

Supplementary Table 1 | A summary of SEAM-derived ocular surface cells.

	hiPSC-derived epithelium				in vivo ocular surface epithelium		
FACS Fraction	P3 cells		P2 cells		Cornea	Limbus	Conjunctiva
Region	PAX6+		PAX6+	PAX6-			
PAX6	+	+	+ (low)	-	+	+	+
K12	+	+ (low)	-	-	+	+ (low)	-
K13	-	-	+	+	-	-	+
p63	+	+	+	+	+	+	+
HOX	-	-	-	+	-	-	-
Epithelial phenotype	Cornea	Limbus	Conjunctiva	Non-ocular surface epithelium	Cornea	Limbus	Conjunctiva
	Ocular surface				Ocular surface		

Supplementary Table 2 | A list of the TaqMan probe sets.

Target gene	Assay ID
<i>GAPDH</i>	Hs99999905_m1
<i>PAX6</i>	Hs00240871_m1
<i>DN-p63</i>	Hs00978339_m1
<i>K3</i>	Hs00365080_m1
<i>K10</i>	Hs00166289_m1
<i>K12</i>	Hs00165015_m1
<i>K13</i>	Hs00999762_m1
<i>K14</i>	Hs00559328_m1
<i>K18</i>	Hs01941416_g1
<i>E-cadherin</i>	Hs01023894_m1
<i>N-cadherin</i>	Hs00983056_m1
<i>CRYAA</i>	Hs00166138_m1
<i>ALDH3A1</i>	Hs00964880_m1
<i>CLU</i>	Hs00971656_m1
<i>CRHL2</i>	Hs00227745_m1
<i>LIN28A</i>	Hs00702808_s1
<i>SOX2</i>	Hh01053049_s1
<i>SOX6</i>	Hs00264525_m1
<i>SOX10</i>	Hs00366918_m1
<i>TUBB3</i>	Hs00801390_s1
<i>RAX</i>	Hs00429459_m1
<i>HOXA1</i>	Hs00939046_m1
<i>HOXB4</i>	Hs00256884_m1
<i>HOXA7</i>	Hs00600844_m1
<i>HOXA10</i>	Hs00172012_m1

Supplementary Table 3 | Details of antibodies used for immunostaining.

Antigen	Description	
E-cadherin	Rabbit polyclonal; H-108	Santa Cruz Biotechnology, Santa Cruz, CA
HOXB4	Rabbit monoclonal; EP1919Y	MILLIPORE, Temecula, CA
Human nuclei	Mouse monoclonal; MAB1281	MILLIPORE
K10	Mouse monoclonal; DE-K10	Dako, Glostrup, Denmark
K12	Goat polyclonal; N-16	Santa Cruz Biotechnology
K12	Goat polyclonal; L-15	Santa Cruz Biotechnology
K13	Mouse monoclonal; AE8	Abcam, Cambridge, MA
K14	Rabbit polyclonal; AF64	Covance Research Products, Denver, PA
K14	Mouse monoclonal; RCK107	Abcam
K15	Rabbit monoclonal; EPR1614Y	Abcam
K18	Mouse monoclonal; Ks 18.04	PROGEN Biotechnik, Heidelberg, Germany
K19	Mouse Monoclonal; Ks 19.1	PROGEN Biotechnik
K3	Mouse monoclonal; AE5	PROGEN Biotechnik
K7	Rabbit polyclonal; ab52870	Abcam
MUC1	Mouse monoclonal; M4H2	Abcam
MUC4	Mouse monoclonal; 8G-7	Abcam
MUC5AC	Mouse monoclonal; CLH2	Abcam
MUC16	Mouse monoclonal; OV185:1	Abcam
p63	Mouse monoclonal; 4A4	Santa Cruz Biotechnology
p63	Rabbit polyclonal; ab97866	Abcam
p75	Mouse monoclonal; ME20.4	ADVANCED TRGETING SYSTEMS, San Diego, CA.
PAX6	Mouse monoclonal; AD2.35	Santa Cruz Biotechnology
PAX6	Rabbit polyclonal; PRB-278P	Covance Research Products
SOX10	Goat polyclonal; N-20	Santa Cruz Biotechnology
SSEA4	Mouse monoclonal; MC813	Abcam
TUBB3	Rabbit polyclonal; T2200	Sigma-Aldrich, St Louis, MO
ZO-1	Mouse monoclonal; 1A12	Invitrogen, Carlsbad, CA
α-Crystallin	Rabbit; SPA-224	Stressgen Biotechnologies, Victoria, Canada
MITF	Mouse monoclonal; C5	Exalpha Biologicals, Watertown, MA
CHX10	Goat polyclonal; N-18	Santa Cruz Biotechnology
CX43	Rabbit polyclonal; #3512	Cell Signaling Technology, Danvers, MA
VIM	Rabbit monoclonal; EPR3776	Abcam