

---

# **ArminLabs Testing – The Basics**

## **Holiday Inn Regents Park, 6<sup>th</sup> March 2018, London, UK**

**Armin Schwarzbach MD PhD**

Specialist for Laboratory Medicine

### **ArminLabs**

Laboratory for tick-borne diseases

**Tel. 0049 821 2182879**

**info@arminlabs.com**

[www.arminlabs.com](http://www.arminlabs.com)



**www.aonm.org**



This document is intellectual property of Armin Schwarzbach MD PhD.  
Reproduction only with permission. Please note the copyright.

# The Basics - Agenda

---

- ▶ **1. Checklists**
- ▶ **2. How to choose the relevant tests**
- ▶ **3. Basic interpretations**
- ▶ **4. Q&As**

# 1. Checklists

## Short Symptom Checklist for Lyme B

Name, first name: .....

▶	Actual and former symptoms: Please mark with a
1	Former or recent tick bite
2	Former or recent bull's eye rash
3	Summer flu after tick bite
4	Fatigue/Malaise/Lethargy
5	Loss of physical/mental capacity, general weakness
6	Neck-pain, neck stiffness
7	Headache
8	Painful joints, swollen joints
9	General aches and pains, tendon problems
10	Muscle pain, muscle weakness
11	Fever, feverish feeling, shivering
12	Ears: intermittent red, swollen earlap
13	Heart problems, disturbance of cardiac rhythm
14	Cough, expectoration, breathlessness
15	Night sweat
16	Sleeplessness, waking up around ..... p.m. ▾
17	Tinnitus
18	Swollen lymph nodes
19	Numbness of the skin
20	"Burning" or "pins and needles" skin sensations, painful sole or foot
21	Back pain, back stiffness
22	Muscle pain, muscle weakness
23	Shivering, chill
24	Blurred, foggy, cloudy, flickering, double vision
25	Aggressiveness, drowsiness, panic attacks, anxiety, mood swings
26	Concentration problems, short-term memory loss, forgetfulness
27	Skin partly thin, paper-like, transparent, dry
Total number of symptoms for	

Antibiotics? When? Which one(s)? How long? Please send the form to info@

## Coinfections-Checklist

Name, first name: ..... Date (DD/MM/YYYY): .....

	Actual and former symptoms Please mark with a cross	X	Score-Points (filled in by physician/naturopath)	Ranking
1	Stomach ache, gut problems	<input type="checkbox"/>	Ehrlichia: .....	
2	Anaemia	<input type="checkbox"/>	Babesia: .....	
3	Diarrhoea intermittent	<input type="checkbox"/>	Rickettsia: .....	
4	Fever or feverish feeling	<input type="checkbox"/>	Bartonella: .....	
5	Lack of concentration, memory disturbance, forgetfulness	<input type="checkbox"/>	Chlamydiae: .....	
6	Encephalitis/Inflammation of the brain (NMR)	<input type="checkbox"/>	Chlamydiae: .....	
7	Yellowish colour of the skin/eyes	<input type="checkbox"/>	Yersinia: .....	
8	Painful joints, swollen joints	<input type="checkbox"/>	Mycoplasma: .....	
9	General aches and pains, tendon problems	<input type="checkbox"/>	Coxsackie-Virus: .....	
10	Flu-like symptoms intermittent	<input type="checkbox"/>	EBV/CMV/HSV: .....	
11	Rash(es)	<input type="checkbox"/>		
12	Small red/purple spots of the skin	<input type="checkbox"/>		
13	Heart problems, disturbance of cardiac rhythm	<input type="checkbox"/>		
14	Cough, expectoration	<input type="checkbox"/>		
15	Headache	<input type="checkbox"/>		
16	Impaired liver function/ liver laboratory values	<input type="checkbox"/>		
17	Pneumonia, bronchitis	<input type="checkbox"/>		
18	Swollen lymph nodes	<input type="checkbox"/>		
19	Tonsillitis	<input type="checkbox"/>		
20	Enlargement of the spleen	<input type="checkbox"/>		
21	Fatigue / exhaustion, intermittent or chronic CFS	<input type="checkbox"/>		
22	Muscle pain, muscle weakness	<input type="checkbox"/>		
23	Shivering, chill	<input type="checkbox"/>		
24	Blurred, foggy, cloudy, flickering, double vision	<input type="checkbox"/>		
25	Nausea, vomiting	<input type="checkbox"/>		
26	Dark urine	<input type="checkbox"/>		
27	Itching or pain when urinating	<input type="checkbox"/>		

Please send the form to info@aonm.org or call our helpline on 03331 210 305

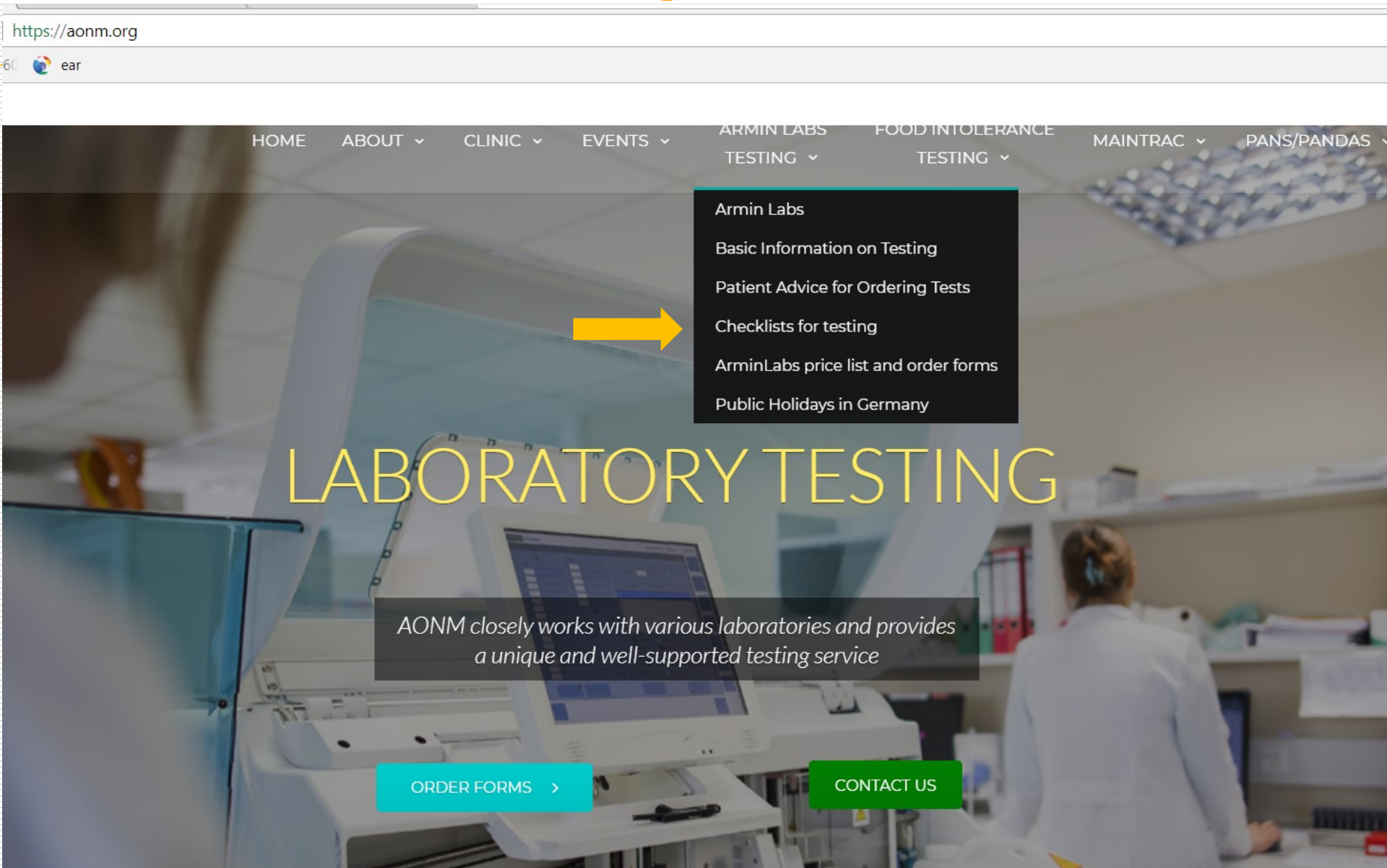
© by ArminLabs GmbH - CEO: Armin Schwarzbach MD PhD  
Zirbelstraße 58, 2nd floor - 86154 Augsburg - Germany - Phone: 0049 821 780 931 50 - [www.arminlabs.com](http://www.arminlabs.com)  
Email: [info@arminlabs.com](mailto:info@arminlabs.com) - VATReg-No.: DE815543871 - Amtsgericht Augsburg HRB 29350

page 1

- ▶ Where to find them
- ▶ How your patients fill them in

# Where to find the checklists:

## [www.aonm.org](http://www.aonm.org) – ArminLabs tab



HOME

ABOUT ▾

CLINIC ▾

EVENTS ▾

ARMIN LABS  
TESTING ▾

FOOD INTOLERANCE  
TESTING ▾

MAINTRAC ▾

PANS/PANDAS ▾

Armin Labs

Basic Information on Testing

Patient Advice for Ordering Tests

Checklists for testing

ArminLabs price list and order forms

Public Holidays in Germany

## LABORATORY TESTING

*AONM closely works with various laboratories and provides a unique and well-supported testing service*

ORDER FORMS >

CONTACT US

# Lyme symptom checklist



## Short Symptom Checklist for Lyme Borreliosis

Name, first name

Date:

▶	Actual and former symptoms: Please mark with a cross	X
1	Former or recent tick bite	<input type="checkbox"/>
2	Former or recent bull's eye rash	<input type="checkbox"/>
3	Summer flu after tick bite	<input type="checkbox"/>
4	Fatigue/Malaise/Lethargy	<input type="checkbox"/>
5	Loss of physical/mental capacity, general weakness	<input type="checkbox"/>
6	Neck-pain, neck stiffness	<input type="checkbox"/>
7	Headache	<input type="checkbox"/>
8	Painful joints, swollen joints	<input type="checkbox"/>
9	General aches and pains, tendon problems	<input type="checkbox"/>
10	Muscle pain, muscle weakness	<input type="checkbox"/>
11	Fever, feverish feeling, shivering	<input type="checkbox"/>
12	Ears: intermittent red, swollen earlap	<input type="checkbox"/>
13	Heart problems, disturbance of cardiac rhythm	<input type="checkbox"/>
14	Cough, expectoration, breathlessness	<input type="checkbox"/>
15	Night sweat	<input type="checkbox"/>
16	Sleeplessness, waking up around ..... p.m. <input type="button" value="v"/>	<input type="checkbox"/>
17	Tinnitus	<input type="checkbox"/>
18	Swollen lymph nodes	<input type="checkbox"/>
19	Numbness of the skin	<input type="checkbox"/>
20	"Burning" or "pins and needles" skin sensations, painful sole or foot	<input type="checkbox"/>
21	Back pain, back stiffness	<input type="checkbox"/>
22	Muscle pain, muscle weakness	<input type="checkbox"/>
23	Shivering, chill	<input type="checkbox"/>
24	Blurred, foggy, cloudy, flickering, double vision	<input type="checkbox"/>
25	Aggressiveness, drowsiness, panic attacks, anxiety, mood swings	<input type="checkbox"/>
26	Concentration problems, short-term memory loss, forgetfulness	<input type="checkbox"/>
27	Skin partly thin, paper-like, transparent, dry	<input type="checkbox"/>
Total number of symptoms for Lyme Borreliosis		

Antibiotics? When? Which one(s)? How long? Please send the form to [info@aonm.org](mailto:info@aonm.org) or call 03331 210 305

# Coinfections checklist

## Coinfections-Checklist

Name, first name  Date (DD/MM/YYYY)

	Actual and former symptoms Please mark with a cross	X	Score-Points (filled in by physician/naturopath)	Ranking
1	Stomach ache, gut problems	<input type="checkbox"/>	Ehrlichia: .....	
2	Anaemia	<input type="checkbox"/>	Babesia: .....	
3	Diarrhoea intermittent	<input type="checkbox"/>	Rickettsia: .....	
4	Fever or feverish feeling	<input type="checkbox"/>	Bartonella: .....	
5	Lack of concentration, memory disturbance, forgetfulness	<input type="checkbox"/>	Chl.pneumoniae: .....	
6	Encephalitis/inflammation of the brain (NMR)	<input type="checkbox"/>	Chl.trachomatis: .....	
7	Yellowish colour of the skin/eyes	<input type="checkbox"/>	Yersinia: .....	
8	Painful joints, swollen joints	<input type="checkbox"/>	Mycoplasma: .....	
9	General aches and pains, tendon problems	<input type="checkbox"/>	Coxsackie-Virus: .....	
10	Flu-like symptoms intermittent	<input type="checkbox"/>	EBV/CMV/HSV: .....	
11	Rash(es)	<input type="checkbox"/>		
12	Small red/purple spots of the skin	<input type="checkbox"/>		
13	Heart problems, disturbance of cardiac rhythm	<input type="checkbox"/>		
14	Cough, expectoration	<input type="checkbox"/>		
15	Headache	<input type="checkbox"/>		
16	Impaired liver function/ liver laboratory values	<input type="checkbox"/>		
17	Pneumonia, bronchitis	<input type="checkbox"/>		
18	Swollen lymph nodes	<input type="checkbox"/>		
19	Tonsillitis	<input type="checkbox"/>		
20	Enlargement of the spleen	<input type="checkbox"/>		
21	Fatigue / exhaustion, intermittent or chronic CFS	<input type="checkbox"/>		
22	Muscle pain, muscle weakness	<input type="checkbox"/>		
23	Shivering, chill	<input type="checkbox"/>		
24	Blurred, foggy, cloudy, flickering, double vision	<input type="checkbox"/>		
25	Nausea, vomiting	<input type="checkbox"/>		
26	Dark urine	<input type="checkbox"/>		
27	Itching or pain when urinating	<input type="checkbox"/>		

Please send the form to [info@aonm.org](mailto:info@aonm.org) or call our helpline on 03331 210 305

# Electronic version fills automatically

## Coinfections-Checklist

Name, first name		Date (DD/MM/YYYY)	
	Actual and former symptoms Please mark with a cross	X	Score-Points (filled in by physician/naturopath)
			Ranking
1	Stomach ache, gut problems	<input checked="" type="checkbox"/>	Ehrlichia: ..... 7 3
2	Anaemia	<input type="checkbox"/>	Babesia: ..... 4 6
3	Diarrhoea intermittent	<input type="checkbox"/>	Rickettsia: ..... 6 4
4	Fever or feverish feeling	<input checked="" type="checkbox"/>	Bartonella: ..... 8 2
5	Lack of concentration, memory disturbance, forgetfulness	<input checked="" type="checkbox"/>	Chl.pneumoniae: ..... 9 1
6	Encephalitis/Inflammation of the brain (NMR)	<input type="checkbox"/>	Chl.trachomatis: ..... 5 5
7	Yellowish colour of the skin/eyes	<input type="checkbox"/>	Yersinia: ..... 5 5
8	Painful joints, swollen joints	<input checked="" type="checkbox"/>	Mycoplasma: ..... 7 3
9	General aches and pains, tendon problems	<input checked="" type="checkbox"/>	Coxsackie-Virus: ..... 9 1
10	Flu-like symptoms intermittent	<input checked="" type="checkbox"/>	EBV/CMV/HSV: ..... 7 3
11	Rash(es)	<input checked="" type="checkbox"/>	
12	Small red/purple spots of the skin	<input type="checkbox"/>	
13	Heart problems, disturbance of cardiac rhythm	<input checked="" type="checkbox"/>	
14	Cough, expectoration	<input type="checkbox"/>	
15	Headache	<input checked="" type="checkbox"/>	
16	Impaired liver function/ liver laboratory values	<input type="checkbox"/>	
17	Pneumonia, bronchitis	<input type="checkbox"/>	
18	Swollen lymph nodes	<input checked="" type="checkbox"/>	
19	Tonsilitis	<input type="checkbox"/>	
20	Enlargement of the spleen	<input type="checkbox"/>	
21	Fatigue / exhaustion, intermittent or chronic CFS	<input checked="" type="checkbox"/>	
22	Muscle pain, muscle weakness	<input checked="" type="checkbox"/>	
23	Shivering, chill	<input type="checkbox"/>	
24	Blurred, foggy, cloudy, flickering, double vision	<input checked="" type="checkbox"/>	
25	Nausea, vomiting	<input checked="" type="checkbox"/>	
26	Dark urine	<input type="checkbox"/>	
27	Itching or pain when urinating	<input type="checkbox"/>	

Ranked in order of priority – draw for first place here: Chlamydia pneumoniae (CPN) and Coxsackie

Download from  
[www.aonm.org](http://www.aonm.org)

# Bartonella striae

---



Source: <https://www.lymedisease.org/cdc-identifies-new-species-of-bartonella/>

# Overview of the tests on the checklists

If you use our digital checklist, the steps 2-6 are automated in the PDF file. You can download it in several languages at [www.arminlabs.com/en/forms](http://www.arminlabs.com/en/forms).

Overview of the most appropriate laboratory tests (please mark with a cross on the Order-Form):

- **Borrelia burgdorferi:** Borrelia IgG-/IgM-SeraSpot® + Borrelia C6 ELISA + CD3-/CD57+ Cells + Borrelia EliSpot + Borrelia miyamotoi EliSpot
- **Ehrlichia & Anaplasma:** Ehrlichia IgM-/IgG-antibodies + Anaplasma IgM-/IgG-antibodies + Ehrlichia & Anaplasma EliSpot
- **Babesia:** Babesia IgG-/IgM-antibodies + Babesia microti EliSpot
- **Rickettsia:** Rickettsia IgG-antibodies + Rickettsia IgM-antibodies
- **Bartonella:** Bartonella IgG-antibodies + Bartonella IgM-antibodies + Bartonella henselae EliSpot
- **Chlamydia pneumoniae:** Chlamydia pneumoniae IgG-/IgA-antibodies + Chlamydia pneumoniae EliSpot
- **Chlamydia trachomatis:** Chlamydia trachomatis IgG-/IgA-antibodies + Chlamydia trachomatis EliSpot
- **Yersinia:** Yersinia IgG-/IgA- antibodies + Yersinia EliSpot
- **Mycoplasma:** Mycoplasma pneumoniae IgG-/IgA-antibodies + Mycoplasma pneumoniae EliSpot
- **Coxsackie-Virus:** Coxsackie IgG-/IgA-antibodies
- **EBV:** EBV IgG-/IgM-/EBNA-/Early-/Avidity-antibodies + EBV EliSpot
- **CMV:** CMV IgG-/IgM-antibodies + CMV EliSpot
- **HSV:** HSV 1/2 IgG-/IgA-/IgM-antibodies + HSV 1/2 EliSpot
- **VZV:** VZV EliSpot

ArminLabs GmbH - CEO: Armin Schwarzbach MD PhD

Contact in the UK: Academy of Nutritional Medicine (AONM), St. John's Innovation Centre, Cowley Road, Cambridge, CB4 0WS

Please feel free to contact us at [laboratories@aonm.org](mailto:laboratories@aonm.org) or call 03331 210 305

page 1

## 2. How to choose the most relevant tests



# No ranking on the Lyme checklist



## Short Symptom Checklist for Lyme Borreliosis

Name, first name: \_\_\_\_\_ Date: \_\_\_\_\_

►	Actual and former symptoms: Please mark with a cross	X
1	Former or recent tick bite	<input checked="" type="checkbox"/>
2	Former or recent bull's eye rash	<input checked="" type="checkbox"/>
3	Summer flu after tick bite	<input type="checkbox"/>
4	Fatigue/Malaise/Lethargy	<input checked="" type="checkbox"/>
5	Loss of physical/mental capacity, general weakness	<input checked="" type="checkbox"/>
6	Neck-pain, neck stiffness	<input checked="" type="checkbox"/>
7	Headache	<input checked="" type="checkbox"/>
8	Painful joints, swollen joints	<input type="checkbox"/>
9	General aches and pains, tendon problems	<input type="checkbox"/>
10	Muscle pain, muscle weakness	<input checked="" type="checkbox"/>
11	Fever, feverish feeling, shivering	<input type="checkbox"/>
12	Ears: intermittent red, swollen earlap	<input type="checkbox"/>
13	Heart problems, disturbance of cardiac rhythm	<input checked="" type="checkbox"/>
14	Cough, expectoration, breathlessness	<input type="checkbox"/>
15	Night sweat	<input type="checkbox"/>
16	Sleeplessness, waking up around ..... p.m. ▼	<input type="checkbox"/>
17	Tinnitus	<input type="checkbox"/>
18	Swollen lymph nodes	<input checked="" type="checkbox"/>
19	Numbness of the skin	<input type="checkbox"/>
20	"Burning" or "pins and needles" skin sensations, painful sole or foot	<input checked="" type="checkbox"/>
21	Back pain, back stiffness	<input checked="" type="checkbox"/>
22	Muscle pain, muscle weakness	<input type="checkbox"/>
23	Shivering, chill	<input type="checkbox"/>
24	Blurred, foggy, cloudy, flickering, double vision	<input checked="" type="checkbox"/>

No ranking for the Lyme checklist as several responses are knockout criteria – former or recent tick bite, and having had an Erythema migrans (EM, or bull's eye) rash.

# Borreliosis tests

## AONM TEST ORDER FORM

Last and first name (patient) Female ☐ Male ☐

Date of birth (DD/MM/YYYY): \_\_\_\_/\_\_\_\_/\_\_\_\_

Street, house no.:

Post-code: City:

County: Country:

Tel. no:

Email:

BARCODE

Time of blood draw: \_\_\_\_ : \_\_\_\_

Date (DD/MM): \_\_\_\_/\_\_\_\_

Phlebotomist use only:  
Material / Quantity ☐ CPDA /  
☐ Heparin / ☐ EDTA /  
☐ Serum / ☐

Please send the results to:  
myself ☐ my physician ☐

Name (physician):

Street, house no.:

Postcode: City:

County: Country:

Tel. no:

Email:

Please mark the tests you are ordering with a cross:

<input type="checkbox"/> 1 Borrelia Elispot	CPDA	<input type="checkbox"/> 29 CMV Elispot	CPDA
<input type="checkbox"/> 2 CD3/CD57+ cells	Hep., EDTA	<input type="checkbox"/> 30 CMV IgG/IgM antibodies	Serum
<input type="checkbox"/> 3 Borrelia IgG/IgM ELISA	Serum	<input type="checkbox"/> 31 VZV IgG/IgA /IgM antibodies	Serum
<input type="checkbox"/> 4 Borrelia IgG/Ig Seraspot	Serum	<input type="checkbox"/> 32 VZV DNA PCR	2 x EDTA
<input type="checkbox"/> 5 Borrelia DNA PCR	2 x EDTA	<input type="checkbox"/> 33 Coxsackie IgG /IgA antibodies	Serum
<input type="checkbox"/> 6 Ehrlichia/Anaplasma Elispot	CPDA	<input type="checkbox"/> 34 HHV 6 IgG/IgM antibodies	Serum
<input type="checkbox"/> 7 Ehrlichia/Anaplasma IgM/IgG antibodies	Serum	<input type="checkbox"/> 35 HHV 6 DNA PCR	2 x EDTA
<input type="checkbox"/> 8 Ehrlichia/Anaplasma DNA PCR	2 x EDTA	<input type="checkbox"/> 36 HHV 8 IgG antibodies	Serum
<input type="checkbox"/> 9 Bartonella IgG antibodies (henselae + quintana)	Serum	<input type="checkbox"/> 37 HHV 8 DNA PCR	2 x EDTA
<input type="checkbox"/> 10 Bartonella IgM antibodies (henselae + quintana)	Serum	<input type="checkbox"/> 38 CCP antibodies	Serum
<input type="checkbox"/> 11 Bartonella DNA PCR	2 x EDTA	<input type="checkbox"/> 39 ANA	Serum
<input type="checkbox"/> 12 Babesia IgG/IgM antibodies	Serum	<input type="checkbox"/> 40 ds-DNS antibodies	Serum
<input type="checkbox"/> 13 Babesia DNA PCR	2 x EDTA	<input type="checkbox"/> 41 ENA screening	Serum
<input type="checkbox"/> 14 Babesia DNA FISH	2 x EDTA	<input type="checkbox"/> 42 c- and p-ANCA	Serum
<input type="checkbox"/> 15 Chlamydia pneumoniae Elispot	CPDA	<input type="checkbox"/> 43 CRP	Serum
<input type="checkbox"/> 16 Chlamydia pneumoniae IgG/IgA antibodies	Serum	<input type="checkbox"/> 44 Diarrhoea/Coeliac Disease	Serum
		<input type="checkbox"/> 45 Organ profile: FBC, AST, ALT, GGT, LDH, CHE, total bilirubin, amylase, lipase, CK, creatinine, uric acid, sodium	Ser. EDTA

**When testing for Borreliosis, the recommendation is to do tests 1, 2, and 4 if possible.**

**\* Further information on the CD57+ test in Part 2 this evening**

## Basic diagnostic tests for chronic Lyme disease

---

1. **Borrelia IgM and IgG antibodies by Microarray (SeraSpot):**  
Sensitivity 60%, specificity 99%
2. **Borrelia Elispot = current Borrelia activity:**  
Sensitivity 84%, specificity 82-100%
3. **CD3-/CD57+ cells = chronic Borrelia activity: Sensitivity 70%, specificity ? (low in Chlamydia and other bacterial infections)**

**All 3 tests together: >90% sensitivity+99% specificity**

**Monitoring 4-6 weeks after end of therapies to verify whether the therapy has been successful or not:**

**Laboratory STAGING process recommended**

# Coinfections: combine ranking with the patient's clinical picture

## Coinfections-Checklist

Name, first name ..... Date (DD/MM/YYYY) .....

	Actual and former symptoms Please mark with a cross	X	Score-Points (filled in by physician/naturopath)	Ranking
1	Stomach ache, gut problems	<input checked="" type="checkbox"/>	Ehrlichia: ..... 2	6
2	Anaemia	<input type="checkbox"/>	Babesia: ..... 3	5
3	Diarrhoea intermittent	<input type="checkbox"/>	Rickettsia: ..... 3	5
4	Fever or feverish feeling	<input type="checkbox"/>	Bartonella: ..... 4	4
5	Lack of concentration, memory disturbance, forgetfulness	<input type="checkbox"/>	Chl.pneumoniae: ..... 5	3
6	Encephalitis/Inflammation of the brain (NMR)	<input type="checkbox"/>	Chl.trachomatis: ..... 4	4
7	Yellowish colour of the skin/eyes	<input checked="" type="checkbox"/>	Yersinia: ..... 3	5
8	Painful joints, swollen joints	<input type="checkbox"/>	Mycoplasma: ..... 3	5
9	General aches and pains, tendon problems	<input checked="" type="checkbox"/>	Coxsackie-Virus: ..... 6	2
10	Flu-like symptoms intermittent	<input type="checkbox"/>	EBV/CMV/HSV: ..... 7	1
11	Rash(es)	<input checked="" type="checkbox"/>		
12	Small red/purple spots of the skin	<input type="checkbox"/>		
13	Heart problems, disturbance of cardiac rhythm	<input checked="" type="checkbox"/>		
14	Cough, expectoration	<input type="checkbox"/>		
15	Headache	<input type="checkbox"/>		
16	Impaired liver function/ liver laboratory values	<input type="checkbox"/>		
17	Pneumonia, bronchitis	<input type="checkbox"/>		
18	Swollen lymph nodes	<input checked="" type="checkbox"/>		
19	Tonsilitis	<input checked="" type="checkbox"/>		
20	Enlargement of the spleen	<input type="checkbox"/>		
21	Fatigue / exhaustion, intermittent or chronic CFS	<input checked="" type="checkbox"/>		
22	Muscle pain, muscle weakness	<input checked="" type="checkbox"/>		
23	Shivering, chill	<input type="checkbox"/>		
24	Blurred, foggy, cloudy, flickering, double vision	<input checked="" type="checkbox"/>		
25	Nausea, vomiting	<input type="checkbox"/>		
26	Dark urine	<input type="checkbox"/>		
27	Itching or pain when urinating	<input type="checkbox"/>		

Suggestion is – as a rule of thumb – to do the first three in terms of ranking. But always combine with the patient's clinical presentation.

# Deciding amongst the herpes viruses

## Coinfections-Checklist

Name, first name ..... Date (DD/MM/YYYY) .....

	Actual and former symptoms Please mark with a cross	X	Score-Points (filled in by physician/naturopath)	Ranking
1	Stomach ache, gut problems	<input checked="" type="checkbox"/>	Ehrlichia: ..... 2	6
2	Anaemia	<input type="checkbox"/>	Babesia: ..... 3	5
3	Diarrhoea intermittent	<input type="checkbox"/>	Rickettsia: ..... 3	5
4	Fever or feverish feeling	<input type="checkbox"/>	Bartonella: ..... 4	4
5	Lack of concentration, memory disturbance, forgetfulness	<input type="checkbox"/>	ChL.pneumoniae: ..... 5	3
6	Encephalitis/Inflammation of the brain (NMR)	<input type="checkbox"/>	ChL.trachomatis: ..... 4	4
7	Yellowish colour of the skin/eyes	<input checked="" type="checkbox"/>	Yersinia: ..... 3	5
8	Painful joints, swollen joints	<input type="checkbox"/>	Mycoplasma: ..... 3	5
9	General aches and pains, tendon problems	<input checked="" type="checkbox"/>	Coxsackie-Virus: ..... 6	2
10	Flu-like symptoms intermittent	<input type="checkbox"/>	EBV/CMV/HSV: ..... 7	1
11	Rash(es)	<input checked="" type="checkbox"/>		
12	Small red/purple spots of the skin	<input type="checkbox"/>		
13	Heart problems, disturbance of cardiac rhythm	<input checked="" type="checkbox"/>		
14	Cough, expectoration	<input type="checkbox"/>		
15	Headache	<input type="checkbox"/>		
16	Impaired liver function/ liver laboratory values	<input type="checkbox"/>		
17	Pneumonia, bronchitis	<input type="checkbox"/>		
18	Swollen lymph nodes	<input checked="" type="checkbox"/>		
19	Tonsilitis	<input checked="" type="checkbox"/>		
20	Enlargement of the spleen	<input type="checkbox"/>		
21	Fatigue / exhaustion, intermittent or chronic CFS	<input checked="" type="checkbox"/>		
22	Muscle pain, muscle weakness	<input checked="" type="checkbox"/>		
23	Shivering, chill	<input type="checkbox"/>		
24	Blurred, foggy, cloudy, flickering, double vision	<input checked="" type="checkbox"/>		
25	Nausea, vomiting	<input type="checkbox"/>		
26	Dark urine	<input type="checkbox"/>		
27	Itching or pain when urinating	<input type="checkbox"/>		

No. 1 suggestion is the group of Herpes viruses. To decide which to do (EBV, CMV, HSV1/HSV2, VZV, HHV6), the clinical presentation and history are key. If there is e.g. a history of glandular fever, reactivation is always possible.

If in doubt, often best to choose the Elispot, as it does not use the B cells (antibodies), which can have issues of their own, but the T cells, and shows current cellular activity against the infection.

# Can be helpful to select a balance of bacterial and viral infections (depending on the patient's presentation)

Please mark the tests you are ordering with a cross:

<input type="checkbox"/> 1	Borrelia <del>Elispot</del>	CPDA	<input type="checkbox"/> 29	CMV <del>Elispot</del>	CPDA
<input type="checkbox"/> 2	CD3/CD57+ cells	Hep., EDTA	<input type="checkbox"/> 30	CMV IgG/IgM antibodies	Serum
<input type="checkbox"/> 3	Borrelia IgG/IgM ELISA	Serum	<input type="checkbox"/> 31	VZV IgG/IgA /IgM antibodies	Serum
<input type="checkbox"/> 4	Borrelia IgG/Ig <del>Seraspot</del>	Serum	<input type="checkbox"/> 32	VZV DNA PCR	2 x EDTA
<input type="checkbox"/> 5	Borrelia DNA PCR	2 x EDTA	<input type="checkbox"/> 33	Coxsackie IgG /IgA antibodies	Serum
<input type="checkbox"/> 6	<del>Ehrlichia/Anaplasma Elispot</del>	CPDA	<input type="checkbox"/> 34	HHV 6 IgG/IgM antibodies	Serum
<input type="checkbox"/> 7	<del>Ehrlichia/Anaplasma IgM/IgG antibodies</del>	Serum	<input type="checkbox"/> 35	HHV 6 DNA PCR	2 x EDTA
<input type="checkbox"/> 8	<del>Ehrlichia/Anaplasma DNA PCR</del>	2 x EDTA	<input type="checkbox"/> 36	HHV 8 IgG antibodies	Serum
<input type="checkbox"/> 9	Bartonella IgG antibodies ( <del>henselae + quintana</del> )	Serum	<input type="checkbox"/> 37	HHV 8 DNA PCR	2 x EDTA
<input type="checkbox"/> 10	Bartonella IgM antibodies ( <del>henselae + quintana</del> )	Serum	<input type="checkbox"/> 38	CCP antibodies	Serum
<input type="checkbox"/> 11	Bartonella DNA PCR	2 x EDTA	<input type="checkbox"/> 39	ANA	Serum
<input type="checkbox"/> 12	Babesia IgG/IgM antibodies	Serum	<input type="checkbox"/> 40	ds-DNS antibodies	Serum
<input type="checkbox"/> 13	Babesia DNA PCR	2 x EDTA	<input type="checkbox"/> 41	ENA screening	Serum
<input type="checkbox"/> 14	Babesia DNA FISH	2 x EDTA	<input type="checkbox"/> 42	c- and p-ANCA	Serum
<input type="checkbox"/> 15	Chlamydia pneumoniae <del>Elispot</del>	CPDA	<input type="checkbox"/> 43	CRP	Serum
<input type="checkbox"/> 16	Chlamydia pneumoniae IgG/IgA antibodies	Serum	<input type="checkbox"/> 44	Diarrhoea/ <del>Coeliac Disease</del>	Serum
<input type="checkbox"/> 17	Chlamydia trachomatis <del>Elispot</del>	CPDA	<input type="checkbox"/> 45	Organ profile: FBC, AST, ALT, GGT, LDH, CHE, total bilirubin, amylase, lipase, CK, creatinine, uric acid, sodium, potassium, alkaline phosphatase, TSH	<del>Serum</del> , EDTA
<input type="checkbox"/> 18	Chlamydia trachomatis IgG/IgA antibodies	Serum	<input type="checkbox"/> 46	Total protein, protein electrophoresis	Serum
<input type="checkbox"/> 19	Mycoplasma <del>pneumon.</del> IgG/IgA antibodies	Serum	<input type="checkbox"/> 47	Lipid profile (cholesterol, <del>triglycerides</del> , HDL, LDL)	Serum
<input type="checkbox"/> 20	Toxoplasma IgG/IgM antibodies	Serum	<input type="checkbox"/> 48	Thyroid hormones (TSH, fT3, fT4)	Serum
<input type="checkbox"/> 21	Yersinia <del>Elispot</del>	CPDA	<input type="checkbox"/> 49	Thyroid antibodies (TPO abs, TG Abs, TSH receptor Abs)	Serum
<input type="checkbox"/> 22	Yersinia IgG/IgA antibodies	Serum	<input type="checkbox"/> 50	Heavy metals in urine (aluminium, cadmium, lead, mercury, copper, creatinine)	Serum
<input type="checkbox"/> 23	Rickettsia IgG antibodies (conorii + <del>mooseri</del> )	Serum	<input type="checkbox"/> 51	Vitamin D	Serum
<input type="checkbox"/> 24	Rickettsia IgM antibodies (conorii + <del>mooseri</del> )	Serum	<input type="checkbox"/> 52	Vitamin B6	EDTA
<input type="checkbox"/> 25	Rickettsia DNA PCR	2 x EDTA	<input type="checkbox"/> 53	Vitamin B12	Serum
<input type="checkbox"/> 26	EBV <del>Elispot</del> (2 antigens: lytic + latent)	CPDA	<input type="checkbox"/> 54	Folate	Serum
<input type="checkbox"/> 27	EBV IgG/IgM + anti-EBNA antibodies	Serum	<input type="checkbox"/> 55	<del>LipoDens</del> Lipoproteins	Serum
<input type="checkbox"/> 28	HSV 1/2 IgG/IgA/IgM antibodies	Serum			

Viral

## Currently the EliSpot is available for:

---

- ☐ *Borrelia burgdorferi* (3 subspecies: *B.b. sensu stricto* + *B.b. garinii* + *B.b. afzelii*)
- ☐ *Borrelia myamotoi*
- ☐ ***Bartonella henselae* (new!)**
- ☐ ***Babesia microti* (new!)**
- ☐ *Chlamydia pneumoniae*
- ☐ *Chlamydia trachomatis*
- ☐ ***Mycoplasma pneumoniae* (new!)**
- ☐ *Ehrlichia*
- ☐ *Yersinia* species
- ☐ Epstein Barr Virus (EBV)
- ☐ Cytomegalovirus (CMV)
- ☐ Herpes Simplex Virus 1 / 2
- ☐ Varicella Zoster Virus (VZV)

# Almost any infection-related test possible

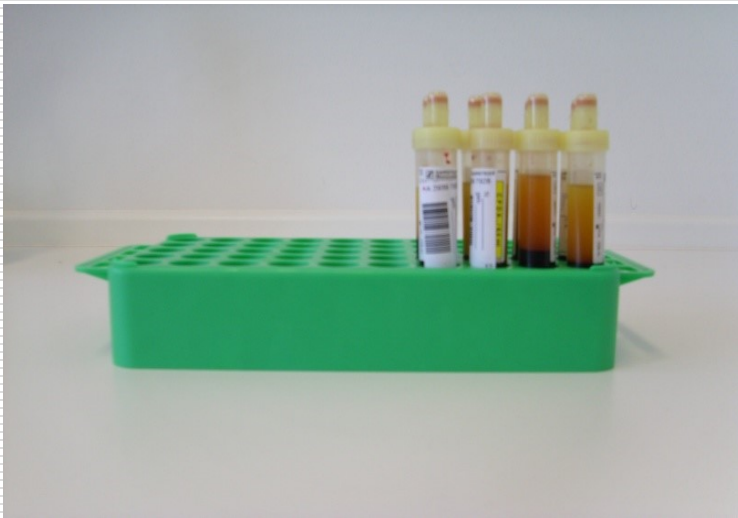
---

Please do ask: ArminLabs can perform almost any bacterial/viral test, even if not on the form: West Nile Virus, Tularemia, Babesia WA1AB, Rocky Mountain Spotted Fever, Q Fever, Typhus, Brucella, Echovirus, Norovirus ....

Armin is also very happy to discuss testing options and likelihood of infection, depending on the carrier – worth remembering that infections can be transmitted by any insect that regurgitates – not just ticks. Mites, mosquitoes, fleas, chiggers, horseflies ...

# Preanalytics: Best workflow for best quality

- **Shake all tubes carefully 5-10 times after taking blood**
- **Put all blood samples in an upright position for 30 minutes**
- **Store at room temperature. No sun, no refrigerator nor cooling of any tubes**
- **Protect all tubes in a special test kit for transportation/logistics**



# 3. Interpretations: Borrelia EliSpot (1)

## Borrelia burgdorferi Elispot

Borrelia burgdorferi Full Antigen	+	8	SI
Borrelia b. OSP-Mix (OSPA/OSPC/DbpA)	+	6	SI
Borrelia burgdorferi LFA-1	+	6	SI

## FINAL REPORT

## Borrelia burgdorferi Elispot

Borrelia burgdorferi Full Antigen	+	32	SI
Borrelia b. OSP-Mix (OSPA/OSPC/DbpA)	+	29	SI
Borrelia burgdorferi LFA-1	(+)	2	SI

## Comments:

The results of the EliSpot tests indicate current cellular activity against *Borrelia burgdorferi*.

Explanation of antigens:

*Borrelia burgdorferi* Full Antigen: *Borrelia b.* B31-reference strain (*Borrelia b sensu stricto*)

*Borrelia burgdorferi* peptide mix: OspA from *Borrelia b. sensu stricto*, *Borrelia afzelii*, *Borrelia garinii* + OspC native + DbpA recombinant

*Borrelia burgdorferi* LFA-1 (Lymphocyte Function Antigen 1): Own body protein + *Borrelia burgdorferi sensu stricto* (shared epitope). Often associated with autoimmune diseases: collagenosis, Rheumatoid Arthritis, vasculitis. If positive or borderline positive look at: ANA, CCP\* antibodies, ANCA.

(Native: cultured antigens/  
Recombinant: produced using genetic technology)

>3 = positive

2-3 = weak positive

<2 = negative

\* CCP = cyclic citrullinated peptide

# Borrelia EliSpot (2)

Analysis	Result	Units	Reference Range
<b>Borrelia burgdorferi Elispot</b>			
Borrelia burgdorferi Full Antigen (+)	3	SI	
Borrelia b. OSP-Mix (OSPA/OSPC/DbpA) (+)	2	SI	
Borrelia burgdorferi LFA-1	0	SI	

>3 = positive

2-3 = weak positive

<2 = negative

## Borrelia EliSpot \*

1 Borrelia b. Full Antigen	1 SI
0-1 = negative	
2-3 = weak positive	
> 3 = positive	
1 Borrelia b. OSP-Mix	1 SI
0-1 = negative	
2-3 = weak positive	
> 3 = positive	
1 Borrelia burgdorferi LFA-1	1 SI
0-1 = negative	
2-3 = weak positive	
> 3 = positive	

Negative – though best to always see this in combination with the CD57+: if immunity is very suppressed, the T cells may not be able to express a rigorous response

Analysis	Result	Units	Reference Range
----------	--------	-------	-----------------

**Borrelia burgdorferi antibodies SeraSpot (Microarray)**

<b>Borrelia burgdorferi SeraSpot IgG</b>	positive		negative
Borr. SeraSpot VlsE (B.b. afzelii)	negative		negative
Borr. SeraSpot p39 (B.b. afzelii)	positive		negative
Borr.SeraSpot p58 (B.b. garinii)	negative		negative
Borr.SeraSpot p100 (B.b. garinii)	negative		negative
Borr.SeraSpot OspC (B.b. afzelii)	negative		negative
Borr.SeraSpot OspC (B.b. garinii)	negative		negative
Borr.SeraSpot OspC (B.b. sensu stricto)	negative		negative
Borr.SeraSpot dbpA (B.b. afzelii)	positive		negative
Borr.SeraSpot dbpA (B.b. garinii)	positive		negative
Borr.SeraSpot dbpA (B.b. sensu stricto)	positive		negative
<b>Borrelia burgdorferi SeraSpot IgM</b>	positive		negative
Borr. SeraSpot VlsE (B.b. afzelii)	negative		negative
Borr. SeraSpot p39 (B.b. afzelii)	positive		negative
Borr.SeraSpot p58 (B.b. garinii)	negative		negative
Borr.SeraSpot p100 (B.b. garinii)	negative		negative
Borr.SeraSpot OspC (B.b. afzelii)	positive		negative
Borr.SeraSpot OspC (B.b. garinii)	positive		negative
Borr.SeraSpot OspC (B.b. sensu stricto)	positive		negative
Borr.SeraSpot dbpA (B.b. afzelii)	negative		negative
Borr.SeraSpot dbpA (B.b. garinii)	negative		negative
Borr.SeraSpot dbpA (B.b. sensu stricto)	negative		negative

# Seraspot (supersedes the Western blot)

Comment at the end:

"The specific *Borrelia burgdorferi* IgG/IgM antibodies by Seraspot (modern *Borrelia* Westernblot) indicate a humoral immune response against *Borrelia burgdorferi*.

Please refer to the results of the *Borrelia* EliSpot and the CD57-positive NK cells.

Take into consideration the clinical symptoms and the differential diagnosis (co-infections)."

# Epstein Barr Virus EliSpot

Analysis	Result	Units	Reference Range	Chart
EBV EliSpot (lytic+latent)				
1 EBV EliSpot (lytic)	!	2	SI	
0-1 = negative				
2-3 = weak positive				
> 3 = positive				
1 EBV EliSpot (latent)	!	44	SI	
0-1 = negative				
2-3 = weak positive				
> 3 = positive				
The results of the EliSpot tests indicate current cellular activity against Epstein Barr Virus (EBV).				

Explanation of EBV antigens:

EBV-lytic antigen: sign of production of infectious EBV virions

EBV-latent antigen: sign of EBV latency without production of infectious EBV virions at present

# EBV antibodies – each has a very specific meaning

---

## Epstein-Barr-Virus antibodies

EBV-VCA-IgG-antibodies	+	6.170	Ratio	< 0.8
EBV-CA-IgM-antibodies		0.110	Ratio	< 0.8
EBV-EBNA1-IgG-antibodies	+	3.880	Ratio	< 0.8

The specific EBV-Virus-IgG- and EBV-EBNA-antibodies are an indication for a humoral immune-response against Epstein-Barr-Virus.

Please look at the result of the actual T-cellular EBV-activity by EBV-EliSpot.

# The higher the titer, the greater the dilution within which the infection is still identifiable

## Coxsackie-Virus antibodies

Coxsackie-Virus-IgG Type A7 (IFT)	+	1:100	Titer	< 1:100
Coxsackie-Virus-IgG Type B1 (IFT)	+	1:320	Titer	< 1:100
Coxsackie-Virus-IgA Type A7 (IFT)	+	1:10	Titer	< 1:10
Coxsackie-Virus-IgA Type B1 (IFT)	+	1:10	Titer	< 1:10

## Coxsackie-Virus antibodies

Coxsackie-Virus-IgG Type A7 (IFT)	+	1:3200	Titer	< 1:100
Coxsackie-Virus-IgG Type B1 (IFT)	+	1:3200	Titer	< 1:100
Coxsackie-Virus-IgA Type A7 (IFT)	+	1:320	Titer	< 1:10
Coxsackie-Virus-IgA Type B1 (IFT)	+	1:320	Titer	< 1:10

# IgG vs. IgA vs. IgM

## HSV 1/2 IgG/IgA/IgM antibodies

6 HSV 1/2 IgG antibodies (ELISA) positive  
4,092 Ratio

Ratio < 0,8	= negative
Ratio 0,8 - 1,1	= weak
Ratio >= 1,1	= positive

6 HSV 1/2 IgA antibodies (ELISA) positive  
2,172 Ratio

Ratio < 0,8	= negative
Ratio 0,8 - 1,1	= weak
Ratio >= 1,1	= positive

6 HSV 1/2 IgM antibodies (ELISA) negative  
0,735 Ratio

Ratio < 0,8	= negative
Ratio 0,8 - 1,1	= weak
Ratio >= 1,1	= positive

IgG is conventionally interpreted as a sign of past infection

IgA is immunoglobulin along the mucosal surfaces: a likely sign that the virus is still active.

IgM is conventionally interpreted as a sign of recent infection (within the last few weeks)

# Very high IgG titers

## Varicella Zoster Virus antibodies

Varicella Zoster Virus-IgG-antibodies	+	>5000.0	IE/l	< 80
Varicella Zoster Virus-IgA-antibodies	+	1.680	Ratio	< 0.8
Varicella Zoster Virus-IgM-antibodies		0.630	Ratio	< 0.8

A very high IgG titer is a pointer to possible reactivation, especially if more than five times the upper reference range (rule of thumb used by some ILADS doctors – no study substantiation of this to date)

## Comparing Lyme Testing

### Key terms:

**ELISA** – Enzyme-linked immunosorbent assay

**EliSpot** – Enzyme-linked immunosorbent spot

**PCR** – Polymerase Chain Reaction

**Specificity** - True negative rate      **Sensitivity** - True positive rate

Borrelia Testing Method	Summary	Testing accuracy	Clinical application	Available from Armin Labs
ELISA C6	Tests part of B-cell immune response against Borrelia	Poor sensitivity Poor specificity	Alternative partly screening for Borrelia antibodies	Yes
ELISA IgG / IgM	Tests B-cell immune response against Borrelia	Poor sensitivity Poor specificity	Screening for Borrelia antibodies	Yes
EliSpot	Tests T-cell activity against Borrelia	High sensitivity High specificity	Reflects current activity last 6-8 weeks	Yes
PCR	Assesses presence of Borrelia DNA in blood	Poor sensitivity High specificity	Reflects current presence of Borrelia	Yes
Seraspot IgG/IgM	Tests B-cell immune response (modern Westernblot)	Poor sensitivity High specificity	Confirmation test for Borrelia antibodies (modern Westernblot)	Yes
Tickplex Basic	Tests B-cell immune response including "roundbodies"	High sensitivity High specificity	Screening for Borrelia antibodies including "roundbodies"	Yes
Western blot	Tests B-cell immune response	Poor sensitivity High specificity	Confirmation test for Borrelia antibodies	No, made obsolete by Seraspot (modern Western blot)
Borrelia culture	Assesses presence of Borrelia in blood	Poor sensitivity High specificity	Reflects current presence of Borrelia	No

## The ArminLabs Advantage

ArminLabs	Leading Competitors
✓ ArminLabs is internationally ISO DIN EN ISO 15189:2014 accredited in immunology, microbiology and virology on all test procedures	✗ Not internationally certified
✓ Uses externally certified and externally validated testing	✗ Uses internal validation ✗ Tests are not certified
✓ Clear and easy to read test result report	✗ Requires experience for accurate interpretation and can be equivocal
✓ Testing results are reported in 7 days of specimen arrival	✗ Results can take up 6 weeks to be reported
✓ Always updating and improving testing methods in line with the latest testing technologies	✗ Used outdated testing technology
✓ Uses new microarray Seraspot technology which improves on western blot technology for Lyme testing	✗ Uses old western blot technology
✓ Offers EliSpot* testing to assess T-cell activity against Borrelia	✗ EliSpot not offered
✓ Tests for 3 most common worldwide strains of Borrelia (Borrelia burgdorferi sensu stricto + Borrelia burgdorferi afzelii + Borrelia burgdorferi garinii)	✗ Tests for only 1 US strain of Borrelia (Borrelia burgdorferi sensu stricto)
✓ Tests with modern recombinant and cultured Borrelia antigens	✗ Tests with just cultured Borrelia antigens
✓ Offers advanced viral testing* – including EBV, CMV, HSV, VZV, HHV6, Coxsackie	✗ No viral testing offered
✓ Offers testing for autoimmune disorders	✗ Don't offer testing for autoimmune disorders
✓ Lab tests paid in Euro (less expensive than US currency)	✗ Lab tests paid in US Dollars (more expensive than payment in Euro)
✓ Readily available clinical consultation with Dr Armin Schwarzbach MD PhD and regional medical advisors	✗ Consultation available but no regional medical advisors
✓ Modern EliSpot and antibody diagnostics for infections with yeasts, moulds and Campylobacter jejuni	✗ No modern diagnostics for infections with yeasts, moulds and Campylobacter jejuni offered

# For further information on testing: lots of downloadable presentations available on the AONM website

The screenshot shows the AONM website with a navigation bar at the top containing links: HOME, ABOUT, CLINIC, EVENTS, ARMIN LABS TESTING, FOOD INTOLERANCE TESTING, MAINTRAC, and PANS/PANDAS. The main content area features a large image of a laboratory setting with a scientist in a white coat working at a machine. Overlaid on this image is a dark box titled 'Upcoming Events' which lists: 'Past Events Overview', 'Lifting the Veil Conference Series', and 'AONM 2017 International Conference: Waking to a New Dawn'. Two yellow arrows point from the left towards this box. Below the image, the text 'LABORATORY TESTING' is displayed in large yellow letters. Underneath this, a dark box contains the text: 'AONM closely works with various laboratories and provides a unique and well-supported testing service'. At the bottom of the image area are two buttons: 'ORDER FORMS >' and 'CONTACT US'.

Academy of Nutritional Medicine x

Secure | <https://aonm.org>

Apps E 1-s2.0-S09254439060 ear

HOME ABOUT ▾ CLINIC ▾ EVENTS ▾ ARMIN LABS TESTING ▾ FOOD INTOLERANCE TESTING ▾ MAINTRAC ▾ PANS/PANDAS ▾

Upcoming Events

Past Events Overview

Lifting the Veil Conference Series

AONM 2017 International Conference: Waking to a New Dawn

LABORATORY TESTING

*AONM closely works with various laboratories and provides a unique and well-supported testing service*

ORDER FORMS >

CONTACT US

[s://aonm.org/upcoming-events/](https://aonm.org/upcoming-events/)

# Presentations by Dr. Schwarzbach at each of the “Lifting the Veil” conferences, available as downloads



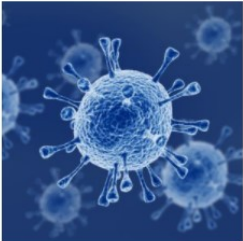
→ ↻ 🏠 Secure | <https://aonm.org/ltv-conference-series/>

Apps **E** 1-s2.0-S09254439060 ear


**AONM**  
ACADEMY of NUTRITIONAL MEDICINE

HOME ABOUT ▾ CLINIC ▾ EVENTS ▾ ARMIN LABS TESTING ▾ FOOD INTOLERANCE TESTING ▾ MAINTRAC ▾ PANS/PANDAS ▾


LIFTING THE VEIL CONFERENCE SERIES Home ▸ Lifting the Veil Conference Series




During 2015 and 2016 AONM held a ground-breaking series of conferences which focused on different aspects of Lyme Disease and co-infections. Speakers from around the world were invited to speak and 'lift the veil' on the misconceptions and lack of treatment for these conditions. You can find here summaries of the conferences as well as the presentations given by speakers.





Lifting the Veil I






Lifting the Veil II





Lifting the Veil III



The powerpoint presentations are provided for free and videos of these conferences are available to buy from AONM. Please contact [info@aonm.org](mailto:info@aonm.org) or call 03331 210 305

# Click on LTV I, II or III, and scroll down to Dr. Schwarzbach

Lifting the Veil Conference x

Secure | <https://aonm.org/lifting-the-veil-conference-i-infections-pathogens-their-role-in-chronic-disease/>

Apps E 1-s2.0-S09254439060 ear

**AONM**  
ACADEMY OF NUTRITIONAL MEDICINE

Organisation (WPI) for the Science and Engineering Research Council (SEAC) and the Society for Molecular Research  
He was appointed Chief Scientific Advisor to the Gulf Support Group, which consists of eminent physicians and scientists researching ME, particularly the misdiagnosis of organochloride pesticide poisoning.

HOME ABOUT CLINIC EVENTS ARMIN LABS TESTING FOOD INTOLERANCE TESTING MAINTRAC PANS/PANDAS

established to consider the possible interactions between Vaccines and NAPS tablets and served on the Gulf Support Group convened at the Royal British Legion.

Professor Hooper worked with the Autism Research Unit at the University of Sunderland for over 20 years. He is Patron of the Sunderland and South Shields ME Association and a member of the John Richardson Newcastle Research Group, which consists of eminent physicians and scientists researching ME, particularly the misdiagnosis of organochloride pesticide poisoning.

**Dr. Judy Mikovits, PhD** is a molecular biologist and virologist with over 30 years of scientific expertise. After over 20 years at the National Cancer Institute, she served as Research Director of the Whittemore-Peterson Institute (WPI) for Neuroimmune Disease in Nevada, USA, for 5 years.

As well as sharing her insights into retroviruses and neuroimmune disease, Dr. Mikovits will also be discussing her recent book "Plague: One Scientist's Intrepid Search for the Truth about Human Retroviruses and Chronic Fatigue Syndrome, Autism, and Other Diseases", and the wider implications of what it reveals (<http://www.plaguethebook.com/>).

Dr. Mikovits continues to work on neuroimmune disease and cancer at MAR Consulting, an endeavour she shares with the renowned microbiologist widely regarded as the father of human retrovirology, Dr. Francis W. Ruscetti.

[Dr. Judy Mikovits, Lifting the Veil Part 1 PDF](#)

[Dr. Judy Mikovits, Lifting the Veil Part 2 PDF](#)

**Dr. Armin Schwarzbach, Ph.D, MD** has specialised in the diagnosis and treatment of patients with tick-borne diseases for over 15 years. He was co-founder of the Borreliosis Clinic Augsburg (BCA) from 2007 - 2014, and is now CEO of the autonomous laboratory ArminLabs, Augsburg, Germany. He is a Board Member of the International Lyme and Associated Diseases Society, ILADS, and serves as an expert on advisory committees on Lyme Disease in Australia, Ireland, France and Germany. Dr. Schwarzbach will be speaking on the topic: "Multiple infections by Borrelia burgdorferi and other tick-borne pathogens: symptom complexity, diagnostic tests and consequences for therapy."

[Dr. Armin Schwarzbach, Lifting the Veil PDF](#)

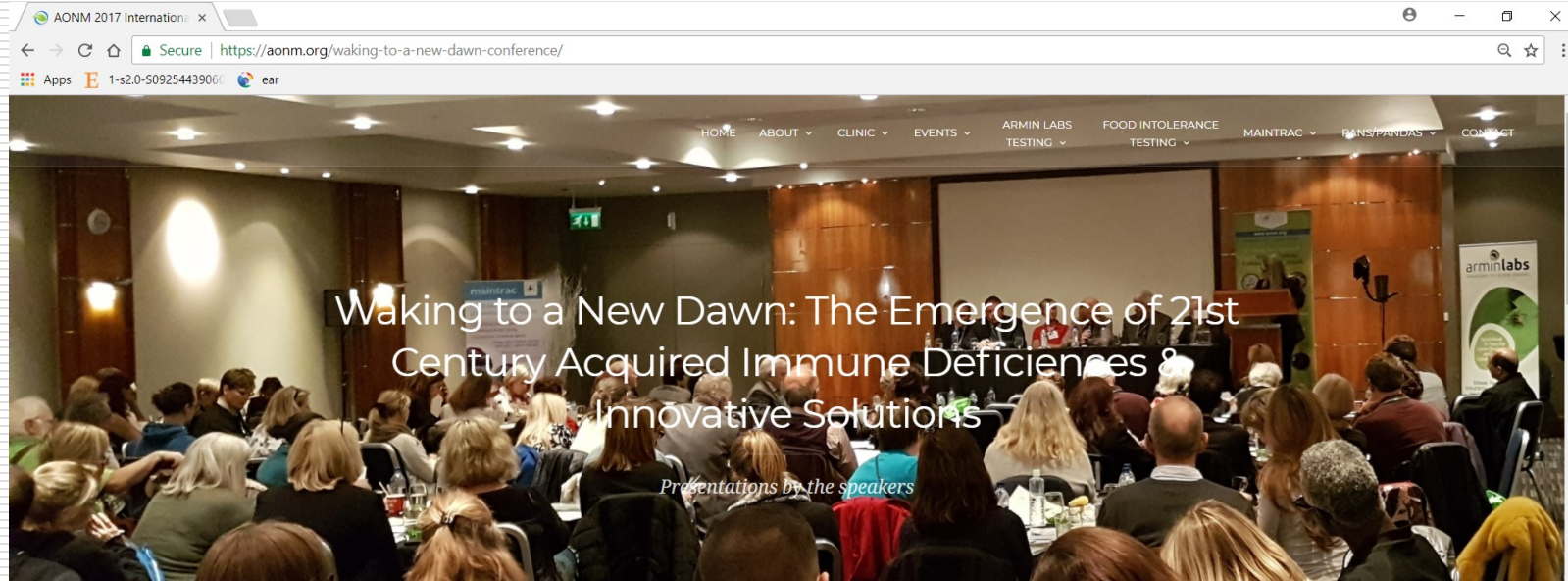
**Professor B. K. Puri, MA, PhD, MB, BChir, BSc (Hons) MathSci, DipStat, PG Dip Maths, MMath, FRCPsych, FSB** is a researcher and medical consultant at Hammersmith Hospital, Imperial College London and Breakspear Medical Group. He is actively involved in researching complex disorders using state-of-the-art electrophysiological, brain scanning and biochemical and molecular biological techniques. He will cover the cardiovascular, urological and neuropsychiatric sequelae of Lyme Disease, as well as the role of gut infection in autism.

**Dr. Philip Kielman** is a pharmacist who has been working with Rio Trading for many years. He graduated in Chemistry in Holland, followed by a doctorate in Pharmacology. He ran his own pharmacy in Arnhem for 20 years, also serving as a consultant to the pharmaceutical industry. He has been the full-time quality manager and head of education for TS Products (Benelux) for the last 10 years, and has authored books on Lyme Disease. He has huge experience with herbs from the Amazon, and has conducted studies on the Lee Cowden protocol for Lyme Disease. He will be speaking about natural therapies for infectious disease.

[Dr. Philip Kielman, Lifting the Veil PDF](#)

For more information please contact [info@aonm.org](mailto:info@aonm.org)

# All presentations downloadable from AONM's 2017 Annual Conference "Waking to a New Dawn", too



AONM International Conference November 2017: Waking to a New Dawn: The Emergence of 21st Century Acquired Immune Deficiencies & Innovative Solutions

Welcome to the latest AONM conference exploring causes and solutions to acquired immune deficiency syndromes.

The following are the innovative powerpoint presentations given at the conference by some of the leading speakers in this subject. We hope you enjoy them and find them useful.

You can now order the DVD of all the speakers' talks that go along with the presentations below.  
Please email [info@aonm.org](mailto:info@aonm.org) or call +44 (0)3331 210 305. Cost £35 (plus postage if outside the UK).



Dr. Armin Schwarzbach

STEALTH INFECTIONS AND THEIR DETECTION



# AONM also has its own YouTube channel where previous conference videos are available free of charge

YouTube player interface showing a video titled "Lyme Disease & Co-Infections Lifting The Veil I Dr Armin Schwarzbach part 1". The video is 40:17 long, and the current time is 10:47. The video shows a large audience seated at round tables in a conference room, facing a stage where a speaker is presenting. A large screen displays a presentation slide.

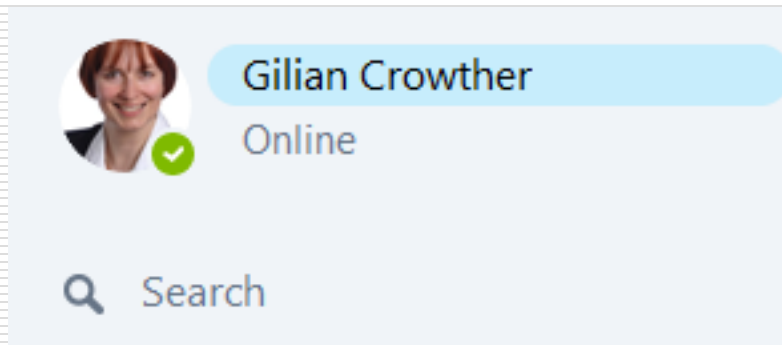
**Up next** (AUTOPLAY is ON):

- Lyme Disease & Co-Infections Lifting The Veil I Dr Armin**  
Academy of Nutritional Medicine - (59 views)  
32:56
- Lyme Disease & Co-Infections Lifting The Veil I Dr Judy**  
Academy of Nutritional Medicine - (1K views)  
44:30
- Advanced Non-Contrast Imaging Techniques**  
Canon Medical US  
Recommended for you  
22:29
- Lyme Disease & Co-Infections Lifting the Veil II Dr Dietrich K**  
Academy of Nutritional Medicine - (59 views)  
1:37:20
- Lyme Disease & Co-Infections Lifting the Veil II Dr Armin**  
Academy of Nutritional Medicine - (62 views)  
58:10
- Lyme Disease & Co-Infections Lifting the Veil II John Caudwell**  
Academy of Nutritional Medicine - (108 views)  
18:37

**Channel Information:**  
Academy of Nutritional Medicine - Official Channel  
Published on Jun 9, 2017  
SUBSCRIBE 34

# Regular Skype Arminlabs training available every on Tuesdays, 6.30 pm, every fortnight

---



Please contact  
[info@aonm.org](mailto:info@aonm.org)  
with your Skype ID  
for the next dates

# Evidence-based literature

---

- Sigal LH et al, Cellular immune findings Lyme disease. Yale J Biol Med 1984, 57 : 595-8
- Sigal LH et al, Proliferative responses of mononuclear cells in Lyme disease. Reactivity to Borrelia burgdorferi antigens is greater in joint fluid than in blood. Arthritis Rheum 1986; 29: 761-9
- Dattwyler RJ et al, Seronegative Lyme disease. Dissociation of specific T- and B-lymphocyte responses to Borrelia burgdorferi. N Engl J Med 1988; 319: 1441-6
- Dressler F et al, The T-cell proliferative assay in the diagnosis of Lyme disease. Ann Intern Med 1991; 115: 533-9
- Krause et al, T cell proliferation induced by Borrelia burgdorferi in patients with Lyme borreliosis. Autologous serum required for optimum stimulation. Arthritis Rheum 1991; 34: 393-402
- Buechner SA et al, Lymphoproliferative responses to Borrelia burgdorferi in patients with erythema migrans, acrodermatitis chronica atrophicans, lymphadenosis benigna cutis and morphea. Arch Dermatol 1995; 131: 673-7
- Breier F et al, Lymphoproliferative responses to Borrelia burgdorferi in circumscribed scleroderma. Brit J Dermatol 1996; 134: 285-91
- Huppertz et al, Lymphoproliferative responses to Borrelia burgdorferi in the diagnosis of Lyme arthritis in children and adolescents. Eur J Pediatr 1996; 155: 297-302
- Valentine-Thon E et al, A novel lymphocyte transformation test for Lyme borreliosis. Diagn Microbiol Infect Dis 2007; 57: 27-34
- Von Baehr V et al, Untersuchungen zur diagnostischen Wertigkeit des Lymphozytentransformationstestes bei Patienten mit Borreliose. J Lab Med 2007; 31(3): 149-158

# Evidence-based literature

---

- "TB Elimination: Interferon-Gamma-Release Assays, [www.cdc.gov/tb](http://www.cdc.gov/tb), May 2011
- Von Baehr, V.: The lymphocyte transformation test for the diagnosis of Lyme borreliosis, Clin Microbiol Infect. 2014 Oct 29
- Skogman et al.: Adaptive and Innate Immune Responsiveness to *Borrelia burgdorferi* sensu lato in Exposed Asymptomatic Children and Children with Previous Clinical Lyme Borreliosis, Clinical and Development Immunology, Vol. 2 012, Article ID294587, 10 pages
- Lehman PV et al.: Unique Strengths of ELISPOT for T Cell Diagnostics in: Kalyuzhny AE. Handbook of ELISPOT: Methods and Protocols, Methods in Molecular Biology, Vol. 792.2<sup>nd</sup> Ed: Springer; 2012: 3-23
- Chenggang Jin et al.: An enhanced ELISPOT assay for sensitive detection of antigen specific T cells responses to *Borrelia burgdorferi*, Cells 2013, 2, 607-620 doi 10.3390/cells2030607
- Von Baehr, V. et al: The Lymphocyte Transformation Test for *Borrelia* detects active Lyme Borreliosis and verifies effective antibiotic treatment, Open Neurol. J. 2012, 6: 104-112

# Thank you very much for your attention!



For tests, please go to  
[www.aonm.org](http://www.aonm.org)  
<https://aonm.org/arminlabs>

or call the AONM helpline  
on 0333 121 0305

