

**Table S7. Presence/absence of virulence-associated genes and gene clusters in *Vibrio cholerae* non-O1, non-O139 isolates from German coastal waters and from German clinical samples based on PCR data.**

| Strain                     | Source code <sup>a</sup> | Virulence-associated genes and gene clusters |                    |             |             |                   |                   |                   |                   |                     |                  |                  |                   |                   |             |             |                          |             |             |                      |                      |                     |                      |
|----------------------------|--------------------------|----------------------------------------------|--------------------|-------------|-------------|-------------------|-------------------|-------------------|-------------------|---------------------|------------------|------------------|-------------------|-------------------|-------------|-------------|--------------------------|-------------|-------------|----------------------|----------------------|---------------------|----------------------|
|                            |                          | <i>rfb</i><br>O1                             | <i>rfb</i><br>O139 | <i>ctxA</i> | <i>toxR</i> | <i>tcpA</i><br>CL | <i>tcpA</i><br>ET | <i>rstR</i><br>CL | <i>rstR</i><br>ET | <i>rstR</i><br>Calc | VSP-1            | VSP-2            | <i>hlyA</i><br>CL | <i>hlyA</i><br>ET | <i>mshA</i> | <i>ompU</i> | <i>rtxA</i> <sup>g</sup> | <i>rtxC</i> | <i>chxA</i> | TTSS<br><i>vcsC2</i> | TTSS<br><i>vcsN2</i> | TTSS<br><i>vspD</i> | TTSS<br><i>vcsI2</i> |
| Environmental - Baltic Sea |                          |                                              |                    |             |             |                   |                   |                   |                   |                     |                  |                  |                   |                   |             |             |                          |             |             |                      |                      |                     |                      |
| VN-00278                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | +                 | -                 | -           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00455                   | E-BS-sw                  | -                                            | -                  | -           | (+)         | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00456                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00457                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | -           | +                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00458                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | +           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-00459                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | (+) <sup>c</sup>  | +           | +           | +                        | +           | -           | +                    | +                    | +                   | +                    |
| VN-00460                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00461                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00462                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00463                   | E-BS-sw                  | -                                            | -                  | -           | (+)         | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | (+) <sup>d</sup>  | -           | +           | (+)                      | +           | -           | -                    | -                    | -                   | -                    |
| VN-00464                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00465                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00466                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | +                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-00468                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00469                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00470                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00471                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00472                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00473                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00474                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00475                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00476                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00477                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-02995                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03901                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | +           | +           | +                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03902                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | (+)         | +                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-03903                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | -           | (+)                      | +           | -           | -                    | -                    | -                   | -                    |
| VN-03907                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03908                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03911                   | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | -           | +                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03916                   | E-BS-sd                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03918                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-03939                   | E-BS-sd                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | -           | +                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03942                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03944                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03949                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | +                        | +           | -           | +                    | +                    | +                   | +                    |
| VN-03951                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | -           | +                        | +           | -           | +                    | +                    | +                   | +                    |
| VN-03954                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03955                   | E-BS-sd                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03958                   | E-BS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | +           | -                    | -                    | -                   | -                    |

Table continued

| Strain                    | Source code <sup>a</sup> | Virulence-associated genes and gene clusters |                    |             |             |                   |                   |                   |                   |                     |                  |                  |                   |                   |             |             |                          |             |             |                      |                      |                     |                      |
|---------------------------|--------------------------|----------------------------------------------|--------------------|-------------|-------------|-------------------|-------------------|-------------------|-------------------|---------------------|------------------|------------------|-------------------|-------------------|-------------|-------------|--------------------------|-------------|-------------|----------------------|----------------------|---------------------|----------------------|
|                           |                          | <i>rfb</i><br>O1                             | <i>rfb</i><br>O139 | <i>ctxA</i> | <i>toxR</i> | <i>tcpA</i><br>CL | <i>tcpA</i><br>ET | <i>rstR</i><br>CL | <i>rstR</i><br>ET | <i>rstR</i><br>Calc | VSP-1            | VSP-2            | <i>hlyA</i><br>CL | <i>hlyA</i><br>ET | <i>mshA</i> | <i>ompU</i> | <i>rtxA</i> <sup>g</sup> | <i>rtxC</i> | <i>chxA</i> | TTSS<br><i>vcsC2</i> | TTSS<br><i>vcsN2</i> | TTSS<br><i>vspD</i> | TTSS<br><i>vcsV2</i> |
| VN-03963                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-04241                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-04250                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | (+) <sup>c</sup> | -                 | +                 | +           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-05169                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-05172                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | +                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-05174                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-05176                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-05177                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | (+) <sup>c</sup> | -                 | +                 | -           | -           | +                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-05185                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-05301                  | E-BS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | -           | -                        | +           | -           | +                    | +                    | +                   | +                    |
| Environmental - North Sea |                          |                                              |                    |             |             |                   |                   |                   |                   |                     |                  |                  |                   |                   |             |             |                          |             |             |                      |                      |                     |                      |
| VN-02808                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | -                 | -           | -           | -                        | (+)         | -           | -                    | -                    | -                   | -                    |
| VN-02825                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | -                 | -           | -           | -                        | (+)         | -           | -                    | -                    | -                   | -                    |
| VN-02923                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | -                 | -           | -           | -                        | (+)         | -           | -                    | -                    | -                   | -                    |
| VN-03012                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03213                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03301                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | -           | +                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-03361                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | (+) <sup>c</sup>  | -           | -           | +                        | +           | -           | +                    | +                    | +                   | +                    |
| VN-03377                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | -           | +                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-03405                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03407                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03428                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | (+) <sup>d</sup>  | +           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03460                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03469                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03470                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | -           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-03471                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03472                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03475                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03492                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-03503                  | E-NS-sw/sd               | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-04219                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-04223                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | (+)         | +                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-04226                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | +           | +                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-04231                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-04233                  | E-NS-sw                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10012                  | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | -           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-10013                  | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | -           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-10127                  | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10130                  | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10131                  | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10133                  | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10137                  | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (+) <sup>c</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10143                  | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | (+)         | +           | -                    | -                    | -                   | -                    |
| VN-10144                  | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | (+)         | -           | -                    | -                    | -                   | -                    |

Table continued

| Strain                | Source code <sup>a</sup> | Virulence-associated genes and gene clusters |                    |             |             |                   |                   |                   |                   |                     |                  |                  |                   |                   |             |             |                          |             |             |                      |                      |                     |                      |
|-----------------------|--------------------------|----------------------------------------------|--------------------|-------------|-------------|-------------------|-------------------|-------------------|-------------------|---------------------|------------------|------------------|-------------------|-------------------|-------------|-------------|--------------------------|-------------|-------------|----------------------|----------------------|---------------------|----------------------|
|                       |                          | <i>rfb</i><br>O1                             | <i>rfb</i><br>O139 | <i>ctxA</i> | <i>toxR</i> | <i>tcpA</i><br>CL | <i>tcpA</i><br>ET | <i>rstR</i><br>CL | <i>rstR</i><br>ET | <i>rstR</i><br>Calc | VSP-1            | VSP-2            | <i>hlyA</i><br>CL | <i>hlyA</i><br>ET | <i>mshA</i> | <i>ompU</i> | <i>rtxA</i> <sup>g</sup> | <i>rtxC</i> | <i>chxA</i> | TTSS<br><i>vcsC2</i> | TTSS<br><i>vcsN2</i> | TTSS<br><i>vspD</i> | TTSS<br><i>vcsV2</i> |
| VN-10145              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | (+)         | +           | -                    | -                    | -                   | -                    |
| VN-10146              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | (+)         | +           | -                    | -                    | -                   | -                    |
| VN-10150              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | +                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10156              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10159              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10162              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10191              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | (+)         | +           | -                    | -                    | -                   | -                    |
| VN-10192              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | (+)         | +           | -                    | -                    | -                   | -                    |
| VN-10196              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | +           | +           | +                        | +           | -           | +                    | +                    | +                   | +                    |
| VN-10197              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-10198              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | -           | +           | -                        | +           | +           | -                    | -                    | -                   | -                    |
| VN-10204              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | (+)         | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10205              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | (+)         | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10206              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | (+)         | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10207              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | (+)         | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10208              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-10320              | E-NS-bm                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | (+) <sup>c</sup> | -                 | +                 | +           | +           | +                        | +           | -           | +                    | +                    | +                   | +                    |
| Clinical - Germany    |                          |                                              |                    |             |             |                   |                   |                   |                   |                     |                  |                  |                   |                   |             |             |                          |             |             |                      |                      |                     |                      |
| VN-00168 <sup>f</sup> | C-G-ext                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00169 <sup>f</sup> | C-G-ext                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00297 <sup>f</sup> | C-G-ext                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00298 <sup>f</sup> | C-G-ext                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00300 <sup>f</sup> | C-G-int                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | +           | -                        | +           | +           | +                    | +                    | +                   | +                    |
| VN-00302 <sup>f</sup> | C-G-int                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | -           | -                        | +           | -           | +                    | +                    | +                   | +                    |
| VN-00305 <sup>f</sup> | C-G-ext                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00307 <sup>f</sup> | C-G-ext                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | -                    | -                    | -                   | -                    |
| VN-00533              | C-G-ext                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | -                | -                | -                 | +                 | -           | +           | -                        | +           | -           | (+)                  | +                    | +                   | +                    |
| VN-00534              | C-G-ext                  | -                                            | -                  | -           | +           | -                 | -                 | -                 | -                 | -                   | (-) <sup>b</sup> | -                | -                 | +                 | -           | -           | -                        | +           | -           | -                    | -                    | -                   | -                    |

Calc, Calcutta; CL, Classical; ET, El Tor.

<sup>a</sup> The source code is explained in Table 1.

The absence of VSP-1 and VSP-2 is demonstrated by the generation of 1.7 kbp and 800 bp PCR products, respectively, as the primers bind to flanking genomic sites of the pandemic islands.

<sup>b</sup> PCR product of ca. 3 kbp and 4 kbp, respectively.

<sup>c</sup> No visible or unspecific PCR products.

The presence of *hlyA*<sup>ET</sup> gene is demonstrated by the generation of 738 bp and 481 bp PCR products.

<sup>d</sup> 738 bp PCR product only weakly visible.

<sup>e</sup> 481 bp PCR product only weakly visible.

<sup>f</sup> The presence/absence data of virulence-associated genes (except *chxA*) and gene clusters were obtained from Schirmeister et al. (2014).

<sup>g</sup> VC1451 of *Vibrio cholerae* O1 biovar El Tor str. N16961.

## References

Schirmeister, F., Dieckmann, R., Bechlars, S., Bier, N., Faruque, S. M., and Strauch, E. (2014). Genetic and phenotypic analysis of *Vibrio cholerae* non-O1, non-O139 isolated from German and Austrian patients. *Eur. J. Clin. Microbiol. Infect. Dis.* 33, 767-778. doi: 10.1007/s10096-013-2011-9