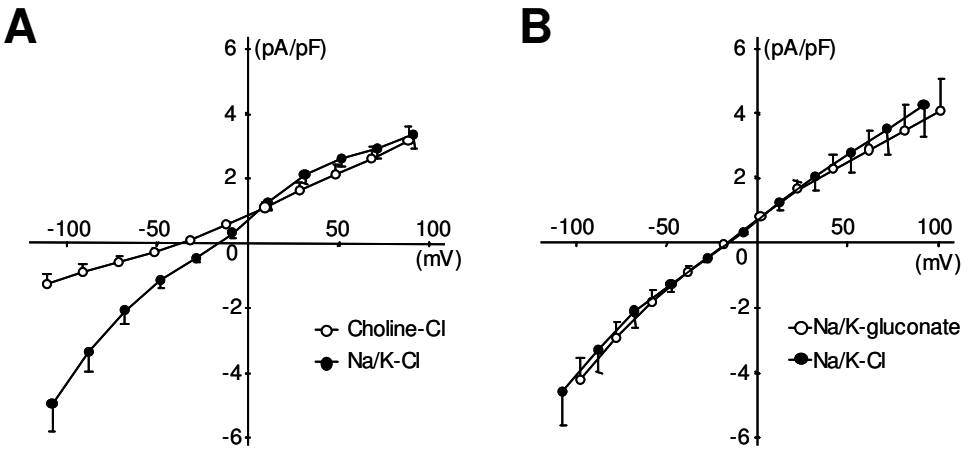
Supplemental Table 1. PCR primers and expected PCR products

Sequence name	Primers	Product length (bp)
TRPM7-Forward	5'-CCATACCATATTCTCCAAGGTTCC-3'	399
-Reverse	5'-CATTCCTCTTCAGATCTGGAAGTT-3'	
TRPM6-Forward	5'- GCAGGGCCTGCAAATCAAAG-3'	478
-Reverse	5'- GAGGGCATAGTAAAGTTCTGGA-3'	
GAPDH-Forward	5'-ATGCTGGTGCTGAGTATGTCGTG-3'	723
-Reverse	5'-TTACTCCTTGGAGGCCATGTAGG-3'	
eNOS-Forward	5'-GTGATGGCGAAGCGAGTGAAG-3'	422
-Reverse	5'-CCGAGCCCGAACACACAGAAC-3'	
TRPC1-Forward	5'-TTCTGTGGATTATTGGGATGA-3'	506
-Reverse	5'-CAGAACAAAGCAAAGCAGGTG-3'	

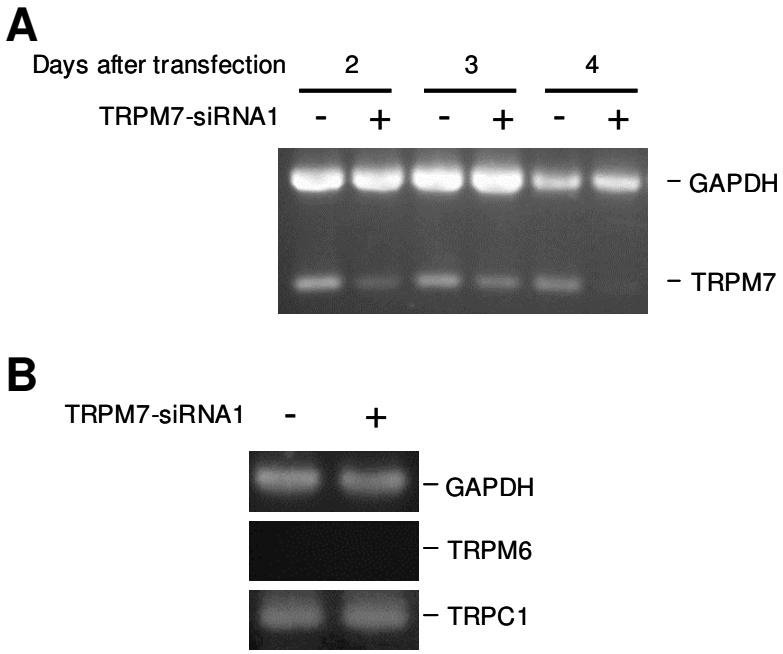
Supplemental Figure 1. Effect of ion substitution on TRPM7-like current in HUVECs

Whole-cell patch-clamp recording was performed on HUVECs (see Materials and Methods). TRPM7-like current was activated with Ca^{2+}/Mg^{2+}-free ECF. (A) I-V relationship before and after replacing Na^+ and K^+ with choline. (B) I-V relationship before and after replacing chloride with gluconate. The changes in junction potential following the ion substitution were calculated with pClamp and corrected for the plots (n = 4 - 5).



Supplemental Figure 2. **Effect of silencing TRPM7 by siRNA**

HUVECs were transfected with either control or TRPM7-siRNA1. (A) RNAs were extracted at the indicated time after transfection. RT-PCR analysis shows reduced expression of TRPM7 mRNA by TRPM7-siRNA1 at day 2, 3, or 4. (B) RT-PCR result showing the lack of effect on the expression of TRPM6 or TRPC1 by TRPM7 siRNA1.



Supplemental Figure 3. Effect of siRNA on the expression of TRPM7 channels in serum-starved HUVECs.

24h after transfection, cells were incubated in a defined, serum-free medium for 48h. (A) RT-PCR analysis shows the maintenance of TRPM7 expression in serum-starved HUVECs, and reduced

expression of TRPM7 mRNA in these cells by TRPM7-siRNA1. (B) Representative I-V relationship for TRPM7-like current taken from serum-starved HUVECs. The current was inhibited by 10 μmol/L Gd^{3+}.