# illumina

## Infinium<sup>®</sup> HumanOmni5-4 v1.1 BeadChip

Superior content. Unprecedented flexibility. The most powerful whole-genome array.



**Figure 1: The Infinium HumanOmni5-4 v1.1 BeadChip** — The 4-sample BeadChip is the ultimate array for whole-genome genotyping and CNV analysis. It provides base content of over 4.2 M markers with tag-SNP coverage down to 1% MAF and the flexibility to add up to 500,000 custom-designed markers.

## Overview

The HumanOmni5-4 v1.1 and HumanOmni5-4+ v1.1 BeadChips (Figure 1) deliver comprehensive coverage of the genome, leveraging tag single-nucleotide polymorphisms (SNPs) selected from the International HapMap project and 1000 Genomes Project (1kGP).<sup>1</sup> These powerful chips target genetic variation down to 1% minor allele frequency (MAF). The HumanOmni5-4+ v1.1 BeadChip provides the flexibility to add up to 500,000 custom markers, allowing researchers to tailor the BeadChip for targeted applications and populationcustomized studies. Using the proven iScan® or HiScan® systems, along with the Infinium LCG Assay, these 4-sample BeadChips offer high-throughput sample processing, and optimized content for wholegenome genotyping and copy-number variation (CNV) applications. This end-to-end DNA analysis solution includes convenient kit packaging, a streamlined PCR-free protocol, and integrated analysis software.

#### Table 1: Infinium HumanOmni5-4 v1.1 Product Information

Feature	Description			
Total Number of Markers	4,284,426			
Capacity for Custom Markers	Up to 500,000			
Number of Samples per BeadChip	4			
DNA Input Requirement	400 ng			
Assay	Infinium LCG Quad			
Instrument Support	iScan or HiScan			
Sample Throughput <sup>a</sup>	> 460 samples/week			
Scan Time per Sample	iScan 38 min	HiScan 15 min		
Variation Captured $(r^2 \ge 0.8)$	1kGP⁵ MAF > 5%	1kGP⁵ MAF > 1%		
CEU°	0.87	0.83		
CHB + JPT°	0.85	0.76		
YRIc	0.71	0.58		
Data Performance	Value <sup>d</sup>	Product Spe	ecification	
Call Rate	99.9%	> 99% avg.		
Reproducibility	99.99%	> 99.9%		
Log R Deviation	0.095	< 0.30°		
Spacing	Mean	Median	90 <sup>th</sup> % <sup>d</sup>	
Spacing (kb)	0.68	0.37	1.57	
a. Estimate assumes 1 HiScan system, 1 AutoLoader 2.x, 1 Tecan robot, and a 5-day				

work week.

b. Compared against the June 2011 1kGP data release.

 ${\tt c.} \hspace{0.1 cm} {\tt See www.1000genomes.org/category/frequently-asked-questions/population.}$ 

d. Values are derived from genotyping 284 HapMap reference samples.

 Value expected for typical projects using standard Illumina protocols. Tumor samples and samples prepared by methods other than standard Illumina protocols are excluded.
Abbreviations: 1kGP, 1000 Genomes project; MAF, minor allele frequency.

#### Table 2: Infinium HumanOmni5-4 v1.1 BeadChip Marker Information

Marker Categories	Number of Markers <sup>a</sup>		
In RefSeq Genes <sup>2</sup>	2,010,538 (2,374,042 <sup>b</sup> )		
In RefSeq Exons	306,047		
In RefSeq Promoter Regions	92,555		
In ADME Genes	33,371 (42,540 <sup>b</sup> )		
In ADME Exons	5,767		
MHC (Extended MHC°)	24,482 (42,311)		
Overlap with Genes in COSMIC	1,830,712		
Overlap with Genes in Gene Ontology <sup>3</sup>	474,003		
Nonsense Markers	933		
Missense Markers	69,667		
Synonymous Markers	62,308		
Silent Markers	172,934		
Mitochondrial Markers	195		
Indels	4,321		
Sex Chromosomes	X 113,662	Y 2,404	Par Loci 5,256

## **Ordering Information**

Infinium HumanOmni5-4 v1.1 BeadChip Kit	Catalog No.
16 samples	WG-313-5001
48 samples	WG-313-5002
96 samples	WG-313-5003
384 samples	WG-313-5004
Infinium HumanOmni5-4+ v1.1 BeadChip Kita	Catalog No.
16 samples	WG-313-5005
48 samples	WG-313-5006
48 samples 96 samples	WG-313-5006 WG-313-5007
48 samples 96 samples 384 samples	WG-313-5006 WG-313-5007 WG-313-5008

a. Compared against the June 2011 1kGP data release.

b. Within 10 kb.

c. MHC is a ~4 Mb region; extended MHC is a ~8 Mb region.

Abbreviations: ADME, absorption, distribution, metabolism, and excretion; COSMIC,

catalog of somatic mutations in cancer4; MHC, major histocompatibility complex.

### Learn More

To learn more about the Infinium HumanOmni5-4 v1.1 BeadChips and other Illumina genotyping products and services, visit www.illumina. com/applications/genotyping.html.

#### References

- 1. www.1000genomes.org Accessed 18 April 2014.
- 2. www.ncbi.nlm.nih.gov/refseq Accessed 6 July 2015.
- 3. geneontology.org Accessed 6 July 2015.
- 4. cancer.sanger.ac.uk/cosmic Accessed 6 July 2015.

Illumina • 1.800.809.4566 toll-free (US) • +1.858.202.4566 tel • techsupport@illumina.com • www.illumina.com

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