

**GENOMICS** INFORMATICS PROTEOMICS METABOLOMICS  
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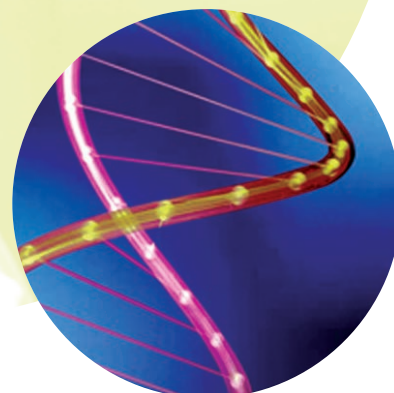
## Agilent Mouse Genome CGH Microarray Kit 44B

The Agilent Human Genome CGH Microarray 44B is a high-resolution, high performance 60-mer oligonucleotide-based microarray platform that allows genome-wide survey and molecular profiling of genomic aberrations on a single chip.

### Optimizing Probe Selection and Workflow for Stellar Performance

Agilent's Oligo aCGH solution allows high throughput, high resolution identification of chromosomal regions of gains and losses in cancers and genetic disorders. Agilent has taken extra measures to design a microarray that truly represents the coverage and performance needed for this application. Agilent has also developed and optimized assay protocols that enable researchers to use nanogram levels of total genomic DNA without genome complexity reduction. The ability to use full-complexity samples with

oligonucleotide microarrays provides researchers the flexibility and performance to study copy-number variations in any region of the genome with a single, simplified sample preparation. The availability of this new technology platform will revolutionize fundamental genomic research and enable you to perform studies in days that previously required weeks or months.

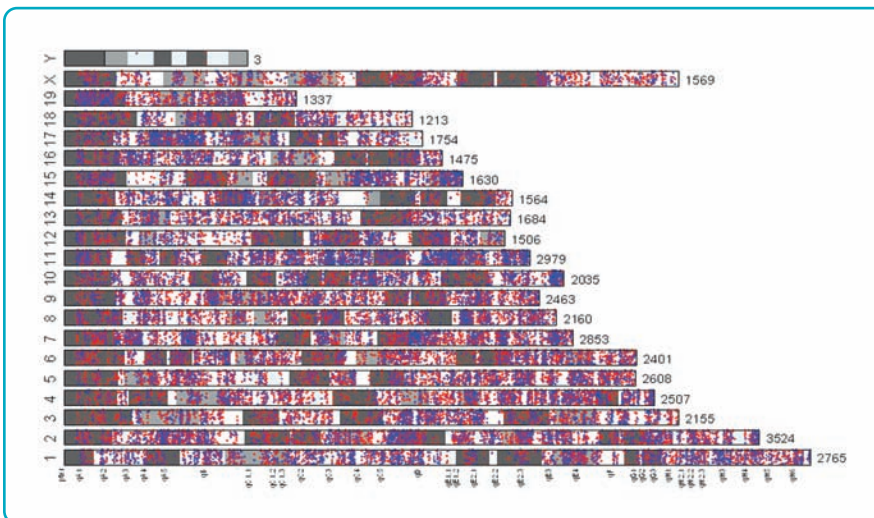


**Accuracy and Detection Sensitivity of the Oligo aCGH System**

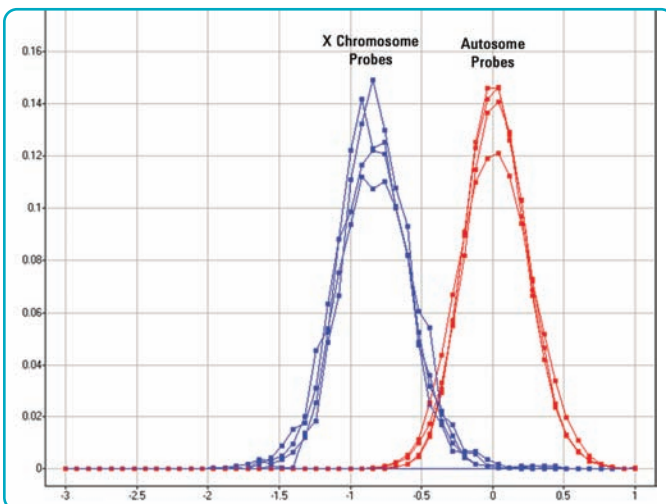
Mouse is the most widely-used mammalian model systems for studying human diseases. Mouse Genome CGH Microarray 44A is the only commercially available microarray platform that allows for high-resolution genome-wide profiling of DNA copy number aberrations in mouse on a single chip.

The 60-mer oligonucleotide probes were designed in silico based on the NCBI genome build 33 and subsequently mapped to build 34. All probes were verified to confirm their uniqueness in the genome and have a narrow range of theoretical Tm values. Final probe selections were filtered using advanced in silico probe selection methods based on rules developed from empirical

testing with model systems with known genomic aberrations (see Figure 1).

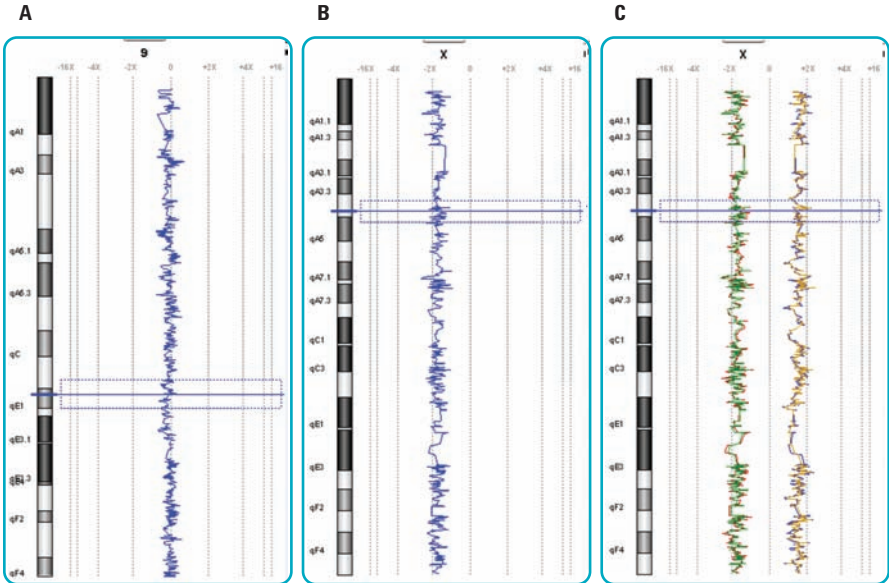


**Figure 1.** Genome coverage by chromosome. Each 60-mer oligonucleotide probe is represented by a dot. Average spatial resolution = 35 kb.

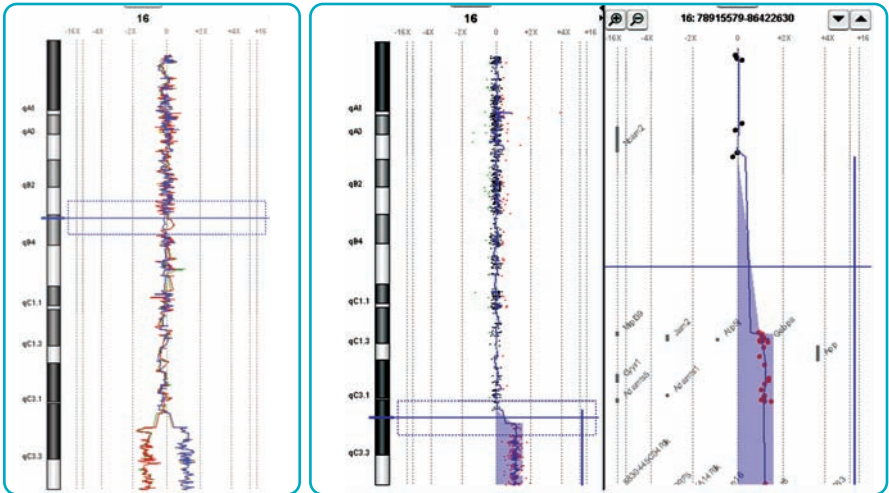


**Figure 2.** XY/XX Separation Histogram. Distribution of log<sub>2</sub> ratio values of all X chromosome oligonucleotide probes (blue) versus autosome oligonucleotide probes (red) in two dye-flip pairs of XY/XX hybridizations on the Mouse Genome CGH Microarray 44A (G4414A).

The ability to detect single copy loss is critical in identification of new tumor suppressor genes and microdeletions associated with genetic diseases. The accuracy and detection sensitivity of the system was demonstrated in the following hybridization experiment using 40, XY and 40, XX genomic DNA samples (see Figures 2 and 3).



**Figure 3.** CGH Analytics view of Chromosome 9 (A) and Chromosome X (B) from a single 40, XY/40, XX microarray experiment (5 pt moving average), which shows a two-copy Chromosome 9 and a single-copy Chromosome X relative to the diploid XX reference sample. (C) is the X chromosome view of two dye-flip pairs of the same experiment, demonstrating the reproducibility of the platform.



**Figure 4.**

**Figure 5.**

**Figure 4.** CGH Analytics view of Chromosome 16, where the single-copy amplification (3 versus 2 copies) in the distal segment of Chromosome 16 is clearly demonstrated. Total of four hybridizations (two dye-flip pairs) are shown here, plotted with 5 pt moving average.

**Figure 5.** Detection and mapping of single-copy amplification. The left panel is a combined dye-flip plot of Chromosome 16 with 5 pt moving average in CGH Analytics. The right panel is the zoomed-in view of the breakpoint just proximal to the App gene (in circle).

**Specifications**

|   |   |
|---|---|
| Microarrays per slide                   | One   |
| Slide format                            | 1" x 3" (25 mm x 75 mm)   |
| Oligonucleotide probe length            | 60-mer  |
| Total number of features                | 44,290  |
| Number of biological features           | 43,020  |
| Replicated biological features          | 308 in triplicates  |
| Agilent internal quality control probes | 1,270   |
| Average resolution*                     | ~35 kb  |
| Sequence source                         | UCSC Genome Browser mm5 (NCBI Build 33)                                   |
| Feature size                            | 115 $\mu$ m   |
| Sample input                            | 100 ng DNA with phi29 amplification<br>3 $\mu$ g DNA with direct labeling |
| Type of labeling                        | Cyanine 3 and cyanine 5 fluorescent labeling                              |
| Overall assay time                      | 3 days  |

**Microarray Kit Contents**

- Five microarrays on five 1" x 3" glass slides
- CD-ROM containing feature location and annotation information

Agilent Oligo aCGH System Guide - "Oligonucleotide Array-Based CGH for Genomic DNA Analysis" is available for download at [www.agilent.com/chem/goCGH](http://www.agilent.com/chem/goCGH).

**Ordering Information**

|   |             |
|---|-------------|
| Mouse Genome CGH Microarray Kit 44A                                     | G4414A      |
| <b>Required microarray processing components from Agilent</b>           |             |
| Agilent Oligo aCGH Hybridization Kit                                    | 5188-5220   |
| Agilent Oligo aCGH Wash Buffer 1  | 5188-5221   |
| Agilent Oligo aCGH Wash Buffer 2  | 5188-5222   |
| Stabilization and Drying Solution                                       | 5185-5979   |
| Hybridization Chamber, stainless  | G2534A      |
| Hybridization Chamber Gasket Slides                                     | G2534-60003 |
| Hybridization Oven  | G2545A      |
| Hybridization Oven Rotator Rack   | G2530-60029 |
| Agilent Microarray Scanner (including Feature Extraction Software v8.1) | G2565BA     |
| CGH Analytics 3.1   | G4175AA     |

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