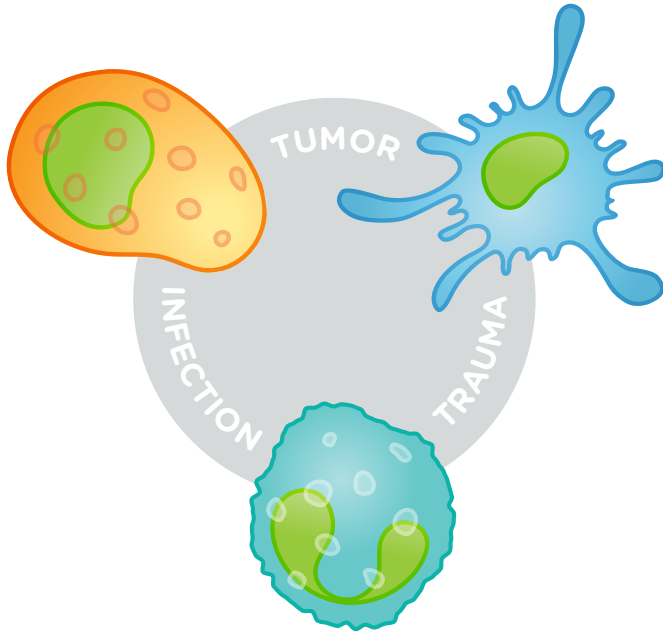# nanoString®

nCounter® Myeloid Innate Immunity
Gene Expression Panel

Immuno-Oncology • Autoimmune Disease • Infectious Disease

The nCounter Myeloid Innate Immunity panels are designed to encompass all aspects of the myeloid innate immune response for use in basic and translational research studies. Each human or mouse panel provides an effective means to comprehensively measure, quantitatively and qualitatively, the attributes of the innate immune response by evaluating relative enrichment of genes that mark recruitment, activation, and effector function of selected myeloid subtypes.

Applications

- Mechanisms of Immune Evasion
- Damage Response, Wound Healing & Tissue Repair
- Immune Regulation
- Disease Pathogenesis
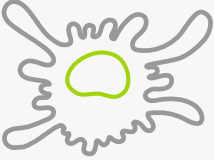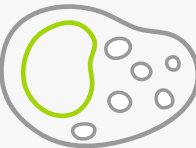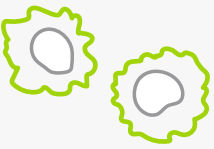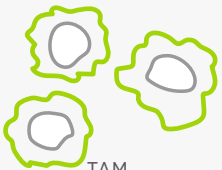- Treatment Responders & Non-Responders

Product Highlights

- Comprehensive panels for either human or mouse experiments.

- Genes representing all major myeloid cell types and their various functions including: neutrophils, eosinophils, mast cells, dendritic cells, monocytes, and macrophages with 19 functional and pathway annotations.

- Customize with Panel-Plus, a custom spike-in product of 55 genes or less that allows for the creation of a panel and experiment uniquely your own.

Feature	Specifications
Number of Targets	770 (Human), 754 (Mouse) including internal reference genes
Standard Input Material (No amplification required)	25 ng–300 ng
Sample Material - Low Input	As little as 1 ng with nCounter RNA Low Input Kit and Panel specific primer pools (sold seperately)
Sample Type(s)	FFPE-derived RNA, total RNA, fragmented RNA, cell lysates and PBMC sorted cells
Customizable	Add up to 55 unique genes with Panel Plus
Time to Results	Approximately 24 hours
Data Analysis	nSolver™ Analysis Software (RUO) and the ROSALIND® Platform

Innate Immunity Myeloid Cells

Genes included in the Myeloid Innate Immunity Panel were chosen based on their abundance/presence in the target cell and their ability to discern activation, polarization and effector phenotypes related to malignancy or infection. The table below gives a description of different myeloid cell types and the number of genes in the human or mouse panel that are reported to be associated with these cells based on the current literature.

Cell Type	Cell Description	Immune Regulatory Function	Associated Human Genes	Associated Mouse Genes
Macrophage	Scavengers of dead or dying cells and cellular debris. Regulates important homeostatic and developmental functions, e.g., terminal end bud migration, angiogenesis, tissue repair, dendritic cell maturation, etc. by secreting a diversity of pro- and anti-inflammatory cytokines, chemokines, proteases and factors.	Adaptive Immune System Activation and Suppression	333 genes	332 genes
Dendritic Cell	Cells that process antigens and present them to prime T cells for activation, thereby acting as messengers between the innate and adaptive immune systems.	Adaptive Immune System Activation	262 genes	264 genes
Eosinophil	Leukocytes responsible for combating parasites and some types of infections. Effector production of growth factors such as TGF-β, VEGF, and PDGF, as well as cytotoxic factors.	Pro-inflammatory	99 genes	103 genes
Neutrophil	Phagocytic granulocytes that act as first-responders and migrate towards sites of inflammation. Typically, a hallmark of acute inflammation which express markers of classical activation.	Acute inflammation	138 genes	137 genes
Mast Cell	Early instigator of inflammation, and regulator of tissue homeostasis by secreting cytokines, chemokines, proteases, and heparin mediators that regulate vascular permeability, fibroblast responses and recruitment of peripheral blood cells into tissues.	Immune modulation	152 genes	147 genes
IMCs	Immature myeloid cells (IMCs), also known as Myeloid Derived Supressor Cells (MDSCs), are a heterogenous group of cells that are transitory in differentiation towards granulocytic or macrophage subtypes. These can significantly suppress lymphocyte activation by paracrine mechanisms.	Strong immune suppression of both innate and adaptive immune system activity	173 genes	169 genes
TAM	Recruited macrophages in tumor tissue are known as tumor associated macrophages (TAMs) - these are distinct from resident macrophages. Akin to macrophages, these are key regulators of tumor angiogenesis and proficient in orchestrating adaptive immune response.	Pro-tumor (Angiogenesis) and Anti-tumor. Variable dependent on tumor type	177 genes	178 genes

Smart Content in every Panel

nCounter Gene Expression panels are developed in collaboration with leading experts in the field. Each panel is curated to include the most current and relevant genes along with the following features:

- Functionally annotated gene lists with sortable gene to function pathway mapping
- Individual probe accession numbers, aliases and target sequence information
- Gene expression analysis for optimal performance on nCounter Analysis System for research use

NanoString offers advanced software tools that address the continuous demands of data analysis and help answer the specific biological questions encompassed in our most popular panels.

ROSALIND is a cloud-based platform that enables scientists to analyze and interpret differential gene expression data without the need for bioinformatics or programming skills. ROSALIND makes analysis of nCounter data easy, with guided modules for:

- Normalization
- Quality Control
- Individual Pathway Analysis
- Differential Expression
- Gene Set Analysis

nCounter customers can access ROSALIND at
www.rosalind.bio/nanostring

Myeloid Innate Immunity Panel Functional Annotations

Functional annotations for 19 different pathways and processes were assigned across all genes in the Myeloid Innate Immunity Panels allowing for a practical view of important aspects of the innate immune response.

Annotation	Human Genes	Mouse Genes
Angiogenesis	61	62
Antigen Presentation	64	57
Cell Cycle and Apoptosis	21	19
Cell Migration and Adhesion	101	97
Chemokine signaling	75	65
Complement Activation	18	17
Cytokine Signaling	157	153
Differentiation and Maintenance of Myeloid Cells	54	51
ECM remodeling	73	70
Fc Receptor Signaling	67	68
Growth Factor Signaling	186	184
Interferon Signaling	34	29
Lymphocyte activation	131	134
Metabolism	92	87
Pathogen Response	91	80
T-cell Activation and Checkpoint Signaling	33	30
TH1 Activation	19	19
TH2 Activation	20	20
TLR signaling	68	64
Internal Reference Genes	40	20

To view the complete gene lists for either the Human or Mouse Myeloid Innate Immunity Panels, visit:
http://www.nanostring.com/myeloid-innate-immunity/

Ordering Information

Gene Expression Panel CodeSets arrive ready-to-use and generally ship within 24-hours following purchase.

Product	Product Description	Quantity	Catalog Number
nCounter Human Myeloid Innate Immunity Panel V2	Includes 770 genes, including 40 internal reference genes for data normalization.	12 Reactions	XT-CSO-HMII2-12
nCounter Mouse Myeloid Innate Immunity Panel V2	Includes 754 genes, including 20 internal reference genes for data normalization.	12 Reactions	XT-CSO-MMII2-12
nCounter Analysis System Master Kit Reagents and Cartridges	Reagents, cartridges, and consumables necessary for sample processing on the nCounter Analysis System.	12 Reactions	NAA-AKTI-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 Myeloid Innate Immunity Primer Pools	MTE primer pools for Low Input RNA profiling (770 genes) 730 immune related human genes + 40 internal reference controls. Master Kit, RNA Low Input Kit & Panel CodeSet Required	12 Reactions	PP-HMII2-12
Mouse Myeloid Innate Immunity Primer Pools	MTE primer pools for Low Input RNA profiling (754 genes) 734 immune-related human genes + 20 internal reference controls. Master Kit, RNA Low Input Kit & Panel CodeSet Required	12 Reactions	PP-MMII2-12

Selected Panel References

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For more information, please visit nanostring.com

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