

## **Borrelien trotz Antibiose, Tier** **Lyme disease despite treatment with antibiotics in animals**

**Gelb** = IDSA Autoren **Yellow** = IDSA Authors

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**“Antibiotic treatment reduced the amount of detectable spirochete DNA in skin tissue by a factor of 1,000 or more”.**

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**“Antibiotic therapy reduced the frequency of *Borrelia*-positivity in subsequent skin biopsy samples. After prednisone treatment, both control dogs developed severe polyarthritis. At euthanasia, single tissues of the antibiotic-treated dogs and multiple tissues of all control dogs were *Borrelia*-positive by polymerase chain reaction”.**

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**“Five months after antibiotic treatment, tissues aseptically collected at necropsy from ponies with increased antibody levels after antibiotic treatment also showed culture positive to *B. burgdorferi* in various post-mortem tissues.”**

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**“Persistence is listed for many reservoir-competent hosts: mice, rats, *Peromyscus leucopus*, hamsters, gerbils, rabbits, dogs, nonhuman primates, and humans”.**

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**“Horse was seropositive for Bb, and PCR assay of CSF for *B. burgdorferi* DNA was positive; horse was treated with doxycycline, responded well, then relapsed, treated with oxytetracycline and later died; diagnosis consistent with neuroborreliosis”.**

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Reveals Important Flaws in Experimental Design. VECTOR-BORNE AND ZOONOTIC DISEASES 12, XX Mary Ann Liebert, Inc. DOI: 10.1089/vbz.2012.1012

<http://www.ncbi.nlm.nih.gov/pubmed/22620495>

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“The agent of Lyme borreliosis, *Borrelia burgdorferi*, evades host immunity and establishes persistent infections in its varied mammalian hosts. This persistent biology may pose challenges to effective antibiotic treatment. Experimental studies in dogs, mice, and non-human primates have found persistence of *B. burgdorferi* DNA following treatment with a variety of antibiotics, but persisting spirochetes are non-cultivable. Persistence of *B. burgdorferi* DNA has been documented in humans following treatment, but the significance remains unknown.

The present study utilized a ceftriaxone treatment regimen in the C3H mouse model that resulted in persistence of non-cultivable *B. burgdorferi* in order to determine their long-term fate, and to examine their effects on the host. Results confirmed previous studies, in which *B. burgdorferi* could not be cultured from tissues, but low copy numbers of *B. burgdorferi flaB* DNA were detectable in tissues at 2, 4 and 8 months after completion of treatment, and the rate of PCR-positive tissues appeared to progressively decline over time.

However, there was resurgence of spirochete *flaB* DNA in multiple tissues at 12 months, with *flaB* DNA copy levels nearly equivalent to those found in saline-treated mice. Despite the continued non-cultivable state, RNA transcription of multiple *B. burgdorferi* genes was detected in host tissues, *flaB* DNA was acquired by xenodiagnostic ticks, and spirochetal forms could be visualized within ticks and mouse tissues by immunofluorescence and immunohistochemistry, respectively. A number of host cytokines were up- or down-regulated in tissues of both saline- and antibiotic-treated mice in the absence of histopathology, indicating host response to the presence of non-cultivable, despite the lack of inflammation in tissues”.

Pavia CS, Wormser GP (2014) Culture of the Entire Mouse to Determine Whether Cultivable *Borrelia burgdorferi* Persist in Infected Mice Treated with a Five Day Course of Ceftriaxone. Antimicrob. Agents Chemother. doi:10.1128/AAC.03751-14 <http://aac.asm.org/content/early/2014/08/19/AAC.03751-14.abstract>

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