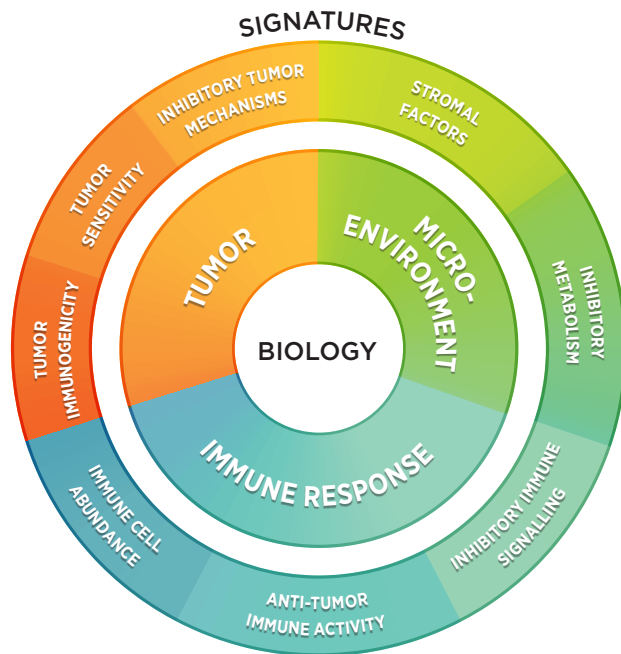


# nCounter® PanCancer IO 360™ Panel

## Gene Expression Panel

Signature Development • Evasion Mechanisms • Tumor Biology

The nCounter PanCancer IO 360 panel and data analysis service provides a unique 360 degree view of gene expression for the tumor, microenvironment and immune response. Now researchers can more quickly evaluate immune evasion by incorporating 48 potentially predictive biological signatures including the Tumor Inflammation Signature.<sup>1</sup>



### Product Highlights

- Expertly curated, comprehensive content includes 770 genes across 16 key immuno-oncology pathways and processes
- 48 signatures including the Tumor Inflammation Signature, 14 signatures measuring immune cell populations, and 34 novel signatures measuring important tumor and immune activities
- Streamlined analysis with access to validated and novel research signatures including the Tumor Inflammation Signature along with 11 key individual immune response genes
- Easy to use nCounter system provides data in 24 hours with less than 30 minutes hands on time

Feature	Specifications
Number of Targets	770 (Human), 770 (Mouse) including internal reference genes
Standard Input Material (No amplification required)	50 ng - 300 ng
Panel Standard	Synthetic oligonucleotide pool corresponding to all panel gene targets used for normalization.
Low Input Material	As little as 10 ng with nCounter RNA Low Input Kit and Panel specific primer pools (sold separately)
Sample Type(s)	FFPE-derived RNA, total RNA, fragmented RNA, cell lysates and PBMCs
Customizable	Add up to 30 unique genes with Panel-Plus
Time to Results	Approximately 24 hours
Data Analysis	nSolver™ Analysis software , IO 360 Data Analysis Report

For further details on compatible sample types, input material, and panel standards please also see the PanCancer IO 360 Best Practices User Guide available on [nanosttring.com](http://nanosttring.com)

## Comprehensive Content Across Tumor-Microenvironment-Immune Response

### PanCancer IO 360 Pathways and Processes

Tumor Foreignness			Tumor Microenvironment			Immune Activity		
Category	Human Genes	Mouse Genes	Category	Human Genes	Mouse Genes	Category	Human Genes	Mouse Genes
Release of Cancer Cell Antigens	74	69	Angiogenesis	40	41	T Cell Priming and Activation	151	152
Cell Cycling and Proliferation	54	53	Extracellular Matrix Remodelling	43	41	Killing of Cancer Cells	177	173
Tumor Intrinsic Factors	156	149	Collagens	6	6	Recognition of Cancer Cells by T Cells	103	104
Common Signaling Pathways	172	162	Metastasis	20	20	NK Cell Activity	28	27
Cancer Antigen Presentation	95	95	Immunometabolism	99	101	Myeloid Cell Activity	262	258
			Immune Cells Localization to Tumors	293	291			

### PanCancer IO 360 Biological Signatures

Content included in the IO 360 panel allows for calculation of 48 gene signatures measuring biological variables crucial to the tumor-immune interaction. Both analytically validated and research signatures are enriched with potentially predictive genes encompassing seven different biological functions measuring antigen availability, structural barriers to immune infiltration, inhibitory signaling, inhibitory metabolism, pro-immune signaling, killing of tumor cells, tumor receptiveness to immune signaling, tumor proliferation and apoptosis.

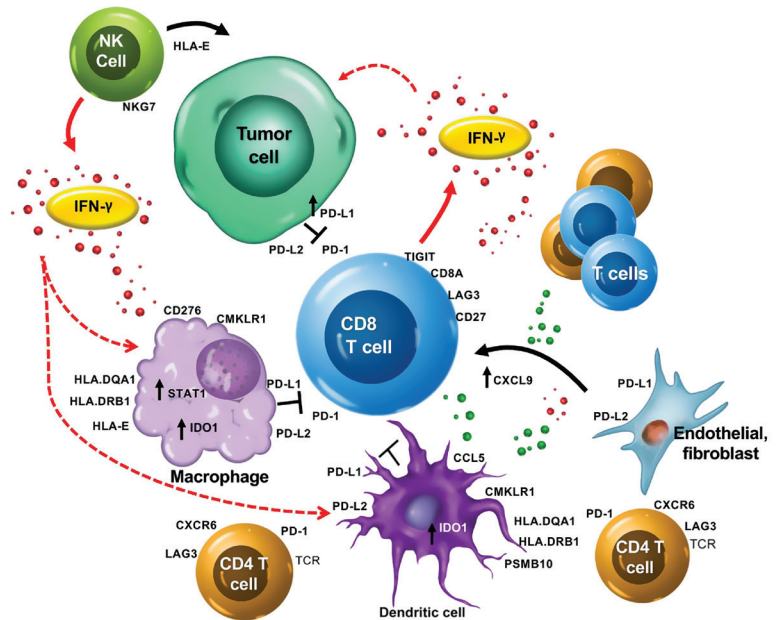
- 48 signatures allow for a multi-faceted view of the tumor immune interplay including the Tumor Inflammation Signature
- Novel research signatures trained through a combination of domain expertise, literature review and TCGA analysis along with ongoing refinement through our data analysis service
- Confirmation of signature accuracy and interpretation involved stringent testing with only signatures displaying strong evidence for measuring biological activity included

Tumor Immunogenicity	Tumor Sensitivity to Immune Attack	Inhibitory Immune Mechanisms	Stromal Factors	Inhibitory Metabolism	Anti-Tumor Immune Activity	Inhibitory Immune Signaling	Immune Cell Population Abundance	
Antigen Processing Machinery	Apoptosis	IDO1 Gene Expression	Endothelial Cells	Glycolysis	Tumor Inflammation Signature (TIS)	CTLA4 Gene Expression	B Cells	NK CD56dim Cells
Antigen Presenting Machinery Expression Loss	Tumor Proliferation	PD-L1 Gene Expression	Stromal Tissue Abundance	Hypoxia	Cytotoxicity	IL10 Gene Expression	CD45+ Cells	Natural Killer Cell Abundance
Immunoproteasome	JAK-STAT Pathway Gene Expression Loss	B7-H3 Gene Expression			Interferon Gamma Signaling	Inflammatory Chemokines	CD8 T Cell	T Cells Abundance
MAGE Genes Expression		TGF-Beta Gene Expression			Interferon Signaling Response	Myeloid-Derived Inflammatory Signaling	Cytotoxic Cells	TH1 Cell (TBX21/T-bet) Expression
Loss of Mismatch Repair Gene Expression					Lymphoid Compartment Activity	PD-1 Gene Expression	Dendritic Cells	Treg (FOXP3 Expression)
Hypermutation					MHC Class II Antigen Presentation	PD-L2 Gene Expression	Exhausted CD8 Cell	
MSI Predictor					Myeloid Compartment Activity	TIGIT Gene Expression	Macrophage	
						ARG1 Gene Expression	Mast Cells	
						NOS2 Gene Expression	Neutrophils	

## Tumor Inflammation Signature

Included within the IO 360 panel is the Tumor Inflammation Signature. This 18-gene signature measures activity known to be associated with response to PD-1/PD-L1 inhibitors pathway blockade.

- Measures 4 axes of biology to characterize a peripherally suppressed immune response
  - Antigen Presenting Cells
  - T Cell/NK Presence
  - IFN $\gamma$  Biology
  - T Cell Exhaustion
- Tissue-of-origin agnostic (Pan-cancer)
- Potential surrogate for PD-L1 and mutational load in research setting



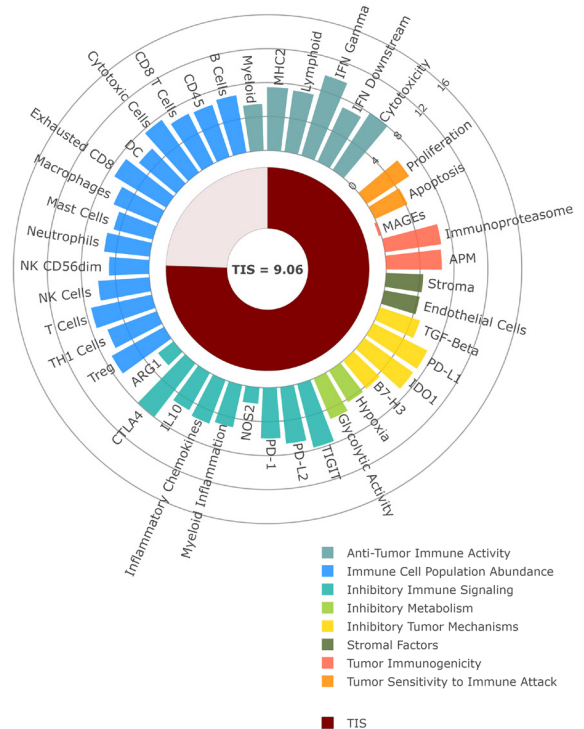
## PanCancer IO 360 Data Analysis Services

A detailed signature analysis report for the PanCancer IO 360 panel is available to enrich interpretation of the profiling. Interactive reports and individual consultation provide information on all 48 signatures and 770 genes included in the panel.

- Customized, interactive reports prepared by NanoString's expert Scientists
- Tumor Inflammation Score provided for each sample to determine "hot" and "cold" tumors
- All your data undergoes QC and normalization (up-front)
- Includes a one hour report out and consultation with an expert analyst
- Up to 5 additional customer-defined signatures can be included in the analysis based on IO 360 or PanelPlus genes

An interactive 360 Signature Analysis Report and consultation services for the Pan Cancer IO 360 panel further enrich the interpretation of the profiling data. This service available through our Data Analysis Services Program. Please inquire for pricing

## Single Sample Analysis



Signature scores are shown for the selected sample, with TIS in the center. Scores range from approximately 0-10; for most scores, a value of 5 is average. Each unit increase in score corresponds to a doubling of the biological process it measures. Color denotes each signature's biological function.

## Ordering Information

Product	Product Description	Quantity	Catalog Number
nCounter Human PanCancer IO 360 Codeset + Panel Standard	Gene Expression CodeSet profiling (770 genes) 750 cancer-related human genes + 20 internal reference controls. The PanCancer IO 360 panel includes a Panel Standard containing a pool of synthetic DNA oligonucleotides that correspond to the target sequence of each of the 770 unique probe targets in the panel. This allows for normalization for possible user, instrument, and lot-to-lot variation.	12 Reactions	XT-CSPS-HIO360-12
nCounter Mouse PanCancer IO 360 Codeset + Panel Standard	Gene Expression CodeSet profiling (770 genes) 750 cancer-related mouse genes + 20 internal reference controls. The PanCancer IO 360 panel includes a Panel Standard containing a pool of synthetic DNA oligonucleotides that correspond to the target sequence of each of the 770 unique probe targets in the panel. This allows for normalization for possible user, instrument, and lot-to-lot variation.	12 Reactions	XT-CSPS-MIO360-12
nCounter Master Kit	Reagents, cartridges, and consumables necessary for sample processing on nCounter MAX and FLEX Systems.	12 Reactions	NAA-AKIT-012
nCounter SPRINT Cartridge 1 Cartridge, 12 lanes	Sample Cartridge for nCounter SPRINT System	12 Reactions	SPRINT-CAR-1.0
nCounter SPRINT Reagent Pack	nCounter SPRINT Reagent Pack containing Reagents A,B,C & Hybridization Buffer	192 Reactions	SPRINT-REAG-KIT
Low Input RNA Reagent Kit	48rxn kit for profiling from low sample input amounts	48 Reactions	LOW-RNA-48
Human PanCancer IO 360 Primer Pool	MTE primer pools for Low Input RNA profiling (770 genes) 750 immune related human genes + 20 internal reference controls. Master Kit, RNA Low Input Kit & Panel CodeSet Required	12 Reactions	PP-HIO360-12
Mouse PanCancer IO 360 Primer Pool	MTE primer pools for Low Input RNA Profiling (770 genes) 750 Immune related mouse genes + 20 internal reference controls. Master Kit, RNA Low Input Kit & Panel Codeset Required.	12 Reactions	PP-MIO360-12
IO 360 Data Analysis Report	Data analysis report for PanCancer IO 360 Panel	Report purchased in 12 sample increments	Contact your local rep
IO 360 Data Analysis Service for PanCancer Immune Profiling Panel	Data analysis service for PanCancer Immune Profiling Panel	Single assay or large dataset project pricing available	DAS-IOPCIP360-1

## PanCancer IO 360™ Selected Publications

- Ayers, Mark, et al. "IFN-γ-related mRNA profile predicts clinical response to PD-1 blockade." The Journal of Clinical Investigation 127.8 (2017).
- Danaher, Patrick, et al. "Gene expression markers of Tumor Infiltrating Leukocytes." Journal for immunotherapy of cancer 5.1 (2017): 18.
- Satoh, Jun-ichi, and Hiroko Tabunoki. "A comprehensive profile of ChIP-Seq-based STAT1 target genes suggests the complexity of STAT1-mediated gene regulatory mechanisms." Gene regulation and systems biology 7 (2013): 41.
- Becht, Etienne, et al. "Estimating the population abundance of tissue-infiltrating immune and stromal cell populations using gene expression." Genome biology 17.1 (2016): 218.
- Spranger, Stefani, Riyue Bao, and Thomas F. Gajewski. "Melanoma-intrinsic [beta]-catenin signalling prevents anti-tumour immunity." Nature 523.7559 (2015): 231.
- Harris, B. H. L., et al. "Gene expression signatures as biomarkers of tumour hypoxia." Clinical Oncology 27.10 (2015): 547-560.
- Manson, G., et al. "Biomarkers associated with checkpoint inhibitors." Annals of Oncology 27.7 (2016): 1199-1206.
- Blank, Christian U., et al. "The 'cancer immunogram'." Science 352.6286 (2016): 658-660.

For more information, please visit [nanosttring.com](http://nanosttring.com)

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