

qPCR			
Gene	species	Forward	Reverse
<i>GLI1</i>	human	CCCAGTACATGCTGGTGGTT	GCTTTACTGCAGCCCTCGT
<i>PTCH1</i>	human	GATGGGGCCATCTCCACATT	CGCCGCAAAGAAGTACCTTACA
<i>OLIG2</i>	human	GGGCCACAAGTTAGTTGGAA	GAGGAACGGCCACAGTTCTA
<i>ISLET1</i>	human	TGTTTGAAATGTGCGGAGTG	GCATTTGATCCCGTACAACC
<i>NKX2.2</i>	human	CTCCAGCTCGTAGGTCTGC	CAGGGTGCTCCGAGTCTG
<i>HOXA5</i>	human	GGAGATCATAGTTCCGTGAGC	GCTGAGATCCATGCATTGT
<i>HOXC9</i>	human	TCCTAGCGTCCAGTTTCC	GCTACAGTCCGGCACCAA
<i>PHOX2B</i>	human	AACCCGATAAGGACCACTTTTG	AGAGTTTGAAGGAACTGCGG
Sequencing			
Gene_region	on/off-target	Forward	Reverse
RPGRIP1L_exon3	on-target	TTTTATCTCTGCTTGCGG	AAGAACGGCACTTGAATACATTT
RPGRIP1L_exon27	on-target	TGTAATGGTGACCCAGGGATGT	AGAAGGAACATAGCCTGTTTGC
TMEM67_exon1	on-target	TGGGTTTTAAGTCAGTGGGGT	GTTGTTGTCGCACTTCTCCG
TMEM67_intron27	on-target	TGAAGTGGGACACAGTGGAAG	ATCCATGTTTCATTGGCAGTGG
NPRL2_exon8	off-target	CAAGTCCCTGCAAGAGGCAT	CTCTGCTCTCCCGAGTCAC

Table S1: qPCR and sequencing primer.

primary Antibody	host	company	reference		secondary Antibody	host	conjugate
Ac3	rabbit	Abcam	ab125093		Mouse IgG1	goat	Alexa488
Arl13b	mouse IgG2a	Antibody Incorporated	75-287		Mouse IgG1	goat	Alexa633
Brachyury	rabbit	Cell Signaling/Ozyme	81694		Mouse IgG2a	goat	Alexa488
Cdx2	rabbit	Abcam	ab76541		Mouse IgG2a	goat	Alexa594
Gpr161	rabbit	Proteintech	13398-1-AP		Mouse IgG2a	goat	Alexa633
Hoxa5	rabbit	Sigma	HPA029319		Mouse IgG2b	goat	Alexa488
Hoxc8	rabbit	Sigma	HPA028911		Mouse IgG2b	goat	Alexa594
Ift81	rabbit	Proteintech	11744-1-AP		Mouse IgG2b	goat	Alexa633
Ift88	rabbit	Proteintech	13967-1-AP		Rabbit	goat	Alexa488
Inpp5e	rabbit	Proteintech	17797-1-AP		Rabbit	goat	Alexa594
Islet1/2	mouse IgG2b	DSHB	39.4D5		Rabbit	goat	Alexa633
Nkx2.2	mouse IgG2b	DSHB	74.5A5				
Nkx6.1	mouse IgG1	DSHB	F55A12				
Olig2	rabbit	Millipore	AB9610				
Pax6	rabbit	BioLegend	PRB-278P				
Pax6	mouse IgG1	DSHB	PAX6				
FoxA2	mouse IgG1	DSHB	4C7				
Phox2b	rabbit	kindly provided by JF Brunet	/				
RPGRIP1L	rabbit	homemade anti-human	/				
Rpgrip1l	rabbit	homemade anti-mouse	/				
Sox2	rabbit	Millipore	AB5603				
Tmem67	rabbit	Proteintech	13975-1-AP				
Tuj1	mouse IgG2a	BioLegend	MMS-435P				
γ-Tubulin	mouse IgG1	Sigma	T6557				

Table S2: Primary and secondary Antibodies.