

Supplementary Table 1. Antibody summary.

Target	Vendor ^a	Catalog #	Host species ^b	Clon-ality ^c	Target size	PFA	MAP
Cell type markers							
Calbindin	Abcam	ab11426	Rb	P	Protein	O	O
Calbindin	CST	13176	Rb	M	Protein	O	O
Calbindin	Abcam	ab82812	Ms	M	Protein	O	X
Calretinin	Abcam	ab702	Rb	P	Protein	O	O
Calretinin	Abcam	ab133316	Rb	M	Protein	O	X
CaMKIIa	Abcam	ab22609	Ms	M	Protein	O	O
ChAT	Aves	CAT	Ch	P	Protein	O	O
GAD2	CST	5843	Rb	M	Protein	O	O
GAD65/2	BioLegend	844502	Ms	M	Protein	O	O
GAD65/2	BioLegend	844503	Ms	M	Protein	O	O
GAD65/67	Millipore	AB1511	Ms	P	Protein	O	O
GAD67	Millipore	MAB5406	Ms	M	Protein	O	O
GFAP	Abcam	ab48050	Rb	P	Protein	O	O
GFAP	Aves	GFAP	Ch	P	Protein	O	O
GFAP	BioLegend	835301	Ms	M	Protein	O	O
GFAP	BioLegend	837201	Ms	M	Protein	O	O
GFAP, A488 ^d	CST	3655	Ms	M	Protein	O	O
GFAP, A594 ^e	CST	8152	Ms	M	Protein	O	O
Iba1	Abcam	ab107159	Gt	P	Protein	O	X
Iba1	Abcam	ab5076	Gt	P	Protein	O	X
Iba1	Novus	NB100-1028	Gt	P	Protein	O	X
Iba1	Wako	019-19741	Rb	P	Protein	O	O
NeuN	Abcam	ab104225	Rb	P	Protein	O	O
NeuN	Abcam	ab177487	Rb	M	Protein	O	O
NeuN	BioLegend	834501	Ms	M	Protein	O	O
NeuN	CST	12943	Rb	M	Protein	O	O
NeuN	CST	24307	Rb	M	Protein	O	O
NeuN	Millipore	MAB377	Ms	M	Protein	O	O
Parvalbumin	Abcam	ab11427	Rb	P	Protein	O	O
Parvalbumin	Abcam	ab32895	Gt	P	Protein	O	O
Somatostatin	Millipore	MAB354	Rt	M	Protein	O	O
Tau	Aves	TAU	Ch	P	Protein	X	O

TH	Abcam	ab112	Rb	P	Protein	O	O
TH	Abcam	ab134461	Ch	P	Protein	O	O
TH	Aves	TYH	Ch	P	Protein	O	O
TH	BioLegend	818001	Ms	M	Protein	O	O
Neurofilament markers							
CNPase	Aves	CNP	Ch	P	Protein	X	O
MAP2	Abcam	ab32454	Rb	P	Protein	O	O
MAP2	Abcam	ab5392	Ch	P	Protein	O	X
MAP2	Aves	MAP	Ch	P	Protein	O	O
MAP2	BioLegend	822501	Ch	P	Protein	O	X
MAP2	BioLegend	801801	Ms	M	Protein	O	O
MAP2	BioLegend	840601	Rb	P	Protein	O	O
MAP2	CST	8707	Rb	M	Protein	O	O
MBP	Abcam	ab134018	Ch	P	Protein	O	O
MBP	Abcam	ab7349	Rt	M	Protein	O	O
MBP	Aves	MBP	Ch	P	Protein	O	O
MBP	BioLegend	808401	Ms	M	Protein	O	O
MBP	BioLegend	836501	Ms	M	Protein	O	O
MBP	CST	78896	Rb	M	Protein	O	O
NF-H	Aves	NFH	Ch	P	Protein	O	O
NF-H	BioLegend	835801	Ms	M	Protein	O	O
NF-H	CST	2836	Ms	M	Protein	O	O
NF-H NP	BioLegend	801701	Ms	M	Protein	O	O
NF-H P	BioLegend	801601	Ms	M	Protein	O	O
NF-H P	BioLegend	835501	Ms	M	Protein	O	O
NF-H P	BioLegend	835701	Ms	M	Protein	O	X
NF-H/NF-M HP	BioLegend	835602	Ms	M	Protein	O	O
NF-H/NF-M HP	BioLegend	835604	Ms	M	Protein	O	O
NF-H/NF-M P	BioLegend	837702	Ms	M	Protein	O	X
NF-H/NF-M P	BioLegend	837704	Ms	M	Protein	O	O
NF-M	Abcam	ab64300	Rb	P	Protein	O	O
NF-M	Aves	NFM	Ch	P	Protein	O	X
NF-M	CST	2838	Ms	M	Protein	O	X
NF-L	Aves	NFL	Ch	P	Protein	O	O
NF-L	BioLegend	845802	Ms	M	Protein	O	O
NF-L	BioLegend	846002	Ms	M	Protein	O	O

NF-L	CST	2837	Rb	M	Protein	O	O
NF pan-axon	BioLegend	837904	Ms	M	Protein	O	O
NF pan-neuro	BioLegend	837801	Ms	M	Protein	O	X
Pan-actin	CST	8456	Rb	P	Protein	O	O
PLP	Aves	PLP	Ch	P	Protein	O	O
SMI-312	BioLegend	837902	Ms	P	Protein	O	O
SMI-32	BioLegend	801704	Ms	M	Protein	O	O
Tubulin	Abcam	ab6160	Rt	M	Protein	O	O
Tubulin	Abcam	ab7291	Ms	M	Protein	O	O
Tubulin α	CST	5063	Rb	M	Protein	O	O
Tubulin β	CST	7634	Rb	M	Protein	O	X
Tubulin β 3	Aves	TUJ	Ch	P	Protein	O	O
Tubulin β 3	BioLegend	801201	Ms	M	Protein	O	O
Tubulin β 3	BioLegend	801202	Ms	M	Protein	O	O
Tubulin β 3	BioLegend	802001	Rb	P	Protein	O	O
Tubulin β 3	BioLegend	845501	Rb	M	Protein	O	X
Neurotransmitters and neuromodulators							
Neuropeptide Y	CST	11976	Rb	M	Peptides	O	O
Synaptic proteins							
Bassoon	Abcam	ab82958	Ms	M	Protein	O	O
Bassoon	SYSY	141003	Rb	P	Protein	O	O
GABA _B R1	Millipore	AB2256	GP	P	Protein	O	O
GluR1	Abcam	ab86141	Rb	P	Protein	X	O
GluR1	BioLegend	819801	Ms	M	Protein	O	X
GluR2/3	Millipore	AB1506	Rb	P	Protein	O	O
Homer1	SYSY	160003	Rb	P	Protein	O	O
mGluR1	Aves	ER1	Ch	P	Protein	O	X
mGluR2	Aves	ER2	Ch	P	Protein	O	X
mGluR5	Aves	ER5	Ch	P	Protein	X	O
nAChR- α 7	BioLegend	838401	Rt	M	Protein	X	O
Neuroigin-1	BioLegend	819001	Ms	M	Protein	O	X
Neuroigin-3	BioLegend	822001	Ms	M	Protein	O	X
PSD95	BioLegend	810401	Ms	M	Protein	X	O
PSD95	CST	2507	Rb	P	Protein	X	O
PSD95	CST	3450	Rb	P	Protein	O	O
PSD95	CST	3409	Rb	P	Protein	X	O

PSD95	NeuroMab	75-028	Ms	M	Protein	O	O
Synapsin I	Abcam	ab64581	Rb	P	Protein	O	O
Synapsin I	CST	5297	Rb	M	Protein	O	O
Synaptophysin	Abcam	ab52636	Rb	M	Protein	O	O
Synaptophysin	CST	5461	Rb	M	Protein	O	O
Synaptotagmin	Aves	STG	Ch	P	Protein	O	O
SYNPR	Abcam	ab175224	Rb	M	Protein	O	O
VGluT1	Abcam	ab104898	Rb	P	Protein	O	O
VGluT1	CST	821301	Ms	M	Protein	O	O
VGluT2	Abcam	ab101760	Gt	P	Protein	O	O
Nuclear and other markers							
E-Cadherin	BD	610181	Ms	M	Protein	O	X
N-cadherin	BD	610920	Ms	M	Protein	O	X
GAP	Aves	GAP43	Ch	P	Protein	O	X
GFP	Aves	GFP-1020	Ch	P	Protein	O	O
GFP	CST	2956	Rb	M	Protein	O	O
GFP	LT	A10262	Ch	P	Protein	O	O
GFP, A594 ^e	LT	A21312	Rb	P	Protein	O	O
GFP, A647 ^f	LT	A31852	Rb	P	Protein	O	O
Lectin, D488 ^g	Vector	DL-1174			Protein	O	O
Lectin, D594 ^h	Vector	DL-1177			Protein	O	O
Histone H3, A647 ^f	CST	12230	Rb	M	Protein	O	O
DAPI	LT	D1306			DNA	O	O
TOTO-1	LT	T3600			DNA	O	O

^a CST, Cell Signaling Technology; SYSY, Synaptic Systems; LT, Life Technologies.

^b Rb, rabbit; Ms, mouse; Gt, goat; Ch, chicken; Rt, rat; GP, guinea pig.

^c M, monoclonal; P, polyclonal.

^d A488, Alexa Fluor 488 conjugate.

^e A594, Alexa Fluor 594 conjugate.

^f A647, Alexa Fluor 647 conjugate.

^g D488, DyLight 488 conjugate.

^h D594, DyLight 594 conjugate.

Supplementary Table 2. Comparison of technologies for intact tissue processing and imaging.

	MAP	ExM	CLARITY	SWITCH	Scale
Type	Polymer-tissue hybrid	Polymer-tissue hybrid	Polymer-tissue hybrid	Multifunctional fixative-tissue-gel	Tissue
Initiation system	Thermal initiator	Persulfate / TEMED	Thermal initiator	N/A	N/A
Expansion rate	4-fold	4-fold	<2-fold	<1.5-fold	<2-fold
Homogenization	Protein denaturation and dissociation	Proteinase K digestion	N/A	N/A	N/A
Protein preservation	Yes	No	Yes	Yes	Yes
Staining step	After gel embedding and lipid removal	Before gel embedding	After gel embedding and lipid removal	After gel formation and lipid removal	After lipid removal
Applicable to whole organ	Yes	No	Yes	Yes	Yes
Protein labeling	Conventional antibodies	Custom trifunctional probes	Conventional antibodies	Conventional antibodies	Conventional antibodies
Multiround immunolabeling	Yes	No	Limited	Yes	No
Requires antibody validation	Yes	No	Yes	Yes	Yes