**Borrelia burgdorferi**, Strain B31 (Clone 5A1)

Catalog No. NR-13251

For research use only. Not for use in humans.

**Contributor:**
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**Manufacturer:**
BEI Resources

**Product Description:**
Bacteria Classification: Borreliaeaceae (previously Spirochaetaceae)\(^1\), Borrelia
Species: Borrelia burgdorferi
Strain: B31 (clone 5A1)
Original Source: Borrelia burgdorferi (B. burgdorferi), strain B31 (clone 5A1) was derived from the original B31 strain. The original B31 strain was isolated in 1981 from adult ticks (*Ixodes dammini/scapularis*) collected from lower vegetation on Shelter Island, New York, USA.\(^2,3\)
Comments: Clone 5A1 lacks linear plasmids lp5 and lp56 of the parent B31 strain but is known to retain the other nineteen plasmids found in strain B31.\(^4\) The complete genome of *B. burgdorferi*, Strain B31 has been sequenced (GenBank: AE000783).\(^5\)

*B. burgdorferi* is a Gram-negative, motile spirochete.\(^5\) It is a zoonotic, vector-borne pathogen transmitted by ticks and the etiologic agent of Lyme disease, now the most common tick-borne zoonotic, vector-borne pathogen transmitted by ticks and the most common tick-transmitted disease in the United States.\(^4\) *B. burgdorferi* is predominant in North America, but also exists in Europe.

**Material Provided:**
Each vial contains approximately 0.5 mL of bacterial culture in Revised Barbour-Stoenner-Kelly broth supplemented with 10% glycerol.

**Note:** If homogeneity is required for your intended use, please purify prior to initiating work.

**Packaging/Storage:**
NR-13251 was packaged aseptically in cryovials. The product is provided frozen and should be stored at -60°C or colder immediately upon arrival. For long-term storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

**Growth Conditions:**

**Media:**
Revised Barbour-Stoenner-Kelly broth or agar or equivalent (Appendix I)

**Note:** Medium should be prepared fresh before each use.

**Incubation:**
Temperature: 32°C to 34°C (growth at 37°C may result in plasmid loss)\(^2\)
Atmosphere: Microaerophilic (slower growth occurs under aerobic conditions)\(^2\)

**Propagation:**
1. Keep vial in dry ice during inoculations.
2. Inoculate new cultures from scraping of frozen stock into a single tube of Revised Barbour-Stoenner-Kelly Medium.
3. Incubate the tube at 32°C to 34°C for 2 to 14 days. Do not shake culture during growth.

**Note:** Subculturing should be minimized to avoid plasmid loss.\(^3,6\)

**Citation:**
Acknowledge for publications should read “The following reagent was obtained through BEI Resources, NIAID, NIH: *Borrelia burgdorferi*, Strain B31 (Clone 5A1), NR-13251.”

**Biosafety Level:** 2


**Disclaimers:**
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References:


APPENDIX I: REVISED BARBOUR-STOENNER-KELLY (BSK) MEDIUM

1. Prepare the Revised BSK Medium directly before each use following the recipe below by dissolving each component one at a time in distilled water:

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEPES</td>
<td>5.64 g</td>
</tr>
<tr>
<td>Neopeptone</td>
<td>4.7 g</td>
</tr>
<tr>
<td>Sodium citrate</td>
<td>0.7 g</td>
</tr>
<tr>
<td>Glucose</td>
<td>5.64 g</td>
</tr>
<tr>
<td>NaHCO₃</td>
<td>2.0 g</td>
</tr>
<tr>
<td>TC-Yeastolate</td>
<td>2.0 g</td>
</tr>
<tr>
<td>Sodium pyruvate</td>
<td>0.75 g</td>
</tr>
<tr>
<td>N-acetylglucosamine</td>
<td>0.37 g</td>
</tr>
<tr>
<td>Bovine serum albumin, fraction V</td>
<td>47.0 g</td>
</tr>
<tr>
<td>Distilled water</td>
<td>840 mL</td>
</tr>
</tbody>
</table>

2. Adjust the pH of the base medium to 7.5 using 1 N HCl or 1 N NaOH and filter-sterilize using a 0.22 µm filter.

3. Aseptically add the next two components to the base medium:

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMRL 1066 Medium, 10× (w/o Glutamine and NaHCO₃)</td>
<td>100.0 mL</td>
</tr>
<tr>
<td>Heat-inactivated rabbit serum</td>
<td>60.0 mL</td>
</tr>
</tbody>
</table>

4. Mix well and aseptically dispense into appropriate vessels. The medium may be stored in aliquots of 50 mL in freezer-safe vessels and stored frozen at -20°C until use. Once thawed, each aliquot should be kept at 2°C to 8°C and used within one month.

5. Adjust the pH of the complete medium to 7.5 to 7.6, as needed, using sterile solutions of 1 N HCl or 1 N NaOH, before use.

Note: Medium should be prepared fresh directly before each use or immediately aliquoted and frozen at -20°C until needed. Once thawed, each aliquot should be kept at 2°C to 8°C and used within one month.

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