CytoScan 750K Suite

Coverage without compromise

The Applied Biosystems™ CytoScan™ 750K Suite is a complete cytogenetics microarray solution that includes an Applied Biosystems™ CytoScan™ 750K Array, reagent kit, and the simple, user-friendly software, Chromosome Analysis Suite (ChAS). The 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
- Forward-looking design by covering not only the regions relevant today, but also the ones that may 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], 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 nonpolymorphic 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 software tailored for cytogenetics and copy number analysis, ChAS allows simple data analysis and generation of customized exports based on your specific requirements; the software adapts to the needs of any cytogenetics laboratory, from single data analysis to database generation, and from constitutional tools to cancer algorithms
- World-class support, from training and instrument maintenance to consulting and compliance, led by our team of multilingual technical experts

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CytoScan 750K Array specifications

Markers for copy number analysis	
Total number of copy number markers	750,436
Number of nonpolymorphic markers	550,000
Number of SNP markers	200,436
Total number of SNP markers suitable for genotyping	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 (nongene backbone)	6,145
Overall (gene and nongene 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 JL (2016) *FOXP2* gene deletion and infant feeding difficulties: a case report. *Cold Spring Harbor Molecular Case Studies* 2:a000547.
3. Kim KB, et al. (2014) Prenatal diagnosis of a 7q21.13q22.1 deletion detected using high-resolution microarray. *Obstetrics & Gynecological Science* 57(4):318–324.
4. Liu WQ, et al. (2015) 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.
5. Mason-Suares H (2013) Density matters: comparison of array platforms for detection of copy number variation and copy-neutral abnormalities. *Genetics in Medicine* 15(9):706–712.
6. Mayer A, et al. (2016) 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.
7. Darcy D, et al. (2015) Mosaic paternal genome-wide uniparental isodisomy with Down syndrome. *American Journal of Medical Genetics Part A* 167(10):2463–2469.
8. Oneda B, et al. (2014) High-resolution chromosomal microarrays in prenatal diagnosis significantly increase diagnostic power. *Prenatal Diagnosis* 34(6):525–533.
9. Sudesh P, et al. (2015) Mosaic 22q11.2 deletion and tetralogy of Fallot with absent pulmonary valve. *World Journal for Pediatric & Congenital Heart Surgery* 6(2):342–345.
10. Choi S, et al. (2014) 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.
11. Fitzgerald TW, et al. (2015) Large-scale discovery of novel genetic causes of developmental disorders. *Nature* 519(7542):223–228.

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Ordering information

Product	Description	Cat. No.
CytoScan 750K Suite consumables		
CytoScan 750K Array and Reagent Kit Bundle	Arrays and reagents sufficient for 24 reactions	901859
Chromosome Analysis Suite (ChAS)	Available as free download from **thermofisher.com/chas**	NA
CytoScan training products		
CytoScan 750K Training Kit	Arrays and reagents sufficient for 24 reactions plus training materials	901860
CytoScan FAS On-Site Training	FAS-led on-site preparation and first week of training	000802
CytoScan FAS Assisted Training	FAS-led on-site site preparation; customer completes training using self-paced tools	000803
Supporting products		
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	00-0218
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 * Recommended: GeneChip Hybridization Oven 645	00-0334
GeneChip Hybridization Oven 645		00-0331
NIMBUS Target Preparation Instrument	Robotics workstation and laptop	00-0401

For additional instrument system configurations or individual system components to meet your needs, please contact your account manager.

Find out more at **thermofisher.com/microarrays**

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