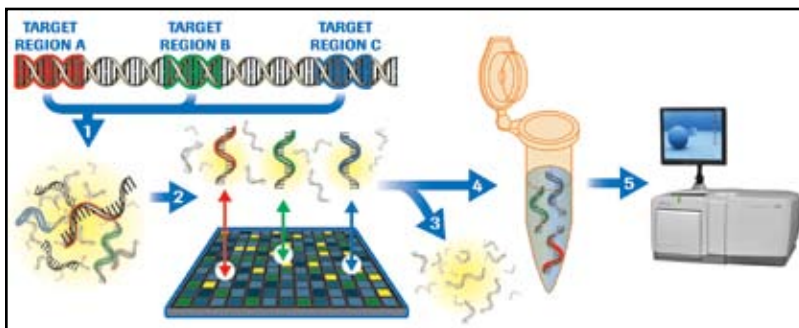
A Revolutionary Way to Perform Targeted Sequencing in Your Own Lab

NimbleGen Sequence Capture arrays enable you to produce targeted, sequencing-ready samples in your lab. Utilizing high-density, long-oligo NimbleGen 385K arrays and our version 2.0 optimized design algorithm, human genomic regions based on your interest and specification are captured and enriched. This array-based process offers significant time and cost savings over conventional PCR methods for sample preparation prior to high-throughput sequencing.

Roche NimbleGen supports human Sequence Capture experiments at every step, providing a stringent protocol supported by multiple Roche Applied Science products (Figure 1).

Advantages of NimbleGen Sequence Capture Arrays

- **Target Specific Regions of Interest:** Capture up to 5Mb contiguous or non-contiguous genomic regions on a single array with high coverage and specificity (Table 1).
- **Rely on Design Expertise:** Ensure the highest level of specificity and sensitivity (Table 2) for custom designs with an empirically tested and validated capture design algorithm.
- **Generate Data with Confidence:** Utilize built-in control probes to ensure system performance.
- **Customize Each Capture Design:** Tailor the array design to capture specific genomic regions or thousands of exons in parallel.
- **Reduce Cost:** Save time and cost compared to PCR-based methods.



◀ **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 the Genome Sequencer FLX Instrument of 454 Life Sciences.

A Complete Solution to Performing Sequence Capture in Your Own Lab

Roche NimbleGen has validated equipment and kits for processing NimbleGen Sequence Capture arrays. Refer to the NimbleGen Sequence Capture Equipment and Reagents flyer or the *NimbleGen Arrays User's Guide: Sequence Capture Array Delivery* (available at www.nimblegen.com/seqcap) for more details.



◀ **Figure 2: The NimbleGen Hybridization System.** The NimbleGen Hybridization System enables you to achieve consistent and reproducible hybridization results.



▶ **Figure 3: The NimbleGen Elution System.** The NimbleGen Elution System simplifies the elution of targeted DNA from the NimbleGen Sequence Capture array.

Performance Data: 11p12 Diabetes Susceptibility Locus	
Target bases	2,113,165
Total 454 sequencing reads	365,261
Percentage of 454 sequencing reads in target regions	80.9%
Percentage of target bases covered	99.2%
Median fold coverage	28-fold
Percentage of HapMap SNPs classified correctly	97.4%

◀ **Table 1: Performance Data.** NimbleGen Sequence Capture arrays were used to capture a ~3Mb region of human chromosome 11p12. This region plays a role in type 2 diabetes susceptibility in which the two susceptibility loci are 2.4Mb apart and thus PCR methods are technically unfeasible for high-throughput sequencing sample preparation. A HapMap sample was captured and an entire PicoTiterPlate device was used to generate ~100Mb of raw sequence on the Genome Sequencer FLX Instrument of 454 Life Sciences. Within the primary ~3Mb region, 28% was masked due to repetitive regions and 72% (or 2,113,165bp) had probe coverage on the array. Note the high specificity (80.9%), high coverage (99.2%), and superior sequencing results (28-fold and 97.4%).

	Version 1.0		Version 2.0	
	GS FLX Standard	GS FLX Titanium	GS FLX Standard	GS FLX Titanium
Genome Sequencer (GS) Chemistry				
Percentage of target bases covered	97.5%	98.2%	98.3%	98.7%
Percentage of target bases with at least 10X coverage	50.5%	80.0%	74.8%	94.4%

▶ **Table 2: Comparison of Array Designs and Sequencing Chemistries.** NimbleGen Sequence Capture arrays were custom designed to the specifications of the 1000 Genomes Consortium, using the old design algorithm (version 1.0) and the optimized design algorithm (version 2.0). GS FLX Standard series kits and GS FLX Titanium series kits were used for sequencing captured DNA on the Genome Sequencer FLX Instrument of 454 Life Sciences. Note the increase in targets hit for version 2.0 for both chemistries, which resulted in high base coverage. Also note that GS FLX Titanium kits significantly increased percent base coverage within the different designs.

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