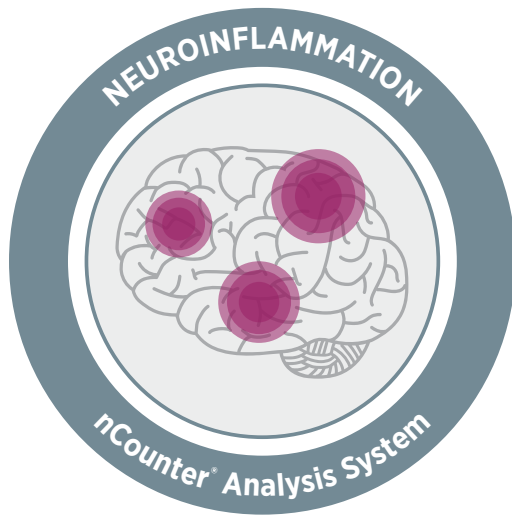


# nCounter<sup>®</sup> Neuroinflammation Panel

## Gene Expression Panel

Neuroimmune interactions • CNS and peripheral immune cell profiling

The nCounter Neuroinflammation panels are designed to rapidly analyze important aspects of neuroimmune interactions for a complete view of the complex interplay between the immune and nervous systems. Each human and mouse panel provides comprehensive evaluation of the pathways, processes, and cell types that are involved in neuroinflammation.



### Applications

- For research of neurodegenerative disease, traumatic brain injury, psychiatric disorders, neuropathic pain, CNS infection, and others
- Gene expression profiling of neuroimmune interactions
- Response to drug treatment and signature generation
- Biomarker characterization

### Product Highlights

- Comprehensive assessment of 23 neuroinflammation pathways and processes
- Unique cell typing analysis feature measures the relative abundance of 5 CNS and 14 peripheral immune cells
- Customizable with Panel Plus option – add up to 55 genes of your choosing
- nCounter workflow is streamlined, user-friendly, and efficient with just 15 minutes total hands-on time

Feature	Specifications
Number of Targets	770 (Human), 770 (Mouse) including internal reference genes
Sample Material - Standard (No amplification required)	25 ng–300 ng
Sample Material - Low Input	As little as 1 ng with nCounter RNA Low Input Kit; low input protocol and primer designs available.
Sample Type(s)	FFPE-derived RNA, total RNA, fragmented RNA, PBMCs, whole blood/plasma, iPSCs, cerebrospinal fluid
Customizable	Add up to 55 unique genes with Panel Plus
Time to Results	Approximately 24 hours
Data Analysis	nSolver™ Analysis software and the ROSALIND® Platform

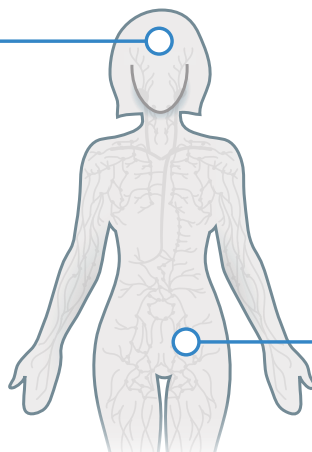
## CNS and Peripheral Immune Cell Profiling

Genes included in the Neuroinflammation Panels provide unique cell profiling data for measuring the relative abundance of 5 central nervous system and 14 peripheral immune cell types in a single sample<sup>1</sup>. The table below summarizes each cell type represented by gene content in the panel qualified through biostatistical approaches and selected literature in the field of neuroinflammation research.

### Cell Function

#### CNS Cells

- Neurons
- Microglia
- Astrocytes
- Oligodendrocytes
- Endothelial cells



#### Peripheral Immune Cells

- B cells
- Dendritic cells
- Exhausted CD8
- Macrophages
- T cells
- CD8 T cells
- Neutrophils
- Mast Cells
- Cytotoxic cells
- Tregs
- NK CD56dim cells
- NK cells
- CD45+ cells
- Th1 cells

### Core Themes and Annotations

Classification	Cell Type	Associated Human Genes	Associated Mouse Genes
<b>CNS cells</b>	Neurons	6	6
	Microglia	6	6
	Astrocytes	8	8
	Oligodendrocytes	15	15
	Endothelial cells	9	9
<b>Peripheral Immune Cells</b>	B cells	7	7
	Dendritic cells	2	2
	Exhausted CD8	4	4
	Macrophages	4	4
	T cells	6	6
	CD8 T cells	2	2
	Neutrophils	5	3
	Mast cells	4	4
	Cytotoxic cells	9	8
	Treg	1	1
	NK CD56dim cells	2	3
	NK cells	2	2
	CD45+ cells	1	1
	Th1 cells	1	1

<sup>1</sup> Danaher P. et al. Gene expression markers of Tumor Infiltrating Leukocytes JITC 2017

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## Neuroinflammation Panel Functional Annotations

Functional annotations for 23 pathways and processes were assigned across the genes in the Neuroinflammation Panels. The 23 pathways and processes represent three core themes of neuroinflammation: immunity and inflammation, neurobiology and neuropathology, and metabolism and stress.

### Immunity and Inflammation

The role of innate immunity in many neurological disorders is now widely accepted in the research world although the relative contributions of these processes to the progression and/or amelioration of these diseases is incompletely understood. Several key processes and pathways are assessed in this panel to provide a comprehensive view of the immune and inflammatory response in the nervous system.

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NF- $\kappa$ B	Microglia function	Innate immune response
Adaptive immune response	Cytokine signaling	Inflammatory signaling

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### Neurobiology and Neuropathology

Neuropathology research today requires a broad view of all the underlying aspects of neurological disorders and injury, including assessment of neurotransmission, neuron-glia interactions, neuroplasticity, cell integrity, neuroinflammation, and metabolism. There are 13 pathways and processes included in this panel to evaluate the impact of neuroinflammation and immune actions in the nervous system on neuropathology.

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Angiogenesis	Apoptosis	Neurons and neurotransmission	Cell cycle	Astrocyte function
Insulin signaling	Notch	DNA damage	Epigenetic regulation	Wnt
Oligodendrocyte function	Matrix remodeling	Growth factor signaling		

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### Metabolism and Stress

Metabolic dysfunction and stress have been shown to influence brain activity and disrupt CNS homeostasis and cognitive function by adopting neurotoxic functions. The genes selected for this panel are designed to assess important aspects of metabolism and stress that are known to impact neuroinflammation.

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Autophagy	Carbohydrate metabolism	Lipid metabolism	Cellular stress
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To view the annotated gene lists for the Neuroinflammation panels, visit [nanosttring.com/neuroinflammation](https://nanosttring.com/neuroinflammation)

## Ordering Information

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

Product	Product Description	Quantity	Catalog Number
nCounter Human Neuroinflammation Panel	Includes 770 genes, including 13 internal reference genes for data normalization	12 Reactions	XT-CSO-HNROI1-12
nCounter Mouse Neuroinflammation Panel	Includes 770 genes, including 13 internal reference genes for data normalization	12 Reactions	XT-CSO-MNROI1-12
nCounter Analysis System Master Kit Reagents and Cartridges	Reagents, cartridges, and consumables necessary for sample processing on the nCounter Analysis System	12 Reactions	NAA-AKIT012
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, and 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
nCounter Human Neuroinflammation Primer Pools	Low input protocol and primer designs available.	N/A	Ask Your Sales Rep
nCounter Mouse Neuroinflammation Primer Pools	Low input protocol and primer designs available.	N/A	Ask Your Sales Rep

## Selected Panel References

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2. Chiu IM, Morimoto ET, Goodarzi H, Liao JT, O'Keeffe S, et al. A neurodegeneration-specific gene-expression signature of acutely isolated microglia from an amyotrophic lateral sclerosis mouse model. *Cell Rep*. 2013 Jul 25;4(2):385-401. PubMed PMID: 23850290; NIHMSID: NIHMS499259; PubMed Central PMCID: PMC4272581.
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**For more information, please visit [nanosttring.com/neuroinflammation](https://nanosttring.com/neuroinflammation)**

## Bruker Spatial Biology

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