14th International Conference on Lyme Borreliosis and Other Tick-Borne Diseases
September 27-30, 2015 Vienna, Austria

PROGRAMME

Under the Patronage of

ÖGHMP
Austrian Society for Hygiene, Microbiology and Preventive Medicine

and

INSTAND e. V.
Society for promoting Quality Assurance in Medical Laboratories e. V.

in Association with

ESGBOR
ESCMID Study Group for Lyme Borreliosis

www.iclb2015.com
Borrelia Diagnostics
Serum, Plasma, CSF

DiaSorin
The Diagnostic Specialist
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Welcome

Dear Colleagues and Friends,

It is with great pleasure that we welcome you to the 14th International Conference on Lyme Borreliosis and Other Tick-Borne Diseases (ICLB) in Vienna from September 27-30, 2015.

It has been an honour to organise the ICLB in Vienna and to celebrate the 40th anniversary of the discovery of Lyme arthritis. It is also the 30th anniversary of the first conference on this topic which was held in Vienna in 1985.

The programme will cover a broad spectrum of topics including biology, epidemiology, ecology, laboratory and clinical aspects of the diseases, prevention and therapy. Delegates will be offered 11 lectures, about 30 oral and 200 poster presentations. The poster presentations are particularly meant for extensive exchange of knowledge and discussion among the respective research groups.

We hope that, besides attending the scientific sessions, you will also find enough time to enjoy the atmosphere and the cultural flair of Vienna, a world-renown center for music and fine arts.

On behalf of the committees and of the Austrian Society for Hygiene, Microbiology and Preventive Medicine as the assisting society, we thank all attendees for joining us, and we wish you a very enjoyable and productive stay in Vienna. Your scientific contribution, your interest, and your good mood will make this conference a successful convention of the tick-borne diseases research community.

Gerold Stanek and Franc Strle
Conference Chairs
Conference Committees

ICLB2015
14th International Conference on Lyme Borreliosis and Other Tick-borne Diseases
September 27-30, 2015 Vienna, Austria

A conference under the patronage of the Austrian Society for Hygiene, Microbiology and Preventive Medicine ÖGHMP and the Society for promoting Quality Assurance in Medical Laboratories e. V. INSTAND e.V. in association with the ESCMID Study Group for Lyme Borreliosis ESGBOR

Conference Chairs
Gerold Stanek, Franc Strle

Local Organising Committee
Elisabeth Aberer, Graz
Georg Duscher, Vienna
Michael Leschnik, Vienna
Martin Glatz, Graz
Wolfgang Kristoferitsch, Vienna*
Mateusz Markowicz, Vienna*
Robert Müllegger, Wiener Neustadt
Erich Schmutzhard, Innsbruck
Gerold Stanek, Vienna*
Julia Walochnik, Vienna

Conference Secretariat & Registration
AZ Med.Info
Contact: Kerstin Hamata, Simone Weinmann and Jasmin Schneckenburger
Phone: +43 1 531 16-76, 39 or 37
Fax: +43 1 531 16-61
E-mail: azmedinfo@media.co.at

Exhibition & Sponsorship
MAW Exhibition Management
Contact: Maria Hamata
Phone: +43 1 536 63-38
Fax: +43 1 535 60 16
E-mail: maw@media.co.at

International Scientific Board
Tatjana Avšič-Zupanc, Ljubljana, Slovenia
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Unn Ljostadt, Kristiansand, Norway
Gabriele Margos, Munich, Germany
Seppo Meri, Helsinki, Finland
Katharina Ornstein, Lund, Sweden*
Patricia Rosa, Hamilton, MT, USA
Gerold Stanek, Vienna, Austria* co-chair
Allen C. Steere, Boston, MA, USA
Brian Stevenson, Kentucky, KY, USA
Hannes Stockinger, Vienna, Austria
Franc Strle, Ljubljana, Slovenia* co-chair
Klemen Strle, Boston, MA, USA
Daša Stupica, Ljubljana, Slovenia
Jean Tsao, East Lansing, MI, USA
Alje Van Dam, Amsterdam, The Netherlands*
Gary P. Wormser, Valhalla, NY, USA

*Members of the Steering Committee of ESGBOR
Venue

Austria Trend
Parkhotel Schönbrunn
Hietzinger Hauptstrasse 10-14, 1130 Vienna

The hotel is located directly next to Schloss Schönbrunn within the elegant residential area of Hietzing. Directly opposite the hotel, the “Hietzinger Tor” leads into the Schloss Schönbrunn palace gardens, with its wide range of sights and attractions such as the Palm House, the Gloriette monument, the historical fountain and the Vienna zoo, the oldest zoo in the world.

A parking garage (fee per day € 24.–) is available at the hotel.

**Arrival by public transportation**

Underground station U4-Hietzing.
The hotel is in close vicinity to Vienna Metro line U4 which connects directly with Station Landstrasse (Wien Mitte/The Mall) where the trains from the airport arrive.
Registration (on site) / General Information

The conference registration area is located in the basement of the hotel next to the exhibition area. On arrival all delegates, accompanying persons and exhibitors must register for the conference.

Registration Fees (in EURO)

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee</th>
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<tbody>
<tr>
<td>Regular Fee</td>
<td>€ 490.– if registered and paid AFTER March 31, 2015</td>
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<tr>
<td>MD in training</td>
<td>€ 390.– please document your training status</td>
</tr>
<tr>
<td>Student</td>
<td>€ 290.– please document your student status</td>
</tr>
<tr>
<td>Accompanying person</td>
<td>€ 110.– includes welcome reception, conference dinner, access to exhibition</td>
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<tr>
<td>Daily charge</td>
<td>€ 180.–</td>
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<tr>
<td>Conference dinner</td>
<td>€ 35.–</td>
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</table>

Cancellation

Cancellation must be made in writing, by registered letter or fax, to the Conference Secretariat. Registration fees will be refunded if written cancellation was received:
- before July 24, 2015: 75% refund
- between July 24 and August 28, 2015: 25% refund
- after August 28, 2015: NO REFUND

Payment

Please note that all onsite payments should be made in cash or by credit card (Visa and MasterCard will be accepted). EURO (€) only. Unfortunately, we cannot accept traveller’s cheques, other credit cards, Euro cheques or other currencies.

Opening hours – Registration

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tbody>
<tr>
<td>Sunday, 27 September</td>
<td>12.00 – 18.00</td>
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<tr>
<td>Monday, 28 September</td>
<td>08.00 – 18.00</td>
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<tr>
<td>Tuesday, 29 September</td>
<td>08.00 – 18.00</td>
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<tr>
<td>Wednesday, 30 September</td>
<td>08.00 – 13.00</td>
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Opening hours – Exhibition

<table>
<thead>
<tr>
<th>Day</th>
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<tr>
<td>Monday, 28 September</td>
<td>09.00 – 18.00</td>
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<tr>
<td>Tuesday, 29 September</td>
<td>09.00 – 18.00</td>
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<tr>
<td>Wednesday, 30 September</td>
<td>08.00 – 13.30</td>
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Abstract Book

All delegates will receive an abstract book with their conference bags as part of the registration fee.

Conference Dinner

Tuesday, 29 September 2015 at 20.00

Liability

The conference organisers cannot accept responsibility for personal accidents and damage to the private property of the conference and exhibition participants or accompanying persons.

Smoking

Conference participants are requested not to smoke within the venue.
Presentations / Posters

Presentations will be given in the Ballroom and in room Österreich-Ungarn of the hotel.

Language
The official language of the conference is English.

Speakers Information
Only PowerPoint presentations – format 4:3 – are accepted.

Speakers should deliver their PowerPoint presentations (USB stick) in the lecture room at least half an hour prior to the start of the respective session.

Poster Presentations
Posters will be on display in room Österreich-Ungarn and on the balcony of the Ballroom. They should be mounted by 12:30 Monday, 28 September 2015, in the numbered spaces indicated in the programme.
Posters may be displayed for the duration of the conference.

Poster size
Maximum 130 cm height x 90 cm width

Poster discussions
During the poster presentation you will be invited by the chairperson to briefly present your work at the poster for 2-3 minutes, and then answer questions (a further 5 minutes or so).
The date and time of the relevant presentation will be shown with the poster number and is also in the programme.
The posters will be presented in the order in which they are printed in the programme.
# Programme Overview

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<tr>
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<tbody>
<tr>
<td>09.00 – 10.30</td>
<td><strong>Session 1</strong> Biology of Lyme Borreliae</td>
<td><strong>Session 5</strong> Clinical Aspects of Lyme Borreliosis</td>
<td><strong>Session 9</strong> Host-Pathogen Interaction</td>
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<tr>
<td>10.30 – 10.45</td>
<td>Break</td>
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<tr>
<td>10.45 – 12.00</td>
<td><strong>Session 2</strong> Tick-Host-Pathogen Interaction</td>
<td><strong>Session 6</strong> Lyme Neuroborreliosis</td>
<td><strong>Session 10</strong> Tick-borne Encephalitis</td>
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<tr>
<td>12.00 – 13.00</td>
<td>Lunch Break</td>
<td>Lunch Break</td>
<td>Lunch Break</td>
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<tr>
<td>13.00 – 15.00</td>
<td><strong>Guided Poster Presentation</strong> Posters 1-72</td>
<td><strong>Guided Poster Presentation</strong> Posters 73-142</td>
<td><strong>Guided Poster Presentation</strong> Posters 143-200</td>
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<tr>
<td>15.00 – 16.15</td>
<td><strong>Session 3</strong> Eco- Epidemiology</td>
<td><strong>Session 7</strong> Laboratory Diagnosis for Tick-borne Diseases</td>
<td><strong>Session 11</strong> Other Tick-borne Diseases</td>
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<tr>
<td>16.15 – 16.30</td>
<td>Break</td>
<td>Break</td>
<td>Closing of the Conference</td>
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<tr>
<td><strong>17.30 – 19.00</strong></td>
<td><strong>Welcome Opening Lecture</strong> Piano Recital</td>
<td><strong>Session 4</strong> Relapsing Fever Borreliae</td>
<td><strong>Session 8</strong> Treatment and Prevention</td>
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<tr>
<td><strong>16.30 – 18.00</strong></td>
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<tr>
<td><strong>19.00 – 20.00</strong></td>
<td>20.00</td>
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<td>Conference Dinner</td>
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14th International Conference on
LYME BORRELIOSIS AND OTHER TICK-BORNE DISEASES
September 27-30, 2015
Vienna, Austria

Scientific Programme Sunday, 27 September 2015

OPENING

17:30 Welcome
Gerold Stanek

17:45 Lyme arthritis: forty years after its discovery
Allen C. Steere; Boston, MA, USA

18:15 Piano recital; Pawel Markowicz, Vienna, AT

19:00-20:00 Reception

Scientific Programme Monday, 28 September 2015

09:00-09:05 Short Introduction

BIOLOGY OF LYME DISEASE BORRELIAE

09:05-09:35 Biology of Lyme disease borreliae: remaining challenges
Alan G. Barbour; Irvine, CA, USA

09:35-09:50 1 The Borrelia burgdorferi regulatory interactome
Brian Stevenson; Lexington, KY, USA

09:50-10:05 2 Borrelia burgdorferi sensu lato in the "lymelight":
glimpses into the history of a species complex
Gabriele Margos; Oberschleißheim, DE

10:05-10:20 3 Immunodominant surface antigen stabilises the community
of Borrelia afzelii strains over one decade
Maarten J. Voordouw; Neuchatel, CH

10:30-10:45 BREAK

TICK-HOST-PATHOGEN INTERACTION

10:45-11:15 Skin and Lyme borreliosis: why does it deserve further investigations?
Nathalie Boulanger-Chicois; Strasbourg, FR
Scientific Programme

Monday, 28 September 2015

11:15-11:30  4 Molecular insight into immune evasion of neuroinvasive Borrelia bavariensis by complement inhibitors BGA66 and BGA71
Peter Kraiczy; Frankfurt, DE

11:30-11:45  5 Fibroblast-like synoviocytes shape and perpetuate immune responses associated with antibiotic-refractory Lyme arthritis
Klemen Strle; Boston, MA, USA

11:45-12:00  6 Extracellular microRNAs as clinical and functional biomarkers of Lyme disease
Robert B. Lochhead; Boston, MA, USA

12:00-13:00  LUNCH BREAK

POSTER PRESENTATIONS

13:00-15:00  BIOLOGY 1
Chair: Patricia Rosa; Hamilton, MT, USA

P1  Identification of factors important in governing expression of the essential regulatory protein BpuR
Willem Arnold; Lexington, KY, USA

P2  The spatio-temporal dynamics of Borreliae growth- using peptidoglycan synthesis to elucidate a new mode of bacterial elongation
Brandon Lyon Jutras; West Haven, CT, USA

P3  Multiple strain infections of Borrelia burgdorferi sensu lato
Martin Andersson; Lund, SE

P4  Borrelia burgdorferi sensu stricto and Borrelia afzelii: population structure and differential pathogenicity
Gabriele Margos; Oberschleißheim, DE

P5  Linking enzootic cycles to understand the evolutionary ecology of Lyme disease bacteria
Karen McCoy; Montpellier, FR
### Scientific Programme  
**Monday, 28 September 2015**

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>P6</td>
<td>The presence of B. burgdorferi s.l. and B. miyamotoi in Ixodes ricinus ticks in different parts of Slovakia</td>
<td>Tatiana Vaculová; Bratislava, SK</td>
</tr>
<tr>
<td>P7</td>
<td>Same but different: Borrelia burgdorferi sensu stricto from Europe and USA</td>
<td>Gabriele Margos; Oberschleißheim, DE</td>
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<tr>
<td>P8</td>
<td>Comparison of growth of Borrelia afzelii and Borrelia garinii at five different temperatures</td>
<td>Gorana Veinović; Ljubljana, SI</td>
</tr>
<tr>
<td>P9</td>
<td>Two media comparability for Borrelia burgdorferi sensu lato cultivation and isolation</td>
<td>Eva Ružić-Sabljić; Ljubljana, SI</td>
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<tr>
<td>P10</td>
<td>Borrelia bacteriophages</td>
<td>Jinyu Shan; Leicester, UK</td>
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**13:00-15:00 CLINICAL ASPECTS 1**  
Chair: Joppe Hovius; Amsterdam, NL

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<tr>
<th>Session</th>
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<tr>
<td>P11</td>
<td>Borrelian lymphocytoma in children</td>
<td>Maja Arnež; Ljubljana, SI</td>
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<tr>
<td>P12</td>
<td>Children with medically unexplained symptoms (MUS) who present to a pediatric infectious diseases (PID) clinic for possible Lyme disease (LD): what happens after the visit?</td>
<td>Eugene D. Shapiro; New Haven, CT, USA</td>
</tr>
<tr>
<td>P13</td>
<td>Oligoarthritis in a child caused by Borrelia bavariensis</td>
<td>Mateusz Markowicz; Vienna, AT</td>
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<tr>
<td>P14</td>
<td>Lyme disease consultations at a mid-Atlantic referral center, 2000-2013</td>
<td>Paul G. Auwaerter; Baltimore, MD, USA</td>
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<tr>
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<tr>
<td>P15</td>
<td>Clinical spectrum in patients with Lyme borreliosis - the experience of a Romanian infectious diseases university hospital</td>
<td>Violeta Tincuța Briciu; Cluj Napoca, RO</td>
</tr>
<tr>
<td>P16</td>
<td>Detection of Borrelia burgdorferi sensu stricto and Borrelia garinii in patient with hyperkeratosis lenticularis perstans (Flegel disease)</td>
<td>Katarina Schwarzová; Bratislava, SK</td>
</tr>
<tr>
<td>P17</td>
<td>A review of scleratrophic clinical presentations and the importance of collagen changes in B. burgdorferi infection</td>
<td>Elisabeth Aberer; Graz, AT</td>
</tr>
<tr>
<td>P18</td>
<td>Findings in adult patients with borrelial lymphocytoma registered in Slovenia from 1986 to 2014</td>
<td>Vera Maraspin; Ljubljana, SI</td>
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<tr>
<td>P19</td>
<td>Erythema migrans: course and outcome in patients treated with disease-modifying antirheumatic drugs</td>
<td>Vera Maraspin; Ljubljana, SI</td>
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<tr>
<td>P20</td>
<td>Broad-range PCR in Borrelia-negative erythema migrans lesions: can we find other tick-borne pathogens?</td>
<td>Mariam Meddeb; Strasbourg, FR</td>
</tr>
<tr>
<td>P21</td>
<td>Preliminary Investigation of Australian patients presenting with a Borreliosis-like illness</td>
<td>Ann Mitrovic; Camperdown, NSW, AU</td>
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13:00-15:00 **LABORATORY DIAGNOSIS 1**

Chair: Ram B. Dessau; Slagelse, DK

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<tr>
<td>P22</td>
<td>Evaluation of Lyme TRACE ELISA, a quantitative IgG anti-VlsE Assay monitoring Lyme borreliosis humoral response</td>
<td>Lienhard Admed Reto; La Chaux-de-Fonds, CH</td>
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</table>
P23  Serological diagnosis of early Lyme borreliosis: two EIAs perform better than EIA and blot
Bart Meijer; Groningen, NL

P24  Evaluation of a 2-enzyme immunoassay approach for laboratory diagnosis of Lyme disease
Claudia Molins; Fort Collins, CO, USA

P26  Avidity Western blot can be used to differentiate patients with current infection of B. burgdorferi from those infected in the past
Sally Mavin; Inverness, UK

P27  Sensitive and direct molecular detection of Borrelia from blood in patients with early Lyme borreliosis
Mark W. Eshoo; Baltimore, MD, USA

P28  Development of CD1 dextramers for diagnosis of Borrelia infection
Bjarke Endel Hansen; Copenhagen, DK

P29  Comparative diagnostic sensitivity of two commercial and two in-house ELISA kits in early Lyme borreliosis
Iva Christova; Sofia, BG

P30  Comparison of the Borrelia ViraChip Protein Microarrays with Borrelia ViraStripe immunblots and Enzygnost ELISA using diverse spectrum of clinical samples in a routine diagnostic laboratory setting
Martin Kintrup; Planegg, DE

P31  Epidemiology, quality of diagnostic testing, and associated cost for Lyme borreliosis in Germany – A medico-economic analysis
Benedikt Lohr; Frankfurt, DE
<table>
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<tr>
<th>Title</th>
<th>Speaker</th>
<th>Location</th>
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<tbody>
<tr>
<td>EU-wide external quality assessment study on the sensitivity and specificity of different amplification protocols for detection of Borrelia burgdorferi sensu lato</td>
<td>Maximilian Faller; Oberschleißheim, DE</td>
<td></td>
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<tr>
<td>First sign of stabilization after 15 years of continuous increase of tick bites and erythema migrans in the Netherlands</td>
<td>Sita Bennema; Bilthoven, NL</td>
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<tr>
<td>A probable European origin and trans-Atlantic exchanges of the Lyme disease agent Borrelia burgdorferi sensu stricto</td>
<td>Gabriele Margos; Oberschleißheim, DE</td>
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</tr>
<tr>
<td>Repeated samplings of Ixodes ricinus in Brønnøy, located 130 km south of the Arctic Circle</td>
<td>Dag Hvidsten; Tromsø, NO</td>
<td></td>
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<tr>
<td>Exploring the temporal and spatial variation in Borrelia burgdorferi prevalence in Ixodes ricinus populations in Southern Cumbria</td>
<td>Jessica Hall; Manchester, UK</td>
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<td>Detection of microbial pathogens in ticks collected in Austria</td>
<td>Anna-Margarita Schötta; Vienna, AT</td>
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<tr>
<td>Spatial and temporal variation in prevalence of tick-borne pathogens in ticks and rodents in different habitat types of Slovakia: results of four years of research in frame of the EDENext project</td>
<td>Eva Špitalská; Bratislava, SK</td>
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<tr>
<td>Ixodes ricinus and I. hexagonus feeding on urban populations of the northern white-breasted hedgehog (Erinaceus roumanicus) display different vector competence for Borrelia spirochetes</td>
<td>Joanna Stańczak; Poznań, PL</td>
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**Scientific Programme**

### Monday, 28 September 2015

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<tr>
<th>No.</th>
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<th>Author(s)</th>
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<tbody>
<tr>
<td>P39</td>
<td>Molecular evidence of bacterial and protozoal pathogens in ticks collected from dogs in Austria</td>
<td>Michiel Wijnveld; Vienna, AT</td>
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<tr>
<td>P40</td>
<td>Making sense of Lyme borreliosis data in Europe</td>
<td>Sally Cutler; London, UK</td>
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<td></td>
<td><strong>13:00-15:00</strong> EPIDEMIOLOGY 2</td>
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<td>Chair: Jeremy Gray; Dublin, IR</td>
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<tr>
<td>P41</td>
<td>Emerging tick-borne agents in northern Italy, their prevalence and reservoirs capacity with new insights into population structure of B. burgdorferi sensu lato</td>
<td>Ivana Baráková; Sopramonte, IT</td>
<td></td>
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<tr>
<td>P42</td>
<td>Tick-borne diseases in Kazakhstan</td>
<td>Zhanna Shapiyeva; Almaty, KA</td>
<td></td>
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<tr>
<td>P43</td>
<td>20 years of neuroborreliosis in a high endemic area in Denmark</td>
<td>Fredrikke Christie Knudtzen; Odense, DK</td>
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</tr>
<tr>
<td>P44</td>
<td>General practitioner reported incidence of Lyme carditis in the Netherlands</td>
<td>Agnetha Hofhuis; Bilthoven, NL</td>
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<tr>
<td>P45</td>
<td>The incidence and disease burden of early and late Lyme borreliosis</td>
<td>Cees van den Wijngaard; Bilthoven, NL</td>
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<td>P46</td>
<td>LymeProspect: design of a prospective study into long-term effects of Lyme borreliosis and determinants for persisting symptoms in the Netherlands</td>
<td>Jeanine Ursinus; Amsterdam, NL</td>
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<tr>
<td>P47</td>
<td>Lyme arthritis in southern Norway - an endemic area for Lyme borreliosis</td>
<td>Inger Johanne W Hansen; Kristiansand, NO</td>
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<tr>
<td>P48</td>
<td>Tick borne-pathogens in ticks infesting humans from Sibiu County, Romania</td>
<td>Lidia Chitimia-Dobler; Munich, DE</td>
<td></td>
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<tr>
<td>P49</td>
<td>The unique combined natural foci of tick-borne infections in the Irkutsk region, Russia</td>
<td>Irina Kozlova; Irkutsk, RU</td>
<td></td>
</tr>
<tr>
<td>P50</td>
<td>The social and economic burden of tick-borne infections in the Russian Federation</td>
<td>Alexander E. Platonov; Moscow, RU</td>
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</tbody>
</table>

**13:00-15:00 IMMUNOLOGY**

- **Chair:** Klemen Strle; Boston, MA, USA

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<tr>
<th>ID</th>
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<th>Speaker</th>
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<tbody>
<tr>
<td>P51</td>
<td>Establishment of a tick-transmission mouse model of Borrelia miyamotoi infection using the new human isolate CT14D4</td>
<td>Alexia A. Belperron; New Haven, CT, USA</td>
<td></td>
</tr>
<tr>
<td>P52</td>
<td>Measurement of Borrelia-specific T cells – a new tool for diagnosing ongoing Borrelia infection?</td>
<td>Liselotte Brix; Copenhagen, DK</td>
<td></td>
</tr>
<tr>
<td>P53</td>
<td>Apolipoprotein B-100 is an autoantigen in a subgroup of patients with Lyme disease</td>
<td>Jameson T. Crowley; Charlestown, MA, USA</td>
<td></td>
</tr>
<tr>
<td>P54</td>
<td>Autophagy modulates host adaptive immune responses towards Borrelia burgdorferi</td>
<td>Marije Doppenberg-Oosting; Nijmegen, NL</td>
<td></td>
</tr>
<tr>
<td>P55</td>
<td>Neutrophilic ability to recognise and eradicate Borrelia burgdorferi sensu lato in relation to clinical outcome after Borrelia infection</td>
<td>Linda Fryland; Linköping, SE</td>
<td></td>
</tr>
<tr>
<td>P56</td>
<td>Intrathecal Th17-response in relation to clinical disease course of Lyme neuroborreliosis</td>
<td>Paula Gyllemark; Jönköping, SE</td>
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### Scientific Programme  
**Monday, 28 September 2015**

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<tr>
<th>Session</th>
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<tr>
<td>P57</td>
<td>Lyme disease in Latvia: immunogenetic characteristics of patients with Lyme disease</td>
<td>Lilija Kovalchuka; Riga, LA</td>
</tr>
<tr>
<td>P58</td>
<td>A study of the inflammatory response in acute Lyme neuroborreliosis in the United States</td>
<td>Adriana Marques; Frederick, MD, USA</td>
</tr>
<tr>
<td>P59</td>
<td>The chemokine CCL19 in a clinical cohort of patients with prospectively-defined post-treatment Lyme disease syndrome</td>
<td>Aucott John N; Baltimore, MD, USA</td>
</tr>
<tr>
<td>P60</td>
<td>Progression of Lyme disease to later stages is associated with an antibody response to the membrane-proximal domain of <em>Borrelia burgdorferi</em> VlsE protein</td>
<td>Kevin S. Tang; New York, NY, USA</td>
</tr>
<tr>
<td>P61</td>
<td>Immune response to endothelial cell growth factor is elevated during early disseminated and late manifestations of Lyme disease but not in post-treatment Lyme disease syndrome</td>
<td>Kevin S. Tang; New York, NY, USA</td>
</tr>
<tr>
<td>P62</td>
<td>Yeast surface display: a screening tool for an ANTIDotE against ticks and tick-borne pathogens</td>
<td>Jos J.A. Trentelman; Amsterdam, NL</td>
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**13:00-15:00**  
**OTHER TICK-BORNE DISEASE 1**

Chair: Alessandro Manelli; Grugliasco, IT

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<thead>
<tr>
<th>Session</th>
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<tbody>
<tr>
<td>P63</td>
<td>Seroprevalence of <em>Anaplasma phagocytophilum</em> in Danish sheep</td>
<td>Nanna Skaarup Andersen; Odense, DK</td>
</tr>
<tr>
<td>P64</td>
<td>Human granulocytic anaplasmosis in Slovenia</td>
<td>Stanka Lotrič-Furlan; Ljubljana, SI</td>
</tr>
<tr>
<td>P65</td>
<td>Prevalence of <em>Anaplasma phagocytophilum</em> in <em>Ixodes ricinus</em> ticks from northern Norway</td>
<td>Anna J Heningsson; Jönköping, SE</td>
</tr>
<tr>
<td>Session</td>
<td>Title</td>
<td>Authors</td>
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<tr>
<td>P66</td>
<td>Sylvatic populations of European hedgehogs (Erinaceus europeus) support the circulation of Anaplasma phagocytophilum</td>
<td>Jerzy Michalik</td>
</tr>
<tr>
<td>P67</td>
<td>Molecular detection and genetic identification of Babesia infection in Rhipicephalus sanguineus ticks ectoparasitized on dogs in Southern Taiwan</td>
<td>Chien-Ming Shih</td>
</tr>
<tr>
<td>P68</td>
<td>Preliminary investigation of Babesia species in Australian ticks and Australians diagnosed with a tick-borne illness</td>
<td>Brooke Storey-Lewis</td>
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<tr>
<td>P69</td>
<td>Detection of babesiosis foci in the Baikal region of Russia</td>
<td>Olga Fedulina</td>
</tr>
<tr>
<td>P70</td>
<td>Bartonella species - another tick-borne pathogen ?</td>
<td>Andreas Müller</td>
</tr>
<tr>
<td>P71</td>
<td>Bartonella spp. in Ixodes vespertilionis ticks (Acari: Ixodidae) feeding on bats in Poland</td>
<td>Jerzy Michalik</td>
</tr>
<tr>
<td>P72</td>
<td>A newly established real-time PCR for detection of Borrelia miyamotioi in Ixodes ricinus ticks</td>
<td>Michael Reiter</td>
</tr>
</tbody>
</table>

**ECOEPIDEMIOLOGY**

15:00-15:30  **The relentless spread of Ixodes scapularis: what does it mean for future Lyme borreliosis risk**  
Jean Tsao; East Lansing, MI, USA

15:30-15:50  **7 Ixodes ricinus in Europe: interactions between ticks and pathogens**  
Agustín Estrada-Peña; Zaragoza, ES
<table>
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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>15:50-16:05</td>
<td>Seasonal activity of <em>Ixodes ricinus</em> and its dependence on weather factors in different seasons: results of a multi-annual study under quasi-natural conditions in Germany</td>
<td>Olaf Kahl; Berlin, DE</td>
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<tr>
<td>16:15-16:30</td>
<td>BREAK</td>
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<tr>
<td>16:30-17:00</td>
<td>From animal models to human disease</td>
<td>Sven Bergstrom; Umea, SE</td>
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<tr>
<td>17:00-17:15</td>
<td>The use of routine epidemiological, clinical and laboratory data for discrimination between <em>Borrelia miyamotoi</em> disease and other zoonotic infection prevalent in the same area</td>
<td>Alexander E. Platonov; Moscow, RU</td>
</tr>
<tr>
<td>17:15-17:30</td>
<td>Variable small protein 1 is the major immunogenic protein in murine experimental <em>Borrelia miyamotoi</em> infection</td>
<td>Alex Wagemakers; Amsterdam, NL</td>
</tr>
<tr>
<td>17:30-17:45</td>
<td>Detection of <em>Borrelia miyamotoi</em> infection in whole blood and cerebral spinal fluid (CSF) specimens in New York State (NYS) utilizing a multiplex real-time PCR approach</td>
<td>Danielle Wroblewski; Albany, NY, USA</td>
</tr>
<tr>
<td>17:45-17:55</td>
<td>Relapsing fever in Europe – be aware!</td>
<td>Volker Fingerle; Oberschleißheim, DE</td>
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<tr>
<td>09:00-09:30</td>
<td>Perspectives and questions about selected clinical manifestations of Lyme borreliosis</td>
<td>Gary P. Wormser; Valhalla, NY, USA</td>
</tr>
<tr>
<td>09:30-09:45</td>
<td>Correlation of culture positivity, PCR positivity, and borrelial burden in skin samples of erythema migrans patients with clinical findings</td>
<td>Daša Stupica; Ljubljana, SI</td>
</tr>
<tr>
<td>09:45-10:00</td>
<td>Comparison of Borrelia burgdorferi sensu stricto in Europe and United States by genotype, inflammatory potential, and clinical features of erythema migrans</td>
<td>Franc Strle; Ljubljana, SI</td>
</tr>
<tr>
<td>10:00-10:15</td>
<td>Systemic autoimmune disorders following Lyme disease</td>
<td>Sheila L. Arvikar; Boston, MA, USA</td>
</tr>
<tr>
<td>10:15-10:45</td>
<td>BREAK</td>
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<tr>
<td>10:45-11:15</td>
<td>Lyme neuroborrelosis, an overview</td>
<td>Klaus Hansen; Copenhagen, DK</td>
</tr>
<tr>
<td>11:15-11:30</td>
<td>Characterization of cerebrospinal fluid in patients with post-treatment Lyme syndrome as a neurologic entity</td>
<td>Steven E. Schutzer; Newark, NJ, USA</td>
</tr>
<tr>
<td>11:30-11:45</td>
<td>A meta-analysis on CXCL13 as biomarker for acute Lyme neuroborrelosiosis</td>
<td>Tobias A. Rupprecht; Munich, DE</td>
</tr>
<tr>
<td>12:00-13:00</td>
<td>LUNCH BREAK</td>
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</tbody>
</table>
POSTER PRESENTATIONS

13:00-15:00  BIOLOGY 2
Chair: Jean Tsao; East Lansing, MI, USA

P73  Diapause in vectors of Lyme borreliosis
Jeremy Gray; Dublin, IR

P74  Seasonal switch from non-diapause to diapause development in engorged larvae and nymphs of Ixodes ricinus in eastern Germany – comparison of new and old data
Olaf Kahl; Berlin, DE

P75  Ecology of ticks and tick-borne agents in the northern Apennines, Tuscany, Italy
Alessandro Mannelli; Grugliasco, IT

P76  Blacklegged tick emergence timing at multiple sites in the eastern United States
Genevieve Pang; East Lansing, MI

P77  Diversity of Borrelia lusitaniae strains from Serbia
Sanja Ćakić; Belgrade, RS

P78  Effect of local biodiversity on the prevalence and genospecies diversity of Borrelia burgdorferi sensu lato and Anaplasma phagocytophilum
Michal Chvostáč; Bratislava, SK

P79  Coinfection patterns of Babesia microti and Borrelia burgdorferi Osp C genotypes in host-seeking Ixodes scapularis nymphs
Maria Diuk-Wasser; New York, NY, USA

P80  Detection of tick-borne pathogens in Haemaphysalis concinna Koch, 1844 (Acari: Ixodidae) ticks in the territory of Baikal region
Elena Doroshchenko; Irkutsk, RU
### Scientific Programme

**Tuesday, 29 September 2015**

| P81 | Eco-epidemiology of *Borrelia miyamotoi* and Lyme borreliosis spirochetes in a popular hunting and recreational forest area in Hungary  
Gabor Foldvari; Budapest, HU |
| P82 | Impacts of vector range expansion on pathogen transmission dynamics  
Robert Jory Brinkerhoff; Richmond, VA, USA |

**13:00-15:00 CLINICAL ASPECTS 2**  
Chair: Franc Strle; Ljubljana, SI

| P83 | The NeBoP test as a clinical prediction score test in children with Lyme neuroborreliosis  
Barbro H. Skogman; Falun, SE |
| P84 | The role of gender in childhood neuroborreliosis  
Dag Tveitnes; Stavanger, NO |
| P85 | Cerebrovascular manifestations of Lyme neuroborreliosis (stroke, transient ischemic attacks) as a result of *B. burgdorferi*-associated vasculitis – a systematic review of published cases  
Joanna Zajkowska; Białystok, PL |
| P86 | Is it Parsonage-Turner syndrome or neuroborreliosis?  
Joanna Zajkowska; Białystok, PL |
| P87 | Cerebrospinal fluid findings in patients with acrodermatitis chronica atrophicans  
Vera Maraspin; Ljubljana, SI |
| P88 | Ganglioside antibodies associated to persisting symptoms after treatment of borreliosis (PSPT)  
Dag Nyman; Mariehamn, Åland, FIN |
| P89 | Cognitive impairments and subjective symptoms in patients with borreliosis-attributed persistent symptoms  
Anneleen Berende; Nijmegen, NL |
Subjective health complaints and reduced general function are not associated with tick bites or antibodies to Borrelia burgdorferi sensu lato in blood donors in western Norway
Reidar Hjetland; Førde, NO

In vitro susceptibility of Borrelia afzelii, Borrelia garinii, Borrelia lusitaniae and Borrelia valaisiana strains from Serbia to antimicrobial agents
Gorana Veinović; Belgrade, RS

Testing patients with nonspecific symptoms for antibodies against Borrelia burgdorferi sensu lato does not provide useful clinical information about their etiology
Mateusz Markowicz; Vienna, AT

Prevalence of vector-borne diseases among patients with fever of unknown origin in a Bulgarian hospital
Magdalena Baymakova; Sofia, BG

13:00-15:00 LABORATORY DIAGNOSIS 2
Chair: Volker Fingerle; Oberschleißheim, DE

Persisting IgM antibodies against Borrelia burgdorferi sensu lato: over-interpretation or cross-reactivity?
Mateusz Markowicz; Vienna, AT

The promises and challenges of analysing the B-cell repertoire of acute Lyme disease patients
Josiane Kirpach; Esch-Sur-Alzette, LU

Laboratory diagnosis using ELISA, immunoblot or CXCL13 identifies different patients with neuroborreliosis
Elisabeth Aberer; Graz, AT

Performance of quantitative measurement of the cytokine CXCL13 in CSF of patients with neuroborreliosis and non-related diseases
Lienhard Reto; La Chaux-de-Fonds, CH
P98  Antigenicity of borrelial protein OppA and NapA fragments in pediatric Lyme arthritis
Lenka Krbková; Brno, CZ

P99  Protein microarray analysis with purified antigens from Borrelia burgdorferi B31 and VlsE
Martin Kintrup; Planegg, DE

P100 Evaluation of sensitivity and specificity of a protein microarray for the serological diagnosis of Lyme borreliosis within different stages of the disease
Martin Kintrup; Planegg, DE

P101 Microarray immunoblot in the diagnosis of pediatric Lyme neuroborreliosis
Lenka Krbková; Brno, CZ

P102 Optimization of a procedure for culturing Borrelia miyamotoi from human blood in vitro
Joris Koetsveld; Amsterdam, NL

P103 Serum antibody responses to Borrelia burgdorferi antigens detected by multiplex assay show distinct patterns among PTLDS versus healthy treated patients
Monica E. Embers; Covington, LA, USA

P104 A multiplex antibody-detection assay for the improved diagnosis of Lyme borreliosis
Michel Ledizet; New Haven, CT, USA

13:00-15:00  EPIDEMIOLOGY 3
Chair: Gerhard Dobler; Munich, DE

P105 Epidemiology, risk assessment and prevalence of tick-borne pathogens in Scandinavia – the Tick-Borne-Diseases STING-study
Per-Eric Lindgren; Linköping, SE
P106  Tick-borne bacteria in Ixodes ricinus collected in southern Norway evaluated by a commercial kit and established real-time PCR protocols
Hanne Quarsten; Kristiansand, NO

P107  Dynamics of Borrelia burgdorferi s.l. populations in Ixodes ricinus in North-West England
Richard Birtles; Salford, UK

Christina Nelson; Fort Collins, CO, USA

P109  Identification of a Novel Borrelia burgdorferi sensu lato genospecies as a cause of Lyme disease in the United States
Jeannine Petersen; Fort Collins, CO, USA

P110  Rapid expansion of Lyme disease in Virginia, 2000-2014, with implications for North Carolina
Paul M. Lantos; Durham, NC, USA

P111  A Bayesian structural equation model to assess predictors of Borrelia infection after a tick bite
Agnetha Hofhuis; Bilthoven, NL

P112  Additional data for TBE risk assessment based on antibody surveillance of Austrian roe deer
Georg Gerhard Duscher; Vienna, AT

P113  Ticking time bomb: the widespread distribution of B. garinii into the southeastern United States increases its global importance for public health
Maryna Golovchenko; Ceske Budejovice, CZ

P114  Incidence of tick-borne infections in a cohort of North Carolina outdoor workers
Steven R. Meshnick; Chapel Hill, NC, USA
13:00-15:00 **GENETICS 1**  
Chair: Jukka Hytönen; Turku, FI

**P115** Characterization of *Borrelia turdi* isolates from Portugal through multilocus sequence analysis  
Ana C. Norte; Coimbra, PT

**P116** Detection and molecular-genetic analysis of bacterial and protozoan agents from *Ixodes persulcatus/Ixodes trianguliceps* sympatric areas in Russia  
Vera Rar; Novosibirsk, RU

**P117** Genetic transformations in those ‘other’ *Borrelia* genospecies  
Ryan O. M. Rego; Ceske Budejovice, CZ

**P118** Whole genome sequences of two emerging, human pathogenic, North American *Borrelia* species  
Marty Schriefer; Fort Collins, CO, USA

**P119** Prevalence of *Borrelia* spp. and other bacterial pathogens in *Ixodes pavlovskyi* ticks  
Nina V. Tikunova; Novosibirsk, RU

**P120** Tick-borne relapsing fever - a murine model for *Borrelia persica* infection  
Sandra Schwarzer; Munich, DE

**P121** Genotyping of *Borrelia afzelii* strains isolated from solitary and multiple erythema migrans  
Tjaša Cerar; Ljubljana, SI

**P122** Identification of a new *Candidatus Rickettsia* species in *Ixodes trianguliceps* ticks and small mammals inhabiting *Ixodes persulcatus/Ixodes trianguliceps* sympatric areas in Russia  
Yana Igolkina; Novosibirsk, RU

**P123** Pubmlst.org – the new home for the *Borrelia* MLST database  
Gabriele Margos; Oberschleißheim, DE
13:00-15:00  **PREVENTION 1**
Chair: Benoit Jaulhac; Strasbourg, FR

**P124**  N-terminally disulfide-bridged dimeric OspC is a promising candidate for a practical Lyme vaccine
Amy J. Ullmann, Fort Collins, USA

**P125**  Design and evaluation of a novel OspA-based vaccine for the prevention of Lyme borreliosis
Urban Lundberg; Vienna, AT

**P126**  Investigation of a novel multivalent OspA vaccine approach based on surface shaping of the C-terminal domain
Abhijeet Nayak; Vienna, AT

**P127**  A conserved chromosomally-encoded surface protein supports Borrelia burgdorferi infectivity and is a novel vaccine target blocking pathogen transmission
Utpal Pal; College Park, MA, USA

**P128**  Human monoclonal antibodies specific for OspA prevent tick transmission of infection in mice
Yang Wang; Boston, MA, USA

**P129**  Passive immunization using polyclonal or monoclonal anti-dimeric OspC antibodies prevents infection with Borrelia burgdorferi B31 in mice
Lars Komorowski; Lübeck, DE

**P130**  Discovery of OspA-specific human monoclonal antibodies reactive against a broad range of Borrelia species for the prevention of Lyme disease
Yang Wang; Boston, MA, USA

**P131**  Passive immunization with anti-OspA antibody protects mice from infected tick challenge likely through a complement-independent mechanism
Yang Wang; Boston, MA, USA
P132  Structure-based drug design to broaden the reactivity of an anti-OspA antibody to multiple species of Borrelia
Yang Wang; Boston, MA, USA

13:00-15:00  OTHER TICK-BORNE DISEASE 2
Chair: Julia Walochnik; Vienna, AT

P133  Cluster of ulceroglandular tularemia cases in Slovenia
Tereza Rojko; Ljubljana, SI

P134  Seroprevalence of Borrelia miyamotoi and Powassan/Deer Tick Virus (POWV/DTV) in persons bitten by Ixodes scapularis ticks in Maine, USA
Robert P. Smith, Jr.; Scarborough, ME, USA

P135  Increasing incidence and diversity of rickettsial diseases in North America
Robert Massung; Atlanta, GA, USA

P136  The epidemiology of tick-borne rickettsioses (TBR) in the Russian Federation
Alexander E. Platonov; Moscow, RU

P137  Spotted fever group rickettsiae in ticks from Gargano National Park (Apulia region): a regional update on tick-borne rickettsioses
Donato Antonio Raele; Foggia, IT

P138  Including of man in life cycle of rickettsiae in Slovakia
Eva Špitalská; Bratislava, SK

P139  Seroprevalence of Mediterranean spotted fever in three dog groups with different lifestyles from the autonomous province of Vojvodina, Serbia
Alexander Potkonjak; Novi Sad, RS

P140  Rickettsia felis, the next Rickettsia species identified in Slovakia
Eva Špitalská; Bratislava, SK
Scientific Programme

Tuesday, 29 September 2015

P141 Detection of Borrelia burgdorferi sensu lato, Anaplasma phagocytophilum and Rickettsia spp. in deer and their ectoparasites from the Krkonoše Mountains National Park in the Czech Republic and in Poland
Kateřina Kybicová; Prague, CZ

P142 Prevalence of tick-borne disease in Sicilian cattle
Santo Caracappa; Palermo, IT

LABORATORY DIAGNOSIS

15:00-15:30 Overview: laboratory diagnosis of Lyme borreliosis
Klaus-Peter Hunfeld; Frankfurt, DE

15:30-15:45 Multiplex assays for Borrelia IgG and IgM antibodies: how to interpret multiple results?
Ram B. Dessau; Slagelse, DK

15:45-16:00 Mapping the serum and urine metabolites of various stages of Lyme disease: early Lyme disease, treated early Lyme disease, and Lyme arthritis
John T. Belisle; Fort Collins, CO, USA

16:00-16:15 Evaluation of alternative two-tiered serodiagnostic algorithms for Lyme disease
John A. Branda; Boston, MA, USA

16:15-16:30 BREAK

LYME BORRELIOSIS TREATMENT

16:30-17:00 Lyme borreliosis treatment and clinical management
Katharina Ornstein; Kristianstad, SE

17:00-17:15 Antigen-induced cytokine release is both diagnostic and a possible measure of treatment efficacy for Lyme disease
Paul M. Arnaboldi; Valhalla, NY, USA
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<th>Time</th>
<th>Session Description</th>
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<tr>
<td>17:15-17:30</td>
<td><strong>Course and outcome of Bannwarth's syndrome – clinical and laboratory findings</strong></td>
<td>Katarina Ogrinc; Ljubljana, SI</td>
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<tr>
<td>17:30-17:45</td>
<td><strong>Effect of prolonged antibiotic treatment on cognitive performance in patients with persistent symptoms attributed to Lyme borreliosis</strong></td>
<td>Anneleen Berende; Nijmegen, NL</td>
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<tr>
<td>20:00</td>
<td><strong>CONFERENCE DINNER</strong></td>
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<td>09:00-09:30</td>
<td>HOST PATHOGEN INTERACTION</td>
<td>What matters, when and why, on the outer surface of Borrelia burgdorferi?</td>
<td>Patricia Rosa; Hamilton, MT, USA</td>
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<td>09:30-09:45</td>
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<td>DNA-binding protein SpoVG governs regulation of tick specific genes</td>
<td>Christina Savage; Lexington, KY, USA</td>
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<td>09:45-10:00</td>
<td></td>
<td>Integration of Ixodes ricinus genome sequencing with transcriptome and proteome annotation in the naïve midgut</td>
<td>Wibke J. Cramaro; Esch-sur-Alzette, LU</td>
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<td>10:00-10:15</td>
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<td>Host pathogen interaction</td>
<td>Joppe Hovius; Amsterdam, NL</td>
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<td>10:15-10:30</td>
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<td>BREAK</td>
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<tr>
<td>10:30-11:00</td>
<td>TICK-BORNE ENCEPHALITIS</td>
<td>Tick-borne flaviviruses</td>
<td>Franz-Xaver Heinz; Vienna, AT</td>
</tr>
<tr>
<td>11:00-11:15</td>
<td></td>
<td>Phylogeography of tick-borne encephalitis virus in Central Europe</td>
<td>Gerhard Dobler; Munich, DE</td>
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<tr>
<td>11:15-11:30</td>
<td></td>
<td>Tick-borne encephalitis virus strains of western subtype isolated in western and eastern Siberia of Russia: the genetic and biological properties</td>
<td>Sergey Tkachev; Novosibirsk, RU</td>
</tr>
<tr>
<td>11:30-11:45</td>
<td></td>
<td>The epidemiology of viral tick-borne encephalitis (TBE) in the Russian Federation</td>
<td>Alexander E. Platonov; Moscow; RU</td>
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<td>12:00-13:00</td>
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<td>LUNCH BREAK</td>
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## POSTER PRESENTATIONS

### 13:00-15:00  
**BIOLOGY 3**  
Chair: Gabriele Margos; Oberschleißheim, DE

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<tr>
<th>Poster No.</th>
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<th>Author(s)</th>
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13:00-15:00 **Epidemiology 4**  
Chair: Olaf Kahl, Berlin, DE

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**P166**  
Ten years apart study: measures of Borrelia burgdorferi sl infected tick densities in Alsace, a high endemic region of France  
Valérie Goldstein; Strasbourg, FR

**P167**  
Geographical differences in nymphal Ixodes scapularis questing behaviour are strongly associated with regional variation in Lyme disease risk in the eastern United States  
Isis Arsnoe; Knoxville, TN, USA

**P168**  
Risk factors for tick exposure in the northeastern United States: home is where the ticks are  
Paul Mead; Fort Collins, CO, USA

**P169**  
Lyme-group Borrelia not confirmed in human-biting Amblyomma americanum ticks from the southeastern United States  
Graham Hickling; Knoxville, TN, USA

**P170**  
Zoonotic pathogens prevalence in questing ticks and ticks from bitten humans in Piedmont, Italy  
Maria Domenica Pintore; Torino, IT

**13:00-15:00**  
**GENETICS 2**  
Chair: Nathalie Boulanger; Strasbourg, FR

**P171**  
Tick bite impacts on the early transmission of Borrelia, the causative agent of Lyme borreliosis  
Quentin Bernard; Strasbourg, FR

**P171a**  
Microarray analyses of inflammation response of human dermal fibroblasts to different species of Borrelia burgdorferi sensu lato  
Benoît Jaulhac; Strasbourg, FR

**P172**  
The role of MBL in the immune response against Borrelia burgdorferi sensu lato  
Jeroen Coumou; Amsterdam, NL
Characterisation of an Ixodes scapularis dystroglycan-like protein and its role in B. burgdorferi transmission
Jeroen Coumou; Amsterdam, NL

Use of massively parallel sequencing for identifying B. burgdorferi fitness in vitro and in vivo
Linden Hu; Boston, MA, USA

Studies on dissemination of Lyme borreliosis in mice using positron emission tomography/computed tomography (PET/CT) imaging
Jukka Hytönen; Turku, FIN

c-di-GMP binding induces conformational change in the Borrelia PlzA/PlzC Proteins: development of a biosensor for measuring c-di-GMP levels in vivo
Richard T. Marconi; Richmond, VA, USA

The genetic diversity of the Anaplasmataceae family members in Irkutsk region eastern Siberia, Russia
Elena Doroshchenko; Irkutsk, RU

In vitro prediction of the pharmacokinetic profiles of anti-OspA monoclonal antibodies for pre-exposure prophylaxis of Lyme disease
Yang Wang; Boston, MA, USA

Interactive tick prevention with a new smartphone app
Werner Tischhauser; Wädenswil, CH
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P181  The effect of seven essential oils on climbing behaviour of Dermacentor reticulatus  
Katarína Štefanidesová; Bratislava, SK

P182  The Norwegian National Advisory Unit on Tick-borne diseases  
Randi Eikeland; Arendal, NO

P183  Two surface-exposed outer membrane Borrelia burgdorferi proteins interact with each other and block pathogen transmission from ticks  
Ozlem Buyuktanir; Samsun, TR

P184  Virus encapsulation in pH-sensitive polymer increases safety of a reservoir-targeted Lyme disease vaccine while maintaining its efficacy  
Aurelie Kern; Boston, MA, USA

P185  Immunization with a recombinant subunit OspA vaccine markedly impacts the rate of newly acquired Borrelia burgdorferi infections in client-owned dogs living in a coastal community in Maine, USA  
Andrew K. Eschner; Duluth, GA, USA

P186  Unorthodox alternative therapies marketed to treat Lyme disease  
Paul M. Lantos; Durham, NC, USA

P188  Surface display of a borrelial lipoprotein on meningococcal outer membrane vesicles  
Merijn L.M. Salverda; Bilthoven, NL

13:00-15:00  TICK-BORNE ENCEPHALITIS  
Chair: Michael Kunze; Vienna, Austria

P189  Identifying clusters of tick borne encephalitis in Switzerland  
Ekkehardt Altpeter; Berne, CH
P190  Nationwide seroprevalence study of tick-borne encephalitis virus in Danish roe deer (C. capreolus)
Nanna Skaarup Andersen; Odense, DK

P191  Prevalence of tick-borne encephalitis virus in tick imagos in a highly urbanized area in Southern Poland
Aleksandra Drellich; Gdansk, PL

P192  Detection of potential recombination sites in genomic sequences of strains of European subtype of tick-borne encephalitis virus
Yuri Dzhioev; Irkutsk, RU

P193  Tick–borne encephalitis virus (TBEV) infection presenting solely as fever after a tick bite in an eight-year-old boy
Liza Lea Lah; Ljubljana, SI

P194  Tick-borne meningoencephalitis in patients who received complete basic immunization against this disease
Stanka Lotrič-Furlan; Ljubljana, SI

P196  A case of severe tick-borne encephalitis in a child
Mojca Rožič; Ljubljana, SI

P197  Factors determining immunological response to vaccination against tick-borne encephalitis virus in older individuals
Johanna Sjöwall; Linköping, SE

P198  The genetic and biological properties of tick-borne encephalitis virus unique group from eastern Siberia, Russia
Sergey Tkachev; Novosibirsk, RU

P199  Kemerovo virus detection in different regions of Western Siberia, Russia
Sergey Tkachev; Novosibirsk, RU

P200  Evaluation of hyponatremia in patients with tick-borne encephalitis
Joanna Zajkowska; Bialystok, PL
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**OTHER TICK-BORNE DISEASE**

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| 15:00-15:30  | 30 Overview and Determination of the relative frequency of Borrelia miyamotoi, Babesia microti, and Anaplasma phagocytophilum in subjects with acute Lyme disease: a pilot study  
Peter J. Krause; New Haven, CT, USA |
| 15:30-15:45  | 31 Veterinary experience on tick-borne diseases  
Michael Leschnik; Vienna, AT |
| 15:45-16:00  | 32 Babesia spp. and cases of human babesiosis in Austria  
Julia Walochnik; Vienna, AT |
| 16:00-16:15  | 33 Aging resets the genetic architecture of host resistance to babesiosis  
Edouard Vannier; Boston, MA, USA |
| 16:30        | CLOSING OF THE CONFERENCE  

Key-note Speakers

Alan G. Barbour; Irvine, CA, USA

Sven Bergstrom; Umea, SE

Nathalie Boulanger-Chicois; Strasbourg, FR

Klaus Hansen; Copenhagen, DK

Franz-Xaver Heinz; Vienna, AT

Peter J. Krause; New Haven, CT, USA

Katharina Ornstein; Kristianstad, SE

Patricia Rosa; Hamilton, MT, USA

Allen C. Steere; Boston, MA, USA

Jean Tsao; East Lansing, MI, USA

Gary P. Wormser; Valhalla, NY, USA
# Chairs Persons Poster Presentations

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Exhibitors

Ärztezentrale, Vienna, Austria
Biovendor, Vienna, Austria
Euroimmun, Lübeck, Germany
IGeneX, Palo Alto, United States
INSTAND e.V., Düsseldorf, Germany
Institut Virion\Serion, Würzburg, Germany
Mikrogen, Neuried, Germany
Orgentec Austria, Deutsch Wagram, Austria
Pfizer, Vienna, Austria
Reagenz, Toivala, Finland
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Viramed Biotech, Planegg, Germany

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