

# Chronic Lyme Disease May Be Associated with Persistent Infection in Animals and Humans.

Study led by Union Square Medical Associates finds ongoing infection despite antibiotic treatment.

SAN FRANCISCO, CA, UNITED STATES, January 27, 2026 /EINPresswire.com/ -- A review of the medical literature has found long-term infection in animal models and persistent infection despite antibiotic therapy in humans with ongoing symptoms of [Lyme disease](#). The study was published in the open access journal *Advances in Infectious Diseases* (<https://www.scirp.org/journal/paperinformation?paperid=149133>).

Lyme disease is a [tick-borne infection](#) caused by [Borrelia burgdorferi](#), a type of corkscrew-shaped bacteria known as a spirochete (pronounced spiro'keet). In 2021 the Centers for Disease Control and Prevention (CDC) announced that Lyme disease is much more common than previously thought, with over 476,000 new cases diagnosed each year in the United States. That makes Lyme disease seven times more common than hepatitis C virus infection, 15 times more common than HIV/AIDS and 49 times more common than tuberculosis in the United States.

The current study was conducted by nurse practitioner Melissa Fesler and internist Raphael Stricker from Union Square Medical Associates, a multispecialty medical practice in San Francisco, CA, and Lorraine Johnson, chief executive of the patient support group LymeDisease.org in San Diego, CA.

“Our findings address a major controversy over persistent symptoms in Lyme disease,” said Melissa Fesler, an author of the published study. “The results suggest that infection with the Lyme spirochete persists in some patients despite supposedly adequate antibiotic therapy.”

Previous studies have shown that the Lyme spirochete could survive antibiotic therapy in monkeys and humans. In the present study, researchers analyzed 56 studies from the medical

Table: Evidence for Persistent Human Infection Following Treatment of Lyme Disease\*†

Study/Year/Reference	Study Origin	Persistence of <i>B. burgdorferi</i> Shown by	Sample Source
Weber et al, 1988 <sup>1</sup>	Europe	Histology	Brain, liver (Autopsy)**
Schmidli et al, 1988 <sup>2</sup>	Europe	Culture	Synovial Fluid
Cimmino et al, 1988 <sup>3</sup>	Europe	Histology	Spleen
Preac-Mursic et al, 1989 <sup>4</sup>	Europe	Culture	Skin Bx, CSF
Pfister et al, 1991 <sup>5</sup>	Europe	Culture	CSF
Stirle et al, 1993 <sup>6</sup>	Europe	Culture	Skin Bx
Preac-Mursic et al, 1993 <sup>7</sup>	Europe	Culture	Iris Bx
Haapli et al, 1993 <sup>8</sup>	Europe	Culture	Ligament Bx
Stirle et al, 1996 <sup>9</sup>	Europe	Culture	Skin Bx
Preac-Mursic et al, 1996 <sup>10</sup>	Europe	Culture	Skin Bx, CSF
Oksi et al, 1996 <sup>11</sup>	Europe	Culture	CSF
		PCR	Brain Bx
		PCR	Brain (Autopsy)
Priem et al, 1998 <sup>12</sup>	Europe	PCR	Synovial Bx/Fluid
Oksi et al, 1999 <sup>13</sup>	Europe	Culture, PCR	Blood
Breier et al, 2001 <sup>14</sup>	Europe	Culture	Skin Bx
Hunfeld et al, 2005 <sup>15</sup>	Europe	PCR	Skin Bx
Sveccova et al, 2008 <sup>16</sup>	Europe	PCR	Blood
Hudson et al, 1998 <sup>17</sup>	Australia	Culture, PCR	Skin Bx
Steere et al, 1988 <sup>18</sup>	USA	Histology	Synovial Bx
Kirsch et al, 1988 <sup>19</sup>	USA	Histology	LN (Autopsy)
Liegner et al, 1993 <sup>20</sup>	USA	Histology	Skin Bx
		PCR	Blood
Battafarano et al, 1993 <sup>21</sup>	USA	Histology, PCR	Synovial Bx/Fluid
Chancellor et al, 1993 <sup>22</sup>	USA	Histology	Bladder Bx
Nocton et al, 1994 <sup>23</sup>	USA	PCR	Synovial Fluid
Shadick et al, 1994 <sup>24</sup>	USA	Histology	Brain (Autopsy)
Masters et al, 1994 <sup>25</sup>	USA	Culture	Blood
Lawrence et al, 1995 <sup>26</sup>	USA	PCR	CSF
Bayer et al, 1996 <sup>27</sup>	USA	PCR	Urine
Nocton et al, 1996 <sup>28</sup>	USA	PCR	CSF
Marques et al, 2014 <sup>29</sup>	USA	Xenodiagnosis	Tick***
Middelvoen et al, 2018 <sup>30</sup>	USA	Culture, Histology	Blood, Genital Secretions, Skin
Sapi et al, 2019 <sup>31</sup>	USA	PCR, Histology, FISH, Confocal microscopy	Liver, Heart, Kidney, Brain (Autopsy)
Bransfield et al, 2024 <sup>32</sup>	USA	Histology, FISH	Pancreas, Heart, Brain (Autopsy)

†Adapted from Stricker RB, Johnson L. Lyme disease: the next decade. *Infect Drug Resist.* 2011;4:1-9.

\*Except for case of Weber et al. (see below), all patients received a minimum of 10 days of antibiotic therapy. PCR, polymerase chain reaction; Bx, biopsy; CSF, cerebrospinal fluid; LN, lymph node. FISH, fluorescent in-situ hybridization

\*\*Mother treated with antibiotics for one week during pregnancy; newborn died.

\*\*\**B. burgdorferi* DNA recovered from ticks fed on human Lyme patients.

## Evidence for Persistent Human Infection Following Treatment of Lyme Disease



When patients remain ill after antibiotic therapy, clinicians need to consider the possibility of persistent infection and the need for continued treatment.”

*Lorraine Johnson*

literature. In 10 animal studies and 25 human studies (Table) Lyme spirochetes were able to survive antibiotic therapy as shown by culture, tissue microscopy and xenodiagnosis (transfer of infection via tickbites). *Borrelia burgdorferi* was detectable for 2-46 months after antibiotic therapy in rodents, dogs, monkeys, horses and humans.

“The presence of live spirochetes in symptomatic patients supports the role of ongoing infection in these patients,” said Lorraine Johnson. “When patients remain ill after

antibiotic therapy, clinicians need to consider the possibility of persistent infection and the need for continued treatment.”

Dr. Stricker pointed to the implications for Lyme disease treatment raised by the study. “This study is bad news for Lyme disease patients and their doctors,” he said. “We need to develop better antimicrobial treatments for these suffering patients, and we need to do it now.”

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