

Supplementary Table 1-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody																
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval						
								Enzyme	Temperature	Incubation time	Concentration	Method	Heating		Temperature	Incubation time		
1	ACTH	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	ND	-	-	-	-	
2	Actin	10%Fo	~1y	P	1/200	o/n	4°C	-	-	-	-	-	MW	Citrate BS	95°C	30m	-	
3	Actin, muscle	10%Fo	o/n	P	1/200	o/n	4°C	-	-	-	-	-	MW	BS	-	10m	-	
		10%Fo	4w	P	1/100	30m	RT	-	-	-	-	-	-	-	-	-	-	
4	Actin, sarcomeric	10%Fo	3~5d	P	1/50	o/n	4°C	-	-	-	-	-	PC	Citrate BS	-	10m	-	
		10%Fo	3~7d	P	1/100	60m	RT	-	-	-	-	-	-	-	-	-	-	
		10%Fo	4w	P	1/10	2h; o/n	RT; 4°C	-	-	-	-	-	-	-	-	-	-	
5	Actin, α-smooth muscle	10%Fo	∞	P	Ready to use	90m	RT	-	-	-	-	-	Bo	PT link (pH9)	95°C	20m	-	
		10%Fo	o/n	P	Ready to use	30m	RT	-	-	-	-	-	MW	Citrate BS (pH6)	-	-	-	
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	-	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m	-
		10%Fo	∞	P	Ready to use	60m	RT	-	-	-	-	-	-	Bo	BS	-	20m	-
		10%Fo	1y	P	1/200	60m	RT	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	∞	P	1/100	o/n	4°C	-	-	-	-	-	-	AC	Citrate BS	121°C	5m	-
		10%Fo	24h	P	1 µg/mL	o/n	4°C	-	-	-	-	-	-	MW	Citrate BS	98°C	20m	-
		10%Fo	1w~	P	1/1000	30m	RT	-	-	-	-	-	-	MW	Citrate BS	-	10m	-
		10%Fo	3d	P	1/1000	o/n	4°C	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	3~5d	P	1/100	60m	RT	-	-	-	-	-	-	PC	Citrate BS	-	10m	-
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	-	MW	Citrate BS	-	15m	-
		10%Fo	w	P	1/50	o/n	4°C	-	-	-	-	-	-	PC	Citrate BS	125°C	5m	-
		10%Fo	~1y	P	1/200	o/n	4°C	-	-	-	-	-	-	MW	Citrate BS	95°C	30m	-
		10%Fo	48h	P	1/1000	60m	RT	-	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	3m	-
		10%Fo	4w	P	1/100	o/n	4°C	-	-	-	-	-	-	MW	Citrate BS	100°C	15m	-
		10%Fo	4w	P	1/100~500	2h; o/n	RT; 4°C	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	-	P	1/50	30m	RT	-	-	-	-	-	-	ND	-	-	-	-
		10%Fo	w	P	1/100	30m	RT	-	-	-	-	-	-	MV	Target Retrieval Solution (pH9, Dako)	-	20m	-
		10%Fo	24h	P; F	1/1000	60m	RT	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	∞	P	1/200	30m	RT	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	-	P	1/300	o/n	4°C	-	-	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m	-
		Not Fo; GA	1d~1w	P	1/1000 (Cat, 1/500)	60m	RT	-	-	-	-	-	-	-	-	-	-	-
10%Fo	4w	P	1/500	60m	RT	-	-	-	-	-	-	-	-	-	-	-		
10%Fo	w	P	1/100	30m	RT	-	-	-	-	-	-	Bo	Tris BS, EDTA (pH9)	100°C	20m	-		
10%Fo	w	P	1/100~200	o/n	4°C	-	-	-	-	-	-	AC	Citrate BS	-	20m	-		
10%Fo	~1y	P	Ready to use	60m	RT	-	-	-	-	-	-	ND	-	-	-	-		
10%Fo	2d	P	0.5 µg/mL	60m	RT	-	-	-	-	-	-	-	-	-	-	-		
10%Fo	-	P	1/500	o/n	4°C	-	-	-	-	-	-	MW	Citrate BS	-	10m	-		
10%Fo	3~7d	P	1/500	60m	RT	-	-	-	-	-	-	MW	DW	-	-	-		
6	Actin, β	10%Fo	-	P	1/500	o/n	4°C	-	-	-	-	-	ND	-	-	-	-	
7	Active-β-catenin	10%Fo	∞	P	1/50	o/n	4°C	-	-	-	-	-	PC	Citrate BS	-	10m	-	
8	Adiponectin	10%Fo	1y	P	1/50	60m	RT	-	-	-	-	-	Bo	BS	-	20m	-	
9	Adipophilin	10%Fo	-	P	1/50	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	121°C	15m	-	
		10%Fo	1w	P	1/200	60m	RT	-	-	-	-	-	MW	Citrate BS	100°C	10m	-	
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Target Retrieval Solution (pH6, Dako), Citrate BS	100°C	10m	-	
		10%Fo	o/n	P	Ready to use (1/1~2)	60m	RT	-	-	-	-	-	-	-	-	-	-	
		10%Fo	24h	F	Ready to use	60m	RT	-	-	-	-	-	-	-	-	-	-	
		10%Fo	3~5d	P	1/200	60m	RT	-	-	-	-	-	-	PC	Citrate BS	-	10m	-
		10%Fo	∞	P	1/100	o/n	4°C	-	-	-	-	-	-	AC	Citrate BS	121°C	5m	-
		10%Fo	o/n	P	1/400	60m	RT	-	-	-	-	-	-	-	-	-	-	
		10%Fo	o/n	P	1/1000	60m	37°C	-	-	-	-	-	-	PC	Citrate BS	-	10m	-
10%Fo	o/n	P	1/1000	o/n	4°C	-	-	-	-	-	-	MW	Immunosaver	98°C	5~10m	-		

Supplementary Table 1-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody					Chromogenic substrate		Photo. No.	
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent		Incubation time
1	ACTH	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	-	
2	Actin	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	10m	DAB	~2m	Photo. 1
3	Actin, muscle	Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	1m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	1~5m	
4	Actin, sarcomeric	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	18m	
		LSAB	Polyclonal Rabbit Anti-Mouse Immunoglobulins, Biotinylated affinity-isolated F(ab') ₂	Dako	E0413	RT	30m	DAB	5m	Photo. 2
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	1~5m	
5	Actin, α-smooth muscle	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	-	40m	DAB	2m30s	
		-	-	-	-	-	-	DAB	-	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 3
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	RT	1h	DAB	30s	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	37°C	30m	DAB	2m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(MULTI)	Nichirei	424151	RT	30m	DAB	10m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	1m30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	6m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	3m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	10m	DAB	~2m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	1m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K6043	RT	30m	DAB	2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	1-5m	
		-	-	Nichirei	-	RT	30m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	10m	Photo. 4
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	-	30s	
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(M)	Nichirei	424131	RT	30m	DAB	90s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	10m	
LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0609	RT	10m	DAB	8m			
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	3m			
LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m			
Histofine Simple Stain	Histofine® MOUSESTAIN KIT*	Nichirei	414321	RT	10m	DAB	10m	Photo. 5		
Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	5m	Photo. 6		
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1~2m	Photo. 7		
LSAB	Polyclonal Swine Anti-Rabbit Immunoglobulins/Biotinylated Swine F(ab') ₂	Dako	E0431	RT	30m	DAB	5m			
6	Actin, β	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
7	Active-β-catenin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	60m	DAB	-	Photo. 8
8	Adiponectin	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	30s	Photo. 9
9	Adipophilin	ABC	VECTASTAIN ABC Kit (Mouse IgG)	Vector Labs	PK-4002	RT	30m	DAB	4~5m	Photo. 10
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	10m	Photo. 11
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	1h	DAB	-	
		-	-	-	-	-	-	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m	
		Biotinylated immunoglobulin	Biotinylated Goat Anti-Guinea Pig IgG Antibody	Vector Labs	BA-7000	37°C	30m	DAB	2m	
		Anti-GUINEA PIG IgG (H&L) (GOAT) Antibody Peroxidase Conjugated	Anti-GUINEA PIG IgG (H&L) (GOAT) Antibody Peroxidase Conjugated	Rockland	606-103-129	RT	60m	DAB	3m	
		ABC	VECTASTAIN ABC Kit (Guinea Pig IgG)	Vector Labs	PK-4007	RT	30m	DAB	1m	Photo. 12
		Elite ABC	Biotinylated Goat Anti-Guinea Pig IgG Antibody	Vector Labs	BA-7000	RT	30m	DAB	30s	

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No.	Antibody	Primary antibody															
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Antigen retrieval									
								Protease treatment				Heating		Method	Solution	Temperature	Incubation time
Enzyme	Temperature	Incubation time	Concentration														
10	Adrenocorticotropin (ACTH)	10%Fo	3~5d	P	1/500	60m	RT	-	-	-	-	-	-	-	-	-	-
11	Amelogenin	-	1w	P	1/5000	o/n	4°C	Proteinase K	RT	6m	Ready to use	-	-	-	-	-	-
12	Amylase	10%Fo; 4%PFA	24h	P	1/100	60m	RT	-	-	-	-	-	MW	Citrate BS	-	10m	-
13	Amylase 2A	10%Fo	o/n	P	1/200	60m	RT	-	-	-	-	-	PC	Citrate BS	-	10m	-
14	Amyloid A	10%Fo	1w~	P	1/200	30m	RT	Actinase E	37°C	30m	-	-	-	-	-	-	-
		10%Fo	24h	P	1/500~2000	-	-	-	-	-	-	-	-	-	Formic Acid (10%)	RT	10~20m
15	β-Amyloid	10%Fo	-	P	1/500	o/n	4°C	-	-	-	-	-	-	-	Formic acid (70%)	RT	30m
		10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	-	-	-	Formic acid (98~100%)	RT	7m
		4%PFA	1w	P	1/200	60m	RT	Formic acid	RT	5m	90%	-	-	-	-	-	-
16	Androgen Receptor	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	98°C	15m	-
		10%Fo	∞	P	1/50	30m	RT	-	-	-	-	-	-	AC	BS(pH6)	121°C	15m
17	Angiotensin II type 1 Receptor	10%Fo	-	P	1/300	o/n	4°C	Proteinase K	RT	5m	Ready to use	-	-	-	-	-	-
18	Aquaporin 1	10%Fo; 4%PFA	∞	P	1/200	60m	RT	-	-	-	-	-	BO	Citrate BS	95°C	40m	-
		10%Fo	7d	P	1/5000	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	105°C	15m	-
19	Aquaporin 2	10%Fo	7d	P	1/5000	o/n	4°C	-	-	-	-	-	-	-	-	-	-
20	Bcl-2	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m	-
		10%Fo	3~7d	P	1/40	o/n	4°C	-	-	-	-	-	-	-	-	-	-
21	Bcl-6	10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	-	AC	Citrate BS	121°C	15m	-
		10%Fo	-	P	1/50	30m	RT	-	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m	-
		10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m	-
22	BrdU	10%Fo	2w	P	1/40	60m	RT	-	-	-	-	-	-	-	-	-	-
		10%Fo	3~7d	P	1/50000 (Ovary,	60m	RT	-	-	-	-	-	MW	Citrate BS	-	-	-
		10%Fo	o/n	P	1/1000	o/n	4°C	Proteinase K	RT	15m	0.4 mg/mL	-	-	-	-	-	-
		10%Fo	-	P	1/1000	o/n	4°C	Proteinase K	RT	5m; 10m	-	-	-	-	HCl (4N)	RT	30m
		10%Fo	-	P	1/100	o/n	4°C	Proteinase	RT	5~10m	0.0005	-	-	-	-	-	-
		10%Fo	o/n	P	1/30	10m	RT	-	-	-	-	-	PC	Citrate BS	-	10m	-
		10%Fo	∞	P	1/100	30m	RT	Proteinase K	RT	10m	0.4 mg/mL	-	-	-	-	-	-
		4%PFA	24h	P	1/250	60m	RT	Actinase	37°C	3m	0.02%	MW	Citrate BS	98°C	15m	-	
		10%Fo	24h	P	1/200	2h	RT	Actinase	37°C	3m	0.02%	MW	Citrate BS	98°C	15m	-	
		10%Fo	∞	P	1/100	60m	RT	-	-	-	-	-	PC	Citrate BS	125°C; 90°C	30s; 5s	-
23	Breast Cancer Resistance Protein/CD338	10%Fo	3~7d	P	1/1000	60m	RT	-	-	-	-	-	AC	Citrate BS	121°C	20m	-
		10%Fo	3~7d	P	1/1000	60m	RT	-	-	-	-	-	AC	Citrate BS	121°C	20m	-
24	Calbindin D28K	10%Fo	1w	P	1/200	60m	RT	-	-	-	-	-	He	CC2 (Roche)	98°C	30m	-
		4%ZnFo	2d	P	1/3000	o/n	4°C	-	-	-	-	-	MW	Citrate BS	100°C	15m	-
		10%Fo	w	P	1/500	o/n	4°C	-	-	-	-	-	Bo	Citrate BS	100°C	40m	-
		10%Fo	7d	P	1/5000	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	105°C	15m	-
25	Calcitonin	-	-	P	1/400	60m	RT	-	-	-	-	-	He	CC2 (Roche)	98°C	30m	-
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	-	MW	-	120°C	14m	-
		10%Fo	o/n	P	1/2	20m	RT	-	-	-	-	-	ND	-	-	-	
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	105°C	5m	-
		10%Fo	1y	P	Ready to use	60m	RT	-	-	-	-	-	Bo	BS	-	20m	-
26	Calponin	10%Fo	A few days (clinical specimen)	P	1/1000	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m	-
27	Calretinin	10%Fo; Bouin	o/n	P	1/300	3h	RT	-	-	-	-	-	MW	Immunosaver (0.5%)	100°C	15m	-
		10%Fo	24h	P	1/50~100	30m	RT	-	-	-	-	-	MW	Tris BS	120°C	14m	-
		10%Fo	1y	P	1/50	60m	RT	-	-	-	-	-	Bo	BS	-	10m	-
28	<i>Candida albicans</i>	10%Fo	1w~	P	1/50	30m	37°C	Trypsin	37°C	30m	-	-	-	-	-	-	
29	Caspase-3	10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	-	MW	HistoVT One	-	15m	-
		MD	2~4h	P	1/250	60m	RT	-	-	-	-	-	MW	Immunosaver	-	3m	-
30	Catalase	10%Fo	3~5d	P	1/200	60m	RT	-	-	-	-	-	PC	Citrate BS	-	10m	-
		10%Fo	3~5d	P	1/200	60m	RT	-	-	-	-	-	PC	Citrate BS	-	10m	-
31	β-catenin	10%Fo	24h	P	1/1000	o/n	4°C	-	-	-	-	-	AC	Instant antigen retrieval H buffer (pH7)	121°C	20m	-
		10%Fo	w	P	1/1000	o/n	4°C	-	-	-	-	-	PC	Citrate BS	125°C	5m	-

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No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
10	Adrenocorticotropin (ACTH)	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	4m	
11	Amelogenin	Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	1m	
12	Amylase	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	-	Photo. 13
13	Amylase 2A	Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	DAB	30s	Photo. 14
14	Amyloid A	Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(MULTI)	Nichirei	424151	RT	30m	DAB	10m	Photo. 15
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
15	β-Amyloid	Histofine Simple Stain	Histofine® MOUSESTAIN KIT*	Nichirei	414321	RT	10m	DAB	10m	
		Biotinylated immunoglobulin	Mouse on Mouse (M.O.M.™) Basic Kit	Vector Labs	BMK-2202	RT	15m	DAB	-	Photo. 16
		Peroxidase streptavidin	Histofine® SAB-PO(M)	Nichirei	426062	RT	5m	DAB	30s	Photo. 17
16	Androgen Receptor	Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	DAB	10m	Photo. 18
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0609	RT	10m	DAB	5m	Photo. 19
17	Angiotensin II type 1 Receptor	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	90s	
18	Aquaporin 1	Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	2m	Photo. 20
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	2~5m	Photo. 21
19	Aquaporin 2	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	2~5m	Photo. 22
20	Bcl-2	SAB	Histofine® SimpleStain SAB-PO (MULTI)	Nichirei	424043	-	-	-	-	
		LSAB	Polyclonal Swine Anti-Rabbit Immunoglobulins/Biotinylated Swine F(ab') ₂	Dako	E0431	RT	30m	DAB	5m	
21	Bcl-6	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	4m	
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	4m	
22	BrdU	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (Rat)	Nichirei	414311	RT	30m	DAB	30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m	Photo. 23
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	37°C	30m	DAB	2m	Photo. 24
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (G)	Nichirei	714331	RT	30m	DAB	1~5m	
		Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	-	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	-	2m	
		Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	5m	
		LSAB	Polyclonal Rabbit Anti-Mouse Immunoglobulins, Biotinylated affinity-isolated F(ab') ₂	Dako	E0413	RT	30m	DAB	8m	
		Histofine SAB-PO(M)	Histofine® SAB-PO (M)	Nichirei	424022	RT	10m	DAB	20m	
23	Breast Cancer Resistance Protein/CD338	LSAB	-	Dako	-	RT	30m	DAB	5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m	
24	Calbindin D28K	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	37°C	30m	DAB	8m	Photo. 25
		Envision	EnVision™+ Dual Link System-HRP	Dako	K6043	RT	30m	DAB	3m	Photo. 26
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K139111	RT	30m	DAB	10m	Photo. 27
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	2~5m	
25	Calcitonin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	8m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	DAB	30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	-	Photo. 28
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	
26	Calponin	Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	Photo. 29
27	Calretinin	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	60m	DAB	2m	Photo. 30
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 31
28	<i>Candida albicans</i>	-	-	-	-	-	-	FITC	-	Photo. 32
29	Caspase-3	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI) ;	Nichirei	714191; 714341	RT	30m	DAB	10m	Photo. 33
30	Catalase	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	2~5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	6m	
31	β-catenin	Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	1m30s	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	3m	

Supplementary Table 3-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody															
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval					
								Enzyme	Temperature	Incubation time	Concentration	Method	Solution	Temperature	Incubation time		
32	CC10	10%Fo	-	P	1/5000	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (pH7, Dako)	121°C	20m	
33	CD3	10%Fo	4w	P	1/20	60m	RT	-	-	-	-	-	AC	EDTA	121°C	15m	
		4%PFA	24h	AMeX-P	2.5 µg/mL	o/n	4°C	-	-	-	-	-	MW	Citrate BS	98°C	10m	
		PLP	6h	AMeX-P	2.5 µg/mL	o/n	4°C	-	-	-	-	-	MW	Citrate BS	98°C	10m	
		10%Fo	w	P	1/25-50	o/n	4°C	-	-	-	-	-	AC	Citrate BS	-	20m	
		10%Fo	24h	P	1/500	60m	RT	-	-	-	-	-	MW	EDTA	95°C	20m	
		10%Fo	>1w	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	95°C	15m	
		10%Fo	48h	P	1/50	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	3m	
		Unfixed (acetone after slice preparation)	10m	F	1/50	o/n	4°C	-	-	-	-	-	-	-	-	-	-
		10%Fo	∞	P	1/200	60m	RT	Proteinase K	RT	10m	0.4 mg/mL	-	-	-	-	-	-
		10%Fo; MD; PLP	1d~1w	P; F	1/100	60m	RT	-	-	-	-	-	-	MW	Immunosaver, Tris-HCl (pH9)	-	3m
		10%Fo	o/n	P	Ready to use (1/1-2)	o/n	4°C	-	-	-	-	-	-	AC	Nichrei antigen retrieval buffer (pH 9)	120°C	20m
		10%Fo	∞	P	1/100	10m	RT	-	-	-	-	-	-	AC	Citrate BS	121°C	5m
		10%Fo	1w	P	1/100	60m	RT	-	-	-	-	-	-	PC	Target Retrieval Solution (Dako)	110°C	15m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	-	AC	Citrate BS	121°C	15m
		10%Fo	3~5d	P	Ready to use	60m	RT	-	-	-	-	-	-	PC	Citrate BS	-	10m
		10%Fo	3~5d	P	Ready to use	60m	RT	-	-	-	-	-	-	PC	Citrate BS	-	10m
		10%Fo	3~5d	P	Ready to use	60m	RT	Protainase K	RT	2m	0.4 mg/mL	-	-	-	-	-	-
		10%Fo	-	P	Ready to use	o/n	4°C	-	-	-	-	-	-	MW	Target Retrieval Solution (pH9, Dako)	-	15m
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	-	-	-	-	-	-
		10%Fo	3d	P	Ready to use	60m	RT	-	-	-	-	-	-	MW	Target Retrieval Solution pH9 (Dako)	500W	10m
10%Fo; Unfixed (Frozen)	48h	P; F	1/100	P, 60m; F, 15m	RT	-	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	3m		
10%Fo	3~7d	P	1/1000	60m	RT	-	-	-	-	-	-	AC	Citrate BS	121°C	20m		
10%Fo	∞	P	1/100	25m	RT	-	-	-	-	-	-	AC	BS (pH6)	121°C	20m		
10%Fo	A few days (clinical specimen)	P	1/3000	o/n	4°C	-	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	15m		
10%Fo	-	P	1/2000	o/n	4°C	-	-	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m		
34	CD3e	Unfixed (acetone after slice preparation)	10m	F	1/50	o/n	4°C	-	-	-	-	-	-	-	-	-	
		10%Fo	-	P	Ready to use	o/n	4°C	-	-	-	-	-	MW	Immunosaver	-	Rat, 15m; Mou,	
		10%Fo	-	P	Ready to use	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m	
35	CD4	10%Fo	o/n	P	Ready to use	o/n	4°C	-	-	-	-	-	AC	Citrate BS (pH6)	121°C	15m	
		10%Fo	-	P	1/50	o/n	4°C	-	-	-	-	-	MW	HistoVT One	-	15m	
		PLP	1d	F	1/500-1/1000	60m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	-	-	1/50	o/n	4°C	-	-	-	-	-	-	-	-	-	
		Unfixed (acetone after slice preparation)	10m	F	1/50	o/n	4°C	-	-	-	-	-	-	-	-	-	
		Unfixed (Frozen)	-	F	1/800	60m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	∞	P	1/50	o/n	4°C	-	-	-	-	-	-	AC	Citrate BS	121°C	5m
Unfixed (acetone after slice preparation)	10m	F	1/50	o/n	4°C	-	-	-	-	-	-	-	-	-			
10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	-	MW	Target Retrieval Solution (pH9, Dako)	-	15m		
36	CD8α	10%Fo	-	-	1/50	o/n	4°C	-	-	-	-	-	-	-	-	-	
		Unfixed (acetone after slice preparation)	10m	F	1/50	o/n	4°C	-	-	-	-	-	-	-	-	-	
		Unfixed (acetone after slice preparation)	10m	F	1/50	o/n	4°C	-	-	-	-	-	-	-	-	-	
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	AC	Citrate BS	121°C	15m	
10%Fo	∞	P	1/100	30m	RT	Proteinase K	RT	10m	0.4 mg/mL	-	-	-	-	-			
37	CD11b	10%Fo	24h	F	1/500	60m	RT	-	-	-	-	-	-	-	-		
38	CD11c	10%Fo	o/n	P	1/400	o/n	4°C	-	-	-	-	-	MW	BS	-	10m	

Supplementary Table 3-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.		
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time			
32	CC10	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	-	30m	DAB	4m	Photo. 34		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	10m	Photo. 35		
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-			
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0609	RT	30m	DAB	-			
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m			
		ABC	VECTOR Red Alkaline Phosphatase (AP) Substrate Kit	Vector Labs	SK-5100	RT	30m	VECTOR DAB	30m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1m30s			
		Elite ABC	Biotinylated Horse Anti-Mouse IgG Antibody, rat adsorbed; VECTASTAIN Elite ABC Kit (Standard)	Vector Labs	BA-2001; PK-6100	RT	30m	DAB	45-60s	Photo. 36		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	3m			
33	CD3	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI) ;	Nichirei	714191; 724142	RT	30m	DAB	10m	Photo. 37		
		-	-	-	-	-	-	DAB	-			
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	37°C	30m	DAB	4-5m	Photo. 38		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	5m			
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	-			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	16m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	3m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	6m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	2m30s			
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1-2m			
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	5m	Photo. 39		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	1m	Photo. 40		
		LSAB	Polyclonal Rabbit Anti-Goat Immunoglobulins/Biotinylated	Dako	E0466	RT	30m	DAB	5m			
		Histofine Simple Stain	Histofine® SAB-PO(G)KIT	Nichirei	414011	RT	10m	DAB	5m	Photo. 41		
		Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	3m	Photo. 42		
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(R)	Nichirei	424141	RT	30m	DAB	80s			
		34	CD3e	Elite ABC	VECTASTAIN Elite ABC Kit (Standard)	Vector Labs	PK-6100	RT	30m	DAB	45-80s	Photo. 43
				Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	60m	DAB	-	
Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit			Dako	K4002	RT	30m	DAB	-	Photo. 44		
35	CD4	-	-	-	-	-	-	DAB	-			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-			
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (Rat)	Nichirei	414311	RT	30m	DAB	10m	Photo. 45		
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	4m			
		Elite ABC	Biotinylated Horse Anti-Mouse IgG Antibody, rat adsorbed; VECTASTAIN Elite ABC Kit (Standard)	Vector Labs	BA-2001; PK-6100	RT	30m	DAB	45-60s	Photo. 46		
		ABC	VECTASTAIN ABC Kit (Mouse IgG)	Vector Labs	PK-4002	RT	10m	DAB	1m			
		Biotinylated immunoglobulin	Biotinylated Goat Anti-Rat IgG Antibody	Vector Labs	BA-9400	37°C	30m	DAB	3m	Photo. 47		
		Elite ABC	VECTASTAIN Elite ABC Kit (Standard)	Vector Labs	PK-6100	RT	30m	DAB	45-80s			
36	CD8α	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	-			
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	4m			
		Elite ABC	VECTASTAIN Elite ABC Kit (Standard)	Vector Labs	PK-6100	RT	30m	DAB	45-80s	Photo. 48		
		Elite ABC	Biotinylated Horse Anti-Mouse IgG Antibody, rat adsorbed; VECTASTAIN Elite ABC Kit (Standard)	Vector Labs	BA-2001; PK-6100	RT	30m	DAB	45-60s	Photo. 49		
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	-	Photo. 50		
Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	-	30s					
37	CD11b	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m			
38	CD11 c	Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	1m			

Supplementary Table 4-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody														
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval				
								Enzyme	Temperature	Incubation time	Concentration	Method	Solution		Temperature	Incubation time
39	CD20	10%Fo	-	P	1/600	o/n	4°C	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)		125°C	0.5m
		10%Fo	A few days (clinical specimen)	P	1/20	o/n	4°C	-	-	-	-	-	-	-	-	-
		10%Fo	24h	P	Ready to use	10m	RT	-	-	-	-	-	-	-	-	-
		10%Fo	24h	P	-	-	-	-	-	-	-	-	-	-	-	-
40	CD20cy	4%PFA	24h	AMeX-P	Ready to use	o/n	4°C	-	-	-	-	-	-	-	-	-
		10%Fo	3d	P	Ready to use	60m	RT	-	-	-	-	MW	Target Retrieval Solution (pH9, Dako)		500W	10m
41	CD21	10%Fo	1w	P	1/200	60m	RT	-	-	-	-	MW	Citrate BS		500W	10m
		10%Fo	-	P	1/2	o/n	4°C	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)		125°C	0.5m
42	CD31	10%Fo	24h	P	2 µg/mL	o/n	4°C	-	-	-	-	MW	Citrate BS		98°C	15m
		10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)		121°C	20m
		4%PFA	~1y	F	1/50	60m	RT	-	-	-	-	ND	-	-	-	-
		10%Fo	7d	P	2 µg/mL	60m	RT	-	-	-	-	MW	Target Retrieval Solution (Dako)		500W	10m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS		-	15m
		10%Fo	1y	P	1/100	60m	RT	-	-	-	-	Bo	BS		-	20m
43	CD34	10%Fo	3~7d	P	1/5000	60m	RT	-	-	-	-	AC	S1699 (Dako)		121°C	20m
		PLP	4h	P	1/20	o/n	4°C	-	-	-	-	BO	Citrate BS		95°C	40m
		10%Fo	∞	P	1/500	60m	RT	Proteinase K	RT	10m	0.4 mg/mL	-	-	-	-	
		10%Fo	1y	P	1/100	60m	RT	-	-	-	-	Bo	BS		-	20m
44	CD45R	10%Fo	∞	P	1/200	60m	RT	Proteinase K	RT	10m	0.4 mg/mL	-	-	-	-	
		10%Fo	-	P	1/100	30m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	-	
		10%Fo	-	P	1/200	30m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	-	
		Unfixed (acetone after slice preparation)	10m	F	1/50	o/n	4°C	-	-	-	-	-	-	-	-	
		4%PFA	24h	AMeX-P	2.5 µg/mL	o/n	4°C	-	-	-	-	-	-	-	-	
45	CD45RA	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS		-	15m
		Unfixed (acetone after slice preparation)	10m	F	1/50	o/n	4°C	-	-	-	-	-	-	-		
46	CD61	10%Fo; Frozen	48h	P; F	P, 1/10000; F, 1/4000	P, 60m; F, 15m	RT	-	-	-	-	AC	Target Retrieval Solution (pH9, Dako)		121°C	3m
		10%Fo	24h	P	1/50~100	30m	RT	-	-	-	-	BO	Target Retrieval Solution (Dako)		100°C	20m
47	CD68	10%Fo	10s	Smear	1/100	30m	RT	-	-	-	-	-	-	-	-	
		10%Fo	∞	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS		121°C	5m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS		-	15m
		10%Fo	w	P	1/100	o/n	4°C	-	-	-	-	PC	Citrate BS		125°C	5m
		PLP	o/n	P; F	1/300	60m	RT	Proteinase K	RT	10m	100 ug/ml	-	-	-	-	
		10%Fo	3~7d	P	1/1000	o/n	4°C	-	-	-	-	AC	Citrate BS		121°C	20m
		10%Fo	4w	P	1/500	30m	RT	Proteinase K	RT	5~10m	0.0005	-	-	-	-	
		10%Fo	o/n	P	1/100	60m	RT	Proteinase K	RT	6m	-	-	-	-	-	
		10%Fo	∞	P	1/200	30m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	-	
		10%Fo	1y	P	1/100	60m	RT	Proteinase K	37°C	2m	Ready to use	-	-	-	-	
		10%Fo	-	P	1/500	o/n	4°C	-	-	-	-	MW	Citrate BS		-	15m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	-	-	-	
		10%Fo	48h	P	1/800~40000	60m	RT	-	-	-	-	AC	Target Retrieval Solution (Dako)		121°C	3m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS		-	10m
		10%Fo	-	P	1/2000	o/n	4°C	Trypsin	37°C	30m	-	-	-	-	-	
		10%Fo	o/n	P	1/500	60m	37°C	Trypsin	37°C	10m	*1000	-	-	-	-	
		10%Fo; 4%PFA; MD	1d~1w	P	1/200~400	60m	RT	Proteinase K	RT	6m	Ready to use	MW	Citrate BS (pH6), Immunosaver		-	-
10%Fo	1w	P	1/100	60m	RT	-	-	-	-	MW	Target Retrieval Solution (Dako)		500W	20m		
10%Fo	∞	P	1/40	60m	RT	Proteinase K	RT	8m	-	-	-	-	-			

Supplementary Table 4-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
39	CD20	Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(R)	Nichirei	424141	RT	30m	DAB	2m	
		Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	3m	Photo. 51
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
40	CD20cy	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	1m 30s	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
41	CD21	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	5m	Photo. 52
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	1m	Photo. 53
42	CD31	Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(M)	Nichirei	424131	RT	30m	DAB	2m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	Photo. 54
		Fluorophore labeled immunoglobulin	Goat Anti-Rat IgG H&L (Alexa Fluor® 568) preadsorbed	Abcam	175710	RT	60m	-	-	
		Biotinylated immunoglobulin	Biotinylated Rabbit Anti-Rat Immunoglobulins	Dako	E0468	RT	30m	DAB	5m	Photo. 55
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1~2m	Photo. 56
43	CD34	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	30s	Photo. 57
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	60m	-	1m	
44	CD45R	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	30s	Photo. 58
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (Rat)	Nichirei	414311	RT	30m	-	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (Rat)	Nichirei	414311	RT	30m	DAB	4m	
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (Rat)	Nichirei	414311	RT	30m	DAB	4m	
		Elite ABC	VECTASTAIN Elite ABC Kit (Standard)	Vector Labs	PK-6100	RT	30m	DAB	45~80s	Photo. 59
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0609	RT	30m	DAB	-	
45	CD45RA	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	Photo. 60
		Elite ABC	Biotinylated Horse Anti-Mouse IgG Antibody, rat adsorbed; VECTASTAIN Elite ABC Kit (Standard)	Vector Labs	BA-2001; PK-6100	RT	30m	DAB	45~60s	Photo. 61
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1m30s	Photo. 62
46	CD61	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	-	4m	
47	CD68	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	37°C	30m	DAB	1m30s	Photo. 63
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	-	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	
		LSAB	Polyclonal Rabbit Anti-Mouse Immunoglobulins, Biotinylated affinity-isolated F(ab')2	Dako	E0413	RT	30m	DAB	5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	1~5m	
		-	-	-	-	-	-	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 64
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	30s	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1m	Photo. 65
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	2m	
		Elite ABC	Biotinylated Horse Anti-Mouse IgG Antibody, rat adsorbed	Vector Labs	BA-2001	RT	30m	DAB	4~5m	Photo. 66
		Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	2m	
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	10m			
Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	5m			
Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	-	20m	DAB	45s			

Supplementary Table 5-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody														
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval				
								Enzyme	Temperature	Incubation time	Concentration	Method	Solution	Temperature	Incubation time	
47	CD68	10%Fo	24h	P	Ready to use	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	24h	P	1 µg/mL	o/n	4°C	-	-	-	-	-	MW	Citrate BS	98°C	15m
		10%Fo	∞	P	1/50	o/n	4°C	-	-	-	-	-	BO	Citrate BS	95°C	40m
		10%Fo	48h	P	1/2000	60m	RT	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	3m
		10%Fo	24h	P	1 µg/mL	o/n	4°C	-	-	-	-	-	MW	Citrate BS	98°C	10m
48	CD77	10%Fo	∞	P	1/250	30m	RT	-	-	-	-	-	MW	Citrate BS (pH9)	-	10m
		10%Fo	∞	F	1/100	o/n	4°C	-	-	-	-	-	-	-	-	-
49	CD79α	10%Fo	1d~1w	P	1/50	60m	RT	-	-	-	-	-	MW	Immunosaver, Tris-HCl (pH9)	-	3m
		10%Fo	o/n	P	1/4000	o/n	4°C	-	-	-	-	-	AC	Citrate BS (pH6)	121°C	15m
		10%Fo	o/n	P	-	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
50	CD90/Thy 1	PLP	4h	P	1/200	o/n	4°C	-	-	-	-	-	BO	Citrate BS	95°C	40m
		10%Fo	∞	P	1/50	60m	RT	-	-	-	-	-	PC	EDTA	-	-
51	CD117/c-kit	10%Fo	24h	P	1/400~600	30m	RT	-	-	-	-	-	BO	Target Retrieval Solution (Dako)	100°C	20m
		10%Fo	A few days (clinical specimen)	P	1/200	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m
		10%Fo	w	P	1/400~600	o/n	4°C	-	-	-	-	-	AC	Citrate BS	-	20m
		10%Fo	-	P	1/100	30m	RT	-	-	-	-	-	PC	Target Retrieval Solution (pH9, Dako)	125°C	0.5m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	AC	Citrate BS	121°C	15m
52	CD138	10%Fo	∞	P	1/1000	o/n	4°C	-	-	-	-	-	AC	Citrate BS	121°C	5m
53	CD163	10%Fo	-	P	1/100	30m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	-	
		Zamboni	o/n	P	1/100	30m	RT	Proteinase K	RT	6m	-	-	-	-	-	
		PLP	o/n	P, F	1/300	60m	RT	Proteinase K	RT	10m	100 ug/ml	-	-	-	-	
		Methacam	1D	P	1/100	60m	RT	Proteinase K	37°C	10m	Ready to use	-	-	-	-	
		10%Fo; 4%PFA	1d~1w	P	1/200	60m	RT	Proteinase K	RT	6m	Ready to use	-	-	-	-	
54	CD204	10%Fo	2~3d	P	1/500	60m	RT	-	-	-	-	-	MW	Citrate BS (pH9)	-	5m×4
		10%Fo	-	P	1/800	o/n	4°C	-	-	-	-	-	MW	HistoVT One	-	15m
		10%Fo	A few days (clinical specimen)	P	1/200	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m
		10%Fo; PLP	o/n; 24h	P, F	1/500	60m	RT	-	-	-	-	-	MW	Citrate BS	95°C	20m
55	Cdc2	10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
56	Cdk2	10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
57	CDX2	10%Fo	∞	P	1/50	30m	RT	-	-	-	-	-	MW	Citrate BS (pH9)	-	10m
58	Chlamydia	10%Fo	3~7d	P	1/8000	60m	RT	-	-	-	-	-	AC	1mM EDTA	121°C	20m
59	Chromogranin A	10%Fo	o/n	P	1/1000	o/n	4°C	-	-	-	-	-	BO	Immunosaver	98°C	45m
60	Claudin 11	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
61	Cleaved Caspase-3	10%Fo	-	P	1/800	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
		10%Fo	3~7d	P	1/3000	o/n	4°C	-	-	-	-	-	AC	1mM EDTA (pH8)	121°C	20m
		10%Fo	3~6d	P	1/600	o/n	4°C	-	-	-	-	-	PC	Target Retrieval Solution (pH9, Dako)	-	10m
62	Clusterin	10%Fo	-	P	1/50	o/n	4°C	-	-	-	-	-	-	-	-	
63	c-Met	10%Fo	∞	P	1/50	60m	RT	-	-	-	-	-	-	-	-	
		10%Fo	3d	P	2 µg/mL	60m	RT	-	-	-	-	-	MW	Target Retrieval Solution (pH9, Dako)	500W	20m
64	Collagen type I	10%Fo	∞	P	1/1600	60m	RT	-	-	-	-	-	MW	Citrate BS (pH6)	-	10m
		10%Fo	3~7d	P	1/200	60m	RT	-	-	-	-	-	MW	Immunosaver	-	-
		10%Fo	1m	P	1/500	60m	RT	Hyaluronidase	37°C	15m	0.2%	-	-	-	-	
65	Collagen type II	4%PFA	1w	P	1/100	60m	RT	Bovine testicular hyaluronidase	RT	30m	2%	-	-	-	-	
66	Collagen type III	10%Fo	3~7d	P	1/50	60m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	-	
		10%Fo	3~7d	P	1/12000	o/n	4°C	-	-	-	-	-	MW	DW	-	-
		10%Fo	1m	P	1/200	60m	RT	Hyaluronidase	37°C	15m	0.2%	-	-	-	-	

Supplementary Table 5-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.	
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time		
47	CD68	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m		
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-		
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	2m	Photo. 67	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	1m		
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	3m		
48	CD77	Alexa Fluor	Goat anti-Rat IgM Heavy Chain Secondary Antibody, Alexa Fluor® 488 conjugate	Life Technologies	A-21212	RT	30m	-	-	Photo. 68	
49	CD79α	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI) ;	Nichirei	714191; 724132	RT	30m	DAB	10m	Photo. 69	
		-	-	-	-	-	-	DAB	-		
		-	-	-	-	-	-	-	DAB	-	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-		
50	CD90/Thy 1	Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	2m	Photo. 70	
51	CD117/c-kit	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	-	Photo. 71	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m		
		Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	3m		
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	4m		
Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-				
52	CD138	Biotinylated immunoglobulin	Biotinylated Goat Anti-Rat IgG Antibody	Vector Labs	BA-9400	37°C	30m	DAB	2m30s		
53	CD163	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m		
		-	-	-	-	-	-	DAB	-		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 72	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	10m		
54	CD204	Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	1h	DAB	30~90s		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	1m		
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	Photo. 73	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m		
55	Cdc2	SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-		
56	Cdk2	SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-		
57	CDX2	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	-	5m		
58	Chlamydia	LSAB	Polyclonal Rabbit Anti-Mouse Immunoglobulins, Biotinylated affinity-isolated F(ab')2	Dako	E0413	RT	30m	DAB	5m		
59	Chromogranin A	-	-	-	-	-	-	DAB	-		
60	Claudin 11	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	-		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	-		
61	Cleaved Caspase-3	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-		
		Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	5m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	6~15m		
62	Clusterin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	1~2m	Photo. 74	
63	c-Met	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	-	-	-	-		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	5m		
64	Collagen type I	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	1m		
		Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	5m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 75	
65	Collagen type II	Envision	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4006	RT	30m	DAB	1m	Photo. 76	
66	Collagen type III	Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	5m		
		Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	5m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 77	

Supplementary Table 6-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody													
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval			
								Enzyme	Temperature	Incubation time	Concentration	Method	Solution	Temperature	Incubation time
67	Collagen type IV	10%Fo	3~7d	P	1/500	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	20m
68	Connexin 32	10%Fo	-	P	1/50	o/n	4°C	-	-	-	-	-	-	-	-
		-	-	F	1/1000	60m	RT	-	-	-	-	-	-	-	-
69	CXCR3	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	Target Retrieval Solution (pH9, Dako)	-	15m
70	Cyclin D1	10%Fo	5m	P	Ready to use	60m	RT	-	-	-	-	Bo	BS	-	20m
		10%Fo	∞	P	Ready to use	60m	RT	-	-	-	-	PC	Citrate BS	-	10m
71	Cyclooxygenase-2	10%Fo	w	P	1/50	o/n	4°C	-	-	-	-	PC	Citrate BS	125°C	5m
		10%Fo	w	P	1/100	o/n	4°C	-	-	-	-	PC	Citrate BS	125°C	5m
		10%Fo	-	P	1/200	30m	RT	-	-	-	-	ND	-	-	-
		10%Fo	-	P	1/600	30m	RT	-	-	-	-	MW	Citrate BS	-	15m
72	Cystatin C	10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	MW	Citrate BS	-	10m
73	Cytochrome P450 3A1	10%Fo	4d	P	1/5000	o/n	4°C	-	-	-	-	-	-	-	-
74	Cytochrome P450 CYP2B1	10%Fo	3~5d	P	1/2000	60m	RT	-	-	-	-	-	-	-	-
75	Cytokeratin	10%Fo	w	P	1/200	o/n	4°C	-	-	-	-	AC	Citrate BS	-	20m
		10%Fo	w	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS	-	20m
		10%Fo	∞	P	Ready to use	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	5m
		10%Fo	24h	P	Ready to use	o/n	4°C	-	-	-	-	MW	Citrate BS	98°C	20m
		10%Fo	∞	P	Ready to use	o/n	4°C	-	-	-	-	BO	Citrate BS	95°C	40m
		10%Fo	3~5d	P	Ready to use	o/n	4°C	-	-	-	-	PC	Serotec Target Unmasking Fluid Mark2	-	10m
		10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m
		10%Fo	1y	P	Ready to use	60m	RT	Proteinase	37°C	2m	Ready to use	-	-	-	-
		10%Fo	3d	P	Ready to use	o/n	4°C	-	-	-	-	MW	Citrate BS	97°C	20m
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	MW	Citrate BS	120°C	14m
		10%Fo; 4%PFA	1d~1w	F	1/100	60m	RT	-	-	-	-	MW	Citrate BS (pH6)	-	6m
		10%Fo	-	P	Ready to use	60m	RT	-	-	-	-	MW	Citrate BS	-	10m
		10%Fo	o/n	P	Ready to use	o/n	4°C	-	-	-	-	AC	Citrate BS (pH6)	121°C	15m
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	-	-	-	-
10%Fo	w	P	1/400	o/n	4°C	-	-	-	-	AC	Citrate BS	-	20m		
10%Fo	-	P	Ready to use	o/n	4°C	-	-	-	-	MW	Citrate BS	-	15m		
76	Cytokeratin Low Molecular Weight	10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	Protainase K	RT	10m	Ready to use	-	-	-	-
77	Cytokeratin High Molecular Weight	10%Fo	3~5d	P	Ready to use	o/n	4°C	Protainase K	RT	3m	0.4 mg/mL	-	-	-	-
		10%Fo	24h	P	5 µg/mL	o/n	4°C	-	-	-	-	MW	Citrate BS	98°C	30m
		10%Fo	4w	P	1/100	60m	RT	-	-	-	-	AC	Citrate BS	121°C	10m
78	Cytokeratin 5	10%Fo	d	P	1/300	30m	RT	-	-	-	-	MV	Target Retrieval Solution (pH6, Dako)	-	20m
79	Cytokeratin 7	10%Fo	24h	P	1/50~100	30m	RT	Proteinase K	37°C	5m	0.4 mg/mL	BO	-	100°C	20m
80	Cytokeratin 8	10%Fo	o/n	P	1/20	60m; o/n	RT; 4°C	-	-	-	-	AC	Citrate BS (pH6)	121°C	15m
		10%Fo	∞	P	Ready to use	5h	RT	-	-	-	-	AC	BS(pH)	121°C	30m
81	Cytokeratin 8/18	10%Fo	24h	P	-	-	-	-	-	-	-	MW	Citrate BS	120°C	14m
		10%Fo	-	P	1/600	o/n	4°C	-	-	-	-	MW	Citrate BS	-	10m
82	Cytokeratin 10	10%Fo	1d~1w	P	1/400	60m	RT	-	-	-	-	MW	Immunosaver	-	3m
83	Cytokeratin 13	Not Fixed	-	F	1/50	2h	RT	-	-	-	-	-	-	-	-
84	Cytokeratin 14	10%Fo	1y	P	1/200	60m	RT	Proteinase	37°C	2m	Ready to use	-	-	-	-
		10%Fo	∞	P	1/50	60m	RT	-	-	-	-	MW	Citrate BS	-	10m
		10%Fo	1w~	P	1/75	30m	RT	-	-	-	-	MW	Citrate BS	-	10m
85	Cytokeratin 18	10%Fo	1d~1w	P	1/100	60m	RT	-	-	-	-	MW	Citrate BS (pH6)	-	6m
		10%Fo	∞	P	1/100	1.5h	RT	-	-	-	-	AC	BS (pH6)	121°C	30m
		10%Fo	o/n	P	1/100	60m; o/n	RT; 4°C	-	-	-	-	AC	Citrate BS (pH6)	121°C	15m

Supplementary Table 6-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
67	Collagen type IV	LSAB	Polyclonal Swine Anti-Rabbit Immunoglobulins/Biotinylated Swine F(ab') ₂	Dako	E0431	RT	30m	DAB	5m	
68	Connexin 32	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	-	
		Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	FITC	30m	
69	CXCR3	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	5m	
70	Cyclin D1	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	-	Photo. 78
71	Cyclooxygenase-2	Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	3m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	30m	DAB	3m	
		SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-	
		SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-	
72	Cystatin C	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	30s	Photo. 79
73	Cytochrome P450 3A1	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	40s	Photo. 80
74	Cytochrome P450 CYP2B1	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	10m	
75	Cytokeratin	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	37°C	30m	DAB	2m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	8~10m	
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 81
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	1m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	10m	Photo. 82
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	5m	
		Histofine Simple Stain	-	Nichirei	-	-	-	DAB	-	
Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m			
LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m			
Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-	Photo. 83		
76	Cytokeratin Low Molecular Weight	Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	Photo. 84
77	Cytokeratin High Molecular Weight	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	10m	Photo. 85
78	Cytokeratin 5	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	10m	Photo. 86
79	Cytokeratin 7	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
80	Cytokeratin 8	Histofine Simple Stain	-	Nichirei	-	-	-	DAB	-	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0609	RT	10m	DAB	90s	Photo. 87
81	Cytokeratin 8/18	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Anti-guinea pig IgG goat polyclonal antibody	anti-guinea pig IgG goat polyclonal antibody	Dako	P0141	RT	30m	DAB	5m	
82	Cytokeratin 10	Histofine Simple Stain	Histofine® Mouse stain kit,	Nichirei	714321; 714191	RT	30m	DAB	10m	Photo. 88
83	Cytokeratin 13	Alexa Fluor	Goat anti Rabbit IgG(H+L) Secondary Antibody, Alexa Fluor® 488 conjugate	Life Technologies	A-11008	RT	1h	-	-	
84	Cytokeratin 14	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 89
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	-	Photo. 90
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(MULTI)	Nichirei	424151	RT	30m	DAB	10m	Photo. 91
85	Cytokeratin 18	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	724132	RT	30m	DAB	10m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0609	RT	10m	DAB	90s	Photo. 92
		Histofine Simple Stain	-	Nichirei	-	-	-	DAB	-	

Supplementary Table 7-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody														
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Antigen retrieval								
								Protease treatment				Heating		Method	Solution	Temperature
Enzyme	Temperature	Incubation time	Concentration													
86	Cytokeratin 19	10%Fo	-	P	Ready to use	o/n	4°C	-	-	-	-	-	PC	Target Retrieval Solution (pH9, Dako)	125°C	0.5m
		10%Fo	o/n	P	1/150	60m	RT	Trypsin	37°C	10m	-	-	-	-	-	-
		10%Fo	24h	P, F	Ready to use	60m	RT	Trypsin	37°C	20m	-	-	-	-	-	-
		10%Fo	o/n	P	1/1000	o/n	4°C	-	-	-	-	-	MW	Immunosaver	98°C	5~10m
		10%Fo	24h	P	1/50~100	30m	RT	Proteinase K	37°C	5m	0.4 mg/mL	-	-	-	-	-
87	Cytokeratin 20	10%Fo	24h	P	-	-	-	-	-	-	-	-	He	CC2 (Roche)	98°C	30m
		10%Fo	24h	P	1/25~50	30m	RT	Proteinase K	37°C	5m	0.4 mg/mL	-	-	-	-	
88	DEAD box Protein 4/DDX-4	10%Fo	-	P	1/200	30m	RT	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m	
89	Desmin	10%Fo	3~5d	P	Ready to use	60m	RT	-	-	-	-	-	-	-	-	
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	-	-	-	-	
		10%Fo	w	P	Ready to use	60m	RT	-	-	-	-	-	-	-	-	
		10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m
		10%Fo	24h	P, F	Ready to use	60m	RT	-	-	-	-	-	MW	Citrate BS	95°C	20m
		10%Fo	∞	P	Ready to use	60m	RT	-	-	-	-	-	Bo	BS	-	20m
		10%Fo	~1y	P	Ready to use	60m	RT	-	-	-	-	-	MW	Citrate BS	-	10m
		10%Fo	1w	P	Ready to use	60m	RT	-	-	-	-	-	MW	Target Retrieval Solution (Dako)	500W	10m
90	Dityrosine	10%Fo; Bouin	-	P	1/200	o/n	4°C	-	-	-	-	-	ND	-	-	
		10%Fo	3d	P	1/50	o/n	4°C	-	-	-	-	-	-	-		
91	<i>Dolichos biflorus</i> Lectin	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	-	-		
92	Doublecortin	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
93	E-cadherin	10%Fo	24h	P	1/500	60m	RT	-	-	-	-	-	MW	EDTA	95°C	20m
		10%Fo	24h	P	1/500	o/n	4°C	-	-	-	-	-	PC	Citrate BS	-	10m
		10%Fo	o/n	P	1/50	o/n	4°C	-	-	-	-	-	MW	BS	-	10m
		10%Fo	3d	P	5 µg/mL	60m	RT	-	-	-	-	-	PC	Target Retrieval Solution (Dako)	110°C	15m
		10%Fo	3d	P	1/100	60m	RT	-	-	-	-	-	MW	Target Retrieval Solution (pH9, Dako)	500W	10m
94	EGF Receptor	10%Fo	10m	F	5 µg/mL	60m	RT	-	-	-	-	-	-	-		
		10%Fo	24h	P	1/800	o/n	4°C	-	-	-	-	-	PC	Citrate BS	-	10m
95	ERCC	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
		10%Fo	∞	P	1/200	20m	RT	-	-	-	-	-	AC	BS (pH6)	121°C	15m
96	Estrogen Receptor α	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	15m
97	Estrogen Receptor β	10%Fo	3~7d	P	1/500	60m	RT	Proteinase K	RT	5m	Ready to use	-	-	-		
		10%Fo	∞	P	1/100	60m	RT	-	-	-	-	-	Bo	BS	-	10m
98	F4/80	10%Fo	∞	P	1/200	60m	RT	-	-	-	-	-	MW	Citrate BS (pH6)	-	10m
		10%Fo	1w	P	1/200	60m	RT	-	-	-	-	-	MW	Target Retrieval Solution (Dako)	500W	10m
		10%Fo	-	P	1/500	o/n	4°C	-	-	-	-	-	ND	-	-	
99	Fas	MD; Bouin	-	P	1/500	o/n	4°C	-	-	-	-	-	ND	-		
100	Fas Ligand	MD; Bouin	-	P	1/500	o/n	4°C	-	-	-	-	-	ND	-		
101	Fibronectin	10%Fo	5m	P	1/200	60m	RT	-	-	-	-	-	-	-		
102	Follicle Stimulating Hormone	10%Fo	7d	P	1/5000	o/n	4°C	Trypsin	37°C	30m	-	-	-	-		
		10%Fo	-	P	1/1000	30m	4°C	-	-	-	-	-	ND	-		
		10%Fo	-	P	1/4000	o/n	4°C	-	-	-	-	-	-	-		
103	Foxp3	10%Fo	-	P	1/800	o/n	4°C	-	-	-	-	-	MW	HistoVT One	-	15m
		10%Fo	-	P	1/800	o/n	4°C	-	-	-	-	-	MW	HistoVT One	-	15m
104	GADD 153	10%Fo	o/n	P	1/500	o/n	4°C	-	-	-	-	-	MV	Target Retrieval Solution (pH6, Dako)	-	10m (After boiling)
105	Galectin-1	4%PFA	o/n	F	1/30	o/n	4°C	-	-	-	-	-	-	-		

Supplementary Table 7-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
86	Cytokeratin 19	Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(M)	Nichirei	424131	RT	30m	DAB	5m	
		Histofine Simple Stain	-	Nichirei	-	-	-	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	30s	Photo. 93
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
87	Cytokeratin 20	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	8m	Photo. 94
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
88	DEAD box Protein 4/DDX-4	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	4m	
89	Desmin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	10m	
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 95
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	13m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	5m	
90	Dityrosine	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Envision, Histofine Simple Stain	EnVision+ System- HRP Labelled Polymer Anti-Rabbit; Histofine® Simple Stain™ Rat MAX PO (MULTI)PO (MULTI)	Dako, Nichirei	K4002; 414191	RT	30m	DAB	1m30s	Photo. 96
91	<i>Dolichos biflorus</i> Lectin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
92	Doublecortin	-	-	-	-	-	-	DAB	1m30s	
93	E-cadherin	Histofine Simple Stain	Histofine® SAB-PO(G)KIT	Nichirei	414011	RT	10m; 5m	DAB	-	Photo. 97
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	60m	DAB	-	Photo. 98
		Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	1m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	5m	Photo. 99
94	EGF Receptor	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	5m	Photo. 100
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	2m	
95	ERCC	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	60m	DAB	-	Photo. 101
96	Estrogen Receptor α	SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-	
		Histofine Simple Stain	Histofine® SAB-PO(R)	Nichirei	426041	RT	10m	DAB	60s	Photo. 102
97	Estrogen Receptor β	SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-	
		SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-	
		LSAB	Biotinylated Rabbit Anti-Rat Immunoglobulins	Dako	E0468	RT	30m	DAB	5m	
98	F4/80	Histofine Simple Stain	-	Nichirei	-	RT	30m	DAB	30s	Photo. 103
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (Rat)	Nichirei	414311	RT	30m	-	5m	
		Biotinylated immunoglobulin	Biotinylated Rabbit Anti-Rat Immunoglobulins	Dako	E0468	RT	30m	DAB	5m	Photo. 104
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
99	Fas	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
100	Fas Ligand	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
101	Fibronectin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	-	-	-	-	
102	Follicle Stimulating Hormone	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	4m	Photo. 105
		-	-	-	-	-	-	-	-	
103	Foxp3	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	60m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181F	RT	30m	DAB	5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181F	-	-	-	-	
104	GADD 153	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	20m	DAB	10m	Photo. 106
105	Galectin-1	Alexa Fluor	Donkey anti-Goat IgG (H+L) Secondary Antibody, Alexa Fluor® 488 conjugate	Life Technologies	A-11055	RT	30m	-	-	

Supplementary Table 8-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody															
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval					
								Enzyme	Temperature	Incubation time	Concentration	Method	Heating		Temperature	Incubation time	
106	Glial Fibrillary Acidic Protein	10%Fo	3d	P	1/100	o/n	4°C	-	-	-	-	-	-	-	-	-	-
		10%Fo	1y	P	1/50	60m	RT	-	-	-	-	-	Bo	Citrate BS	95~99°C	20m	
		10%Fo; FG	1d~1w; 1d	P	1/50~1/100	60m	RT	-	-	-	-	-	MW	Citrate BS (pH6), Immunosaver	-	6m; 3m	
		10%Fo	24h	P, F	1/2500	60m	RT	-	-	-	-	-	MW	Citrate BS	95°C	20m	
		10%Fo	1w	P	1/1000	60m	RT	-	-	-	-	-	MW	Citrate BS	98°C	15m	
		10%Fo	∞	P	Ready to use	o/n	4°C	-	-	-	-	-	AC	Citrate BS	121°C	5m	
		10%Fo	3~5d	P	Ready to use	30m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	o/n	P	Ready to use	60m	RT	-	-	-	-	-	AC	Citrate BS (pH6)	121°C	15m	
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	-	-	-	-	-	
		10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m	
10%Fo	o/n	P	Ready to use	o/n	4°C	-	-	-	-	-	PC	Citrate BS	-	10m			
10%Fo	1d	P	Ready to use	o/n	4°C	-	-	-	-	-	MW	Immunosaver	98°C	10m			
10%Fo	w	P	1/500	o/n	4°C	-	-	-	-	-	AC	Citrate BS	-	20m			
107	α2μ-globulin	10%Fo	o/n	P	1/100	o/n	4°C	Trypsin	37°C	30m	-	-	-	-	-	-	
		10%Fo	-	P	1/2000	o/n	4°C	0.05% Protease	RT	10m	0.05%	-	-	-	-	-	
		10%Fo	4w	P	1/200~300	2h; o/n	RT; 4°C	-	-	-	-	-	MW	Citrate BS	-	20m	
		10%Fo	∞	P	1/100	60m	RT	-	-	-	-	-	Bo	BS	-	20m	
		10%Fo	1d~1w	P	1/100	60m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	2w	P	1/600	o/n	4°C	Proteinase	37°C	15m	-	-	Bo	Tris-EDTA (pH9)	About 85°C	40m	
10%Fo	1w	P	1/300	60m	37°C	Protenase1	37°C	15m	Ready to use	He	CC2 (Roche)	98°C	30m				
10%Fo	∞	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	10m			
108	Glucagon	Bouin	~1or2d	P	1/1000	o/n	4°C	-	-	-	-	-	-	-	-	-	
		10%Fo	o/n	P	1/4000	o/n	4°C	-	-	-	-	-	-	-	-	-	
		10%Fo	-	P	1/5000	o/n	4°C	-	-	-	-	-	-	-	-	-	
		10%Fo	-	P	1/12000	o/n	4°C	-	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m	
		10%Fo	o/n	P	Ready to use	9m	40°C	-	-	-	-	-	-	-	-	-	
109	Glucose Transporter type 1	10%Fo	o/n	P	1/250	o/n	4°C	-	-	-	-	PC	Citrate BS	-	10m		
110	Glucose Transporter type 3	10%Fo	o/n	P	1/100	o/n	4°C	-	-	-	-	PC	Citrate BS	-	10m		
111	Glutamate Decarboxylase 65&67	10%Fo	3~5d	P	1/50	o/n	4°C	-	-	-	-	-	-	-	-		
112	Glutamine Synthetase	MD	-	P	1/200	o/n	4°C	Proteinase K	RT	10m	-	-	-	-	-		
113	Glutathione S-transferase Placental type	Cold acetone	o/n	P	1/2000	o/n	4°C	-	-	-	-	-	-	-	-	-	
		10%Fo	3~7d	P	1/1000	60m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	1 y	P	1/200	30m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	-	ND	-	-	-	
		10%Fo	7d	P	1/1000	60m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	7d	P	1/1000	60m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	1w	P	1/1000	60m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	-	P	Ready to use	o/n	4°C	-	-	-	-	-	-	-	-	-	
		10%Fo	2w	P	Ready to use	60m	RT	-	-	-	-	-	-	-	-	-	
		10%Fo	∞	P	1/2	30m	RT	-	-	-	-	-	-	-	-	-	
10%Fo	1d	P	Ready to use	60m	RT	-	-	-	-	-	-	-	-	-			
114	Glutathione S-transferase π	10%Fo	3d	P	1/500	o/n	4°C	-	-	-	-	-	-	-	-	-	
		10%Fo	∞	P	1/500	60m	RT	-	-	-	-	-	MW	Citrate BS (pH6)	-	10m	
115	Granzyme B	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	HistoVT One	-	15m	
116	Green Fluorescent Protein	10%Fo	-	P	1/7000	o/n	4°C	-	-	-	-	-	-	-	-	-	
117	Growth Hormone	10%Fo	7d	P	1/1000	o/n	4°C	Trypsin	37°C	30m	-	-	-	-	-	-	
		10%Fo	-	P	1/500	30m	4°C	-	-	-	-	-	ND	-	-	-	
		10%Fo	~1y	P	1/250	2h	37°C	-	-	-	-	-	-	-	-	-	
		10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	-	ND	-	-	-	

Supplementary Table 8-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
106	Glial Fibrillary Acidic Protein	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	1~2m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	RT	1h	DAB	5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	10m	Photo. 107
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (R)	Nichirei	714181	RT	30m	DAB	10m	
		Alexa Fluor	F(ab') ₂ -Goat anti-Mouse IgG (H+L) Secondary Antibody, Alexa Fluor® 488 conjugate	Life Technologies	A-11017	RT	30m	-	-	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	37°C	30m	DAB	2m	Photo. 108
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m	
		-	-	-	-	-	-	DAB	-	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	60s	
LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m			
107	α2μ-globulin	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	3m	Photo. 109
		Histofine Simple Stain	Histofine® SAB-PO(G)KIT	Nichirei	414011	RT	5m; 10m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (G)	Nichirei	714331	RT	30m	DAB	1~5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	30s	Photo. 110
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	10m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	1h	DAB	2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	8m	
Biotinylated immunoglobulin	Polyclonal Rabbit Anti-Goat Immunoglobulins/Biotinylated	Dako	E0466	37°C	30m	DAB	2m			
108	Glucagon	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	-	DAB	~1m	Photo. 111
		-	-	-	-	-	-	DAB	-	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	Photo. 112
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(M)	Nichirei	424131	RT	30m	DAB	10~20s	
Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	40°C	4m	DAB	10m	Photo. 113		
109	Glucose Transporter type 1	Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	DAB	1m20s	Photo. 114
110	Glucose Transporter type 3	Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	DAB	1m10s	Photo. 115
111	Glutamate Decarboxylase 65&67	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m	
112	Glutamine Synthetase	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1~2m	Photo. 116
113	Glutathione S-transferase Placental type	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	37°C	30m	DAB	2m	Photo. 117
		LSAB	Polyclonal Swine Anti-Rabbit Immunoglobulins/Biotinylated Swine F(ab') ₂	Dako	E0431	RT	30m	DAB	5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	1~5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	1m30s	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0609	RT	10m	DAB	3m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0609	RT	10m	DAB	7m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	8m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	4m	
LSAB	-	Dako	-	RT	30m	DAB	1m			
114	Glutathione S-transferase π	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	1m30s	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	10m	
115	Granzyme B	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	3m	
116	Green Fluorescent Protein	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-	
117	Growth Hormone	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	4m	Photo. 118
		-	-	-	-	-	-	-	-	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	37°C	10m	DAB	2m30s	Photo. 119
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331F	RT	30m	DAB	3m			

Supplementary Table 9-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody													
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval			
								Enzyme	Temperature	Incubation time	Concentration	Method	Heating		Temperature
118	H ⁺ , K ⁺ -ATPase	10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	AC	BS	121°C	15m
119	Heat Shock Protein 60	10%Fo	-	P	1/400	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
120	Heme Oxygenase-1	10%Fo	∞	P	1/200	30m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	-
121	Hepatocyte	10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m
122	Hexanoyl Lysine (HEL)	10%Fo; Bouin	-	P	1/100	o/n	4°C	-	-	-	-	ND	-	-	-
123	4-Hydroxy-2-nonenal	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
		10%Fo	>1w	P	1/50	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	15m
		10%Fo	3d	P	1/1000	o/n	4°C	-	-	-	-	-	-	-	-
124	Iba 1	10%Fo	o/n	P	1/200	o/n	4°C	-	-	-	-	MW	BS	-	10m
		10%Fo	4w	P	1/500	o/n	4°C	-	-	-	-	-	-	-	-
		10%Fo	∞	P	1/250	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	5m
		10%Fo	-	P	1/16000	o/n	4°C	-	-	-	-	PC	Citrate BS	-	20m
		10%Fo	1w~	P	1/200	30m	RT	Trypsin	37°C	30m	-	-	-	-	-
		10%Fo	3d	P	1/500	2h	RT	-	-	-	-	MW	Citrate BS	98°C	15m
		10%Fo	3~5d	P	1/500	60m	RT	-	-	-	-	PC	Citrate BS	-	10m
		10%Fo	2~3d	P	1/1000	60m	RT	-	-	-	-	MW	Instant antigen retrieval H buffer (pH7)	-	5m
		10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	-	-	-	-
		10%Fo	o/n	P	1/2000	60m	RT	-	-	-	-	MW	Immunosaver (0.5%)	100°C	15m
		10%Fo	o/n	P	1/2000	o/n	4°C	-	-	-	-	AC	Citrate BS (pH6)	121°C	15m
		10%Fo	24h	P	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	w	P	1/50	o/n	4°C	-	-	-	-	AC	Citrate BS	-	20m
		10%Fo	24h	P, F	1/1000	60m	RT	-	-	-	-	MW	Citrate BS	95°C	20m
		10%Fo	∞	P	1/200	60m	RT	-	-	-	-	MW	Citrate BS (pH6)	-	10m
4%PFA	1d~1w	P	1/1000	60m	RT	-	-	-	-	MW	Citrate BS (pH6)	-	6m		
4%PFA	24h	P	1/1000	60m	37°C	-	-	-	-	He	CC2 (Roche)	98°C	30m		
10%Fo; 4%PFA	o/n	P, F	1/500; 1/400	o/n	4°C	-	-	-	-	-	-	-	-		
125	IFN-γ	10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	MW	Target Retrieval Solution (pH9, Dako)	-	15m
126	IgG, Fc(γ)	10%Fo	w	P	1/500	60m	RT	-	-	-	-	-	-	-	
127	IgM, (μ)	10%Fo	3~7d	P	1/200	60m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	
		10%Fo	w	P	1/500	60m	RT	-	-	-	-	-	-	-	
128	IL-17	10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
129	Inhibin α	10%Fo	∞	P	1/25	30m	RT	-	-	-	-	PC	EDTA	-	-
130	Insulin	Bouin	~1or2d	P	1/1000	o/n	4°C	-	-	-	-	-	-	-	
		10%Fo	o/n	P	1/1000	60m	RT	-	-	-	-	-	-	-	
		10%Fo	-	P	1/5000	o/n	4°C	-	-	-	-	-	-	-	
		10%Fo	-	P	1/8000	o/n	4°C	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m
		10%Fo	-	P	1/30	o/n	4°C	-	-	-	-	MW	Citrate BS	-	15m
		10%Fo	24h	P	Ready to use	30m	RT	-	-	-	-	-	-	-	-
10%Fo	~1y	P	Ready to use	30m	RT	-	-	-	-	ND	-	-	-		
10%Fo	o/n	P	1/100	9m	40°C	-	-	-	-	-	-	-	-		
131	Intrinsic Factor	10%Fo	-	P	1/3000	o/n	4°C	-	-	-	-	AC	BS	121°C	15m
132	Ki-67	10%Fo	24h	P	1/75~150	30m	RT	-	-	-	-	BO	Low pH	100°C	20m
		10%Fo	48h	P	Ready to use	10m	RT	-	-	-	-	MV	Target Retrieval Solution (pH6, Dako)	-	20m
		10%Fo	4w	P	1/2	60m	RT	-	-	-	-	Bo	Target Retrieval Solution (Dako)	98°C	20m
		10%Fo	48h	P	1/800	60m	RT	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	3m
		10%Fo	A few days (clinical specimen)	P	1/50	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m
		10%Fo	w	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS	-	20m
		10%Fo	-	P	1/100	30m	RT	-	-	-	-	PC	Target Retrieval Solution (pH9, Dako)	121°C	15m
10%Fo	w	P	1/100	20m	RT	-	-	-	-	Bo	Citrate BS	100°C	20m		

Supplementary Table 9-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
118	H ⁺ K ⁺ -ATPase	Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	-	-	DAB	-	Photo. 120
119	Heat Shock Protein 60	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	2m30s	
120	Heme Oxygenase-1	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m	
121	Hepatocyte	Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	Photo. 121
122	Hexanoyl Lysine (HEL)	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
123	4-Hydroxy-2-nonenal	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	3m30s	
		Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	1m30s	Photo. 122
124	Iba 1	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	2m	
		Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	1m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K6043	RT	30m	DAB	3m	Photo. 125
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	37°C	30m	DAB	2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	10m	
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(MULTI)	Nichirei	424151	RT	30m	DAB	10m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	30~40s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	2m	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	15s	Photo. 124
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	60m	DAB	5m	
		-	-	-	-	-	-	DAB	-	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	714181	RT	30m	DAB	10m	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	3m	
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	10m			
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	37°C	30m	DAB	8m			
Alexa Fluor	Donkey anti-Rabbit IgG (H+L) Secondary Antibody, Alexa Fluor® 555 conjugate	Life Technologies	A-31572	RT	30m	-	-			
125	IFN-γ	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331F	RT	30m	DAB	5m	
126	IgG, Fc(γ)	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	5m	Photo. 125
127	IgM, (μ)	LSAB	Polyclonal Rabbit Anti-Goat Immunoglobulins/Biotinylated	Dako	E0466	RT	30m	DAB	5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	5m	Photo. 126
128	IL-17	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	1m15s	
129	Inhibin α	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	-	Photo. 127
130	Insulin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	-	DAB	~1m	Photo. 128
		-	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	-	-	DAB	-	
		Envision	EnVision+ System- HRP Labelled Polymer; Biotinylated Rabbit Anti-Mouse Immunoglobulins	Dako	K4000; E0464	RT	30m	DAB; NF	-	Photo. 129
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(M)	Nichirei	424131	RT	30m	DAB	20~30s	
		Biotinylated immunoglobulin	goat anti-guinea pig IgG-B	Santa Cruz	sc-2440	RT	30m	DAB	1m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	Photo. 130
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	10m	
Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	40°C	4m	DAB	10m	Photo. 131		
131	Intrinsic Factor	Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	-	-	DAB	-	Photo. 132
132	Ki-67	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	10m	DAB	5m	Photo. 133
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	5m	Photo. 134
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	1m	Photo. 135
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m	
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	3m			

Supplementary Table 10-1 Immunological properties of primary antibodies and IHC staining conditions

No.	Primary antibody																								Positive Control						
	Antibody						Species reactivity																								
	Antigen	Clone	Supplier	Catalog Number	Antibody	Host animal	All	Rat	Mou	Dog	GP	Ham	Hum	Mon	Rab	Cat	Pig	Cow	Hor	She	Fer	Chi	Other								
132	Ki-67	MIB-5	Dako	M7248	MoAb	Mou																			Pancreas						
																														Small intestine; Liver	
																															Small intestine
																															Small intestine
																															Thymus
																															Nucleus
																															-
																															Liver
																															Spleen; Small intestine
																															Digestive canal; Spleen
																								Liver							
																								Stomach							
																								Liver							
																								Liver; Stomach							
		SP6	Abcam	ab16667	MoAb	Rab																		Intestine; Kidney							
			Nichirei	418071	MoAb	Rab																		Liver							
			Abcam	ab15580	PoAb	Rab																		Tumor							
			Millipore	AB9260	PoAb	Rab																		Liver; Spleen; Adipose tissue							
			Novus Biologicals	NB110-89717	PoAb	Rab																		Spleen; Intestine							
																								Esophagus							
																								Liver							
133	KIM-1/Tim-1	-	R&D systems	AF3689	PoAb	Gt																		Kidney (damaged)							
																											Kidney (damaged)				
																													Kidney (damaged)		
																													Kidney		
134	Lactate Dehydrogenase	H160	Santa Cruz	SC33781	PoAb	Rab																	Kidney								
135	Laminin	-	Dako	Z0097	PoAb	Rab																		Liver; Lymph node; Spleen							
			LSL	LB-1013	PoAb	Rab																		Basement membrane							
			Sigma-Aldrich	L9393	PoAb	Rab																			Basement membrane						
																							Basal Lamina								
136	LAMP-1	-	Abcam	ab24170	PoAb	Rab																		-							
			Sigma-Aldrich	L1418	PoAb	Rab																			-						
137	LAMP-2	M3/84	Santa Cruz	sc-19991	MoAb	Rat																		Kidney (damaged)							
			Affinity Bioreagents	PA1-655	PoAb	Rab																			Liver						
																									Liver						
			Invitrogen	51-2200	PoAb	Rab																				-					
																										Liver					
			Lifespan Biosciences	LS-B3144	MoAb	Mou																		Liver							
																							Liver								
																							Liver; Kidney; Adrenal gland								
																							-								
																							Lysosome								
138	LC3	-	MBL	PM036	PoAb	Rab																		All							
139	Lipocalin-2/NGAL	-	R&D systems	AF1757	PoAb	Gt																		Kidney (damaged)							
140	Luteinizing Hormone	-	Affinity Bioreagents	PA1-23783	PoAb	Rab																		Pituitary							
			Biogenesis	5720-7989	PoAb	Rab																			Pituitary						
			Millipore	AB944	PoAb	Rab																			Pituitary						
141	Luteinizing Hormone Receptor	-	Santa Cruz	sc-25828	PoAb	Rab																	Ovary; Testis								
142	Lysozyme	-	Dako	A0099	PoAb	Rab																		Lung							
																												Bone			
																							Histiocyte								
143	MAC-2	M3/38	Cedarlane	CL8942AP	MoAb	Rat																		Macrophage							
																												Macrophage			

Supplementary Table 10-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.		
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time			
132	Ki-67	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	3m			
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(M)	Nichirei	424131	RT	1h	DAB	2m			
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	3m			
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	10m			
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	3m			
		-	-	-	-	-	-	DAB	-			
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	-	10m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m			
		Envision	EnVision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4006	RT	1h	DAB	3m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m	Photo. 136		
		Histofine SAB-PO(M)	Histofine® SAB-PO (M)	Nichirei	424022	RT	10m	DAB	Under observatio			
		133	KIM-1/Tim-1	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	5m	Photo. 137
				Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	1~5m	
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)			Nichirei	714171	RT	30m	DAB	10m			
ABC	VECTASTAIN ABC Kit (Rabbit IgG)			Vector Labs	PK-4001	RT	30m	DAB	45s	Photo. 138		
Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit			Dako	K4002	37°C	30m	DAB	2m			
Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit			Dako	K4002	-	30m	DAB	4m	Photo. 139		
Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)			Nichirei	414341	RT	30m	DAB	40s			
Biotinylated immunoglobulin	Polyclonal Rabbit Anti-Goat Immunoglobulins/Biotinylated			Dako	E0466	37°C	30m	DAB	2m			
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)			Nichirei	414331	RT	30m	DAB	30~90s			
Biotinylated immunoglobulin	Biotinylated Rabbit Anti-Goat IgG Antibody			Vector Labs	BA-5000	RT	30m	DAB	5m	Photo. 140		
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)			Nichirei	414331F	-	-	-	-			
134	Lactate Dehydrogenase			Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	10m	
135	Laminin	LSAB	Polyclonal Swine Anti-Rabbit Immunoglobulins/Biotinylated Swine F(ab') ₂	Dako	E0431	RT	30m	DAB	5m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	-	Photo. 141		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	37°C	30m	DAB	2m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	-	DAB	5m30s	Photo. 142		
136	LAMP-1	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	4m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	4m			
137	LAMP-2	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (Rat)	Nichirei	414311	RT	30m	DAB	60s	Photo. 143		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	3m			
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	60m	DAB	20m			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	3m			
		Elite ABC	Biotinylated Goat Anti-Rabbit IgG Antibody	Vector Labs	BA-1000	-	-	DAB	-			
		Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	DAB	1m	Photo. 144		
		Goat anti-rabbit bio/ninylated antibody	Goat anti-rabbit biotinylated antibody	Vector Labs	-	RT	30m	DAB	30s			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	3m30s			
138	LC3	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 145		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	6m			
139	Lipocalin-2/NGAL	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	1~1.5m	Photo. 146		
140	Luteinizing Hormone	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-			
		-	-	-	-	-	-	-	-			
141	Luteinizing Hormone Receptor	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	60m	DAB	-			
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	3m			
142	Lysozyme	Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	30s	Photo. 147		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-			
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m			
143	MAC-2	Biotinylated immunoglobulin	Biotinylated Rabbit Anti-Rat Immunoglobulins	Dako	E0468	RT	30m	DAB	3m			
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (Rat)	Nichirei	414311	-	30m	DAB	4m	Photo. 148		

Supplementary Table 11-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody															
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval					
								Enzyme	Temperature	Incubation time	Concentration	Method	Heating		Temperature	Incubation time	
144	Macrophage	10%Fo	1d	P	1/100	60m	RT	Proteinase K	RT	6m	Ready to use	-	-	-	-	-	-
145	Macrophage Scavenger Receptor A	10%Fo	24h	P	5 µg/mL	o/n	4°C	-	-	-	-	MW	Citrate BS	98°C	10m	-	-
146	Macrophage/Dendritic Cells	10%Fo	-	P	1/25	o/n	4°C	-	-	-	-	-	-	-	-	-	-
147	MCM7	10%Fo	∞	P	1/100	30m; 60mr	RT	-	-	-	-	PC	Citrate BS	125°C; 90°C	30s; 5s	-	-
		10%Fo	3~7d	P	1/2000	60m	RT	-	-	-	-	MW	Citrate BS	-	-	-	-
148	Melan A	10%Fo	24h	P	-	-	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	1w~	P	Ready to use	30m	RT	-	-	-	-	MW	Citrate BS	-	10m	-	-
		10%Fo	o/n	P	1/50	o/n	4°C	-	-	-	-	MW	BS	-	10m	-	-
		10%Fo	A few days (clinical specimen)	P	1/50	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	1m	-	-
		10%Fo	24h	P	1/200	60m	RT	-	-	-	-	MW	EDTA	95°C	20m	-	-
		10%Fo	w	P	Ready to use	o/n	4°C	-	-	-	-	AC	Citrate BS	-	20m	-	-
149	Melanoma	10%Fo	24h	P	1/50	40m	37°C	-	-	-	-	-	-	-	-	-	-
		10%Fo	-	P	1/25	60m	RT	-	-	-	-	Bo	BS	-	20m	-	-
150	Mesothelin	10%Fo	∞	P	1/200	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	5m	-	-
		10%Fo	∞	P	1/2000	30m	RT	-	-	-	-	MW	Citrate BS (pH6)	-	10m	-	-
		10%Fo	∞	P	1/100	60m	RT	-	-	-	-	Bo	BS	-	10m	-	-
		10%Fo	3~6d	P	1/250	o/n	4°C	-	-	-	-	-	-	-	-	-	-
151	Metallothionein	10%Fo	o/n	P	1/50	60m	37°C	-	-	-	-	ND	-	-	-	-	-
152	MHC class II (Human HLA-DR)	10%Fo	24h	P	1/20~40	30m	RT	-	-	-	-	BO	Target Retrieval Solution (Dako)	100°C	20m	-	-
		10%Fo	A few days (clinical specimen)	P	1/500	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m	-	-
		10%Fo	w	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS	-	20m	-	-
		10%Fo	>1w	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS	95°C	15m	-	-
153	MHC class II (RT1B)	PLP	o/n	P; F	1/500	60m	RT	Proteinase K	RT	10m	100 µg/ml	-	-	-	-	-	-
154	β2-microglobulin	10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	MW	Citrate BS	-	15m	-	-
155	Microtubule Associated Protein 2	10%Fo	3d	P	1/200	o/n	4°C	-	-	-	-	MW	Citrate BS	98°C	10m	-	-
156	Mitochondria	10%Fo	w	P	1/400	o/n	4°C	-	-	-	-	AC	Citrate BS	-	20m	-	-
157	MLH1	10%Fo	24h	P	1/1600	o/n	4°C	-	-	-	-	PC	Citrate BS	-	10m	-	-
158	Myelin Basic Protein	10%Fo	24h	P; F	1/1000	60m	RT	-	-	-	-	MW	Citrate BS	95°C	20m	-	-
		MD	-	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS	-	10m	-	-
		10%Fo	o/n	P	1/300	60m	RT	-	-	-	-	-	-	-	-	-	-
		10%Fo	∞	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	5m	-	-
159	Myelin CNPase	10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	15m	-	-
160	Myelin Proteolipid Protein	10%Fo	∞	P	1/2000	60m	RT	-	-	-	-	MW	Citrate BS (pH6)	-	10m	-	-
		10%Fo	24h	P; F	1/500	60m	RT	-	-	-	-	MW	Citrate BS	95°C	20m	-	-
161	Myeloid/Histiocyte Antigen	10%Fo	-	P	1/1000 or more	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m	-	-
		10%Fo	24h	P	1/200~400	30m	RT	Proteinase K	37°C	5m	0.4 mg/mL	-	-	-	-	-	-
		10%Fo	w	P	1/400	o/n	4°C	-	-	-	-	AC	Citrate BS	-	20m	-	-
162	MyoD1	10%Fo	A few days (clinical specimen)	P	1/50	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m	-	-
163	Myogenin	10%Fo	-	P	1/800	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	121°C	15m	-	-
		10%Fo	A few days (clinical specimen)	P	1/200	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m	-	-
164	Nectin 4	10%Fo	24h	P	1/100	-	-	-	-	-	-	-	-	-	-	-	-
165	Nephrin C	Cold acetone	10m (1~8°C)	F	1/20	o/n	1~8°C	-	-	-	-	ND	-	ND	-	-	-
166	Nestin	10%Fo	∞	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	5m	-	-
		PLP	4hr	P	1/100	o/n	4°C	-	-	-	-	BO	Citrate BS	95°C	40m	-	-
		4%PFA	2h	P; F	1/500	60m	RT	-	-	-	-	MW	Citrate BS	95°C	20m	-	-
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	15m	-	-
167	NeuN	10%Fo	∞	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	5m	-	-
		10%Fo	48h	P	1/400	60m	RT	-	-	-	-	AC	Citrate BS	121°C	3m	-	-
		10%Fo	24h	P; F	1/1000	60m	RT	-	-	-	-	MW	Citrate BS	95°C	20m	-	-

Supplementary Table 11-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
144	Macrophage	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (Rat)	Nichirei	414311	RT	30m	DAB	10m	Photo. 149
145	Macrophage Scavenger Receptor A	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
146	Macrophage/Dendritic Cells	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	Photo. 150
147	MCM7	Histofine SAB-PO(M)	Histofine® SAB-PO (M)	Nichirei	424022	RT	10m	DAB	3m	
		LSAB	Polyclonal Swine Anti-Rabbit Immunoglobulins/Biotinylated Swine F(ab') ₂	Dako	E0431	RT	30m	DAB	5m	Photo. 151
148	Melan A	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(MULTI)	Nichirei	424151	RT	30m	DAB	10m	
		Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	1m	
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	Photo. 152
149	Melanoma	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
150	Mesothelin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 153
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	37°C	30m	DAB	2m	Photo. 154
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	5m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	13m	
151	Metallothionein	Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	2m	Photo. 155
152	MHC class II (Human HLA-DR)	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	Photo. 156
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m	
		ABC	VECTOR Red Alkaline Phosphatase (AP) Substrate Kit	Vector Labs	SK-5100	RT	30m	VECTOR Red	30m	
153	MHC class II (RT1B)	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	Photo. 157
154	β2-microglobulin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1~2m	Photo. 158
155	Microtubule Associated Protein 2	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	1m30s~2m	
156	Mitochondria	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m	
157	MLH1	Biotinylated immunoglobulin	Biotinylated Goat Anti-Rabbit IgG Antibody	Vector Labs	BA-1000	RT	30m	DAB	-	Photo. 159
158	Myelin Basic Protein	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (R)	Nichirei	714181	RT	30m	DAB	10m	Photo. 160
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1~2m	Photo. 161
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	3m	Photo. 162
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	37°C	30m	DAB	1m30s	Photo. 163
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
159	Myelin CNPase	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
160	Myelin Proteolipid Protein	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	1m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (R)	Nichirei	714181	RT	30m	DAB	10m	Photo. 164
161	Myeloid/Histiocyte Antigen	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	1m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m	
162	MyoD1	Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	Photo. 165
163	Myogenin	Elite ABC	Biotinylated Horse Anti-Mouse IgG Antibody, rat adsorbed	Vector Labs	BA-2001	RT	30m	DAB	4~5m	Photo. 166
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	Photo. 167
164	Nectin 4	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331F	37°C	30m	DAB	1~2m	
165	Nephrin C	Fluorophore laveled immunoglobulin	Swine Anti-Rabbit Immunoglobulins/FITC	Dako	F0205	RT	1h	-	-	Photo. 168
166	Nestin	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	37°C	30m	DAB	2m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	Photo. 169
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
167	NeuN	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	37°C	30m	DAB	2m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	1m	Photo. 170
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (R)	Nichirei	714181	RT	30m	DAB	10m	

Supplementary Table 12-1 Immunological properties of primary antibodies and IHC staining conditions

No.	Primary antibody																					Positive Control								
	Antibody						Species reactivity																							
	Antigen	Clone	Supplier	Catalog Number	Antibody	Host animal	All	Rat	Mou	Dog	GP	Ham	Hum	Mon	Rab	Cat	Pig	Cow	Hor	She	Fer		Chi	Other						
168	Neurofilament	2F11	Dako	IR607	MoAb	Mou				o														PNS						
																										Brain				
																											Brain			
																											Digestive canal			
																											Cerebellum; Spinal cord			
																												Brain		
																											Neuron			
																											Brain			
																								Brain						
																								Nerve tissue						
																								Brain						
																								Nerve tissue						
169	Neurofilament 200	NE14	Sigma-Aldrich	N5389	MoAb	Mou		o																Brain						
170	Neurofilament L	-	Millipore	AB9568	PoAb	Rab																		Brain						
171	Neuron-Specific Enolase	BBS/NC/VI-H14	Dako	IR612	MoAb	Mou																		Nerve tissue						
		-	Nichirei	422081	PoAb	Rab		o																Neuroendocrine cells; Schwannoma						
								o																Testis						
								o																Brain						
172	NG2	-	Millipore	AB5320	PoAb	Rab		o	o	o														Brain						
173	3-Nitrotyrosine	39B6	Abcam	ab61392	MoAb	Mou	o																	All						
174	OCT3/4	C-10	Santa Cruz	SC-5279	MoAb	Mou		o																Testis						
175	Olig2	-	IBL	18953	PoAb	Rab		o	o	o															Brain					
								o																				Brain		
								o																					Nerve tissue	
								o																						Brain
								o																						Spinal cord; Brain
								o																						Brain
								o																Brain						
176	Osteocalcin	OCG3	Abcam	ab13420	MoAb	Mou		o																Osteoblast						
																									Bone					
																										Bone				
177	Osterix	-	Abcam	ab22552	PoAb	Rab		o																Osteoblast						
								o																			Osteosarcoma			
								o	o																				Bone-derived cell	
								o	o																				Osteoblast	
178	p62/SQSTM1	-	MBL	PM045	PoAb	Rab		o	o			o	o										All							
179	Paraoxonase 2 (PON2)	-	Abcam	ab40969	PoAb	Rab		o	o	o			o	o				o				o	All							
180	Parathyroid Hormone	-	Yanaihara	Y421	PoAb	Rab		o															Thyroid							
181	Pax5	EPR3730(2)	Abcam	ab109443	MoAb	Rab			o															Thymus						
			Abcam	ab15164	PoAb	Rab				o															Lymph node					
182	Pax6	-	BioLegend	PRB-278P	PoAb	Rab		o																Eye						
183	PCNA	PC10	Dako	M0879	MoAb	Mou		o	o																Liver; Kidney; Intestine					
								o																				Harderian gland		
								o																					Digestive canal	
								o	o	o																				Proliferated cell
								o																						Small intestine
								o																						Ovary
								o	o	o																				Small intestine; Adrenal gland
								o																						Intestine; Skin
								o	o																					Liver; Intestine; Stomach
								o																						All
								o	o																					-
																						o	Proliferated tumor cell							
																						o	Proliferated cell							

Supplementary Table 12-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody														
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval				
								Enzyme	Temperature	Incubation time	Concentration	Method	Solution		Temperature	Incubation time
168	Neurofilament	10%Fo	24h	P	1/50~100	40m	37°C	-	-	-	-	BO	Target Retrieval Solution (Dako)		100°C	20m
		10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)		121°C	20m
		10%Fo	∞	P	1/50	o/n	4°C	-	-	-	-	AC	Citrate BS		121°C	5m
		10%Fo	24h	P	1/200	o/n	4°C	-	-	-	-	MW	Citrate BS		98°C	10m
		10%Fo	3~7d	P	1/1000	60m	RT	-	-	-	-	AC	Citrate BS		121°C	20m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS		121°C	15m
		10%Fo	~1y	P	1/400	o/n	4°C	-	-	-	-	MW	Citrate BS		95°C	30m
		4%ZnFo	2d	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS		100°C	15m
		10%Fo	4w	P	1/100	30m	RT	-	-	-	-	MW	DW		-	5m
		10%Fo	∞	P	1/200	30m	RT	Proteinase K	RT	10m	0.4 mg/mL	-	-	-	-	
		Not Fo; GA	1d~1w	P; F	1/50~400; 1/100(Fo)	60m	RT	-	-	-	-	MW	Citrate BS (pH6), Immunosaver		-	6m
169	Neurofilament 200	-	-	P	1/1000	o/n	4°C	-	-	-	-	-	-	-	-	-
170	Neurofilament L	10%Fo	∞	P	1/400	60m	RT	-	-	-	-	MW	Citrate BS (pH6)		-	10m
171	Neuron-Specific Enolase	10%Fo	1y	P	Ready to use	60m	RT	-	-	-	-	Bo	Citrate BS		95 ~ 99°C	20m
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	-	-	-	-	
		10%Fo	-	P	Ready to use	30m	RT	-	-	-	-	-	-	-	-	
		10%Fo	-	P	1/10	30m	RT	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)		125°C	0.5m
172	NG2	Perfusion fixation for EM	o/n	P	1/50	o/n	4°C	-	-	-	-	MW	Citrate BS		98°C	15m
173	3-Nitrotyrosine	10%Fo; Bouin	-	P	1/50	o/n	4°C	-	-	-	-	Acetone dipping (15m)	-	-	-	
174	OCT3/4	10%Fo	-	P	1/800	o/n	4°C	-	-	-	-	-	-	-	-	
175	Olig2	10%Fo	3d	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS		98°C	10m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS		-	15m
		10%Fo	24h	P; F	1/1000	60m	RT	-	-	-	-	MW	Citrate BS		95°C	20m
		10%Fo	∞	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS (pH9)		-	10m
		10%Fo	1w	P	1/500	60m	RT	-	-	-	-	MW	Citrate BS		98°C	15m
		10%Fo	1w	P	1/1000	60m	RT	-	-	-	-	MW	Citrate BS		98°C	15m
		10%Fo	1d	P	1/1000	o/n	4°C	-	-	-	-	MW	Immunosaver		98°C	10m
176	Osteocalcin	10%Fo	∞	P	1/100	60m	RT	Proteinase K	RT	8m	-	-	-	-	-	
		10%Fo	1y	P	1/100	60m	RT	-	-	-	-	-	-	-	-	
		10%Fo	1w	P	1/200	60m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	-	
177	Osterix	10%Fo	∞	P	1/200	60m	RT	-	-	-	-	Bo	PT link (pH9)		95°C	20m
		10%Fo	∞	P	1/200	o/n	4°C	-	-	-	-	AC	Citrate BS		121°C	5m
		10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	Proteinase K	-	-	-	
		10%Fo	1y	P	1/200	60m	RT	-	-	-	-	-	-	-	-	
178	p62/SQSTM1	10%Fo	-	P	1/2000	o/n	4°C	-	-	-	-	MW	HistoVT One		-	15m
179	Paraoxonase 2 (PON2)	10%Fo; Bouin	-	P	1/1000	o/n	4°C	-	-	-	-	MW	HistoVT One		-	15m
180	Parathyroid Hormone	-	-	P	1/50	60m	RT	-	-	-	-	He	CC2 (Roche)		98°C	30m
181	Pax5	10%Fo	-	P	1/300	o/n	4°C	-	-	-	-	Bo	Tris EDTA (pH8)		90°C	30m
		10%Fo	A few days (clinical specimen)	P	1/50	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)		121°C	20m
182	Pax6	10%Fo	∞	P	1/2500	60m	RT	-	-	-	-	MW	Citrate BS (pH9)		-	10m
183	PCNA	10%Fo	∞	P	1/1000	o/n	4°C	-	-	-	-	MW	Citrate BS		-	5m
		MD	-	P	1/200~400	o/n	4°C	-	-	-	-	MW	Citrate BS		-	15m
		10%Fo	∞	P	1/200; 1/400	o/n	4°C	-	-	-	-	BO	Citrate BS		95°C	40m
		10%Fo	3d	P	1/2000	o/n	4°C	-	-	-	-	MW	BS (1% Zinc sulfate)		98°C	18m
		10%Fo	3~7d	P	1/500	60m	RT	-	-	-	-	Bo	DW		-	-
		10%Fo	3~7d	P	1/500	60m	RT	-	-	-	-	MW	Citrate BS		-	-
		10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	MW (2N HCL)	DW		100°C	30m (After)
		10%Fo	48h	P	1/20000~30000	60m	RT	-	-	-	-	AC	Citrate BS		121°C	3m
		10%Fo	1 y	P	1/100~200	30m	RT	-	-	-	-	MW	DW		-	5m
		10%Fo	-	P	1/100; 1/50	30m; o/n	4°C	-	-	-	-	MW	Citrate BS		-	15m
		10%Fo	o/n	P	1/200	60m	RT	-	-	-	-	AC 121°C 15	Citrate BS (pH6), DW		121°C	15m
		10%Fo	24h	P	1/200~400	30m	RT	-	-	-	-	BO	Target Retrieval Solution (Dako)		100°C	20m
		10%Fo	w	P	1/50~1/100	o/n	4°C	-	-	-	-	AC	Citrate BS		-	20m

Supplementary Table 12-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
168	Neurofilament	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Envision+	EnVision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m	Photo. 171
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	37°C	30m	DAB	2m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		LSAB	Polyclonal Rabbit Anti-Mouse Immunoglobulins, Biotinylated affinity-isolated F(ab')2	Dako	E0413	RT	30m	DAB	5m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	10m	DAB	~2m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K6043	RT	30m	DAB	2m	Photo. 172
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	1~5m	
Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	-	1m			
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI) ;	Nichirei	714191; 724152	RT	30m	DAB	10m			
169	Neurofilament 200	Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	5m	
170	Neurofilament L	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	1m	
171	Neuron-Specific Enolase	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	RT	1h	DAB	3m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	4m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	4m	
172	NG2	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	3m	
173	3-Nitrotyrosine	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	-	
174	OCT3/4	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m	
175	Olig2	LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	2m	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (R)	Nichirei	714181	RT	30m	DAB	10m	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	10m	Photo. 173
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	10m	
		Alexa Fluor	F(ab')2-Goat anti-Rabbit IgG (H+L) Secondary Antibody, Alexa Fluor® 555 conjugate	Life Technologies	A-21430	RT	30m	-	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	15s	Photo. 174
176	Osteocalcin	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	-	20m	DAB	45s	Photo. 175
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	10m	Photo. 176
177	Osterix	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	-	20m	DAB	1m30s	Photo. 177
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	37°C	30m	DAB	2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	
178	p62/SQSTM1	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
179	Paraoxonase 2 (PON2)	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
180	Parathyroid Hormone	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	8m	
181	Pax5	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-	Photo. 178
		Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	3m	Photo. 179
182	Pax6	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	-	10m	
183	PCNA	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	37°C	30m	DAB	2m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1~2m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	2m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0679	RT	30m	DAB	1m	
		LSAB	Polyclonal Rabbit Anti-Mouse Immunoglobulins, Biotinylated affinity-isolated F(ab')2	Dako	E0413	RT	30m	DAB	5m	
		LSAB	Polyclonal Rabbit Anti-Mouse Immunoglobulins, Biotinylated affinity-isolated F(ab')2	Dako	E0413	RT	30m	DAB	5m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	
		Histofine Simple Stain, Bio/ninylate immunoglobulin	EnVision+ System- HRP Labelled Polymer Anti-Rabbit; Histofine® Simple Stain™ Rat MAX PO (MULTI)PO (MULTI)	Dako, Nichirei	K4002; 414191	RT	30m	DAB	1m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI)	Nichirei	714191	RT	30m	DAB	1~5m	
		-	-	-	-	-	-	-	-	
		Histofine Simple Stain	-	Nichirei	-	-	-	DAB	-	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0675	RT	15m	DAB	5m	

Supplementary Table 13-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody													
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval			
								Enzyme	Temperature	Incubation time	Concentration	Method	Solution	Temperature	Incubation time
183	PCNA	10%Fo	24h	P	1/500	60m	RT	-	-	-	-	MW	Citrate BS	95°C	20m
		10%Fo	∞	P	1/500	60m	RT	-	-	-	-	-	-	-	-
		10%Fo	-	P	1/3000	30m	RT	-	-	-	-	PC	Target Retrieval Solution (pH9, Dako)	125°C	0.5m
		10%Fo	-	P	1/6000	30m	RT	-	-	-	-	PC	Target Retrieval Solution (pH9, Dako)	125°C	0.5m
		10%Fo	-	P	1/100	30m	RT	-	-	-	-	-	-	-	-
		10%Fo	-	P	1/500	o/n	4°C	-	-	-	-	-	-	-	-
		10%Fo	1d~1w	P	1/800	60m	RT	-	-	-	-	MW	DW	-	6m
		10%Fo	1w	P	1/100	o/n	4°C	-	-	-	-	AC	Citrate BS	95°C	10m
		10%Fo	5d~1y	P	1/1000	60m	RT	-	-	-	-	MW/AC	Citrate BS	120°C	20m
		10%Fo	-	P	1/800	o/n	4°C	-	-	-	-	MW	Target Retrieval Solution (pH6, Dako);	100°C	15m
		10%Fo	o/n	P	1/1000	60m	RT	-	-	-	-	MW	Citrate BS	98°C	15m
		4%PFA	24h	P	1/200	60m	37°C	-	-	-	-	He	CC2 (Roche)	98°C	30m
		10%Fo	∞	P	1/6000	60m	RT	-	-	-	-	PC	Citrate BS	125°C; 90°C	30s; 5s
		10%Fo	w	P	1/800	30m	RT	-	-	-	-	Bo	Citrate BS	100°C	20m
10%Fo	2d	P	0.2 µg/mL	60m	RT	-	-	-	-	MW	Citrate BS	500W	10m		
10%Fo	o/n	P	Ready to use	30m	RT	-	-	-	-	MV	Target Retrieval Solution (pH6, Dako)	-	10m (After)		
184	PDX1	10%Fo	o/n	P	1/100	o/n	4°C	-	-	-	-	PC	Citrate BS	-	10m
185	Perilipin 1	10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	121°C	15m
186	PGP-9.5	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
		10%Fo	1w	P	1/100	60m	RT	-	-	-	-	AC	Citrate BS	121°C	10m
		10%Fo	∞	P	1/200	60m	RT	-	-	-	-	-	-	-	
187	Phospho-histone H3	10%Fo	4w	P	1/100	60m	RT	-	-	-	-	AC	Citrate BS	121°C	10m
		10%Fo	o/n	P	1/300	o/n	4°C	-	-	-	-	PC	Citrate BS	-	10m
188	Phospho-histone H3 (Ser10)	10%Fo	1w	P	1/200	60m	RT	-	-	-	-	MW	Citrate BS	500W	20m
189	Phospho-Met (Tyr1349)	10%Fo	3d	P	1/25	60m	RT	-	-	-	-	MW	Target Retrieval Solution pH9 (Dako)	500W	20m
190	Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204)	10%Fo	1w	P	0.5 µg/mL	60m	RT	-	-	-	-	MW	Citrate BS	500W	10m
191	PLAP	10%Fo	-	P	1/100	30m	RT	-	-	-	-	PC	Target Retrieval Solution (pH9, Dako)	125°C	0.5m
192	PNAd Carbohydrate	10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m
193	PNMT	10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	ND	-	-	
194	Podoplanin	10%Fo	1w	P	1/200	60m	RT	-	-	-	-	AC	EDTA	121°C	5m
		10%Fo	∞	P	1/200	60m	RT	-	-	-	-	-	-	-	
		10%Fo	∞	P	1/100	60m	RT	-	-	-	-	-	-	-	
		10%Fo	-	P	1/100	30m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	
195	PPARα	10%Fo	-	P	1/250	o/n	4°C	-	-	-	-	MW	Citrate BS	-	15m
		10%Fo	>1w	P	1/400	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	15m
196	PPARγ	10%Fo	-	P	1/250	o/n	4°C	-	-	-	-	MW	Citrate BS	-	15m
		10%Fo	∞	P	1/500	60m	RT	-	-	-	-	-	-		
197	PPARγ2	10%Fo	-	P	1/400	o/n	4°C	-	-	-	-	MW	Citrate BS	-	15m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	Citrate BS	-	15m
199	Prohibitin	10%Fo	-	P	1/50	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
		10%Fo	-	P	1/50	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
		10%Fo	1d~1w	P	1/500	60m	RT	-	-	-	-	MW	-	-	6m
		10%Fo	-	P	1/50	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
200	Prolactin	10%Fo	~1y	P	1/1000	2h	37°C	-	-	-	-	-	-	-	
201	Prosulfactant Protein C	10%Fo	-	P	1/1000	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	121°C	20m
202	Pulmonary Surfactant-associated Protein C	10%Fo	4w	P	1/100~300	60m;0 o/n	RT; 4°C	Proteinase	RT	5-10m	0.0005	-	-	-	
203	Pulmonary Surfactant-associated Protein D	10%Fo	-	P	1/20	o/n	4°C	Proteinase K	RT	5m	Ready to use ^{x2}	-	-	-	
204	RASSF1	10%Fo	24h	P	1/200	o/n	4°C	-	-	-	-	-	-	-	

Supplementary Table 13-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
183	PCNA	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	10m	DAB	10m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	90s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI) ;	Nichirei	714191; 724132	RT	30m	DAB	10m	Photo. 180
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(M)	Nichirei	424131	RT	30m	DAB	45s	
		LSAB	Universal LSAB2 Kit/HRP, Rabbit/Mouse	Dako	K0609	RT	10m	DAB	1m	
		Envision	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4006	RT	1h	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	37°C	30m	DAB	8m	
		Histofine Simple SAB-PO(M)	Histofine® SAB-PO (M)	Nichirei	424022	RT	10m	DAB	1m	
Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	3m			
Histofine Simple Stain	Histofine® MOUSESTAIN KIT*	Nichirei	414321	RT	30m	DAB	5m			
Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	10m	DAB	10m	Photo. 181		
184	PDX1	Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	DAB	2m	Photo. 182
185	Perilipin 1	ABC	VECTASTAIN ABC Kit (Guinea Pig IgG)	Vector Labs	PK-4007	RT	30m	DAB	4~5m	Photo. 183
186	PGP-9.5	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	10m	Photo. 184
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	-	
187	Phospho-histone H3	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	10m	Photo. 185
		Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	DAB	1m30s	
188	Phospho-histone H3 (Ser10)	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	2m	Photo. 186
189	Phospho-Met (Tyr1349)	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	5m	
190	Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204)	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	5m	
191	PLAP	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m	
192	PNAd Carbohydrate	Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(M)	Nichirei	424131	RT	30m	DAB	2m	
193	PNMT	Biotinylated immunoglobulin	Biotinylated Rabbit Anti-Mouse Immunoglobulins; Streptavidin, Alkaline Phosphatase conjugated	Dako, Vector Labs	E0464; SA-5100	RT	30m	NF	-	Photo. 187
194	Podoplanin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	10m	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	-	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 188
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m	
195	PPARα	SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-	
196	PPARγ	ABC	VECTASTAIN ABC Kit (Rabbit IgG)	Vector Labs	PK-4001	RT	30m	DAB	1m30s	Photo. 189
		SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-	
197	PPARγ2	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	30s	Photo. 190
198	Progesterone Receptor	Histofine Simple Stain	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	
		SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-	
199	Prohibitin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO (MULTI)	Nichirei	724152	RT	30m	DAB	10m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	3m30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
200	Prolactin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	37°C	-	DAB	30s~1m	Photo. 191
201	Prosurfactant Protein C	Envision	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	-	30m	DAB	4m	Photo. 192
202	Pulmonary Surfactant-associated Protein C	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (MULTI) ; Histofine® Simple Stain™ MouseMAX-PO (R)	Nichirei	714191; 714341	RT	30m	DAB	1~5m	
203	Pulmonary Surfactant-associated Protein D	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	1.5m	Photo. 193
204	RASSF1	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	60m	DAB	-	Photo. 194

Supplementary Table 14-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody																
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Protease treatment				Antigen retrieval						
								Enzyme	Temperature	Incubation time	Concentration	Method	Solution	Temperature	Incubation time			
205	Rat Mast Cell Protease 2	10%Fo	1w	P	1/100	60m	RT	-	-	-	-	-	-	-	-	-	-	
206	Rat MFH	10%Fo	∞	P	1/50	60m	RT	-	-	-	-	-	Bo	BS	-	-	20m	
207	Renin	10%Fo	1w	P	1/500	60m	RT	-	-	-	-	-	-	-	-	-	-	
208	Retinal Pigment Epithelium-specific 65 kDa Protein	MD	-	P	1/500	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	-	10m	
209	Retinoic Acid Receptor β	10%Fo	24h	P	1/50	o/n	4°C	-	-	-	-	-	PC	Citrate BS	-	-	10m	
210	Rhodopsin	MD	-	P	1/2000	o/n	4°C	-	-	-	-	-	PC	EDTA (pH8)	-	-	2m	
211	S100	10%Fo	48h	P	1/100~1000	60m	RT	-	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	-	3m	
		10%Fo	-	P	1/2	o/n	4°C	-	-	-	-	-	Bo	Citrate BS	-	-	10m	
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	24h	P; F	Ready to use	60m	RT	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	∞	P	Ready to use	60m	RT	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	∞	P	Ready to use	o/n	4°C	-	-	-	-	-	-	-	-	-	-	-
212	S100a	10%Fo	3~7d	P	1/2000	60m	RT	-	-	-	-	-	-	-	-	-	-	
213	Sall4	10%Fo	o/n	P	1/800	2h	RT	-	-	-	-	-	AC	Citrate BS	121°C	-	10m	
		10%Fo; Testis:FSA → 10%Fo	5m	P	1/10	60m	RT	-	-	-	-	-	-	-	-	-	-	
214	Sarcoplasmic/Endoplasmic Reticulum Calcium ATPase 2	10%Fo	3~7d	P	1/50000	60m	RT	Proteinase K	RT	5m	Ready to use	-	-	-	-	-	-	
		10%Fo	-	P	1/1000	o/n	4°C	Trypsin	37°C	30m	-	-	-	-	-	-	-	
215	Schwann Cell/Peripheral Myelin	10%Fo	∞	P	1/500	o/n	4°C	-	-	-	-	-	Bo	PT link (pH9)	95°C	-	20m	
		10%Fo	24h	P; F	1/1000	60m	RT	Proteinase K	RT	10m	100 ug/ml	-	-	-	-	-	-	
		10%Fo	∞	P	1/100000	60m	RT	-	-	-	-	-	-	-	-	-	-	
216	Slow Skeletal Myosin Heavy Chain	4%PFA	1w	P	1/5000	20m	RT	-	-	-	-	-	PC	Tris BS (10mmol/L) + EDTA (1mmol/L)(pH9)	120°C	-	10m	
217	Somatostatin	10%Fo	-	P	1/2000	o/n	4°C	-	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	-	0.5m	
		10%Fo	-	P	1/2000	o/n	4°C	-	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	-	0.5m	
218	Steroidogenic Factor 1	10%Fo	10d	P	1/1000	o/n	4°C	-	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	121°C	-	15m	
219	Stromal Cell-derived Factor 1/CXCL12	10%Fo	w	P	1/40	o/n	4°C	-	-	-	-	-	MV	Target Retrieval Solution (pH6, Dako)	-	-	15m (After)	
220	Synaptophysin	10%Fo	-	P	Rat, 1/500; Mou, 1/50	o/n	4°C	-	-	-	-	-	AC	Citrate BS	121°C	-	15m	
		10%Fo	24h	P	1/50	40m	37°C	-	-	-	-	-	MW	-	120°C	-	14m	
221	Talin	4%PFA	-	-	1/250	60m	RT	-	-	-	-	-	ND	-	-	-	-	
222	Tamm-Horsfall Urinary Glycoprotein	10%Fo	7d	P	1/200	o/n	4°C	-	-	-	-	-	-	-	-	-	-	
		10%Fo	-	P	1/200	30m	RT	-	-	-	-	-	PC	Target Retrieval Solution (pH9, Dako)	125°C	-	0.5m	
223	Tartrate-resistant Acid Phosphatase	10%Fo	-	P	1/50	o/n	4°C	Proteinase K	-	-	-	-	-	-	-	-	-	
		10%Fo (Formic acid	-	P	1/1000~	o/n	4°C	-	-	-	-	-	-	-	-	-	-	
		10%Fo	1~3 d (1~8°C)	F	1/1000	60m	RT	-	-	-	-	-	-	ND	-	-	-	
224	T-bet/TBX21	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Target Retrieval Solution (pH9, Dako)	-	-	-	
225	TER-119/Erythroid Cells	10%Fo	3~7d	P	1/5000	60m	RT	-	-	-	-	-	MW	DW	-	-	-	
226	TGFβ Receptor II	10%Fo	3d	P	2 ug/mL	60m	RT	-	-	-	-	-	PC	Target Retrieval Solution (pH9, Dako)	110°C	-	10m	
227	TGFβ1	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	Citrate BS	-	-	15m	
228	Thyroglobulin	10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	-	-	-	-	-	-	
229	Thyroid Stimulating Hormone	10%Fo	-	P	1/2000	30m	RT	-	-	-	-	-	-	ND	-	-	-	
		10%Fo	7d	P	1/1000	o/n	4°C	Trypsin	37°C	30m	-	-	-	-	-	-	-	
		10%Fo	-	P	1/4000	o/n	4°C	-	-	-	-	-	-	-	-	-	-	
		10%Fo	~1y	P	1/1000	2h	37°C	-	-	-	-	-	-	-	-	-	-	-
		10%Fo	-	P	1/5000	o/n	4°C	-	-	-	-	-	-	ND	-	-	-	-
230	Thyroid Stimulating Hormone β	10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	MW	HistoVT One	-	-	15m	
231	Thyroid Transcription Factor 1	10%Fo	o/n	P	1/100	60m	RT	-	-	-	-	-	MW	Immunosaver (0.5%)	100°C	-	15m	
		-	-	P	1/20	60m	RT	-	-	-	-	-	MW	Immunosaver (0.5%)	98°C	-	15m	
		10%Fo	∞	P	1/50	60m	RT	-	-	-	-	-	MW	Citrate BS	-	-	10m	
		10%Fo	24h	P	1/50~200	40m	37°C	-	-	-	-	-	-	BO	Target Retrieval Solution (Dako)	100°C	-	20m
		10%Fo	-	P	1/100	o/n	4°C	-	-	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	121°C	-	20m
10%Fo	24h	P	1/200	60m	RT	-	-	-	-	-	-	MW	EDTA	95°C	-	20m		

Supplementary Table 14-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time	
205	Rat Mast Cell Protease 2	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	10m	Photo. 195
206	Rat MFH	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 196
207	Renin	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	3m	
208	Retinal Pigment Epithelium-specific 65 kDa Protein	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331	RT	30m	DAB	1~2m	Photo. 197
209	Retinoic Acid Receptor β	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	60m	DAB	-	Photo. 198
210	Rhodopsin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1~2m	Photo. 199
211	S100	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	1m	Photo. 200
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	10m	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Envision+	Envision+ System-HRP Labelled Polymer Anti-Rabbit	Dako	K4003	RT	30m	DAB	3m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (R)	Nichirei	714181	RT	30m	DAB	10m	Photo. 201
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	-	40m	DAB	30s	Photo. 202
212	S100a	Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(MULTI)	Nichirei	424151	RT	30m	DAB	10m	
		LSAB	Polyclonal Rabbit Anti-Mouse Immunoglobulins, Biotinylated affinity-isolated F(ab')2	Dako	E0413	RT	30m	DAB	5m	Photo. 203
213	Sall4	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	3m	Photo. 204
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 205
214	Sarcoplasmic/Endoplasmic Reticulum Calcium ATPase 2	LSAB	Polyclonal Rabbit Anti-Mouse Immunoglobulins, Biotinylated affinity-isolated F(ab')2	Dako	E0413	RT	30m	DAB	5m	
		Elite ABC	Biotinylated Goat Anti-Rabbit IgG Antibody	Vector Labs	BA-1000	RT	30m	DAB	4~5m	Photo. 206
215	Schwann Cell/Peripheral Myelin	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	-	20m	DAB	~30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m	Photo. 207
216	Slow Skeletal Myosin Heavy Chain	Envision	EnVision™+ Dual Link System-HRP	KPL	074-1803	RT	30m	DAB	30s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 208
217	Somatostatin	Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(R)	Nichirei	424141	RT	30m	DAB	90s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	1m	
218	Steroidogenic Factor 1	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	1~2m	Photo. 209
219	Stromal Cell-derived Factor 1/CXCL12	Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	10m	DAB	5m	Photo. 210
220	Synaptophysin	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	-	Photo. 211
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
221	Talin	Alexa Fluor	-	-	-	-	-	-	-	
222	Tamm-Horsfall Urinary Glycoprotein	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	2~5m	Photo. 212
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	4m	
223	Tartrate-resistant Acid Phosphatase	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	60m	DAB	~10s	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	10m	Photo. 213
224	T-bet/TBX21	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	1m	
225	TER-119/Erythroid Cells	LSAB	Biotinylated Rabbit Anti-Rat Immunoglobulins	Dako	E0468	RT	30m	DAB	5m	
226	TGFβ Receptor II	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	5m	
227	TGFβ1	Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	-	Photo. 214
228	Thyroglobulin	Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
229	Thyroid Stimulating Hormone	-	-	-	-	-	-	-	-	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	4m	Photo. 215
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	60m	DAB	-	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	37°C	-	DAB	30s~1m	Photo. 216
230	Thyroid Stimulating Hormone β	Envision	EnVision™+ Dual Link System-HRP	Nichirei	414191	RT	40m	DAB	Under observatio	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (G)	Nichirei	414331F	-	-	-	-	
231	Thyroid Transcription Factor 1	Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	60m	DAB	15m	Photo. 217
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	8m	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	-	Photo. 218
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m	
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	-	30m	DAB	4m	Photo. 219
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (R)	Nichirei	714181	RT	30m	DAB	10m	Photo. 220

Supplementary Table 15-1 Immunological properties of primary antibodies and IHC staining conditions

No.	Primary antibody																							Positive Control			
	Antibody						Species reactivity																				
	Antigen	Clone	Supplier	Catalog Number	Antibody	Host animal	All	Rat	Mou	Dog	GP	Ham	Hum	Mon	Rab	Cat	Pig	Cow	Hor	She	Fer	Chi			Other		
232	Tissue Inhibitor of Metalloproteinase-3	-	Proteintech	10858-1-AP	PoAb	Rab		o																Lung; Squamous cell			
233	TJP1/ZO-1	-	Invitrogen	61-7300	PoAb	Rab		o																All			
234	Trichohyalin	AE15	Abcam	ab58755	MoAb	Mou									o									Skin; Tongue			
235	Troponin I, Cardiac	2D5	Affinity Bioreagents	MA1-34958	MoAb	Mou								o										Heart			
236	Tubulin, β III	TU-20	Abcam	ab7751	MoAb	Mou		o																Eye			
237	Tyrosine Hydroxylase	LNC1	Millipore	MAB318	MoAb	Mou			o															Brain			
		-	Enzo Life Sciences	BML-TZ1010	PoAb	Rab			o															Midbrain			
238	Tyrosine Tubulin	TUB-1A2	Sigma-Aldrich	T9028	MoAb	Mou	o					o												Testis			
239	Ubiquitin	-	Dako	Z0458	PoAb	Rab			o																Kidney; Bile duct; Small intestine; Testis; Lung		
240	Uncoupling Protein 1	-	Abcam	ab10983	PoAb	Rab		o	o																Ubiquitinated protein		
241	Uroplakin III	AU1	Progen	651108	MoAb	Mou		o																	Brown adipocyte		
242	Vascular Endothelial Growth Factor A	VG1	Abnova	MAB6996	MoAb	Mou		o																	-		
243	Vasoactive Intestinal Peptide	-	Millipore	AB982	PoAb	Rab		o																	Kidney		
244	Vimentin	D21H3	Cell Signaling Technology	5741	MoAb	Rab		o	o																Small intestine		
								o																	Mesenchyme		
								o																		Kidney	
														o	o											Kidney	
								o	x																	Fibrocyte; Smooth muscle cell; Myoepithelial cell	
										o																Kidney	
								o			o															Mesenchymal cell	
								o																			Mesenchymal cell
											o								o	o							Skin
											o																Mesenchyme
245	Vinculin		Nichirei	422101	MoAb	Mou							o												Mesenchyme		
		Vim 3B4	Dako	CBL202	MoAb	Mou		o	o																Tumor		
				M7020	MoAb	Mou		o																		Uterus; Digestive canal	
				172 002	PoAb	Rab		o																		Uterus	
			Synaptic Systems		PoAb	Rab		o																			Mesenchyme
246	Von Willebrand Factor	SPM227	Abcam	ab18058	MoAb	Mou		o	o			o	o									o			All		
		V284	Millipore	05-386	MoAb	Mou		o	o					o	o											CHL cell	
		-	Abcam	ab73412	PoAb	Rab		o	o					o												CHL cell	
247	Wilms' Tumor 1	F8/86	Dako	M0616	MoAb	Mou		o		o															Endothelium		
										o																Vascular endothelium; Hemangioma	
															o											Lymph node	
																			o							Vascular endothelium	
248	X-ray Repair Cross-complementing 1	-	Thermo Fisher Scientific	18-0018	PoAb	Rab			o	o															Blood vessel		
		6F-H2	Dako	M3561	MoAb	Mou		o		o																Kidney; Testis	
								o																		Kidney	
248	X-ray Repair Cross-complementing 1							o																		Kidney	
								o																		Kidney	
								o																		Kidney	
248	X-ray Repair Cross-complementing 1	-	Santa Cruz	sc-11429	PoAb	Rab		o																	Squamous cell (Forestomach: Rat)		

Supplementary Table 15-2 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Primary antibody													
		Fixing solution	Fixing time	Embedding	Dilution	Incubation time	Temperature	Antigen retrieval							
								Protease treatment				Heating			
Enzyme	Temperature	Incubation time	Concentration	Method	Solution	Temperature	Incubation time								
232	Tissue Inhibitor of Metalloproteinase-3	10%Fo	24h	P	1/200	o/n	4°C	-	-	-	-	-	-	-	-
233	TJP1/ZO-1	10%Fo; MD	-	P	1/50	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
234	Trichohyalin	10%Fo	d	P	1/200	30m	RT	-	-	-	-	MV	Target Retrieval Solution (pH6, Dako)	-	20m
235	Troponin I, Cardiac	10%Fo	∞	P	1/50	o/n	4°C	-	-	-	-	BO	Citrate BS	95°C	40m
236	Tubulin, β III	10%Fo; Eye:MD→10%Fo	1w	P	1/200	60m	RT	-	-	-	-	MW	Citrate BS	98°C	15m
237	Tyrosine Hydroxylase	10%Fo	-	P	1/2000	o/n	4°C	-	-	-	-	Bo	Citrate BS	-	10m
		10%Fo	o/n	P	1/1000	o/n	4°C	-	-	-	-	ND	-	-	-
238	Tyrosine Tubulin	10%Fo	-	P	1/800	o/n	4°C	-	-	-	-	ND or MW	-	-	-
		10%Fo; testis:FSA→10%Fo	1m	P	1/1000	60m	RT	-	-	-	-	-	-	-	-
239	Ubiquitin	4%ZnFo	2d	P	1/1000	o/n	4°C	Protease XXV	37°C	10m	1 mg/mL	-	-	-	-
240	Uncoupling Protein 1	10%Fo	∞	P	1/500	60m	RT	-	-	-	-	-	-	-	-
241	Uroplakin III	10%Fo	o/n	P	Ready to use	60m	RT	-	-	-	-	AC	Citrate BS (pH6)	121°C	15m
		10%Fo	7d	P	Ready to use	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	105°C	15m
242	Vascular Endothelial Growth Factor A	10%Fo	-	P	1/800	o/n	4°C	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m
243	Vasoactive Intestinal Peptide	10%Fo	3~7d	P	1/500~1000	o/n	4°C	Proteinase K	RT	5m	Ready to use	-	-	-	-
244	Vimentin	10%Fo	w	P	1/500	o/n	4°C	-	-	-	-	PC	Citrate BS	-	5m
		10%Fo	3~5d	P	Ready to use	60m	RT	-	-	-	-	PC	Serotec Target Unmasking Fluid Mark2	-	10m
		10%Fo	3~5d	P	Ready to use	60m	RT	-	-	-	-	PC	Citrate BS	-	10m
		10%Fo; Frozen	48h	P; F	1/300	P, o/n; F, 15m	4°C; RT	-	-	-	-	AC	Citrate BS	121°C	3m
		10%Fo	o/n	P	Ready to use (1/1~2)	30m	RT	-	-	-	-	PC	Instant antigen retrieval H buffer	125°C	30s
		10%Fo	24h	P	Ready to use	40m	37°C	-	-	-	-	MW	Citrate BS	120°C	14m
		10%Fo	w	P	Ready to use	30m	RT	-	-	-	-	MV	Target Retrieval Solution (pH9, Dako)	-	5m (After)
		10%Fo	A few days (clinical specimen)	P	Ready to use	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (Dako)	121°C	20m
		10%Fo	24h	P; F	Ready to use	60m	RT	-	-	-	-	MW	Citrate BS	95°C	20m
		10%Fo	∞	P	Ready to use	60m	RT	Proteinase	37°C	2m	Ready to use	-	-	-	-
		10%Fo	1w	P	Ready to use	60m	RT	-	-	-	-	MW	Citrate BS	500W	10m
		10%Fo	o/n	P	Ready to use	60m	RT	-	-	-	-	PC	Citrate BS	-	10m
10%Fo	-	P	1/200	o/n	4°C	-	-	-	-	MW	Citrate BS	-	15m		
10%Fo	∞	P	1/200	60m	RT	Proteinase	37°C	2m	Ready to use	-	-	-	-		
245	Vinculin	10%Fo	-	P	1/25	o/n	4°C	-	-	-	-	MW	HistoVT One	-	15m
		4%PFA	-	-	1/100	60m	RT	-	-	-	-	ND	-	-	
		4%PFA	-	-	1/200	60m	RT	-	-	-	-	ND	-	-	
246	Von Willebrand Factor	10%Fo	∞	P	1/200	75m	RT	-	-	-	-	Bo	PT link (pH9)	95°C	20m
		10%Fo	24h	P	1/25~50	30m	RT	-	-	-	-	BO	Target Retrieval Solution (Dako)	100°C	20m
		10%Fo	-	P	1/400	o/n	4°C	-	-	-	-	PC	Target Retrieval Solution (pH6, Dako)	125°C	0.5m
		10%Fo	∞	P	1/800	o/n	4°C	Proteinase K	RT	5m	2 drops PK/TBS 1 mL	-	-	-	
		10%Fo	1w~	P	1/100	30m	RT	-	-	-	-	MW	Citrate BS	-	10m
247	Wilms' Tumor 1	10%Fo; 4%PFA	∞; 24h	P	1/200	30m	RT	Pepsin	37°C	20m	0.40%	-	-	-	
		10%Fo	3d	P	1/500	o/n	4°C	-	-	-	-	AC	Citrate BS	121°C	15m
		10%Fo	o/n	P	1/5000	o/n	4°C	-	-	-	-	AC	Target Retrieval Solution (pH6, Dako)	121°C	15m
		10%Fo	~1y	P	1/4000	o/n	3~8°C	-	-	-	-	AC	Citrate BS	121°C	5m
248	X-ray Repair Cross-complementing 1	10%Fo	24h	P	1/600	o/n	4°C	-	-	-	-	Bo	Citrate BS	98°C	10m

Supplementary Table 15-3 Immunological properties of primary antibodies and IHC staining conditions

No.	Antibody	Secondary antibody						Chromogenic substrate		Photo. No.	
		Kit product	Product	Supplier	Catalog Number	Temperature	Incubation time	Reagent	Incubation time		
232	Tissue Inhibitor of Metalloproteinase-3	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	60m	DAB	-	Photo. 221	
233	TJP1/ZO-1	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-		
234	Trichohyalin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	10m	Photo. 222	
235	Troponin I, Cardiac	Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	2m	Photo. 223	
236	Tubulin, β III	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	5m		
237	Tyrosine Hydroxylase	Histofine Simple Stain	Histofine® MOUSESTAIN KIT*	Nichirei	414321	RT	10m	DAB	10m		
		Elite ABC	VECTASTAIN Elite ABC Kit (Rabbit IgG)	Vector Labs	PK-6101	RT	30m	DAB	1m30s	Photo. 224	
238	Tyrosine Tubulin	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	RT	30m	DAB	1m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s	Photo. 225	
239	Ubiquitin	Envision	EnVision™+ Dual Link System-HRP	Dako	K6043	RT	30m	DAB	1m30s	Photo. 226	
240	Uncoupling Protein 1	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (R)	Nichirei	414181	RT	30m	DAB	-	Photo. 227	
241	Uroplakin III	-	-	-	-	-	-	DAB	-		
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	2~5m	Photo. 228	
242	Vascular Endothelial Growth Factor A	Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	4m		
243	Vasoactive Intestinal Peptide	LSAB	Polyclonal Swine Anti-Rabbit Immunoglobulins/Biotinylated Swine F(ab') ₂	Dako	E0431	RT	30m	DAB	5m		
244	Vimentin	Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	30m	DAB	3m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	2m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	2m		
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K4000	RT	30m	DAB	1m	Photo. 229	
		-	-	-	-	-	-	-	DAB	-	
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	10m		
		Envision+	Envision+ System-HRP Labelled Polymer Anti-mouse	Dako	K4001	RT	30m	DAB	3m		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX-PO (M)	Nichirei	714171	RT	30m	DAB	10m		
		Histofine Simple Stain	Histofine® Simple Stain™ Mouse MAX PO (R)	Nichirei	414341	RT	30m	DAB	30s		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	5m		
245	Vinculin	Elite ABC	VECTASTAIN Elite ABC Kit (Mouse IgG)	Vector Labs	PK-6102	RT	30m	DAB	-	Photo. 230	
		SAB	Histofine® SimpleStain SAB-PO(MULTI)	Nichirei	424043	-	-	-	-		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	30s		
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191F	-	-	-	-		
		Alexa Fluor	-	Life Technologies	-	-	-	-	-		
246	Von Willebrand Factor	Alexa Fluor	-	Life Technologies	-	-	-	-	-		
		Envision	EnVision+ System- HRP Labelled Polymer	Dako	K1390	-	40m	DAB	2m		
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4061	37°C	30m	DAB	1~2m		
247	Wilms' Tumor 1	Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(M)	Nichirei	424131	RT	30m	DAB	90s		
		Envision	EnVision™+ Dual Link System-HRP	Dako	K4063	RT	60m	DAB	2m	Photo. 231	
		Histofine Simple Stain	Histofine® Simple Stain™ MAX-PO(MULTI)	Nichirei	424151	RT	30m	DAB	10m	Photo. 232	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (M)	Nichirei	414171	RT	30m	DAB	-	Photo. 233	
248	X-ray Repair Cross-complementing 1	Envision + System-HRP	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	1~2m		
		Envision	EnVision+ System- HRP Labelled Polymer Anti-Rabbit	Dako	K4002	RT	30m	DAB	2~5m	Photo. 234	
		Histofine Simple Stain	Histofine® Simple Stain™ Rat MAX PO (MULTI)	Nichirei	414191	RT	30m	DAB	1~2m		
248	X-ray Repair Cross-complementing 1	Biotinylated immunoglobulin	Biotinylated Goat Anti-Rabbit IgG Antibody	Vector Labs	BA-1000	RT	30m	DAB	-	Photo. 235	

Clonality	MoAb, Monoclonal ; PoAb, Polyclonal
Animal species	All, All species; Rat, Rat; Mou, Mouse; Dog, Dog; GP, Guinea pig; Ham, Hamster; Hum, Human; Mon, Monkey; Rab, Rabbit; Cat, Cat; Pig, Pig; Cow, Cow; Hor, Horse; She, Sheep; Fer, Ferret; Chi, Chicken; Other, Other.
Reactivity	O, good; Δ , conditional; x, inappropriate
Fixation	Fo, Buffered formalin; PFA, Paraformaldehyde; GA, Glutaraldehyde; ZnFo, Zinc formalin; PLP, Periodate lysine paraformaldehyde; FSA, Formalin sucrose acetic acid; MD, (Modified) Davidson; EM, Electro microscopy; FG, Buffered formalin+Glutaraldehyde
Embedding	F, Frozen; P, Paraffin; Amex-P, Acetone-methyl benzoate-xylene-paraffin
Time	s, second; m, minute; h, hour; o/n, over night; d, day; w, week; m, month; y, year.
Temperature	RT, Room temperature.
Retrieval heating method	MW, Microwave; AC, Autoclave; PC, Pressure cooker; Bo, Boiling; He, Heating; ND, Not done.
Solution	DW, Distilled water; BS, Buffer solution.
Coloring Reagent	NF, New Fuchsin; DAB, Diaminobenzidine; FITC, Fluorescein isothiocyanate