DataSheet

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Biology for a better world

CytoScan® 750K Suite

Coverage without compromise

CytoScan 750K Suite is a complete cytogenetic microarray solution that includes CytoScan® 750K Array, reagent kit, and the simple, user-friendly software, Chromosome Analysis Suite (ChAS).

CytoScan 750K Suite was designed to provide the most comprehensive coverage and highest performance for detecting chromosomal aberrations in a broad range of sample types for constitutional, cancer, stem cell, and neurodevelopmental applications.

Highlights

- **High specificity, sensitivity**,[1] and resolution[2] across the genome.
- **Comprehensive whole-genome coverage** across RefSeq, OMIM®, ClinGen and DECIPHER/DDG2P constitutional gene regions, and Sanger cancer genes.
- **Future-proofed** design by covering not only the regions relevant today, but the ones that will become relevant in the future.
- **A hybrid dual design** including not only the best of copy number probes, but also the power of high-density SNPs for confident breakpoint determination,[3] allelic confirmation of copy number changes,[4] high-resolution loss/absence of heterozygosity (LOH/AOH),[5] gene-level homozygosity mapping,[6] parent-of-origin analysis,[7] and enhanced detection of low-level mosaics,[8] clonality,[9] genomic contamination, and ploidy adjustments and detection.[10]
- **750,000 markers** for copy number analysis, including 200,000 SNP and 550,000 non-polymorphic probes.
- **Robust, proprietary manufacturing** technology that produces highly reproducible arrays between batches, with no risk of probe dropout that occurs with bead array technology.
- **Proven technology**, extensively cited, with more than 250 publications per year not only in constitutional and cancer applications, but also in neurodevelopmental and stem cell research.
- A robust and flexible **manual or automated assay**, designed to save you time and money, reduce error, and deliver performance, results, and quality consistent with your laboratory requirements.
- State-of-the-art **data analysis software** tailored for cytogenetics and copy number analysis. ChAS allows simple data analysis to generate customized exports based on your specific requirements. From single data analysis to database generation, and from constitutional tools to cancer algorithms, the software adapts to the needs of any cytogenetics laboratory.
- **World-class support**, from training and instrument maintenance to consulting and compliance, led by our world-class team of multilingual technical experts.

CytoScan® 750K Array specifications

Markers for copy number analysis	
Total number of copy number markers	750,436
Number of non-polymorphic markers	550,000
Number of SNP markers	200,436
Total number of "genotype-able" SNP markers	200,436
Genome build	hg19
Autosomal markers	702,346
Pseudoautosomal markers	811
Intragenic markers	532,850
Intergenic markers	217,586

Average marker spacing (base pairs)	
Intragenic (within all the genes below)	1,737
Intergenic (non-gene backbone)	6,145
Overall (gene and non-gene backbone)	4,125
Percentage of genes covered (25 markers/100 kb)	
ClinGen (formerly ICCG and ISCA) (3,483)	100%
Cancer genes (526)	100%
OMIM genes (3,483)	83%
X chromosome OMIM Morbid genes (177)	93%
RefSeq genes (36,121)	80%
DDD[11] (1,309)	80%

References

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2. Zimmerman E., Maron J. L. *FOXP2* gene deletion and infant feeding difficulties: a case report. *Cold Spring Harbor Molecular Case Studies* **2**:a000547 (2016).
3. Kim K. B., *et al.* Prenatal diagnosis of a 7q21.13q22.1 deletion detected using high-resolution microarray. *Obstetrics & Gynecological Science* **57**(4):318–324 (2014).
4. Liu W. Q., *et al.* Genetic Evaluation of Copy number variations, loss of heterozygosity and Single-nucleotide variant levels in human embryonic stem cells with or without skewed X Chromosome inactivation. *Stem Cells and Development* **24**(15):1779–1792 (2015).
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6. Mayer A., *et al.* Homozygosity mapping and whole-genome sequencing reveals a deep intronic PROM1 mutation causing cone-rod dystrophy by pseudoexon activation. *European Journal of Human Genetics* **24**(3):459–462 (2016).
7. Darcy D., *et al.* Mosaic paternal genome-wide uniparental isodisomy with Down syndrome. *American Journal of Medical Genetics Part A* **167**(10):2463–2469 (2015).
8. Oneda B., *et al.* High-resolution chromosomal microarrays in prenatal diagnosis significantly increase diagnostic power. *Prenatal Diagnosis* **34**(6):525–533 (2014).
9. Sudesh P., *et al.* Mosaic 22q11.2 Deletion and tetralogy of Fallot with absent pulmonary valve. *World Journal for Pediatric & Congenital Heart Surgery Cancer* **6**:342–345 (2015).
10. Choi S., *et al.* Near-haploid B lymphoblastic leukemia with an apparent hyperdiploid karyotype: the critical role of SNP analysis in establishing proper diagnosis. *Journal of Hematopathology* **7**(1):27–32 (2014).
11. Fitzgerald T. W., *et al*. Large-scale discovery of novel genetic causes of developmental disorders. *Nature* **519**(7542):223–228 (2015).

Ordering information

Part number	Description	Details
CytoScan® 750K Suite consumables		
901859	CytoScan® 750K Array Kit and Reagent Kit Bundle	Arrays and reagents sufficient for 24 reactions
N/A	Chromosome Analysis Suite (ChAS)	Available as free download from www.affymetrix.com/chas
CytoScan® training products		
901860	CytoScan® 750K Training Kit	Arrays and reagents sufficient for 24 reactions plus training materials
000802	CytoScan® FAS On-Site Training	FAS-led on-site preparation and first week of training
000803	CytoScan® FAS Assisted Training	FAS-led on-site site preparation. Customer completes training using self-paced tools
Supporting products		
00-0218	GeneChip® 3000 7G with Workstation and AutoLoader	Includes ▪ GeneChip® Scanner 3000 7G with AutoLoader ▪ n2D Handheld Barcode Reader ▪ GeneChip® Fluidics Station 450 ▪ GeneChip® Hybridization Oven 645 ▪ Computer Workstation with instrument control software
00-0334	GeneChip® System 3000Dx v.2*	Includes ▪ GeneChip® Scanner 3000Dx v.2 with AutoLoaderDx ▪ GeneChip® Fluidics Station 450Dx v.2 ▪ Workstation with Affymetrix Molecular Diagnostics Software (AMDS) *Requires GeneChip® Hybridization Oven 645 (see below)
00-0331	GeneChip® Hybridization Oven 645	
00-0401	Affymetrix® NIMBUS® Target Preparation Instrument	Robotics workstation and laptop

For additional instrument system configurations or individual system components to meet your needs, please contact your local Affymetrix Account Manager.

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