

Supplementary Material to

**Open and Shut: Crystal Structures of the Dodecylmaltoside Solubilized Mechanosensitive
Channel of Small Conductance from *E. coli* and *H. pylori* at 4.4 Å and 4.1 Å resolution**

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Table S1 – MscS homologs cloned into pET19, pET26, and pET28 vectors

	Organism	DNA Insert Size (In base pairs)
1	<i>Aeropyrum pernix</i>	843
2	<u>Archaeoglobus fulgidus</u>	852
3	<u>Anabaena variabilis</u>	882
4	<i>Bartonella bacilliformis</i>	1239
5	<i>Bartonella henselae</i>	1245
6	<i>Bordetella parapertussis</i>	864
7	<i>Chlorobium tepidum</i>	906
8	<u>Helicobacter pylori</u>	825
9	<i>Legionella pneumophila</i>	2976
10	<u>Marinobacter aquaeolei</u>	861
11	<i>Methanocaldococcus jannaschii</i>	1086
12	<i>Novosphingobium aromativicorans</i>	993
13	<i>Pseudoalteromonas atlantica</i>	1077
14	<i>Pyrococcus furiosus</i>	1005
15	<i>Rhodospirillum rubrum</i>	2634
16	<i>Roseobacter denitrificans</i>	1344
17	<i>Shewanella frigidimarina</i>	861
18	<u>Shewanella lohica</u>	852
19	<i>Staphylococcus aureus</i>	882
20	<i>Thermoplasma acdiophilum</i>	861
21	<u>Thermoplasma volcanium</u>	867
22	<i>Thermotoga maritime</i>	807
23	<i>Thermus thermophilus</i>	891
24	<u>Vibrio cholera</u>	864
25	<i>Zymomonas mobilis</i>	1158

The 14 underlined MscS homologues (numbers 2-6, 8, 10, 16-18, 21, 23-24) were identified as having reasonable expression levels in our *E. coli* expression system. The 7 MscS homologues in bold font (numbers 2, 3, 8, 10, 18, 21 and 24) exhibited monodisperse behavior by size exclusion chromatography in at least 1 detergent, and the 3 MscS homologues highlighted in yellow (2, 8 and 21) were successfully scaled up and screened for crystallization conditions; only the *H. pylori* MscS (number 8) gave any crystallization hits.

Table S2 List of Detergents used for Screening

Detergent	Concentration (w/v)
Chaps	1%
Zwittergent 3-12	1%
Cymal-3	2%
Cymal-5	1%
Cymal-7	1%
Fos-choline 10	1%
Fos-choline 14	1%
Decyldimethyl glycine	1%
LDAO	1%
Fos-MEA 10	1%
Fos-choline-iso-11	1%
Octyl glucoside	2%
Nonyl glucoside	2%
Decyl glucoside	2%
HEGA-9	2%
MEGA-9	1%
Nonyl maltoside	1%
Decyl maltoside	1%
Dodecyl maltoside	1%
Tridecyl maltoside	1%
Sucrose monodecanoate	1%
Tween 20	1%
C10E6	1%
C12E8	1%
Triton X-114	1%

Detergents highlighted in bold were most extensively tested in solubilization studies of various MscS homologs.

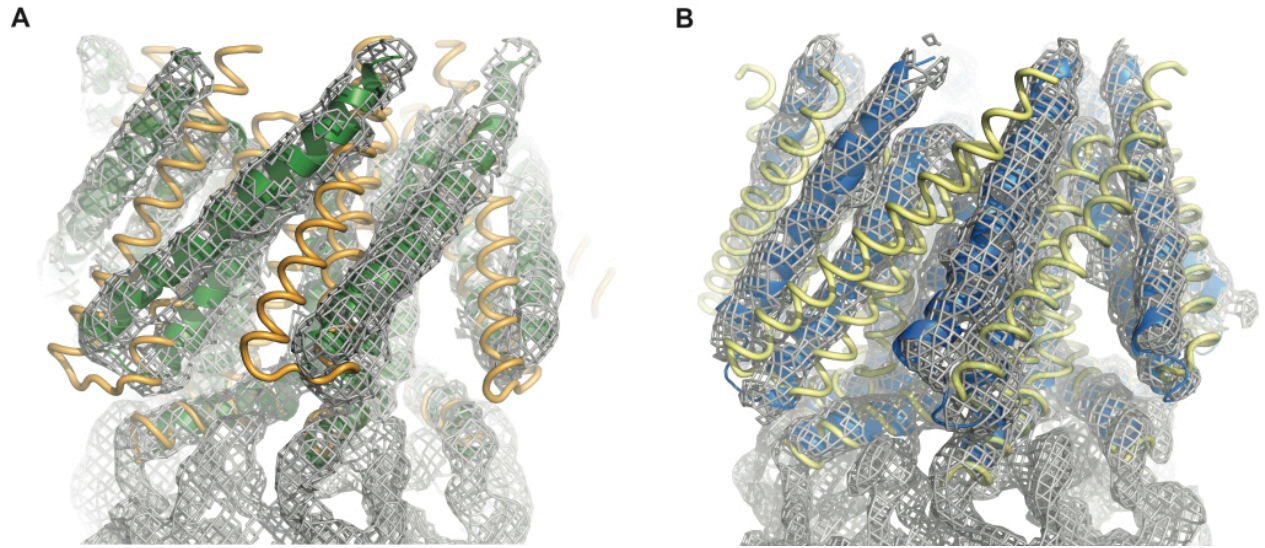


Figure S1 Electron density maps in the transmembrane domain regions of DDM solubilized EcMscS (Fig S1A) and DDM solubilized HpMscS (Fig S1B), calculated using the final refined models. The 2OAU and 2VV5 structures are superimposed to illustrate the correspondence between the electron density maps and the non-conducting and open state structures. For DDM solubilized EcMscS (Fig S1A), the 2VV5 and 2OAU structures are illustrated as green ribbons and gold coils, respectively. For DDM solubilized HpMscS (Fig S1B), the 2OAU and 2VV5 structures are depicted as blue ribbons and yellow coils, respectively. This figure was created with PyMol³⁷.