

Supplementary Information

Media Preparation

For cell dissociation (E8-10Y)

Component	Supplier	Cat. No.	Stock Concentration	Final Concentration	Volume (10 ml)
Essential 8 Flex Medium	Gibco	A2858501	-	100% (v/v)	10 ml
Y27632 in Solution	Stemgent	04-0012-02	10 mM	10 μ M	10 μ l
Normocin	Invivogen	Ant-nr-1	50 mg/ml	100 μ g/ml	20 μ l

For cell aggregation (E8-20Y)

Component	Supplier	Cat. No.	Stock Concentration	Final Concentration	Volume (22 ml)
Essential 8 Flex Medium	Gibco	A2858501	-	100% (v/v)	22 ml
Y27632 in Solution	Stemgent	04-0012-02	10 mM	20 μ M	44 μ l
Normocin	Invivogen	Ant-nr-1	50 mg/ml	100 μ g/ml	44 μ l

E6-based differentiation medium

Component	Supplier	Cat. No.	Stock Concentration	Final Concentration	Volume (30 ml)
Essential 6 Medium	Gibco	A1516401	-	98% (v/v)	29.4 ml
Matrigel	Corning	354230	-	2% (v/v)	600 μ l
SB431542 (SB)	Stemgent	04-0010-05	10 mM	10 μ M	30 μ l
Recombinant Human FGF-basic (FGF)	PeproTech	100-18B	200 μ g/ml	4 ng/ml	0.6 μ l
Recombinant Human BMP-4 (BMP)	PeproTech	120-05	100 μ g/ml	2.5 ng/ml	0.75 μ l
Normocin	Invivogen	Ant-nr-1	50 mg/ml	100 μ g/ml	60 μ l

Organoid Maturation Medium (OMM)

Component	Supplier	Cat. No.	Stock Concentration	Final Concentration	Volume (50 ml)
Advanced DMEM/F12	Gibco	12634010	-	49% (v/v)	24.5 ml
Neurobasal Medium	Gibco	21103049	-	49% (v/v)	24.5 ml
GlutaMAX™ Supplement	Gibco	35050061	100X	1X	500 µl
B-27 Supplement, Minus Vitamin A	Gibco	12587010	50X	0.5X	500 µl
N2 Supplement	Gibco	17502048	100X	0.5X	250 µl
2-Mercaptoethanol	Gibco	21985023	55 mM	0.1 mM	91 µl
Normocin	Invivogen	Ant-nr-1	50 mg/ml	100 µg/ml	100 µl