Supplementary Information

Jin et al. 10.1073/pnas.1120033109

A

Time	Number of pups (P1)		Number of embryos[a]			
			Live		Dead	
	fl/fl	*fl/fl* (*Cre-ER*^{TM})	*fl/fl*	*fl/fl* (*Cre-ER*^{TM})	*fl/fl*	*fl/fl* (*Cre-ER*^{TM})
E7	3	0	6	0	0	3[b]
E7.5	4	0	5	0	0	5[b]
E8.5	3	0	4	0	0	5[b]
E14.5	5	3	4	6	0	0

[a] Embryos were dissected 48-72h post tamoxifen injection.
[b] These embryos exhibited abnormal morphology, as shown in **Figure 1*B***.

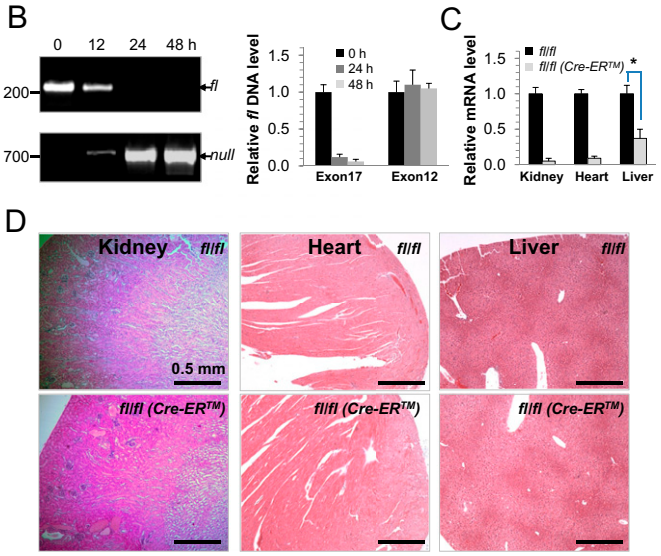

Fig. S1. Early *Trpm7* disruption (E7–E9) consistently resulted in lethality, but not at later stages (>E14.5) or in adults. *(A)* Summary of embryonic lethality after TM-induced *Trpm7* disruption listing the numbers and genotypes of the newborn pups, as well as the ratio of live/dead embryos at different embryonic stages. *Trpm7*$^{fl/fl}$ (*Cre-ER*) male mice were bred with *Trpm7*$^{fl/fl}$ female mice, and one dose of TM (25 μg/g of body weight) was injected i.p. in females with pups on E7, E7.5, E8.5, and E14.5. Two series of injection were conducted. Neonatal pups were genotyped by tail DNA, or female mice were killed at 48–72 h postinjection, and embryos were collected and genotyped. *(B)* TM-induced loss of the *fl* allele (200 bp) and emergence of the *null* allele (700 bp) were tracked by tail genomic DNA qPCR genotyping [6-wk-old *Trpm7*$^{fl/fl}$ (*Cre-ER*) mouse injected with TM i.p. at a dose of 50 μg/g of body weight]. *(C)* Triplicate qRT-PCR analysis of the efficiency of TM-induced *Trpm7* disruption in kidney, heart, and liver of adult *Trpm7*$^{fl/fl}$ (*Cre-ER*) mice. *(D)* H&E staining of organs as labeled. *C* and *D* are representative samples of *Trpm7*$^{fl/fl}$ control and a *Trpm7*$^{fl/fl}$ (*Cre-ER*) mouse that were injected at 4 wk of age with TM for three consecutive daily doses of 25 μg/g of body weight and euthanized at 8 wk.

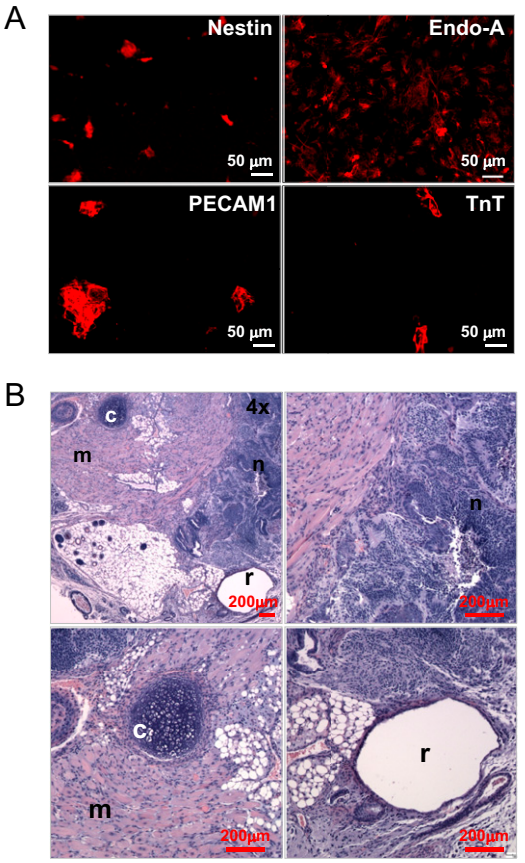

Fig. S2. Characterization of *Trpm7*$^{fl/fl}$ (*Cre-ER*) iPS cell clone iPS6 via in vitro differentiation and teratoma formation. *(A)* iPS6 cells differentiate in vitro to ectodermal (Nestin^{+}), endodermal (cytokeratin Endo-A^{+}), and mesodermal [PECAM1^{+}, Troponin T^{+} (TnT)] cells. *(B)* Teratoma analysis by injection of iPS6 cells in immunocompromised mice. The teratoma contained lineages from all three germ layers: neural epithelium (ectodermal), muscle and cartilage (mesodermal), and respiratory ducts (endodermal). (*Upper Left*) Low-magnification (magnification: 4×) view with three lineages highlighted: neural epithelium (n); muscle (m) and cartilage (c); and respiratory duct (r).

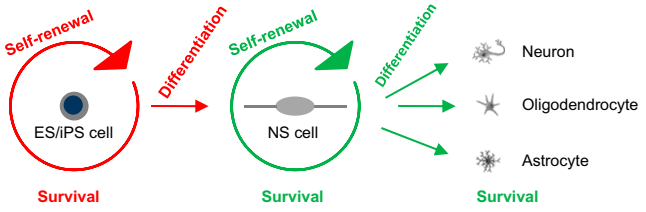

Fig. S3. Diagram showing TRPM7 is required for survival/self-renewal of pluripotent stem cells and differentiation from ES/iPS to NS cells but not for survival/renewal of NS cells or their further differentiation to neural lineages. TRPM7 is indispensable (red) or dispensable (green).