Supplementary Information for

Structures and activation mechanism of proton-activated chloride channel

Zheng Ruan1*, James Osei-Owusu2*, Juan Du1, Zhaozhu Qiu2, 3# & Wei Lü1#

- 1. Van Andel Institute, Grand Rapids, MI 49503
- Department of Physiology, Johns Hopkins University School of Medicine, Baltimore, MD 21205
- Solomon H. Snyder Department of Neuroscience, Johns Hopkins University School of Medicine, Baltimore, MD 21205

#CORRESPONDING AUTHOR

Correspondence and requests for materials should be addressed to W.L. (email:

wei.lu@vai.org). TEL: (616) 234-5022, FAX: 616-234-5170 or Z.Q. (email:

zhaozhu@jhmi.edu) TEL: (410) 614-3795

*These authors contributed equally to this work.



Supplementary Figure 1: The raw gel images. a, The marker and the PAC–GFP lane are cropped to make Extended Data Fig. 1b. **b,** The Extended Data Fig. 1d is made by cropping the marker, and PAC–GFP lanes w/o PNGase F treatment. **c,** The Extended Fig. 9b is made by cropping the GFP-tagged WT, H98C/Q296C, H98S/Q296S lanes. The brightness of the image is adjusted globally to increase contrast but without biasing the data. Both gels in (b) and (c) are imaged by detecting the GFP (480 nm) and far red (680nm) signal.

Supplementary Video 1: A video showing the conformational change between pH8– PAC and pH4–PAC.