

Table 3:
Materials, Reagents, Software

Item	Supplier	Specification	Publication	Comment
Mice				
C57BL/6J wild type	Janvier Labs			
C57BL/6 wild type				
B6D2 (C57BL/6 x DBA/2) Villin-Cre			eIMarijou2004	kind gift from Sylvie Robine, Institut Curie-CNRS, Paris, France
C57BL/6J <i>Lsd1^{fl/fl}</i>			Kerenyi2013	kind gift from Stuart Orkin, Harvard Medical School, Boston, USA
B6.129P2 <i>Apc^{tm1Rsmj}/RfoJ</i>	Jackson Laboratories	stock no: 029275		
<i>Lgr5</i> -EGFP-IRES-CreERT2	Jackson Laboratories	stock no: 008875		
<i>Hpgds</i> -tdTomato			Bornstein2018	
<i>Neurog3</i> -RFP			Kim2015	kind gift from Anne Grapin-Botton, DanStem, University of Copenhagen, Copenhagen, Denmark
Cell lines				
cell line producing Noggin				kind gift from Hans Clevers, Hubrecht Institute, Utrecht, The Netherlands
cell line producing R-Spondin				kind gift from Calvin Kuo, Stanford University School of Medicine, Stanford, USA
Plates				
24-well plate	Corning	#3523		
96-well glass-bottom plate	Cellvis	#P-96-1N		
384-well optical plates	Applied Biosystems	#4309849		
8-well microscopy slide	Ibidi	#80821		
Reagents				
PBS	Sigma-Aldrich	#806552		
EDTA	Thermo Fisher Scientific	#15575020		
TrypLE Express	Thermo Fisher Scientific	#12605010		
Tamoxifen	Sigma-Aldrich	#T5648		
Corn oil	Sigma-Aldrich	#C8267		
FCS	Gibco	#10270106		
Saponin	Sigma-Aldrich	#8047-15-2		
Triton X-100	Sigma-Aldrich	#T8787		
PFA	Alfa Aesar	#43368		
Organoid culture				
Matrigel	Corning	#734-1101		
DMEM F12	Gibco	#31330-038		
Penicillin-Streptomycin	Sigma-Aldrich	#P0781		
HEPES	Gibco	#35050061		
Glutamax	Gibco	#35050061		
B-27 supplement	Gibco	#35050061		
N2 supplement	Gibco	#17502001		
N-Acetylcysteine	Sigma-Aldrich	#A-7250		
EGF Recombinant Mouse Protein	Thermo Fisher Scientific	#PMG8041		
CHIR99021	Sigma-Aldrich	#SML1046		
Valproic acid (VPA)	Cayman Chemicals	#13033		
DAPT	Cayman Chemicals	#13197		
IWP-2	Cayman Chemicals	#13951		
RNA isolation, qRT-PCR				
RNA-solv Reagent	Omega Bio-Tek	#R6830-02		
Direct-zol MiniPrep kit	Zymo Research	#R2051		
Direct-zol-96	Zymo Research	#R2055		
High-Capacity RNA-to-cDNA Kit	Applied Biosystems	#4388950		
2x Perfecta ROX,UNG Fast Mix	Quanta Biosciences	#733-1398		
Primers	Sigma-Aldrich			see Supplementary Table 2
Universal ProbeLibrary probes	Roche			see Supplementary Table 2
Antibodies				
IF & IHC staining reagents				
BD CompBead Anti-Mouse Ig	Becton Dickinson	#552843		
BD CompBead Anti-Rat and Anti-Hamster Ig	Becton Dickinson	#552845		
DAPI	Thermo Fisher Scientific	#62248		
Hoechst 33342	Thermo Fisher Scientific	#62249		
Zombie Aqua	Biolegend	#423102		
TruStain FcX	Biolegend	#101320		
CD24-PerCp-Cy5.5, clone M1/69	Biolegend	#101824		
CD24-AF647, clone M1/69	Biolegend	#101818		
CD44-AF647, clone IM7	Biolegend	#103018		
CD44-BV785, clone IM7	Biolegend	#103041		
CD117-PE-Cy7, clone ACK2	Biolegend	#135112		
CD326-BV421, clone G8.8	Biolegend	#118225		
CD326-BV605, clone G8.8	Biolegend	#118227		
UEA1-FITC, Ulex Europaeus Agglutinin I	Invitrogen	#L32476		
UEA1-Rhodamine, Ulex Europaeus Agglutinin I	Vector Laboratories	#RL-1062-2		
Goat Anti-Rabbit IgG-BV421	Invitrogen	#A-31556		
Goat Anti-Rabbit IgG-AF488	Invitrogen	#A-11034		
anti-DCLK1	Abcam	#ab31704		
anti-MUC2	Santa Cruz	#sc-15334		
anti-Ki67	Invitrogen	#MAS-14520		
Fluoromount G	Invitrogen	#00-4958-02		
EnVision-HRP	Dako	#K4063 & #K4061		
DAB	Dako	#K5007		
mRNA sequencing				
Quick-RNA MicroPrep kit	Zymo Research	#R1050		
Illumina TruSeq Stranded Total RNA	Illumina			I-CBP112 study, carried out at Genomics Core Facility, NTNU
Illumina N5500 MO flow-cell	Illumina			I-CBP112 study, carried out at Genomics Core Facility, NTNU
NEB Next Ultra RNA Library Prep Kit	NEB			MS023 study, carried out at Novogene (UK) Co
Instruments				
EVOS FL Auto2 microscope	Thermo Fisher Scientific			
Eclipse Ci-L microscope	Nikon			
LSM880 confocal microscope	Zeiss			
Axio Imager Z1 confocal microscope	Zeiss			
NanoDrop-1000	NanoDrop			
QuantStudio 5 Real-Time PCR system	Thermo Fisher Scientific			
BD LSRII flow cytometer	Becton Dickinson			
BD FACSAria III flow cytometer	Becton Dickinson			
MACSQuant X flow cytometer	Miltenyi Biotec			
Viaflo 96-channel pipette	Integra Biosciences			
Qubit Fluorometric Quantitation system	Life Technologies			
2100 Bioanalyzer	Agilent			
Illumina NextSeq 500	Illumina			
Illumina NovaSeq 6000	Illumina			

Software			
GNU R		v3.6.3	
Bioconductor		v3.10	
tidyverse		v1.3.0	Wickham2019
ggpubr		v0.3.0	
ggimage		v0.2.8	
magick		v2.3	
pheatmap		v1.0.12	
ggtree		v2.0.4	Yu2018
flowCore		v1.53.17	
CytoML/flowWorkspace		v1.12.1	
ggcyto		v1.14.1	Van2018
flowViz		1.50.0	
biomaRt		v2.42.1	Durinck2005
ClusterProfiler		v3.14.3	Yu2012
ImageJ/Fiji		v1.52n	Schindelin2012
ilastik		v1.3.2	Berg2019
FlowJo software	FlowJo, LLC	v10.6.2	
QuantStudio Design & Analysis Software	Thermo Fisher Scientific	v1.5.1	
FastQC		v0.11.8	
MultiQC		v1.7	Ewels2016
featureCounts		v1.6.4	Liao2014
GNU R		v3.6.1	
STAR		v2.7.3a	Dobin2013
DESeq2		v1.26.0	Love2014
Datasets			
Ensembl		GRCh38.p13	
GENCODE annotation		M18	Frankish2019
STRING-DB		v11	Szklarczyk2019
TRRUST		v2	Han2018
IEC lineage signatures		GSE92332	Haber2017
LGR5+ stem cells		GSE33949	Munoz2012
GO:BP		GO Consortium	TheGeneOntologyConsortium2019
tpm BRDs, PRMTs		E-MTAB-9077	Zwiggelaar2020
tpm BRDs, PRMTs		E-MTAB-78	Zwiggelaar2020
scRNA tpm Prmt1		GSE92332	Haber2017