Table S1. The *B. burgdorferi* *ruvA* mutant T11P01A01 and the *ruvB* mutant T03TC051 exhibit decreased *vlsE* sequence variation during infection of C3H/HeN and C3H/SCID mice.

<table>
<thead>
<tr>
<th><em>B. burgdorferi</em> strain</th>
<th>Day post inoculation</th>
<th>Mouse strain</th>
<th>Mouse strain</th>
<th>Total no. of clones sequenced</th>
<th>No. of clones with parental sequence (%)</th>
<th>No. of variants with unique sequence (%)</th>
<th>No. of variants with non-unique sequence (%)</th>
<th>No. of mice tested</th>
<th>No. of tissues tested</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>ruvA</em> mutant</td>
<td>7</td>
<td>C3H/HeN</td>
<td>C3H/HeN</td>
<td>99 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>5 (5)</td>
<td>5</td>
<td>5a</td>
</tr>
<tr>
<td><em>ruvB</em> mutant</td>
<td>7</td>
<td>C3H/HeN</td>
<td>C3H/HeN</td>
<td>22 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>4 (4)</td>
<td>4</td>
<td>4a</td>
</tr>
<tr>
<td>5A18NP1</td>
<td>7</td>
<td>C3H/HeN</td>
<td>C3H/HeN</td>
<td>65 (11)</td>
<td>38 (58)</td>
<td>20 (31)</td>
<td>5 (5)</td>
<td>5</td>
<td>5a</td>
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<tr>
<td><em>ruvA</em> mutant</td>
<td>14</td>
<td>C3H/HeN</td>
<td>C3H/HeN</td>
<td>16 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>3 (3)</td>
<td>3</td>
<td>3b</td>
</tr>
<tr>
<td>5A18NP1</td>
<td>14</td>
<td>C3H/HeN</td>
<td>C3H/HeN</td>
<td>59 (0)</td>
<td>48 (81)</td>
<td>11 (19)</td>
<td>1 (1)</td>
<td>1</td>
<td>3b</td>
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<tr>
<td><em>ruvA</em> mutant</td>
<td>28</td>
<td>C3H/HeN</td>
<td>C3H/HeN</td>
<td>114 (3)</td>
<td>0 (0)</td>
<td>111 (97)</td>
<td>6 (2)</td>
<td>12</td>
<td>12c</td>
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<tr>
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<td>C3H/HeN</td>
<td>40 (12.5)</td>
<td>1 (2.5)</td>
<td>34 (85)</td>
<td>3 (3)</td>
<td>10</td>
<td>10d</td>
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<tr>
<td>5A18NP1</td>
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<td>C3H/HeN</td>
<td>C3H/HeN</td>
<td>63 (0)</td>
<td>31 (49)</td>
<td>32 (51)</td>
<td>1 (1)</td>
<td>4</td>
<td>4d</td>
</tr>
<tr>
<td><em>ruvA</em> mutant</td>
<td>14</td>
<td>C3H/SCID</td>
<td>C3H/SCID</td>
<td>85 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>5 (5)</td>
<td>20</td>
<td>20d</td>
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<tr>
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<td>C3H/SCID</td>
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<td>51 (67)</td>
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<td>5 (5)</td>
<td>17</td>
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<tr>
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<td>C3H/SCID</td>
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<tr>
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<td>C3H/SCID</td>
<td>C3H/SCID</td>
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<td>41 (87)</td>
<td>6 (13)</td>
<td>5 (5)</td>
<td>16</td>
<td>16d</td>
</tr>
</tbody>
</table>

*skin isolates only
b joint isolates only
c skin, joint, bladder isolates
d skin, joint, heart, and bladder isolates