

Neural markers guide

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Neuroscience

神經科學為科學探索與發現的前沿，目前相關研究致力於探討其神經系統的分子、細胞和功能過程，以及它們在發育、衰老和疾病中的作用。

Amyotrophic Lateral Sclerosis
肌萎縮側索硬化症



Alzheimer's disease
阿茲海默症



Multiple sclerosis
多發性硬化症



Traumatic brain injury
創傷性腦損傷



Parkinson's disease
帕金森氏症



Huntington's disease
亨丁頓舞蹈症



Cell type	Markers
Neuroepithelial cells	Nestin, SOX2, Notch1, HES1, HES3, E-cadherin, occludin.
Radial glia	Vimentin, nestin, PAX6, HES1, HES5, GFAP, GLAST, BLBP, TN-C, N-cadherin, SOX2.
Intermediate progenitors	TBR2, MASH1/Ascl1.
Immature neurons	Doublecortin, beta III tubulin, NeuroD1, TBR1, stathmin 1.
Oligodendrocyte precursor cells	PDGF receptor alpha, NG2.
Mature oligodendrocytes	Olig 1, olig 2, olig 3, MBP, OSP, MOG, SOX10.
Schwann cells	MPZ, NCAM, GAP43, S100, P75NTR.
Astrocytes	GFAP, EAAT1/GLAST, EAAT2/GLT-1, glutamine synthetase, S100 beta, ALDH1L1.
Microglia	TMEM119, CD11b, CD45, Iba1, CX3CR1, F4/80, CD68, CD40.
Mature neurons	NeuN, MAP2, 160 kDa neurofilament medium, 200kDa neurofilament heavy, synaptophysin, PSD95.
Glutamatergic neurons	VGLUT1, VGLUT2, NMDAR1, NMDAR2B, glutaminase, glutamine synthetase.
GABAergic neurons	GABA transporter 1, GABA ^B receptors 1 and 2, GAD65, GAD67.
Dopaminergic neurons	Tyrosine hydroxylase, dopamine transporter, FOXA2, GIRK2, Nurr1, LMX1B
Serotonergic neurons	Tryptophan hydroxylase, serotonin transporter, Pet1.
Cholinergic neurons	Choline acetyltransferase, vesicular acetylcholine transporter, acetylcholinesterase

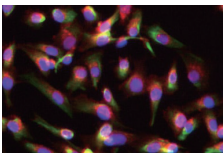
The markers shown in the guide are suggestions based on commonly used markers in published literature. There is often overlap in markers between different cell types, therefore we advise combining multiple markers and observing ultrastructural features where possible.



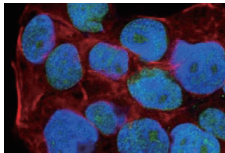
Neural markers

加速您的神經科學研究

Neuroepithelial cells	
Nestin	ab105389
SOX2	ab92494
Notch1	ab52627
HES1 and HES3	ab108937
E-cadherin and Occludin	ab40772
SOX10	ab155279
Radial glia	
Vimentin and Nestin	ab92547
PAX6	ab195045
HES1 and HES5	ab194111
Astrocytic markers: GFAP, GLAST, and BLBP	ab279649
Adhesion and extracellular matrix molecules: TN-C and N-Cadherin	ab76011
SOX2	ab93689
Immature neurons and intermediate progenitors	
Intermediate progenitorsTBR2	
TBR2	ab216870
MASH1 (Ascl1)	ab211327
Immature neurons	
Doublecortin	ab207175
Beta III tubulin	ab52623
NeuroD1	ab213725
TBR1	ab183032
Stathmin 1	ab52630
Oligodendrocytes and oligodendrocyte precursor cells	
Oligodendrocyte precursor cells	
PDGFR alpha	ab203491
NG2	ab255811
Oligodendrocytes	
Olig2	ab109186
Oligodendrocyte specific protein (OSP) and myelin oligodendrocyte glycoprotein (MOG)	ab233549
Myelin basic protein (MBP)	ab209328
SOX10	ab227680
Schwann cells and Schwann cell precursors	
Myelin protein zero (MPZ)	ab183868
NCAM1	ab75813
GAP43	ab75810
S100B	ab52642
Dhh	ab270453
Astrocytes	
GFAP	ab68428
EAAT1 (GLAST)	ab181036
EAAT2 (GLT-1)	ab205248
Glutamine synthetase	ab176562
S100B	ab52642
ALDH1L1	ab177463

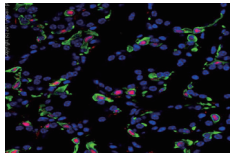


Neural progenitor cells derived from human iPSCs stained red with anti-Nestin (ab105389).

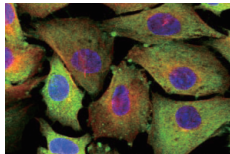


Human embryonic carcinoma epithelial cells stained green with anti-SOX2 (ab93689).

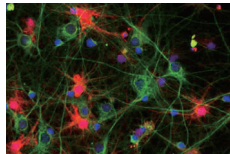
Microglia	
CD11b and CD45	ab1211
Iba1	ab178846
F4/80	ab16911
CD68	ab283654
CD40	ab224639
Mature neurons	
NeuN	ab177487
MAP2	ab183830
160 kDa Neurofilament medium	ab254348
200 kDa Neurofilament heavy	ab207176
Synaptophysin	ab32127
PSD95	ab238135
Glutamatergic neurons	
vGluT1	ab227805
vGluT2	ab216463
NMDAR1	ab109182
NMDAR2B	ab254356
Glutaminase	ab156876
Glutamine synthetase	ab176562
GABAergic neurons	
GABA transporter 1 (GAT1)	ab259971
GABAB receptor 1 and 2	ab238130
GAD65	ab239372
GAD67	ab213508
Dopaminergic neurons	
Tyrosine hydroxylase (TH)	ab75875
Dopamine transporter (DAT)	ab184451
FOXA2	ab108422
GIRK2	ab259909
Nurr1	ab41917
LMX1B	ab259926
Serotonergic neurons	
Tryptophan hydroxylase (TPH)	ab52954
Serotonin transporter	ab254358
Pet1	ab221724
Cholinergic neurons	
Choline acetyltransferase (ChAT)	ab178850
Vesicular acetylcholine transporter (VACHT)	ab271111
Acetylcholinesterase	ab183591



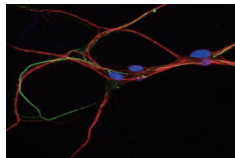
Mouse thyroid tissue, stained red with anti-MASH1 (ab211327).



Human neuroblastoma cell line stained green with anti-Mylin basic protein (ab209328).



E18 rat hippocampal glia stained in red with anti-S100 beta (ab52642).

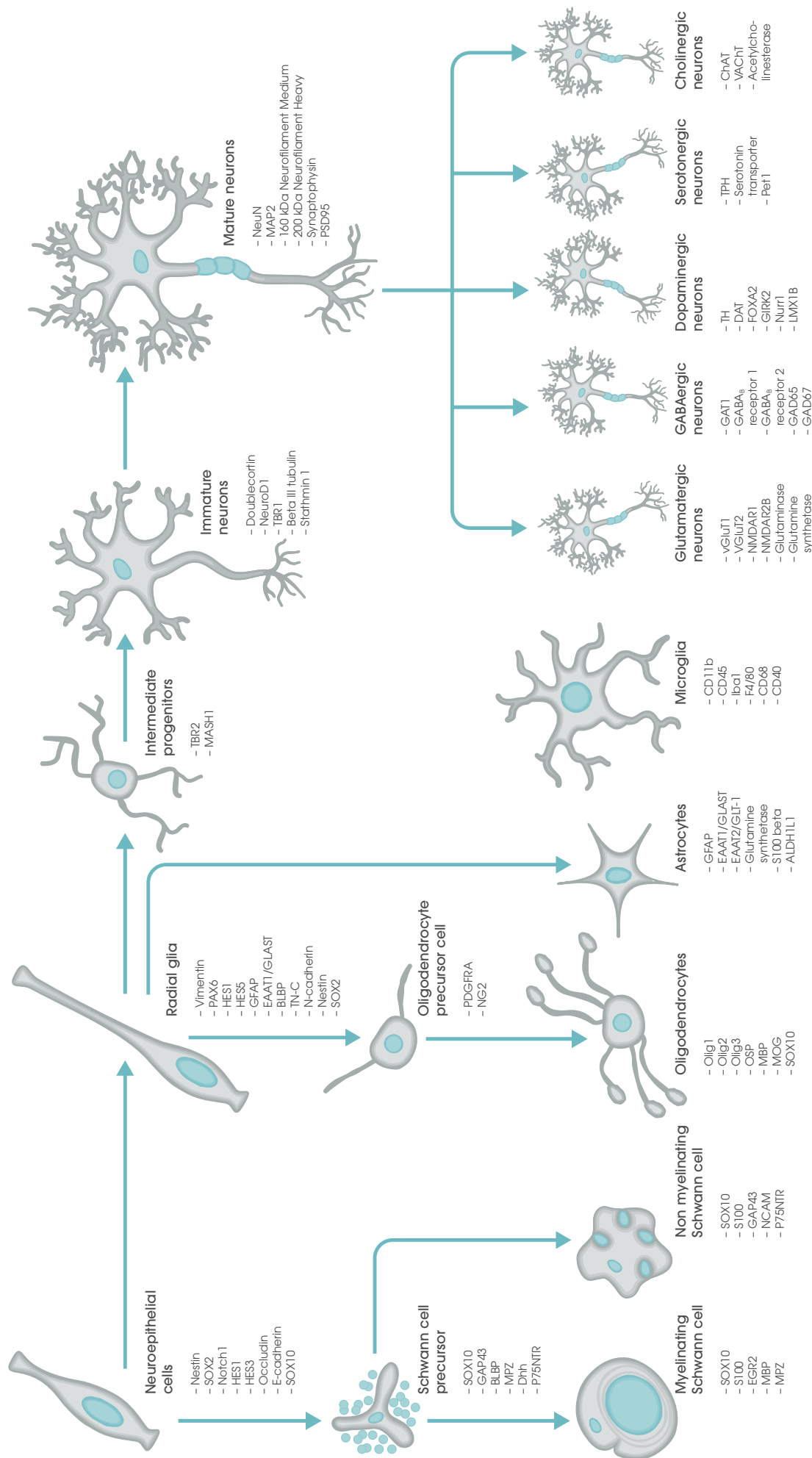


Mouse primary neurons stained green using anti-160 kDa neurofilament medium (ab254348).



Neural lineage markers at a glance

神經元和神經膠細胞表達著獨特的轉錄因子、酶、細胞骨架蛋白和受體。abcam提供最適合您的神經標記物。



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