

Borrelien Direkt – Nachweis Direct Detection of Borrelia

**Kultur, -Histologie, -Videomikroskopie, -PCR, -elektromagnetische (EM) Signale
Culture, Histology, Video Microscopy, PCR, Electromagnetic Signals**

Borrelien Original – Bakterien (Phänotypen, frontal pathogens) Borrelia Spirochetal Forms (Phenotypes)

Huismans BD (2007) Plädoyer für den Erregernachweis bei der chronischen Lyme-Borreliose. Grin Verlag. ISBN 978-3-638-92337-8

<http://www.grin.com/de/e-book/86576/plaedoyer-fuer-den-erregernachweis-bei-der-chronischen-lyme-borreliose>

Borrelien Stress – Varianten (Genotypen, stealth pathogens) Borrelia Stress Variants (Genotypes)

Borrelia Population Dynamics <http://www.erlebnishaft.de/kommentstressvar2.pdf>

Biofilme in Medicine <http://www.erlebnishaft.de/kommentbiofilmmed.pdf>

Biogenic Amines und Peptides <http://www.kabilahsystems.de/biogeneamineundpeptide.pdf>

Die erweiterten Koch'schen Postulate. The extended Koch's postulates.

http://www.xerlebnishaft.de/expand_koch_post.pdf

Borrelien Kultur. Borrelia Culture

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Preac-Mursic V, Wilske B, Schierz G (1986) European Borrelia burgdorferi isolated from humans and ticks. Culture conditions and antibiotic susceptibility. Zbl Bakt Hyg A263: 112-118.

Barbour AG (1988) Laboratory aspects of Lyme borreliosis. Clin Microbiol Rev 1(4), 399-414. PMID: [3069200](https://pubmed.ncbi.nlm.nih.gov/3069200/)

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[Rodríguez I](#), [Lienhard R](#), [Gern L](#), [Veuve MC](#), [Jouda F](#), [Siegrist HH](#), [Fernández C](#), [Rodríguez JE](#). (2007) Evaluation of a modified culture medium for Borrelia burgdorferi sensu lato. Mem Inst Oswaldo Cruz. 102(8), 999-1002 <http://www.ncbi.nlm.nih.gov/pubmed/18209941>

Kroun M (2008) Optimal growth conditions for Borrelia. <http://lymerick.net/Borrelia-growth-optimium.html> Original URL for this article: <http://lymerick.net/Borrelia-growth-optimium.html>

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Hill S (2011) BORRELIA CULTURE NOW AVAILABLE TO EVALUATE LYME DISEASE PATIENTS. Research breakthrough promises a new Gold Standard in Lyme Disease testing. Advanced Laboratory Services, Inc. 501 Elmwood Avenue - Sharon Hill, PA 19079 Web: www.advanced-lab.com email: info@advanced-lab.com
<http://researchednutritionals.com/Announcements/LymeCultureTest.pdf>

United States Patent. Sapi E. et al. (2012) <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetacgi%2FPTO%2FSrchnum.htm&r=1&f=G&l=50&s1=8,697,419.PN.&OS=PN/8,697,419&RS=PN/8,697,419>

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[Johnson BJ](#), [Pilgard MA](#), [Russell TM](#) (2013) Assessment of New Culture Method to Detect Borrelia species in Serum of Lyme Disease Patients. doi: 10.1128/JCM.01674-13 JCM.01674-13 <http://jcm.asm.org/content/early/2013/08/14/JCM.01674-13>
<http://www.ncbi.nlm.nih.gov/pubmed/23946519>

“Eighty percent (41/51) of the reported patient-derived pyrG sequences are identical to one of the laboratory strains and an additional 12% (6/51) differ by only a single nucleotide across a 603bp region of the pyrG gene. Thus, false positivity due to laboratory contamination of patient samples cannot be ruled out and further validation of the proposed novel culture method is required”.

[Ružić-Sabljiić E](#), [Maraspin V](#), [Cimperman J](#), [Strle F](#), [Lotrič-Furlan S](#), [Stupica D](#), [Cerar T](#). (2013) Comparison of isolation rate of Borrelia burgdorferi sensu lato in two different culture media, MKP and BSK-H. Clin Microbiol Infect. doi: 10.1111/1469-0691.12457.
<http://www.ncbi.nlm.nih.gov/pubmed/24237688>

“In conclusion, comparison of MKP and BSK-H medium for culturing European erythema migrans skin specimens revealed several distinctions. While commercial BSK-H medium was more suitable for the routine usage due to less laboratory labor, the isolation rate from this medium was lower and the proportion of slow growing isolates and visible but not growing strains was higher than for home-made MKP medium”.

Margos G, Stockmeier S, Hizo-Teuffell C et al. (2014) Long-term in vitro cultivation of Borrelia miyamotoi. Ticks and Tick-borne Diseases.
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Borrelien Histologie. Borrelia Histology

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<http://www.jaad.org/article/S0190-9622%2807%2900882-1/fulltext>

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[Hagenaars JC](#), [Koning OH](#), [van den Haak RF](#), [Verhoeven BA](#) et al. (2014) Histological characteristics of the abdominal aortic wall in patients with vascular chronic Q fever. *Int J Exp Pathol*. doi: 10.1111/iep.12086. <http://www.ncbi.nlm.nih.gov/pubmed/24953727>

[Xing J](#), [Radkay L](#), [Monaco SE](#), [Roth CG](#), [Pantanowitz L](#) (2015) Cerebrospinal Fluid Cytology of Lyme Neuroborreliosis: A Report of 3 Cases with Literature Review. *Acta Cytol*. [Epub ahead of print] <http://www.ncbi.nlm.nih.gov/pubmed/26343489>

Borrelien Videomikroskopie. Borrelia Video Microscopy

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<http://iai.asm.org/content/65/5/1908.long>

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<http://www.google.de/search?q=A+simple+method+for+the+detection+of+live+Borrelia+spirochaetes+in+human+blood+using+classical+microscopy+techniques.+Biological+and+Biomedical+Reports+3%281%29%2C+15-28&hl=de&btnG=Google+Search>
“Classic techniques involving phase-contrast and fluorescence microscopy are used. The method is also quite sensitive for detecting other bacteria, protists, fungi and other organisms present in blood samples. It is also useful for monitoring the effects of various antibiotics during treatment. We also present a simple hypothesis for explaining the confusion generated through the interpretation of possible stages of *Borrelia* seen in human blood. We hypothesize that these various stages in the blood stream are derived from secondarily infected tissues and biofilms in the body with low oxygen concentrations. Motile stages transform rapidly into cysts or sometimes penetrate other blood cells including red blood cells (RBCs). The latter are ideal hiding places for less motile stages that take advantage of the host’s RBCs blebbing-system. Less motile, morphologically different stages may be passively ejected in the blood plasma from

the blebbing RBCs, more or less coated with the host's membrane proteins which prevents detection by immunological methods”.

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PLoS ONE 9(11), e111809. doi:10.1371/journal.pone.0111809

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http://www.terkko.helsinki.fi/article/11386478_an-optimized-sybr-green-ipi-assay-for-rapid-viability-assessment-and-antibiotic-susceptibility-testing-for-borrelia-burgdorferi

„A test has been developed by researchers which they say will allow them to test thousands of FDA-approved drugs to see if they will work against the bacteria that causes tick-borne Lyme disease“.

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- ➔ International Forum for cell biology (2014) **Imaging Technologies, Single Molecule Imaging, and Super-Resolution 1**
<http://www.ascb.org/files/AllPosterPresentations2014.pdf>
- ➔ Kroun M (2016) **Microscopy, Culture or PCR-verified cases of persistent [seronegative] Lyme Borreliosis.** <http://lymerick.net/persistent-borreliosis.html>
- ➔ Kroun M (2016) **Video microscopy on blood from danish chronically ill patients - with symptoms of chronic / relapsing *Borrelia* infection after antibiotic treatment.** <http://lymerick.net/MK-videomicroscopy.html>

PCR-Verfahren. PCR Methods

***Borrelia burgdorferi sensu lato* strains**

<http://www.pasteur.fr/recherche/borrelia/Borreliaspecies.html>

<http://www.reocities.com/HotSprings/Oasis/6455/bb-strains.txt>

NCBI Taxonomy *Borrelia* <http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=138>

- ➔ **Immunity** http://www.erlebnishaft.de/danger_model.pdf
- ➔ **Bakterielle Stress-Varianten** <http://www.erlebnishaft.de/stressvar1.pdf>
- ➔ **Borrelien Populations-Dynamik** <http://www.erlebnishaft.de/stressvar2.pdf>
- ➔ **Erweiterung der Henle-Koch'schen Postulate (2013)**
http://www.xerlebnishaft.de/expand_koch_post.pdf

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

Jaulhac B, Heller R, Limbach FX et al. (2000) Direct Molecular Typing of *Borrelia burgdorferi* Sensu Lato Species in Synovial Samples from Patients with Lyme Arthritis. *Journal of Clinical Microbiology*, 38, 1895-1900.

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“Perhaps most surprising, researchers found the genetic footprint of bacteria known as *Borrelia burgdorferi* in his DNA — making the Iceman the earliest known human infected by the bug that causes Lyme disease”.

Nolte O (2012) Nucleic Acid Amplification Based Diagnostic of Lyme (Neuro-) borreliosis – Lost in the Jungle of Methods, Targets, and Assays? *The Open Neurology Journal*, 6, (Suppl 1-M7) 129-139 <http://www.ncbi.nlm.nih.gov/pubmed/23230454>

“The current paper wants to summarize the available PCR/NAT assays for the detection of *B. burgdorferi* DNA in clinical specimens, with special attention to neurologic disorders, and to discuss the difficulties in PCR analysis and result interpretation, associated thereof”.

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Borrelia MLST Databases (2015) <http://pubmlst.org/borrelia/>
<http://pubmlst.org/>

Venczel R, Knocke L, Pavlic M et al (2015) **A novel duplex real-time PCR permits simultaneous detection and differentiation of *Borrelia miyamotoi* and *Borrelia burgdorferi sensu lato*.** ARTICLE in *INFECTION* · JULY 2015 See discussions, stats, and author profiles for this publication at: <http://www.researchgate.net/publication/280059012>

➔ **IRIDICA** <http://iridica.abbott.com/iridica.html>

Proteom – Nachweise (Microarrays). Proteome Microarrays.
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Liang FT, Kenneth Nelson F, Fikrig E (2002) DNA Microarray Assessment of Putative *Borrelia burgdorferi* Lipoprotein Genes doi: 10.1128/IAI.70.6.3300-3303.2002 *Infect. Immun.* 70(6) 3300-3303

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(2014) Sciomics: Antikörper-Microarrays und ihre vielfältigen Anwendungen.
<http://www.bio-pro.de/magazin/thema/00158/index.html?lang=de&artikelid=/artikel/09868/index.html>

SONSTIGES, OTHERS

EM-Signale. Electromagnetic Signals (ist umstritten für therapeutische Anwendungen, still controversial for considerations in therapy)

[Del Giudice E](#), [Preparata G](#), [Vitiello G](#) (1988) Water as a Free Electric Dipole Laser. *Phys. Rev. Lett.* 61, 1085–1088 http://prl.aps.org/abstract/PRL/v61/i9/p1085_1
“We show that the usually neglected interaction between the electric dipole of the water molecule and the quantized electromagnetic radiation field can be treated in the context of a recent quantum field theoretical formulation of collective dynamics. We find the emergence of collective modes and the appearance of permanent electric polarization around any electrically polarized impurity.”

Hoffmann R, Torrence V. (1993) *Chemistry Imagined. Reflexions on Science.* SMITHSONIAN INSTITUTION PRESS, WASHINGTON, DC, ISBN 10: [1560982144](#) / ISBN 13: [9781560982142](#) S. 144
<http://www.abebooks.de/CHEMISTRY-IMAGINED-REFLECTIONS-SCIENCE-HARDBACK-HOFFMANN/9032790507/bd>

Preparata G (1995) *QED Coherence in Matter.* (Singapore: World Scientific) ISBN 9810222491 S. 195, S. 216
“... it is not impossible to imagine that such marvelously ordered structure may retain and release electromagnetic information that it has required in some way or other. ... the coherence domains of water...”
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