Supplementary figures and legends

Supplementary Figure 1. Chromatograms illustrating the ITPR2 gene mutation c.7492G>A (arrows) in an affected homozygous individual (top) and a heterozygous parent (middle). The w.t. sequence of a normal control individual is shown at the bottom. The corresponding codons are indicated above each chromatogram.

Supplementary Figure 2. Immunoreactivity for InsP₃R1, InsP₃R2 and InsP₃R3 in normal human eccrine sweat glands. (A) InsP₃R1 is not detectable in the sweat glands (box enlarged). (B) InsP₃R2 is predominantly expressed in the secretory portion (box
enlarged) with some staining in the excretory ducts (*) showing a concentration in subcellular regions lining the ducts. (C) InsP₃R3 show strong staining of the basal ductal (peripheral) cell layer of the excretory duct (*), and a weaker staining in cells of the secretory part (box enlarged). Stain: Polyclonal Rabbit anti-human InsP₃R1 1:1000 (HPA 016487, Sigma), Polyclonal rabbit anti-human InsP₃R2 1:1000 (AB9074, Millipore) and Polyclonal rat anti-mouse InsP₃R3 1:500 (LC3, (26)). Original magnification x10. Size bar: 20 µm.

**Supplementary Figure 3. Immunohistochemistry of InsP₃R1 and InsP₃R3 in mouse sweat glands.** Upper panel shows the immunohistochemistry of InsP₃R1 in Itpr1⁺/⁺ and Itpr1⁻/⁻ mouse sweat glands. Lower panel shows the immunohistochemistry of InsP₃R3 in Itpr3⁺/⁺ and Itpr3⁻/⁻ mice. Strong InsP₃R3 signals at the apical site of clear cells were sometimes observed (arrows). Stain: Polyclonal rat anti-mouse InsP₃R1 (4C11 (28)) and polyclonal rabbit anti-mouse InsP₃R3 (LC3 (26)).

**Supplementary video 1. The pseudo-colored image of Ca²⁺ signals in mouse sweat glands in response to acetylcholine.** The isolated sweat glands from wild-type mice were sequentially stimulated with 30, 100, 300, 1000 nM of acetylcholine.