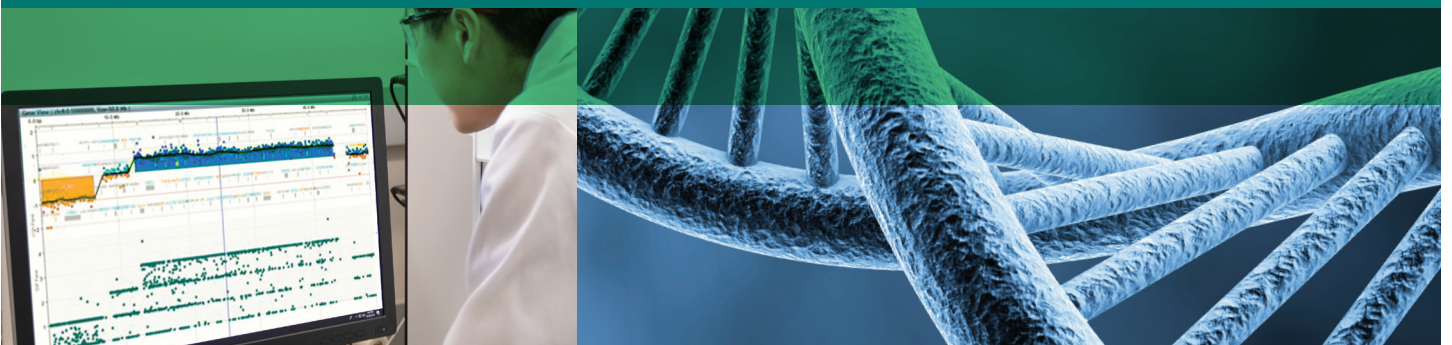


Focus on What Matters

GenetiSure Cyto CGH Microarrays



GenetiSure Cyto CGH & CGH+SNP Microarrays

GenetiSure Cyto CGH Microarrays are designed for the detection of copy number variations (CNV) and copy-neutral loss of heterozygosity (cnLOH) in constitutional DNA samples extracted from a variety of sources such as blood, saliva, amniotic fluid and chorionic villus sampling (CVS).

These microarrays are developed for cytogenetic research and clinical laboratories who perform pre- and postnatal analysis.

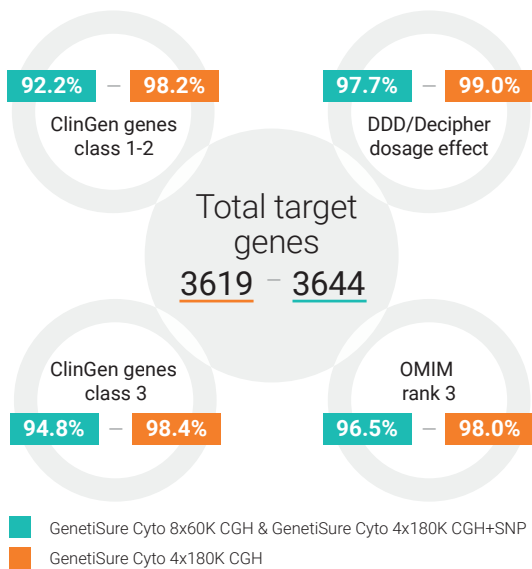


Figure 1. Coverage of database-curated genes targeted by GenetiSure Cyto arrays. Percentages indicated show gene coverage (defined as ≥ 5 probes/gene) in different array formats for each database utilized (ClinGen, DDG2P, OMIM).

GenetiSure Cyto CGH & CGH+SNP:

- Designs are focused on genes and regions relevant for CGH analysis, including clinically relevant data from ClinGen, ClinVar, OMIM and Development Disorder Genotype-Phenotype Database (DDG2P).
- The microarrays include a curated backbone with increased coverage on telomeres and PAR regions to improve data interpretation.
- High-quality probes enable copy number changes and mosaicism detection with high specificity and sensitivity.
- Free space on each array allow for easy customization to integrate laboratory specific genes or regions of interest.

In addition:

- 4x180K CGH array includes exon-level coverage in genes usually tested by Multiplex Ligation-dependent Probe Amplification (MLPA) to improve test value and reduce the need for secondary tests.
- 4x180K CGH+SNP array enables LOH resolution down to 2.5 Mb in autosomal chromosomes, exceeding the most updated guidelines from consortia.

Table 1. Technical specifications for Agilent GenetiSure microarray formats.

	Array type	AMADID	Array format	Total genes targeted*	Target regions	Median probe spacing					
						Overall	Backbone**	Telomere & PAR	Free space	LOH resolution	Exon coverage
GenetiSure Cyto 8x60K CGH	CGH	085590	8x60K	3644	7.1 Kb	50.6 Kb	67.4 Kb	31.8 Kb 13.5 Kb	~500	-	-
GenetiSure Cyto 4x180K CGH	CGH	085589	4x180K	3619	3.5 Kb	16.5 Kb	19.8 Kb	7.8 Kb 7.5 Kb	~1500	-	Yes on 103 selected genes
GenetiSure Cyto 4x180K CGH+SNP	CGH+SNP	085591	4x180K	3644	7.3 Kb	44.5 Kb	57.1 Kb	25.0 Kb 10.5 Kb	~1500	2.5 Mb across Autosomes	No
GenetiSure Postnatal 2x400K CGH+SNP	CGH+SNP	078737	2x400K	8106	-	9.5 Kb	-	-	-	2.5 Mb across Autosomes	89% of genes 3 probes/exon

*Genes are considered covered if they are targeted by 5 or more probes.

Note: 4x180K CGH targets "fewer" than 8x60/4x180 SNP because of the large gene cutoff which is more aggressive due to the denser backbone.

**Resolution is intended here as median probe spacing (or distance between probes).

Versatile design

- One design for both pre- and postnatal analysis
- Single design for easier sample management, reducing need to batch samples by application
- Free space for easy customization enabling addition of laboratory-specific genes of interest

Focus only on what matters

- Targets genes critical for pre- and postnatal analysis
- Clinically relevant, curated content with known phenotype and function
- Reduce incidental findings (IF) for ease in interpretation

Streamlined workflow

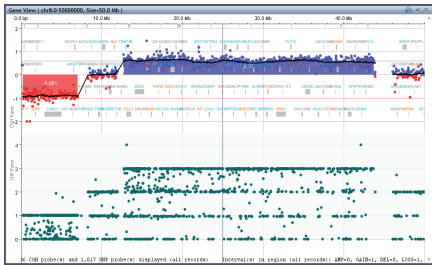
- Fast 2 day protocol from sample to result
- Easy sample tracking due to spike-in probes included in the design
- Optimized protocol to easily track all steps while running the experiments

Designed with quality in mind

- Precision targeting of relevant genes and regions.
- Selection of high-quality probes to improve accuracy and resolution of CNV calling down to exon level resolution.

Figure 2 highlights the detection of aberrations of various sizes using GenetiSure Cyto CGH 4x180K CGH and CGH+SNP arrays.

A) GenetiSure Cyto CGH+SNP 4x180K



B) GenetiSure Cyto CGH 4x180K

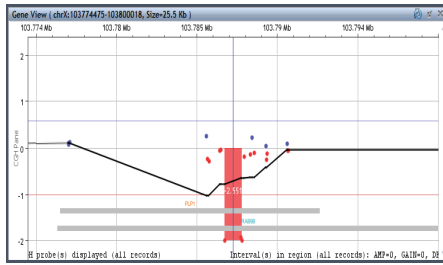


Figure 2. Examples of copy number gains and losses using GenetiSure Cyto 4x180K CGH and CGH+SNP arrays. Figure 2A: CN Gain (~30 Mb) and Loss (~7 Mb): 46,XY,der(8)del(8)(p23.3)dup(8)(p23.1->p11.2::p23.1->qter), Chr8 p-arm, Figure 2B: Loss (~1kb, only 3 probes): Pathogenic deletion of parts of exons 3~4 and the intervening sequence in the PLP1 gene, ChrX q-arm.

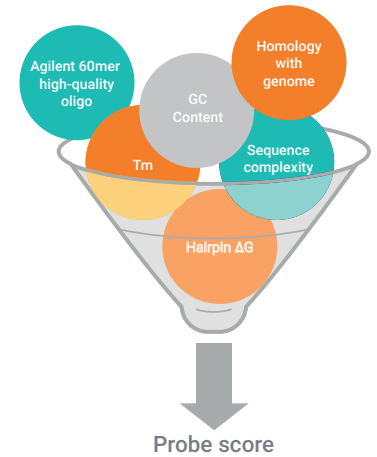
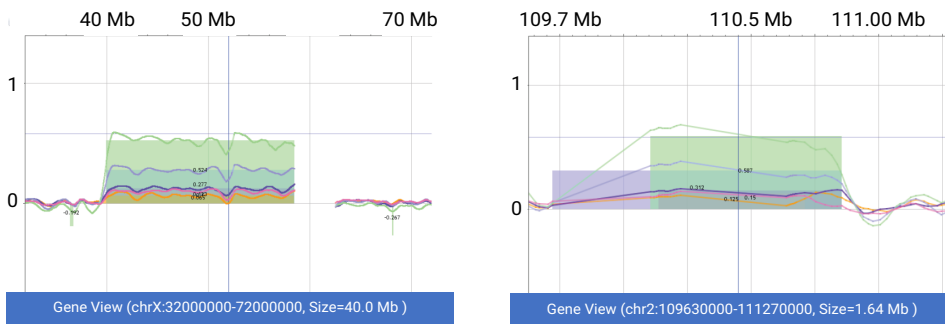


Figure 3. Funnel diagram illustrating criteria to determine probe scores used to select high-quality probes for GenetiSure Cyto microarrays.

Copy number detection in mosaic samples



	Sample genome	Reference genome	Sample/Reference ratio	Expected Log2 Ratio	Detected Log2 ChrX	Detected Log2 Chr2
Diploid	2	2	1	0	0	0
Gain	3	2	1.5	0.58	0.52	0.59
50% Gain	2.5	2	1.25	0.32	0.28	0.31
20% Gain	2.2	2	1.1	0.14	0.12	0.15
15% Gain	2.15	2	1.07	0.1	0.1	0.12
10% Gain	2.1	2	1.05	0.07	0.065	na

Figure 4. Demonstration of mosaicism sensitivity within A) 18 Mb gain interval of ChrX and B) 0.75 Mb gain interval of Chr2 using GenetiSure Cyto CGH 4x180K array. Log ratios are indicated on solid lines for non-mosaic, 50%, 20%, and 15% mosaicism conditions. C) Table illustrating observed vs. expected arithmetic and log ratios for different mosaicism conditions and chromosomes (Gain=non-mosaic, 50% gain = 50:50 mixture, etc.)

Seamless, Comprehensive CGH Workflow



These designs are an integral part of the Agilent CGH complete workflow, which includes DNA QC, labeling (SureTag Labeling Kit), scanning (SureScan Microarray Scanner), data analysis (CytoGenomics) and interpretation (Alissa Interpret).

Ordering details

	PN	Volume	Total # samples
GenetiSure Cyto CGH Microarray kit, 8x60K	G5982A	3 slides	24
GenetiSure Cyto CGH Microarray kit, 4x180K	G5983A	3 slides	12
GenetiSure Cyto CGH+SNP Microarray kit, 4x180K	G5984A	3 slides	12
GenetiSure Cyto CGH Microarray, 8x60K*	G5982B	1 slide	8
GenetiSure Cyto CGH Microarray, 4x180K*	G5983B	1 slide	4
GenetiSure Cyto CGH+SNP Microarray, 4x180K*	G5984B	1 slide	4
GenetiSure Cyto CGH Microarray bundle, 8x60K**	G5982C	6 slides	48
GenetiSure Cyto CGH Microarray bundle, 4x180K**	G5983C	12 slides	48
GenetiSure Cyto CGH+SNP Microarray bundle, 4x180K**	G5984C	12 slides	48

	PN
SureScan scanner	G4900DA
SureScan Dx scanner****	G5761AA
Hybridization oven	G2545A
Hybridization chamber	G2534A
SureCycler 96 samples	G8800A G8810A

**** SureScan Dx Scanner available in select regions.
Visit www.agilent.com for details.

	PN	Total # reactions	
		8X	4X
Total number of samples			
SureTag Complete Labeling kit	5190-4240	50	25
SureTag labeling kit RT components purification columns	5190-3391	25	-
Cot-1 Human DNA	5190-3393	312	125
Total number of slides			
Oligo aCGH/Chip Hybridization kit	5188-5220	25	25
Oligo aCGH/Chip Wash Buffer set	5188-5226	40	40
Pack 5 Backing slide (8 arrays per slide)***	G2534-60014	5	-
Pack 5 Backings slide (4 arrays per slide)***	G2534-60011	-	5

* Single arrays are made to order and follow the same lead time as custom arrays.

** Bundle includes arrays and all the reagents needed to process samples.

*** For additional formats please visit our website www.agilent.com.

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