

Supplementary Information

Supplementary Table S1: Components of the Organoid Culture Medium
The reagents and their respective concentrations are detailed below.

Medium ingredient	Supplier/ # Catalog	Conc.
DMEM (F12)	Gibco #11320033	1×
GlutaMAX	Gibco #35050061	1x
Antibiotic-Antimycotic	Gibco #15240062	1×
HEPES	Sigma-Aldrich #H3375	10 mM
B27	Gibco #17504044	1×
NAC	Sigma-Aldrich #A7250	1 mM
ROCKi (Y-27632)	Hello Bio #HB2297	10 μ M
Noggin	PeproTech #120-10C	100 ng/mL
R-Spondin1	PeproTech #120-38	100 ng/mL
FGF10	PeproTech #100-26	100 ng/mL
EGF	PeproTech #315-09	50 ng/mL
Forskolin	ChemSupply #F0855	10 μ M
A-83-01	Sigma #SML0788	5 μ M

Supplementary Table S2: Antibodies Used for Immunohistochemistry

Details of the antibodies and their corresponding experimental conditions are provided below.

Antibody	Company	Catalogue	Antibody type	Primary Dilution	Retrieval Condition
Keratin 10 (K10)	Covance	PRB-159	Rabbit Polyclonal	1:500	Target Retrieval pH 9 (#S2367, DAKO), 20 min
Keratin 5 (K5)	Biolegend	905504	Rabbit Polyclonal	1:2000	10 mM Sodium Citrate, pH 6, 15 min
Filaggrin (FLG)	Abcam	ab81468	Rabbit Polyclonal	1:100	
Loricrin (LOR)	Biolegend	905104	Rabbit Polyclonal	1:500	
Involucrin (IVL)	Covance	PRB-140C	Rabbit Polyclonal	1:1000	
p63	Abcam	ab735	Mouse Monoclonal	1:50	
Ki67	Dako	IR626	Mouse Monoclonal	Ready to use	
Cleaved Caspase-3	Cell Signaling Technology	Asp175 (5A1E)	Rabbit Monoclonal	1:2000	

Supplementary Table S3: RT-qPCR Primers

The primer sequences, product sizes, and annealing temperatures are provided below.

Gene	Forward primer 5'-3'	Reverse primer 5'-3'	Product size (bp)	Annealing temperature (°C)
GAPDH	GCCCTCAATGACCACTT TGT	TCCTTGGAGGCCATGT AGAC	101	55
KRT5	CAAGGATGCCAAGAAC AAGC	TGTTTGTGATGACAGA GATGT	215	59
KRT10	CGCCTCGTGACTACAGC AAA	CGTTGATGTCAGCCTC CACA	186	55
FLG	GATGACCCAGACACT GCTGA	TGGTTTTGCTCTGATGC TTG	158	57
LOR	CAAGTAAGGCCCGTTGG AAG	ATCATGAGAGCGCTAA AGCC	84	57
IVL	AAAGAAGAGCAGGTGC TGG A	TGCTCACTGGTGTTCTG GAG	174	57
Claudin-1	AAGACGATGAGGTGCA GAAG	GTGAAGAGAGCCTGAC CAAA	175	55
Ocludin	AAGAACTCTCTCGCCTG G	GATGTGGGACAATTTG CTCT	167	55