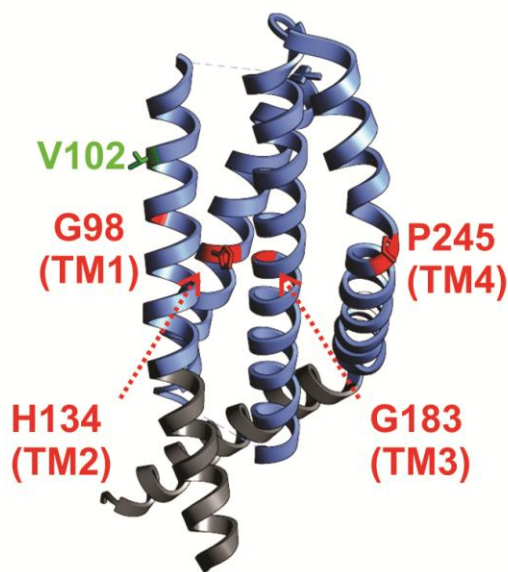


Figure S9

A



B

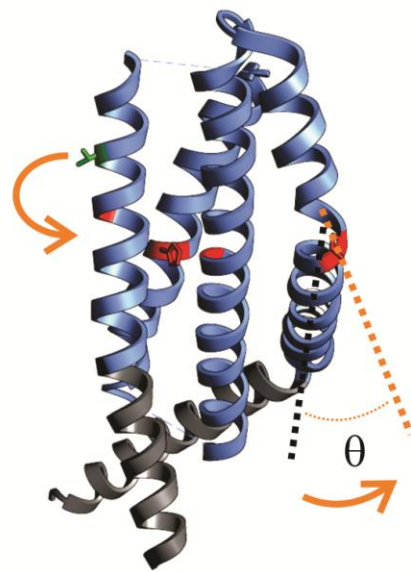


Figure S9. Hypothetical model for Orai1 channel gating motions based on the dOrai structure.

(A) Representation (ribbon shape) of crystal structure of dOrai (residue numbering follows the human Orai1 sequence). Conserved TM4 P245, TM3 G183 and TM1 G98 residues implicated in coupling STIM1 binding to channel gating are collared in red. TM1 V102 suggested to operate as a hydrophobic gate is collared in green. Dashed arrow points to H134 found adjacent to G183. Note that P245 and G183 are positioned along the same axis together with G98 that was previously suggested to operate as hinge which may control the gate (57). (B) Motions in TM4 transduced through TM2 & 3 to TM1 induce repositioning of the gate. Modulation of the TM4 bend is forcing a motion around G183 and possibly around a yet unidentified region (likely around H134 which is in close proximity to G183) in TM2 that causes G98 to rotate along the TM1 helix axis thereby repositioning the hydrophobic side chain (the

gate) of V102 (34) to allow ion permeation through the pore.