

# Advanta IO Gene Expression Assay

Reveal the molecular signatures of tumor immune response



The Advanta™ IO Gene Expression Assay is part of a complete workflow that focuses on 170 genes to enable tumor immunobiology profiling and new biomarker identification.

Designed to meet the rigorous demands of human checkpoint inhibitor research programs, the Advanta IO Gene Expression Assay includes 91 key markers of tumor immune response that were shown in a multicenter international clinical trial to inform tumor progression and checkpoint therapeutic response<sup>1,2</sup>. Working with researchers in the biopharmaceutical industry, we further expanded the panel to include 74 additional immuno-oncology markers.

The two-panel set includes genes for identification and functional analysis of immune and cancer cells, including markers found in defined T cell subsets, cytokines and chemokines and markers of immune regulation and immune cell fate. The Advanta IO Gene Expression Assay is a key component of a complete workflow from sample to data supporting your research in tumor immune response.

## Highlights

**Optimized**—Screen high-value markers of the tumor immune response.

**Flexible**—Easily add new markers over time, customizing for your own research needs.

**Efficient**—Run 24 to 96 samples at a time using the robust Biomark™ HD automated qPCR system.

### Panel A

ARG1	CLEC4C	IL12A	PDCD1LG2 (PD-L2)
BTLA	CSF2	IL13	PRF1
CCL2	CTLA4	IL17A	PTGER2
CCL22	CX3CL1	IL17F	PTGER4
CCL28	CXCL10	IL1B	PTGS2
CCR5	CXCL8	IL2	PTPRC
CCR7	CXCL9	IL2RA	RORC
CD1C	CXCR3	IL4	SDHA
CD244	EOMES	IL6	SP2
CD27	EPCAM	IL7	TBX21
CD274 (PD-L1)	FOXP3	IL7R	TGFB1
CD276	GZMA	ITGAM	TMEM55B
CD28	GZMB	ITGAX	TNF
CD3E	HAVCR2	ITGB2	TNFRSF14
CD4	HLA-A	KLRK1	TNFRSF4
CD40	HLA-B	LAG3	TNFRSF9
CD40LG	HLA-C	LGALS9	TNFSF4
CD48	HMOX1	MAP4K1	TNFSF9
CD69	ICAM1	MICA	VCAM1
CD70	ICOS	MICB	VEGFA
CD80	IDO1	MS4A1	VPS33B
CD86	IFNG	NCAM1	VTCN1
CD8A	IL10	PDCD1 (PD-1)	

### Panel B

APOBEC3A	CXCR4	IFNA2	NKG7
APOBEC3B	CYBB	IGHA1	NRAS
ARG2	DGAT2	IGHG1	NT5E
CA4	EBI3	IGHM	PYGL
CCL18	ERBB2	JCHAIN (IGJ)	SLAMF7
CCL21	FASLG	IGKC	SLAMF8
CCL3	FCER1G	IGLJ3	STAT1
CCL4	FCRLA	IGSF6	STAT2
CCL5	FYB	IL10RA	STAT3
CD160	GATA3	IL12B	STAT5A
CD19	GNLY	IL15	STAT5B
CD1D	GZMH	IL2RG	STAT6
CD2	GZMK	IRF9	TLR7
CD22	HLA-DMB	ISG15	TLR8
CD37	HLA-DPB1	JAK2	TNFAIP8
CD52	HLA-DQB1	KREMEN1	TNFRSF18
CD53	HLA-DRB1	LAPTM5	TNFSF18
CD63	IFI27	LCK	
CTSS	IFIT2	LRG1	

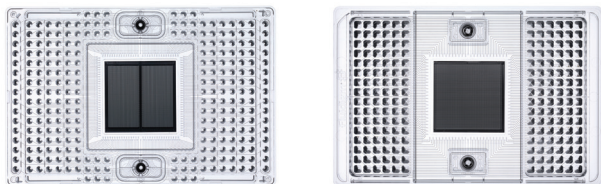
#### Housekeeping genes for Panels A and B:

B2M, ACTB, GAPDH, GUSB, TFRC

**Table 1. The Advanta IO Gene Expression Assay gene list by panel.** Panel A includes 91 target genes and 5 housekeeping genes. Panel B includes 74 target genes and the same 5 housekeeping genes, along with 17 open assay inlets to facilitate the addition of custom content over time. Refer to [Ordering information](#) for the panel content of each component.

## The Biomark HD advantage

The Advanta IO Gene Expression Assay is optimized to run on the industry-proven Biomark HD system. Leveraging the power of microfluidics, the system uses integrated fluidic circuits (IFCs) to precisely combine multiple reactions at nanoliter volumes. Enabling you to easily automate the gene expression workflow, Biomark HD delivers performance you can trust with minimal hands-on time.

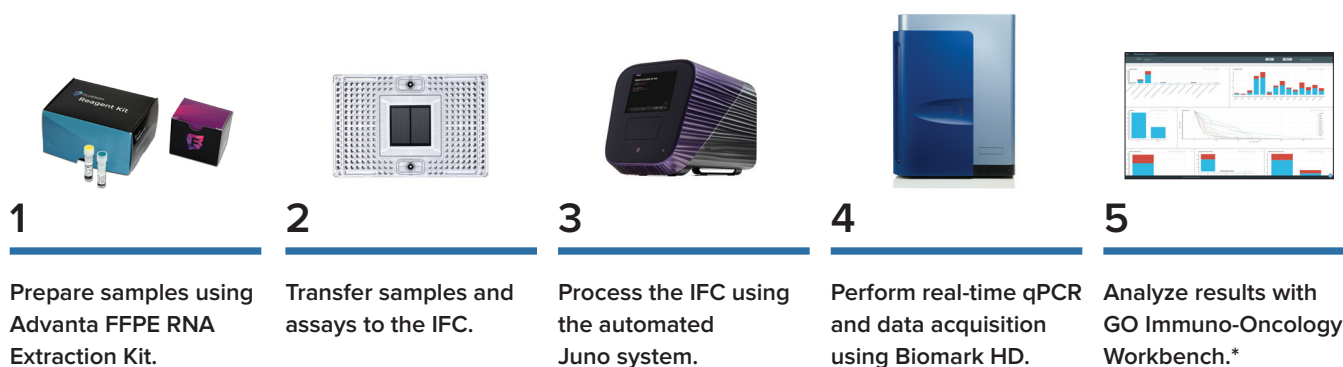


**Figure 1. Manage sample throughput to meet your research needs with integrated fluidic circuits (IFCs).** The Gene Expression 24.192 IFC (left) accommodates up to 24 samples per run. For laboratories with higher throughput needs, the Gene Expression 96.96 IFC (right) accommodates up to 96 samples per run. Respectively, the IFCs generate a total of 4,608 and 9,216 parallel reactions.

Replicates per Sample	Samples per GE 24.192 IFC	Samples per GE 96.96 IFC
1	24	96
2	12	48
3	8	32
4	6	24

**Table 2. Sample capacity per IFC.** The number of samples that can be processed in a single run depends on the IFC format and the number of replicates per sample.

## Complete workflow from sample to data analysis



**Figure 2. Assay workflow.** The gene expression assay workflow uses the Juno™ system for IFC preparation and the Biomark HD for qPCR thermal cycling and data acquisition. Generate 175–192 assay results per sample (up to 24 samples) in 4.5 hours with 1.3 hours of hands-on time using the GE 24.192 IFC. Alternatively, generate up to 96 assay results per sample (up to 96 samples) in 6.5 hours with 1.5 hours of hands-on time using the GE 96.96 IFC. After primary data analysis, results can be further analyzed with third-party software, such as the GO Immuno-Oncology Workbench.

## Ordering information

Product Name	Part Number
Advanta IO Gene Expression Assay—Panels A & B, GE 24.192, 2 IFCs	101-7678
Advanta IO Gene Expression Assay—Panel A, GE 96.96, 2 IFCs	101-6082
Advanta IO Gene Expression Assay—Panel B, GE 96.96, 2 IFCs	101-6083
Advanta IO Gene Expression Assay—Panels A & B, GE 96.96, 4 IFCs	101-6084
Recommended Products Sold Separately	Part Number
Advanta IO Gene Expression Control 1, 100 µL	101-7676
Advanta FFPE RNA Extraction Kit	101-6773
GO Immuno-Oncology Workbench*	101-6819

Each assay kit contains reagents and assays for preamplification and gene expression, along with IFCs and Control Line Fluid. Assays for the 24.192 IFC are provided in dried-down form. Assays for the 96.96 IFC are provided in liquid form.

\*GO Immuno-Oncology Workbench was developed by GenomOncology.

### References

1. Fehrenbacher, L. et al. *The Lancet* 387 (2016): 1,837–1,846
2. Herbst, R.S. et al. *Nature* 515 (2014): 563–567

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