

Supplementary Table 1. Antibodies

Immunofluorescence		
Antigen	Name	Company
CLDN3	Anti-Claudin-3 antibody	Thermo fisher(34-1700)
CLDN5	Anti-Claudin-5 antibody	Abcam(ab15106)
CLDN11	Anti-Oligodendrocyte specific protein antibody	Abcam(ab53041)
SYCP3	Rabbit anti-SYCP3 antibody	Gift from Dr. Chuma S.
CLGN	Rabbit anti-CLGN antibody	Abcam(ab171971)
Secondary reagents		
Alexa Fluor 647-conjugated goat anti-rabbit IgG		Molecular Probes (A21245)
Alexa Fluor 488-conjugated goat anti-rabbit IgG		Invitrogen(A110008)
Rhodamine peanut agglutinin		Vector Laboratories (RL-1072)
Dylight 488-conjugated Streptavidin		Vector (SA-5488)
Flow cytometry		
Antigen	Name	Company
KIT	Allophycocyanin(APC)-conjugated rat anti-mouse CD117 (c-Kit)	eBioscience (clone ACK2)
EPCAM	Rat anti-mouse CD326 (EPCAM)	BioLegend (clone G8.8)
CDH1	Alexa Fluor 647-conjugated rat anti-CD324 (CDH1)	eBioscience (clone DECMA-1)
ITGA6	APC-conjugated rat anti-human/mouse CD49f ($\alpha 6$ -integrin)	eBioscience (clone GoH3)
ITGB1	Biotin-conjugated hamster anti-rat CD29 ($\beta 1$ -integrin)	BD Biosciences (clone Ha2/5)
CD9	APC-conjugated rat anti-mouse CD9	eBioscience (clone KMC8)
GFRA1	Mouse anti-rat Gfr α 1	R&D systems (MAB560)
FUT4	Biotin-conjugated anti-mouse/human SSEA-1	eBioscience (clone MC-480)
Secondary reagents		
APC-conjugated Streptavidin		eBioscience (17-4317)
APC-conjugated goat anti-rat IgG+IgM		BD Bioscience (551019)
Western blotting		
Antigen	Name	Company
p-MTOR	Rabbit anti- phospho-MTOR(Ser2448) antibody	Cell signaling (5536)
p-RPS6KB1	Rabbit anti- phospho-RPS6KB1(Ser371) antibody	Cell signaling (9208)
p-RPS6KB1	Rabbit anti- phospho-RPS6KB1(Thr389) antibody	Cell signaling (9234)
p-EIF4EBP1	Rabbit anti- phospho-EIF4EBP1(Thr37/46) antibody	Cell signaling (2855)
p-AKT1(Thr308)	Rabbit anti-mouse p-AKT(Thr308)	Cell Signaling (9275)
p-AKT1(Ser473)	Rabbit anti-mouse p-AKT(Ser473) antibody	Cell Signaling (9271)
p-MAP2K1/2 (Ser217/221)	Rabbit anti-human p-MEK1/2 (Ser217/221) antibody	Cell Signaling (9121)
ACTB	Mouse anti- β -actin antibody	Sigma (clone AC-15)
Secondary reagents		
HRP (horseradish peroxidase)-conjugated horse anti-mouse IgG		Cell Signaling (7076)
HRP-conjugated horse anti-rabbit IgG		Cell Signaling (7074)

Supplementary Table 2. PCR primers

RT-PCR	Forward	Reverse
<i>Bcl6b</i>	ACTCCTCCGACGTGCTTAGC	GGCCCCGGAAAATTGAATTAG
<i>Eiv5</i>	TGTGATCAGCAAGTCCCTTT	GTGAGCCAGATCTGTGTCCA
<i>Id4</i>	GTTACAGAGCATTACCGTA	AAGGTTGGATTACAGATTGC
<i>Nanos2</i>	CCATATGCAACTTCTGCAAGC	TGAGTGTATGAGCCTGGTCG
<i>Nanos3</i>	CTTCTGTCTACTGCTACACCACC	TTGGAACCTGCATAGACACC
<i>Neurog3</i>	AGCAGAGAGGCTCAGCTATCC	AACTGAGCACTTCGTGGTCC
<i>Pou5f1</i>	CCCAACGAGAAGAGTATGAGG	TGATCAACAGCATCACTGAGC
<i>Zbtb16</i>	AGGGAGCTGTTTCAGCAAGCT	TCATCCCACTGTGCAGTTTC
<i>Ccnd1</i>	CGGATGAGAACAAGCAGACC	TTCAATCTGTTCCCTGGCAGG
<i>Ccnd2</i>	TTCATTGAGCACATCCTTCG	TTCATCATCCTGCTGAAGCC
<i>Ccnd3</i>	CTATACGGACCAGGCTGTGG	ATGGATGGAGGATACATCGC
<i>Cdkn1a</i>	GCAGATCCACAGCGATATCC	CAACTGCTCACTGTCCACGG
<i>Cdkn1b</i>	AGGAGAGCCAGGATGTCAGC	GAATCTTCTGCAGCAGGTCG
<i>Hprt</i>	GCTGGTGAAAAGGACCTCT	CACAGGACTAGAACACCTGC
qPCR	Forward	Reverse
<i>Gdnf</i>	CTTCGCGCTGACCAGTGACT	CGCTTGTTTATCTGGTGACC
<i>Cxcl12</i>	GCTCTGCATCAGTGACG	TTCAGATGCTTGACGTTGGC
<i>Ccl9</i>	CCCTCTCCTTCCTCATTCTTACA	AGTCTTGAAAGCCCATGTGAAA
<i>Fgf2</i>	CTCTACTGCAAGAACGGCG	CATAGCAAGGTACCGGTTGG
<i>Wnt5a</i>	TCCTATGAGAGCGCACGCAT	CAGCTTGCCCCGGCTGTTGA
<i>Bcl6b</i>	ACTCCTCCGACGTGCTTAGC	GGCCCCGGAAAATTGAATTAG
<i>Nanos2</i>	CCATATGCAACTTCTGCAAGC	TGAGTGTATGAGCCTGGTCG
<i>Nanos3</i>	CTTCTGTCTACTGCTACACCACC	TTGGAACCTGCATAGACACC
<i>Neurog3</i>	AGCAGAGAGGCTCAGCTATCC	AACTGAGCACTTCGTGGTCC
<i>Ccnd1</i>	CGGATGAGAACAAGCAGACC	TTCAATCTGTTCCCTGGCAGG
<i>Cdkn1a</i>	GCAGATCCACAGCGATATCC	CAACTGCTCACTGTCCACGG
<i>Cdkn1b</i>	AGGAGAGCCAGGATGTCAGC	GAATCTTCTGCAGCAGGTCG
<i>Cldn3</i>	CACCACTACCAGCAGTCGATGAAC	AGACTGTGTGTCGTCTGTCACCATC
<i>Cldn5</i> (Fig. 4A)	TAACCTGAAAGGGCAGCTGGAGAAAC	AGGTCCAGGCTAAGTCCTTTGGTTCAGTA G
<i>Cldn5</i> (Fig.4E)	GTCCGCGAGTTCTATGATCC	TGTCGTAATCGCCATTGGCC
<i>Cldn11</i>	CTGCCGAAAAATGGACGAACTG	TGCACGTAGCCTGGAAGGATGA
<i>Eiv5</i>	TGTGATCAGCAAGTCCCTTT	GTGAGCCAGATCTGTGTCCA
<i>Gata4</i>	CCTCTATCACAAGATGAACG	CAGCGTGGTGGTGGTAGTCT