



Figure S4. The VSD of Na_vRh contacts the pore domain more extensively than that of Na_vAb. (A) The S1 segment in Na_vRh, but not in Na_vAb, interacts extensively with

the S5 segment in the adjacent protomer. One complete protomer (blue) and the pore forming helix bundle from the adjacent protomer (yellow) are shown for Na_vRh (*left panel*) and Na_vAb (*right panel*) in the periplasmic view. The same colors are applied to the corresponding protomers in the two channels. **(B)** The interactions between a VSD and the pore forming helices of the adjacent protomer in Na_vRh. Stereoviews of two perpendicular views are shown. The H-bonds are indicated by red dashed lines. Asn213, which is an invariant residue in a number of voltage-gated ion channels, is highlighted in red.