

**Table S1.** List of media and of their composition.

Medium	Composition	Concentration	Source	Stock Number
Neural Induction Medium	DMEM F-12		ThermoFisher	31330038
	GlutaMAX	1:100	ThermoFisher	35050038
	MEM NEEA	1:100	ThermoFisher	11140050
	2-Mercaptoethanol	1:1000	ThermoFisher	21985023
	Human Insulin	25mg/mL	Sigma Merck	I3536
	SB431542	10mM	Tocris	1614/10
	LDN193189	250nM	Tocris	6053/10
	Retinoic Acid	100nM	Sigma Merck	R2625
	PenStrep	1:100	Sigma Merck	P4333
N2 Medium	DMEM F-12		ThermoFisher	31330038
	GlutaMAX	1:100	ThermoFisher	35050038
	MEM NEEA	1:100	ThermoFisher	11140050
	2-Mercaptoethanol	1:1000	ThermoFisher	21985023
	N2 supplement	1:100	ThermoFisher	17502001
	Smoothened agonist	1mM	Tocris	6390/1
	Retinoic Acid	100nM	Sigma Merck	R2625
	PenStrep	1:100	Sigma Merck	P4333
N2B27 Medium	DMEM F-12		ThermoFisher	31330038
	GlutaMAX	1:100	ThermoFisher	35050038
	MEM NEEA	1:100	ThermoFisher	11140050
	2-Mercaptoethanol	1:1000	ThermoFisher	21985023
	Human Insulin	1:100	Sigma Merck	I3536
	N2 supplement	1:100	ThermoFisher	17502001
	B27 supplement	1:50	ThermoFisher	17504044
	Smoothened agonist	1mM	Tocris	6390/1
	Retinoic Acid	100nM	Sigma Merck	R2625
	PenStrep	1:100	Sigma Merck	P4333
PDGF Medium	DMEM F-12		ThermoFisher	31330038
	GlutaMAX	1:100	ThermoFisher	35050038
	MEM NEEA	1:100	ThermoFisher	11140050
	2-Mercaptoethanol	1:1000	ThermoFisher	21985023
	Human Insulin	1:100	Sigma Merck	I3536
	N2 supplement	1:100	ThermoFisher	17502001
	B27 supplement	1:50	ThermoFisher	17504044
	PDGFaa	10ng/mL	ThermoFisher	PHG0035
	IGF-1	10ng/mL	ThermoFisher	PHG0078
	HGF	5ng/mL	ThermoFisher	PHG0254
	NT3	10ng/mL	ThermoFisher	PHC7036
	T3	60ng/mL	Sigma Merck	T2877
	Biotin	100ng/mL	Sigma Merck	B4639
	cAMP	1mM	Sigma Merck	A9501
	PenStrep	1:100	Sigma Merck	P4333

**Table S2.** List of primary and secondary antibodies used to stain plated cells.

Antigen Name	Host	Dilution	Source	Stock Number
<b>Primary antisera</b>				
CD49f	Rat	1:100	Biologend	313602
GFAP	Mouse	1:400	Sigma Merck	MAB360
AQP4	Rabbit	1:1000	Sigma Merck	HPA014784
LMNB1	Rabbit	1:1000	Abcam	AB16048
<b>Secondary antisera</b>				
AlexaFluor488 Anti-Rt	Donkey	1:400	Jackson ImmunoResearch	712-545-153
Cy3 Anti-Ms	Donkey	1:800	Jackson ImmunoResearch	715-165-151
AlexaFluor647 Anti-Rb	Donkey	1:800	Jackson ImmunoResearch	711-605-152

**Table S3.** List of the predictors we used to estimate the LMNB class of the nucleus. The columns indicate from left to right: the Predictor name, a short description of the predictor, the type (quantitative = Q or categorical = C), the unit, the range, and the standard error. Legend. a.u. = arbitrary unit.

Predictive Feature	Description	Type	Unit	Range or Class Types	IQR	S.E.	N. Missing Observations
GFAP	positive/negative for GFAP expression	C	NA	0/1	NA	NA	2 (1%)
Cell Morphology	Type of morphology	C	NA	0/1/2/3	NA	NA	0(0%)
nRamifications	Number of axonal ramifications	Q	NA	0-18	NA	NA	0 (0%)
Cellular Area	Area occupied by the cell (soma + ramifications)	Q	$\mu\text{m}^2$	170-11710	2421	156.17	10(5%)
Soma Area	Area occupied by the soma	Q	$\mu\text{m}^2$	141-916	162.9	17.27	191(93%)
Nuclear Area	Area of the Nucleus	Q	$\mu\text{m}^2$	55-383	70.55	4.23	0(0%)
Norm. Intensity LMNB	z-score normalized Integrated density LMNB	Q	a.u.	-1.06-1.09	0.64	0.03	0(0%)
Norm. Intensity GFAP	z-score normalized integrated density of GFAP	Q	a.u.	-0.56-2.38	0.73	0.06	178(92%)