

Das angeborene Immunsystem, innate immunity, Komplement, Faktor H, C3, C4, Mannose bindendes Lektin, Chaperone, N-Acetylglucosaminidase, Inflammasom, 25-Hydroxycholesterol

Das angeborene (unspezifische) Immunsystem besteht aus den **anatomische Barrieren** (Haut, Eingeweide- und Lungen- Oberflächen) und aus **speziellen chemischen Wirk-Stoffen**.

The innate (non-specific) immune system consists of the **anatomical barriers** (skin, gut and lung surfaces) and from **special chemical active substances**.

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Komplement, Complement

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“The elements of the innate (non-specific) immune system include anatomical barriers, secretory molecules and cellular components. Among the mechanical anatomical barriers are the skin and internal epithelial layers, the movement of the intestines and the oscillation of broncho-pulmonary cilia. Associated with these protective surfaces are chemical and biological agents”.

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<http://www.cell.com/trends/parasitology/abstract/S1471-4922%2812%2900199-7>

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http://www.researchgate.net/publication/264643996_The_relapsing_fever_spirochete_Borrelia_miyamotoi_resists_complement-mediated_killing_by_human_serum

« **The data presented here provide strong evidence that B. miyamotoi overcome human complement by affecting the central complement component C3, thereby inhibiting formation of the C3 convertase and downstream activation of the complement cascade.** »

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Factor H

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„**In conclusion, BbCRASP-3 has been identified as a novel factor H-binding protein on B. burgdorferi which by conferring complement resistance to the pathogen may contribute to its persistence in the mammalian host.**“

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<http://www.ncbi.nlm.nih.gov/pubmed/25582082>

C3, C4

Diagnostik: <http://www.laborlexikon.de/Lexikon/Infoframe/k/Komplement-Untersuchungen.htm>

Therapie: Nur Systemdestruktions-Methoden, keine letztlich heilende Therapie bekannt.

Therapy: Only system Destruktions methods, ultimately no known curative therapy.

[Alitalo A](#), [Meri T](#), [Rämö L](#), [Jokiranta TS](#), [Heikkilä T](#), [Seppälä IJ](#), [Oksi J](#), [Viljanen M](#), [Meri S](#) (2001) Complement evasion by ***Borrelia burgdorferi***: serum-resistant strains promote C3b inactivation. *Infect Immun.* 69(6), 3685-91.

Mocco J, Wilson DA, Komotar RJ et al. (2006) Alterations in Plasma Complement Levels after Human **Ischemic Stroke**. *Neurosurgery*, 59, 28-33. <http://dx.doi.org/10.1227/01.NEU.0000219221.14280.65>

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CONCLUSIONS: These findings suggest that C3a and C4a may be useful markers of Lyme disease in patients seen shortly after tick bite, even in those without EM.

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Stricker RB (2012) "One of the benefits of doing C3a and C4a testing in a Lyme patient with positive ANA is that if the C3a is normal prior to antibiotic treatment, the patient is unlikely to have an autoimmune disease no matter how high the ANA titer is. Like the ANA, C4a is an inflammatory marker that can be high in any condition that involves inflammation."

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Mazumdar B, Kim H, Meyer K, et al. (2012) Hepatitis C virus proteins inhibit C3 complement production. J Virol 86(4), 2221-8. [Abstract](#)

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Unbound MEDLINE results for: Complement AND human | [Refine this search](#)

77713 journal articles in the PubMed database

Unbound MEDLINE results for: innate immunity AND human | [Refine this search](#)

42520 journal articles in the PubMed database

Mannose bindende Lektine, mannose-binding lectins

Das **Mannose-bindende Lektin (MBL)** gehört zu den wichtigsten Komponenten der angeborenen Immunabwehr.

The **mannose-binding lectin (MBL)** is one of the most important components of the innate immune response.

(2014) **Diagnostik:** z.B. Institut für medizinische Diagnostik, Berlin-Potsdam

<http://www.imd-berlin.de/leistungsschwerpunkte/immundefekte/untersuchungsverfahren/mannose-bindendes-lektin-mbl.html>

(214) **Therapie, therapy:** [Griffithsin](#) (**viral entry inhibitor**)

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Eisen DP et al. (2003) Impact of Mannose-Binding Lectin on Susceptibility to Infectious Diseases. Clin Infect Dis 37, 1496-1505

Ezekowitz RA. (2003) Role of the mannose-binding lectin in innate immunity. J Infect Dis 187(Suppl 2), S335-9

Tsutsumi et al. (2005) **Mannose binding lectin: Genetics and autoimmun disease**. Autoimmunity Reviews 4, 364-372. <http://www.ncbi.nlm.nih.gov/pubmed/16081027>

[Emau P](#), [Tian B](#), [O'keefe BR](#) et al (2007) **Griffithsin, a potent HIV entry inhibitor, is an excellent candidate for anti-HIV microbicide**. J Med Primatol. 36(4-5), 244-53.

<http://www.ncbi.nlm.nih.gov/pubmed/17669213>

O'Keefe BR, Vojdani F, Buffa V et al. (2009) Scaleable manufacture of HIV-1 entry inhibitor **griffithsin** and validation of its safety and efficacy **as a topical microbicide** component. PNAS Early Edition. <http://www.pnas.org/content/early/2009/03/27/0901506106.full.pdf+html> Proc. Natl. Acad. Sci. U. S. A. 106, 6099-6104. <http://www.ncbi.nlm.nih.gov/pubmed/19332801> **“Plant-produced GRFT (GRFT-P) was shown as active against HIV at picomolar concentrations, directly virucidal via binding to HIV envelope glycoproteins, and capable of blocking cell-to-cell HIV transmission.”**

[Moulaei T](#), [R. Shenoy](#) SR, [Giomarelli B](#) et al. (2010) **Monomerization of Viral Entry Inhibitor Griffithsin Elucidates the Relationship between Multivalent Binding to Carbohydrates**

and anti-HIV Activity. Structure [18\(9\)](#), 1104–1115

<http://www.cell.com/structure/abstract/S0969-2126%2810%2900268-6>

http://ac.els-cdn.com/S0969212610002686/1-s2.0-S0969212610002686-main.pdf?_tid=253d3a08-76fe-11e4-bf25-00000aacb35e&acdnat=1417179644_c3e0e40a207215894536297938786bab

(2012) **Anti-viral griffiths** in compounds, compositions and methods of use. US 8088729 B2

<http://www.google.com/patents/US8088729> (**mannose-binding lectins** such as griffithsin)

« **A method of inhibiting a viral infection of a host comprising administering to the host an anti-viral polypeptide comprising SEQ ID NO: 3, where in the viral infection is a Hepatitis C viral infection, a Severe Acute Respiratory Syndrome (SARS) viral infection, an H5N1 viral infection, or an Ebola viral infection, and where upon the viral infection is inhibited.** »

[Barton](#) Chr, [Kouokam](#) JC, [Lasnik](#) AB et al. (2014) **Activity of and Effect of Subcutaneous Treatment with the Broad-Spectrum Antiviral Lectin Griffithsin in Two Laboratory Rodent Models.** Antimicrob Agents Chemother. 58(1), 120–127. doi: [10.1128/AAC.01407-13](https://doi.org/10.1128/AAC.01407-13)

PMCID: PMC3910741 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3910741/>

<http://www.ncbi.nlm.nih.gov/pubmed/24145548>

„**The results presented in this work show that minimal toxicity was induced by a range of single and repeated daily subcutaneous doses of GRFT in two rodent species, although we noted treatment-associated increases in spleen and liver mass suggestive of an antidrug immune response. ...**

Overall, our data presented here show that GRFT accumulates to relevant therapeutic concentrations which are tolerated with minimal toxicity. »

[Sajanti EM](#), [Gröndahl-Yli-Hannuksela K](#), [Kauko T](#) et al. (2014) **Lyme Borreliosis and Deficient Mannose-Binding Lectin Pathway of Complement.** J Immunol. pii: 1402128.

<http://www.jimmunol.org/content/early/2014/11/21/jimmunol.1402128.abstract>

Chaperone, HSP60/GroEL, HSP70, HSP90, HSP100/Cip, kleinere Hitzeschockproteine

Helmes C. (1995) Molekulare und immunologische Charakterisierung der immundominanten Antigene HSP60, HSP70 und LpLA7 von **Borrelia burgdorferi**, dem Erreger der Lyme-Borreliose. Heidelberg, Univ. Diss., 1997

<http://katalog.ub.uni-heidelberg.de/cgi-bin/titel.cgi?katkey=9714870>

http://books.google.de/books/about/Molekulare_und_immunologische_Charakteri.html?id=tbepHAAACAAJ&redir_esc=y

Bukau B, Horwich AL (1998) The Hsp70 and Hsp60 Chaperone Machines. Cell Vol 92, 351-366 (**Abstract**) <http://www.cell.com/fulltext/S0092-8674%2800%2980928-9>

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(**Abstract**)

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(2010) 11, 777-788 (**Abstract**)

Oh E et al. (2011) Selective ribosome profiling reveals the cotranslational chaperone action of trigger factor in vivo. Cell 147, 1295-1308 (**Abstract**).

Lu M et al. (2014) Opposing unfolded-protein-response signals converge on death receptor 5 to control apoptosis Science, 345, 98-101

<http://www.sciencemag.org/content/345/6192/98.short>

➔ **Chaperones (Anstandsdamen)**

<http://www.ncbi.nlm.nih.gov/pubmed/?term=chaperones>

➔ **Heat shock protein 70 (HSP70)** <http://www.ncbi.nlm.nih.gov/pubmed/?term=hsp70>

N-acetylgalactosaminidase (Nagalase) Aktivität und Gc-MAF

Nagalase (Alpha-N-acetylgalactosaminidase) ist ein in **Bakterien**, in **Tumoren**, **Tieren**, **Menschen** physiologisch vorkommendes Enzym, eine Glycosid-Hydrolase. Das Enzym inaktiviert durch Zuckerabspaltung den Immun-Booster GcMAF (MAF = Makrophagen aktivierender Faktor).

Nagalase wirkt immunsuppressiv durch Inaktivierung der Makrophagen.

Quelle u.a.: <http://dr-bieger.de/nagalase-und-gcmf-dezember-2012/>

Nagalase (alpha-N-acetylgalactosaminidase) is a physiologically occurring enzyme in **bacteria**, **tumors** and in **animals**, it is a glycoside hydrolase. The enzyme inactivates the immune Booster GcMAF (MAF = macrophage activating factor) by cleavage of the sugar.

Nagalase has an immunosuppressive effect by inactivation of macrophages.

Source, inter alia: <http://dr-bieger.de/nagalase-und-gcmf-dezember-2012/>

Laboratorien, laboratories:

ELN <http://www.hdri-usa.com/tests/nagalase/> <http://www.europeanlaboratory.nl/documents/Nagalase%20in%20bloed%20eng.pdf>
RED Laboratories

<http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&ved=0CHcQFjAI&url=http%3A%2F%2Fwww.arydol.es%2Farchivos%2Ftemas%2Fdolor-cronico-sindrome-fatiga-cronica%2Fdownload.php%3F%3Dsindrome-intestino->

[permeable.pdf&ei=f661UoyyK4bltAaQlIC4CA&usq=AFQjCNH7iw77cCamJa68mLwTSUbaAlcox7Q&bvm=bv.58187178.d.Yms](http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&ved=0CHcQFjAI&url=http%3A%2F%2Fwww.arydol.es%2Farchivos%2Ftemas%2Fdolor-cronico-sindrome-fatiga-cronica%2Fdownload.php%3F%3Dsindrome-intestino-permeable.pdf&ei=f661UoyyK4bltAaQlIC4CA&usq=AFQjCNH7iw77cCamJa68mLwTSUbaAlcox7Q&bvm=bv.58187178.d.Yms)

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„...However, the response to GcMAF was often relatively robust and certain trends stand out.“

Sample records for **serum nagalase activity** from WorldWideScience.org
<http://worldwidescience.org/topicpages/s/serum+nagalase+activity.html>

Inflammation <http://en.wikipedia.org/wiki/Inflammation>
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„**The results of our integrativeimmunotherapy seem hopeful. We also plan to conduct a comparative clinical study. Immunotherapy has become an attractive new strategy in the treatment of cancer.** »

Sample records for serum nagalase activity from WorldWideScience.org
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Inflammasom

Das Inflammasom ist ein cytosolischer **Proteinkomplex** in Makrophagen und neutrophilen Granulozyten, der durch Bestandteile von Bakterien oder Kristalle aus Harnsäure, Siliziumdioxid, Titanoxid, Cholesterin, Asbest, **Nanopartikel von spezieller Größe**) stimuliert wird. Quelle: <http://de.wikipedia.org/wiki/Inflammasom>
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