

1 **Supplementary Table 1.** Bacterial strains and plasmids used in this study.

Strain	Description	Source
ZG1307	(<i>Vc</i>) C6706	50
S17-1	<i>E. coli</i> used for cloning and plasmid conjugal transfer	51
ZG1609	(<i>Vc</i>) C6706 Δ <i>crvA</i>	13
ZG1610	(<i>Vc</i>) C6706 Δ <i>crvB</i>	This study
ZG1611	(<i>Vc</i>) C6706 Δ <i>crvAB</i>	This study
ZG1612	(<i>Vc</i>) Δ <i>crvA</i> +pEV5143::P _{tet} - <i>crvA</i>	This study
ZG1613	(<i>Vc</i>) Δ <i>crvB</i> +pEV5143::P _{tet} - <i>crvA</i>	This study
ZG1614	(<i>Vc</i>) Δ <i>crvAB</i> +pEV5143::P _{tet} - <i>crvA</i>	This study
ZG1615	(<i>Vc</i>) Δ <i>crvA</i> +pEV5143 EV	This study
ZG1616	(<i>Vc</i>) Δ <i>crvB</i> +pEV5143 EV	This study
ZG1617	(<i>Vc</i>) Δ <i>crvAB</i> +pEV5143 EV	This study
ZG1618	(<i>Vc</i>) Δ <i>crvA</i> +pEV5143::P _{tet} - <i>crvAB</i>	This study
ZG1619	(<i>Vc</i>) Δ <i>crvB</i> +pEV5143::P _{tet} - <i>crvAB</i>	This study
ZG1620	(<i>Vc</i>) Δ <i>crvAB</i> +pEV5143::P _{tet} - <i>crvAB</i>	This study
ZG1621	(<i>Ec</i>) MG1655	52
ZG1622	(<i>Ec</i>) MG1655+pEV5143::P _{tet} - <i>crvAB</i>	This study
ZG1623	(<i>Ec</i>) MG1655+pEV5143 EV	This study
ZG1624	(<i>Pa</i>) PA14	53
ZG1625	(<i>Pa</i>) PA14+pUCP18::P _{tet} - <i>crvAB</i>	This study
ZG1626	(<i>Pa</i>) PA14+ pUCP18 EV	This study
ZG1627	(<i>Cc</i>) CB15N	54
ZG1628	(<i>Cc</i>) CB15N+pRXMCS-6 EV	This study
ZG1629	(<i>Cc</i>) CB15N+pRXMCS-6::P _{tet} - <i>crvAB</i>	This study
ZG1630	(<i>Cc</i>) CB15N Δ <i>creS</i>	55
ZG1631	(<i>Cc</i>) Δ <i>creS</i> +pRXMCS-6 EV	This study
ZG1632	(<i>Cc</i>) Δ <i>creS</i> +pRXMCS-6::P _{tet} - <i>crvAB</i>	This study
ZG1633	(<i>At</i>) C58	56
ZG1634	(<i>At</i>) C58+pRXMCS-6 EV	This study
ZG1635	(<i>At</i>) C58+pRXMCS-6::P _{tet} - <i>crvAB</i>	This study
ZG1636	(<i>Vc</i>) <i>crvA</i> - <i>msfGFP</i>	This study
ZG1637	(<i>Vc</i>) <i>crvA</i> - <i>mCherry</i>	This study
ZG1638	(<i>Vc</i>) <i>crvB</i> - <i>msfGFP</i>	This study
ZG1639	(<i>Vc</i>) <i>crvA</i> - <i>mCherry</i> ; <i>crvB</i> - <i>msfGFP</i>	This study
ZG1640	(<i>Ec</i>) MG1655+pEV5143::P _{tet} - <i>crvA</i> - <i>mCherry</i> - <i>crvB</i> - <i>msfGFP</i>	This study
ZG1641	(<i>Vc</i>) <i>crvA</i> - <i>msfGFP</i> +pEV5143::P _{tet} -SS _{VcdsbA} - <i>mCherry</i>	This study
ZG1642	(<i>Vc</i>) <i>crvB</i> - <i>msfGFP</i> +pEV5143::P _{tet} -SS _{VcdsbA} - <i>mCherry</i>	This study
ZG1643	(<i>Vc</i>) <i>crvB</i> - <i>msfGFP</i> ; Δ <i>crvA</i>	This study

ZG1644	(Vc) <i>crvA-msfGFP; ΔcrvB</i>	This study
ZG1645	(Vc) <i>crvA-msfGFP; ΔcrvB; VC1378::P_{bad}-crvB</i>	This study
ZG1646	(Vc) <i>crvBΔNTD (Δ24-359)</i>	This study
ZG1647	(Vc) <i>crvBΔCBS(Δ371-605)</i>	This study
ZG1648	(Vc) <i>ΔcrvB; crvA-CBS(crvB 371-605) (1x crvA_{CBS})</i>	This study
ZG1783	(Vc) <i>crvB:: crvA-CBS(crvB 371-605); crvA-CBS(crvB 371-605) (2x crvA_{CBS})</i>	This study
ZG1649	(Vc) <i>crvA-CBS-msfGFP</i>	This study
ZG1650	<i>A. fischeri</i> ES114	57
ZG1651	<i>A. fischeri</i> <i>ΔcrvY</i>	This study
ZG1652	(Vc) <i>ΔcrvAB+pEVS143::P_{bad}-crvY</i>	This study
ZG1776	(Vc) <i>ΔcrvB; VC1378::P_{bad}-crvB-msfGFP</i>	This study
ZG1777	(Vc) <i>ΔmrcA (pbp1A)</i>	This study
ZG1778	(Vc) <i>ΔmrcB(pbp1B)</i>	This study
ZG1779	(Ec) MG1655+pEVS143::P _{tet} - <i>crvA-msfGFP</i>	This study
ZG1780	(Ec) MG1655+pEVS143::P _{tet} - <i>crvA-msfGFP; crvB</i>	This study
ZG1781	(Ec) MG1655+pEVS143::P _{tet} - <i>crvB-msfGFP</i>	This study
ZG1782	(Ec) MG1655+pEVS143::P _{tet} - <i>crvA; crvB-msfGFP</i>	This study
ZG1787	(Vc) C6706+pEVS143::P _{tet} - <i>crvAB</i>	
ZG1788	(Vc) C6706+pEVS143::P _{tet} - <i>crvA-msfGFP; crvB</i>	
Plasmid	Description	Source
pKAS32	Allelic exchange vector used for <i>V. cholerae</i> chromosomal mutations	36
pRE112	Allelic exchange vector used for <i>A. fischeri</i> chromosomal mutations	37
pEVS143	Expression vector used in <i>V. cholerae</i> and <i>E. coli</i>	58
pUCP18	Expression vector used in <i>P. aeruginosa</i>	59
pRXMCS-6	Expression vector used in <i>C. crescentus</i> and <i>A. tumefaciens</i>	60

2 (Vc): *V. cholerae*, (Ec): *E. coli*, (Pa): *P. aeruginosa*, (Cc): *C. crescentus* (At): *A. tumefaciens*, EV: Empty vector

3 **Supplementary Table 2(separate file).** Genomic accession numbers, *crv* protein accession
4 numbers, and clade labels for each of 921 Vibrionaceae genomes. Clade labels are listed in
5 Extended Data Figures 4C and S4D. Excel file with two header rows and 921 data rows. Column

6 names (first header row) and descriptions of the data in each column (second header row) are
7 included for each of the 17 columns.

8 **Supplementary Table 3(separate file).** Table of p-values from statistical tests represented as
9 symbols in figures.

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11 **Supplementary Video 1.**

12 Time lapse of intact CrvA-mCherry/CrvB-GFP structure in *V. cholerae* cell from Extended Data
13 Figure 4B. The fluorescent structure remains intact throughout the time course and remains
14 associated with the curved daughter cell from the initial division. Scale bar is 1µm.

15 **Supplementary Video 2.**

16 Time lapse of CrvA-mCherry/CrvB-GFP structures in *V. cholerae* filamented on low melting
17 point agarose pads containing 5µg/mL cephalixin. As cells filament, CrvAB structures do not re-
18 localize to regions of high curvature and new CrvAB structures can be seen forming in straight
19 regions of the cell.

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21 **Supplementary Video 3.**

22 Time lapse of CrvA-mCherry/CrvB-GFP structures in *V. cholerae* filamented on low melting
23 point agarose pads containing 5µg/mL cephalixin. As cells filament, CrvAB structures do not re-
24 localize to regions of high curvature and new CrvAB structures can be seen forming in straight
25 regions of the cell.

26 **Supplementary Video 4.**

27 Time lapse of CrvA-mCherry/CrvB-GFP structures in *V. cholerae* recapitulating dynamics of
28 population curvature and CrvAB localization observed in time courses from liquid culture. Filled
29 green arrows point to specific CrvA-mCherry/CrvB-GFP structures of interest and outlined green
30 arrows indicate the position of cells before those structures have formed.
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