MIBI-VALIDATED ANTIBODIES FOR SPATIAL PROTEOMICS SERVICES

Human Advanced Cell Classification Panel

- Ideal for quantitative
 immune profiling
- Identify dozens of cell populations
- Expand with add-on or custom markers

The Advanced Cell Classification Panel is the ideal starting point for comprehensive immune profiling of human FFPE tissue samples—providing classification of dozens of cell populations and tissue regions.

The antibody panel was designed for quantitative immune infiltrate analysis of the tumor microenvironment. You have the flexibility to customize analysis with additional markers for your particular needs.

24-MARKER ADVANCED CELL CLASSIFICATION PANEL

CD20	CD163	Keratin or SOX10
CD31	dsDNA	Ki-67
CD45RO	FOXP3	Na/K-ATPase
CD45	Granzyme B	Podoplanin
CD56	HLA Class 1	SMA
CD68	HLA DPDQDR	Vimentin
	CD31 CD45RO CD45 CD56	CD31dsDNACD45ROFOXP3CD45Granzyme BCD56HLA Class 1

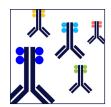
MARKERS BY TYPE

TISSUE AR	CHITECTURE	IMMUNE CE	LLS & SUBSETS	TUM	OR CELLS
β-Tubulin	Na/K-ATPase	CD3	CD45	Keratin	SOX10
CD31	Podoplanin	CD4	CD56	Ki-67	
dsDNA	SMA	CD8	CD68		
HLA Class 1	Vimentin	CD11c	CD163	TISSUE REGIONS	
HLA DPDQDR		CD14	FOXP3	0004	0144
		CD20	Granzyme B	CD31	SMA
		CD45RO		Keratin	Vimentin
				Podoplanin	



Cell Classification and Phenotyping

Tumor cellsKeratin+ or SOX10+Proliferating tumor cellsKeratin+Ki-67+ or SOX10+Ki-67+Immune cellsCD45+ or positive for at least one immune lineage markersProliferating immune cellsCD45+CD3+ or CD45+FoxP3+Helper T lymphocytesCD45+CD3+CD4+FoxP3-Naive helper T cellsCD45+CD3+CD4+CD45R0-Memory helper T cellsCD45+CD3+CD4+CD45R0+Activated helper T lymphocytesCD45+CD3+CD4+CD45R0+Activated helper T lymphocytesCD45+CD3+CD4+CD45R0+Activated registryCD45+CD3+CD4+CD4+CD8+Naive cytotxic T cellsCD45+CD3+CD4+CD8+CD45R0-Memory cytotxic T cellsCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1M1 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1M1 monocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-	CELL TYPE	PHENOTYPE
Immune cells CD45+ or positive for at least one immune lineage markers Proliferating immune cells CD45+Ki-67+ Tcells CD45+CD3+ or CD45+FoxP3+ Helper T lymphocytes CD45+CD3+CD4+FoxP3- Naive helper T cells CD45+CD3+CD4+CD45R0- Memory helper T cells CD45+CD3+CD4+CD45R0+ Activated helper T lymphocytes CD45+CD3+CD4+CD4+Ri-67+ or Granzyme B+ Cytotoxic T lymphocytes CD45+CD3+CD4+CD8+ Naive cytotoxic T cells CD45+CD3+CD4+CD8+ Memory cytotoxic T cells CD45+CD3+CD4+CD8+CD45R0- Memory cytotoxic T cells CD45+CD3+CD4+CD8+CD45R0+ Activated cytotoxic T lymphocytes CD45+CD3+CD4+CD8+CD45R0+ Activated cytotoxic T lymphocytes CD45+CD3+CD4+CD4+CD45R0+ Regulatory T cells CD45+CD3+CD4+CD4+CD45R0+ Activated NK cells CD45+CD3+CD3+CD4+FoxP3+ NK cells CD45+CD3-CD56+ Activated NK cells CD45+CD3+CD56+ Activated NK cells CD45+CD3+CD56+ B cells CD45+CD20+	Tumor cells	Keratin+ or SOX10+
Proliferating immune cellsCD45+Ki-67+T cellsCD45+CD3+ or CD45+FoxP3+Helper T lymphocytesCD45+CD3+CD4+FoxP3-Naive helper T cellsCD45+CD3+CD4+CD45R0-Memory helper T cellsCD45+CD3+CD4+CD45R0+Activated helper T lymphocytesCD45+CD3+CD4+CD45R0+Activated helper T lymphocytesCD45+CD3+CD4+CD4+CD4+R0+Vaive cytotoxic T cellsCD45+CD3+CD4+CD4+CD4+R0-Memory cytotoxic T cellsCD45+CD3+CD4+CD4+CD4+R0+Activated cytotoxic T cellsCD45+CD3+CD4+CD4+R0+Activated cytotoxic T lymphocytesCD45+CD3+CD4+CD4+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-	Proliferating tumor cells	Keratin+Ki-67+ or SOX10+Ki-67+
T cellsCD45+CD3+ or CD45+FoxP3+Helper T lymphocytesCD45+CD3+CD4+FoxP3-Naive helper T cellsCD45+CD3+CD4+CD45R0-Memory helper T cellsCD45+CD3+CD4+CD45R0+Activated helper T lymphocytesCD45+CD3+CD4+CD45R0+Activated helper T lymphocytesCD45+CD3+CD4+CD4+CD45R0+Cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Naive cytotoxic T cellsCD45+CD3+CD4+CD8+CD45R0-Memory cytotoxic T cellsCD45+CD3+CD4+CD8+CD45R0+Activated cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M1 monocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-	Immune cells	CD45+ or positive for at least one immune lineage markers
Helper T lymphocytesCD45+CD3+CD4+FoxP3-Naive helper T cellsCD45+CD3+CD4+CD45R0-Memory helper T cellsCD45+CD3+CD4+CD45R0+Activated helper T lymphocytesCD45+CD3+CD4+CD45R0+Activated helper T lymphocytesCD45+CD3+CD4+Ki-67+ or Granzyme B+Cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Naive cytotoxic T cellsCD45+CD3+CD4+CD8+CD45R0-Memory cytotoxic T cellsCD45+CD3+CD4+CD8+CD45R0+Activated cytotoxic T cellsCD45+CD3+CD4+CD8+CD45R0+Activated cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-	Proliferating immune cells	CD45+Ki-67+
Naive helper T cellsCD45+CD3+CD4+CD45RO-Memory helper T cellsCD45+CD3+CD4+CD45RO+Activated helper T lymphocytesCD45+CD3+CD4+CD4+Ri-67+ or Granzyme B+Cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Naive cytotoxic T cellsCD45+CD3+CD4+CD8+CD45RO-Memory cytotoxic T cellsCD45+CD3+CD4+CD8+CD45RO+Activated cytotoxic T cellsCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD3+CD56+Granzyme B+B cellsCD45+CD3+CD3+CD56+Granzyme B+B cellsCD45+CD3+CD3+CD56+Granzyme B+B cellsCD45+CD3+CD3+CD56+Granzyme B+B cellsCD45+CD3+CD3+CD56+Granzyme B+MacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	Tcells	CD45+CD3+ or CD45+FoxP3+
Memory helper T cellsCD45+CD3+CD4+CD45R0+Activated helper T lymphocytesCD45+CD3+CD4+Ki-67+ or Granzyme B+Cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Naive cytotoxic T cellsCD45+CD3+CD4+CD8+CD45R0-Memory cytotoxic T cellsCD45+CD3+CD4+CD8+CD45R0+Activated cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+FoxP3+NK cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3+CD56+Activated NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c-M1 monocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-	Helper T lymphocytes	CD45+CD3+CD4+FoxP3-
Activated helper T lymphocytesCD45+CD3+CD4+Ki-67+ or Granzyme B+Cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Naive cytotoxic T cellsCD45+CD3+CD4+CD8+CD45RO-Memory cytotoxic T cellsCD45+CD3+CD4+CD8+CD45RO+Activated cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+FoxP3+NK cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-	Naive helper T cells	CD45+CD3+CD4+CD45RO-
Cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Naive cytotoxic T cellsCD45+CD3+CD4+CD8+CD45RO-Memory cytotoxic T cellsCD45+CD3+CD4+CD8+CD45RO+Activated cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+FoxP3+NK cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3+CD56+Granzyme B+NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	Memory helper T cells	CD45+CD3+CD4+CD45RO+
Naive cytotoxic T cellsCD45+CD3+CD4+CD8+CD45RO-Memory cytotoxic T cellsCD45+CD3+CD4+CD8+CD45RO+Activated cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+FoxP3+NK cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-	Activated helper Tlymphocytes	CD45+CD3+CD4+Ki-67+ or Granzyme B+
Memory cytotoxic T cellsCD45+CD3+CD4+CD8+CD45RO+Activated cytotoxic T lymphocytesCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+FoxP3+NK cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	Cytotoxic Tlymphocytes	CD45+CD3+CD4+CD8+
Activated cytotoxic TlymphocytesCD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+Regulatory T cellsCD45+CD3+CD4+FoxP3+NK cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD56+Activated NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	Naive cytotoxic T cells	CD45+CD3+CD4+CD8+CD45RO-
Regulatory T cellsCD45+CD3+CD4+FoxP3+NK cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD56+Activated NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1M1 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	Memory cytotoxic T cells	CD45+CD3+CD4+CD8+CD45RO+
NK cellsCD45+CD3-CD56+Activated NK cellsCD45+CD3-CD56+Granzyme B+NKT cellsCD45+CD3+CD56+Activated NKT cellsCD45+CD3+CD56+Granzyme B+B cellsCD45+CD20+Myeloid cellspositive for at least one of the myeloid lineage markersMacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1M1 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	Activated cytotoxic Tlymphocytes	CD45+CD3+CD4+CD8+Ki-67+ or Granzyme B+
Activated NK cells CD45+CD3-CD56+Granzyme B+ NKT cells CD45+CD3+CD56+ Activated NKT cells CD45+CD3+CD56+Granzyme B+ B cells CD45+CD20+ Myeloid cells positive for at least one of the myeloid lineage markers Macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 M1 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163- M2 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+ Monocytes CD14+CD68-CD11c- M1 monocytes CD14+CD68-CD11c-CD163-	Regulatory T cells	CD45+CD3+CD4+FoxP3+
NKT cells CD45+CD3+CD56+ Activated NKT cells CD45+CD3+CD56+Granzyme B+ B cells CD45+CD20+ Myeloid cells positive for at least one of the myeloid lineage markers Macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 M1 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163- M2 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+ Monocytes CD14+CD68-CD11c- M1 monocytes CD14+CD68-CD11c-CD163-	NK cells	CD45+CD3-CD56+
Activated NKT cells CD45+CD3+CD56+Granzyme B+ B cells CD45+CD20+ Myeloid cells positive for at least one of the myeloid lineage markers Macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 M1 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163- M2 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+ Monocytes CD14+CD68-CD11c- M1 monocytes CD14+CD68-CD11c-CD163-	Activated NK cells	CD45+CD3-CD56+Granzyme B+
B cells CD45+CD20+ Myeloid cells positive for at least one of the myeloid lineage markers Macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 M1 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163- M2 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+ Monocytes CD14+CD68-CD11c- M1 monocytes CD14+CD68-CD11c-CD163-	NKT cells	CD45+CD3+CD56+
Myeloid cells positive for at least one of the myeloid lineage markers Macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 M1 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163- M2 macrophages CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163- M2 macrophages CD14+CD68-CD11c- M1 monocytes CD14+CD68-CD11c-CD163-	Activated NKT cells	CD45+CD3+CD56+Granzyme B+
MacrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1M1 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	B cells	CD45+CD20+
M1 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	Myeloid cells	positive for at least one of the myeloid lineage markers
M2 macrophagesCD68+ and CD68:CD11c intensity ratio ≥ 1 CD163+MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	Macrophages	CD68+ and CD68:CD11c intensity ratio \geq 1
MonocytesCD14+CD68-CD11c-M1 monocytesCD14+CD68-CD11c-CD163-	M1 macrophages	CD68+ and CD68:CD11c intensity ratio ≥ 1 CD163-
M1 monocytes CD14+CD68-CD11c-CD163-	M2 macrophages	CD68+ and CD68:CD11c intensity ratio \geq 1 CD163+
	Monocytes	CD14+CD68-CD11c-
	M1 monocytes	CD14+CD68-CD11c-CD163-
M2 monocytes CD14+CD68-CD11c-CD163+	M2 monocytes	CD14+CD68-CD11c-CD163+
Dendritic cells CD11c+HLA DPDQDR+ and CD68:CD11c intensity ratio < 1	Dendritic cells	CD11c+HLA DPDQDR+ and CD68:CD11c intensity ratio < 1
Conventional dendritic cells CD11c+HLA DPDQDR+ and CD68:CD11c intensity ratio < 1 CD14	Conventional dendritic cells	CD11c+HLA DPDQDR+ and CD68:CD11c intensity ratio < 1 CD14-
Monocyte-derived dendritic cells CD11c+HLA DPDQDR+ and CD68:CD11c intensity ratio < 1 CD14	Monocyte-derived dendritic cells	CD11c+HLA DPDQDR+ and CD68:CD11c intensity ratio < 1 CD14+



REGION	PHENOTYPE
Tumor	Keratin+
Stroma	Vimentin+ or SMA+Keratin-
Fibroblasts	Vimentin+SMA-Keratin-CD31-
Myofibroblasts/Smooth Muscle	Vimentin+SMA+CD31-
Lymphatics	Podoplanin+Keratin-
Blood vessels	CD31+Podoplanin-



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