



International Symposium on Tick-Borne Pathogens and Disease ITPD 2023

In honour of Gerold Stanek

Organised by the
Austrian Society for Hygiene, Microbiology and Preventive Medicine (ÖGHMP)
and under the auspices of the
ESCMID Study Group for Lyme Borreliosis (ESGBOR)

22 to 25 October 2023

Venue

Parkhotel Schönbrunn, Vienna, Austria

Programme



ÖGHMP
Österreichische Gesellschaft
für Hygiene, Mikrobiologie und
Präventivmedizin

ÖGHMP

Austrian Society for Hygiene, Microbiology and Preventive Medicine and



ESCMID

MANAGING INFECTIONS
PROMOTING SCIENCE

ESGBOR

ESCMID Study Group for Lyme Borreliosis

www.itpd-tickborne.com



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Welcome

Dear Colleagues and Friends,

on behalf of the Austrian Society of Hygiene and Preventive Medicine (ÖGHMP) and the ESCMID Study Group for Lyme Borreliosis (ESGBOR), it is our pleasure to inform you about the upcoming International Symposium on Tick-Borne Pathogens and Disease, ITPD 2023. ITPD 2023 is a joint activity between ESGBOR and ÖGHMP and will be in honour of Ao.Univ.-Prof. Dr.med.univ. Gerold Stanek this year, the driving force behind the previous ITPD events and many other meetings.

Gerold Stanek unfortunately passed away after a short illness on the 4th of November 2022. He was an outstanding researcher, a clinician specialised in tick-borne diseases, a mentor, and not the least a friend of many of us.

To honour Gerold Stanek and to continue his ever positive and constructive energy we hope to welcome you all at ITPD 2023 starting on the 22nd until the 25th of October 2023.

Mateusz Markowicz, Franc Strle, Michiel Wijnveld, Birgit Willinger
The Organisers of the ITPD2023



Symposium Committees

Scientific Committee

Allan Barbour (USA), Nathalie Boulanger (FR), Ram Dessau (DK), Georg Duscher (AT), Randi Eikeland (NO), Volker Fingerle (DE), Gábor Földvári (HU), Anna Henningsson (SE), Joppe Hovius (NL), Klaus-Peter Hunfeld (DE), Benoit Jaulhac (FR), Olaf Kahl (DE), Maria Kazimirova (SK), Wolfgang Kristoferitsch (AT), Michael Leschnik (AT), Reto Lienhard (CH), Per-Eric Lindgren (SE), Mateusz Markowicz (AT), Sally Mavin (UK), Robert Müllegger (AT), Katharina Ornstein (SE), Alice Raffetin (FR), Michael Reiter (AT), Tobias Rupprecht (DE), Anna-Margarita Schötta (AT), Hein Sprong (NL), Georg Stary (AT), Franc Strle (SL), Klemen Strle (USA), Johanna Strobl (AT), Michiel Wijnveld (AT), Gary P Wormser (USA)

Symposium Secretariat & Registration

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Exhibition & Sponsorship



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With friendly support  **IN STAND**



Venue and Networking Dinner

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 € 35.–) 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.



Networking dinner

The Networking Dinner starts at 19.30 at Brandauer Schlossbräu.

Adress: Am Platz 5, 1130 Wien.





Registration (on site) / General Information

The symposium registration area is located on the ground floor of the hotel next to the exhibition area. On arrival all delegates, accompanying persons and exhibitors must register for the Symposium.

Registration Fees (in EURO)

Regular Participant	€ 550.–
MD in training*	€ 420.–
Student*	€ 300.–
Accompanying person**	€ 150.–
Networking Dinner	€ 40.–

*Please submit proof of training/student status

**includes Reception, Symposium Dinner, Coffee Breaks & Access to Exhibition

Payment

Please note that all onsite payments should be made in cash or by credit card (Visa, MasterCard and Maestro will be accepted). EURO (€) only.

Unfortunately, we cannot accept traveller's cheques, other credit cards, Euro cheques or other currencies.

Opening hours – Registration

Sunday, 22 October	12.00 – 18.00
Monday, 23 October	08.00 – 17.30
Tuesday, 24 October	08.00 – 18.00
Wednesday, 25 October	08.00 – 12.00

Abstract Book

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

Networking Dinner

Tuesday, 24 October 2023 at 19.30

Liability

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



Presentations / Posters

Presentations

Presentations will be given in the 'Ballsaal' (lecture room) of the hotel.

Language

The official language of the symposium is English.

Speakers Information

You will have the opportunity to present your work in 15 minutes with 5 minutes discussion. The presentation should be prepared in PowerPoint (4:3 format only).

Make sure to provide your presentation on a USB stick at the lecture hall in a timely manner.

Poster Presentations

Posters will be on display in room 'Österreich-Ungarn'.

They should be mounted on Monday morning, 23 October 2023, in the numbered spaces indicated in the programme.

Posters may be displayed until 17:30 Tuesday, 24 October 2023.

Poster size

Maximum 130 cm height x 90 cm width (portrait DIN A0 format)

Poster discussions

You will have the opportunity to present your work in 3 minutes, followed by 2 minutes discussion in a guided poster session. 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.

The burden of Lyme disease across Europe



Over the past 15 years, the burden of Lyme disease (Lyme Borreliosis) has increased across Europe.¹

Pfizer and Valneva's latest research, published in a special edition of the **Vector-Borne and Zoonotic Diseases** journal, provides a comprehensive overview of the Lyme disease burden across Europe.

Pfizer and Valneva's analysis of European surveillance data shows that the burden of Lyme disease continues to rise in endemic regions of Europe, and has emerged in new areas.¹



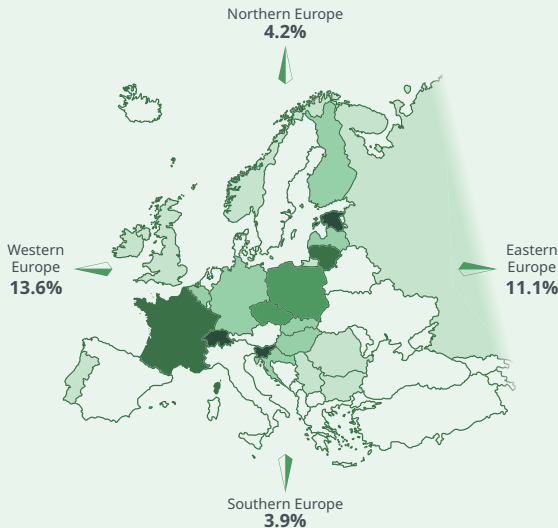
202 million people.²



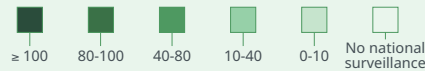
Last estimate from WHO in 2006 was **65,000–85,000 cases annually.²**

Seroprevalence and incidence of Lyme disease across Europe^{3,3}

Percentages indicate the proportion of general populations that show seropositivity (presence of antibodies) to Lyme disease



Incidence (cases per 100,000 population) per year of Lyme disease across Europe



France

The rate of Lyme disease incidence in primary care almost doubled between 2010 and 2019.⁴



Poland

Lyme disease is endemic in all regions, with most Lyme cases diagnosed in women.⁵



Germany

Incidence peaks among 3 to 6 year old children, and 55 to 74 year old adults.⁶

Significant variation in reporting and lack of systematic surveillance exist across Europe, representing a major barrier to accurately understanding the burden of Lyme disease.^{2,7}

Even in countries reporting national incidence data, there is evidence of substantial regional variation and underreporting¹, for example in Finland:

Average annual total incidence varied almost **300-fold** by hospital district.⁸



For every one case of Lyme disease reported to the surveillance system, **2.7 symptomatic cases go unreported.⁹**

Therefore, prevention efforts may need to rely on **regional interventions**, as well as national strategies.¹

Across the last decade, numerous steps have been taken to foster robust, sustainable approaches to public health surveillance, however further action is needed:¹

Countries should continue to invest into **high-quality disease surveillance.¹**



Individuals should maintain vigilance and recognize risk behaviors, to **prevent infection.¹**

Read the full publication here:



These studies were supported and jointly funded by Valneva and Pfizer.

References

1. Stark JH, Pilz A, Jodar L, ...¹ The Epidemiology of Lyme Borreliosis in Europe: An Updated Review on a Growing Public Health Issue. *Vector Borne and Zoonotic Diseases* 2023; 23(4):139-141. DOI: 10.1089/vbz.2022.0068
2. Burn, L, Tran, TMP, Pilz, A, et al. Incidence of Lyme Borreliosis in Europe from National Surveillance Systems (2005-2020). *Vector Borne and Zoonotic Diseases* 2023; 23(4):156-171. DOI: 10.1089/vbz.2022.0071
3. Burn, L, Pilz, A, Vyse, A, et al. A Seroprevalence of Lyme Borreliosis in Europe: Results from a Systematic Literature Review (2005-2020). *Vector Borne and Zoonotic Diseases* 2023; 23(4):195-220. DOI: 10.1089/vbz.2022.0069
4. Nuttens, C, Bessou, A, Duret, S, et al. Epidemiology of Lyme Borreliosis in France in Primary Care and Hospital Settings, 2010-2019. *Vector Borne and Zoonotic Diseases* 2023; 23(4):221-229. DOI: 10.1089/vbz.2022.0050
5. Paradowska-Stankiewicz, I, Zbrzezniak, J, Skufca, J, et al. A Retrospective Database Study of Lyme Borreliosis Incidence in Poland from 2015 to 2019: A Public Health Concern. *Vector Borne and Zoonotic Diseases* 2023; 23(4):247-255. DOI: 10.1089/vbz.2022.0049
6. Skufca, J, Tran, TMP, Brestrich, G, et al. Incidence of Lyme Borreliosis in Germany: Exploring Observed Trends Over Time Using Public Surveillance Data, 2016-2020. *Vector Borne and Zoonotic Diseases* 2023; 23(4):237-246. DOI: 10.1089/vbz.2022.0046
7. Nagarajan, A, Skufca, J, Vyse, A, et al. The Landscape of Lyme Borreliosis Surveillance in Europe. *Vector Borne and Zoonotic Diseases* 2023; 23(4):142-155. DOI: 10.1089/vbz.2022.0067
8. Skufca, J, De Smedt, N, Pilz, A, et al. Incidence of Lyme Borreliosis in Finland: Exploring Observed Trends Over Time Using Public Surveillance Data, 2015-2020. *Vector Borne and Zoonotic Diseases* 2023; 23(4):255-264. DOI: 10.1089/vbz.2022.0047
9. Olsen, J, Angulo, JF, Pilz, A, et al. Estimated Number of Symptomatic Lyme Borreliosis Cases in Adults in Finland in 2021 Using Seroprevalence Data to Adjust the Number of Surveillance-Reported Cases: A General Framework for Accounting for Underascertainment by Public Health Surveillance. *Vector Borne and Zoonotic Diseases* 2023; 23(4):265-272. DOI: 10.1089/vbz.2022.0051



Sunday, 22. October 2023

- 15:30 **WELCOME AND OPENING**
Monika Ehling-Schulz
- 15:50 **Introduction of the organisers**
Mateusz Markowicz, Franc Strle, Michiel Wijnveld,
Birgit Willinger
- 16:00 **SESSION IN HONOUR OF GEROLD STANEK**
Session chairs: Mateusz Markowicz and Michiel Wijnveld
- Franc Strle
- Alan Barbour
- Walter Koller
- Wolfgang Kristoferitsch
- Jeremy Gray
- Volker Fingerle
- Regina Sommer
- Michael Kundi
- 17:30 **RECEPTION IN THE EXHIBITION AREA**

ENCEPUR® KANN BEIM SCHUTZ VOR FRÜHSOMMER-MENINGOENZEPHALITIS (FSME) HELFEN!

ENCEPUR® BIETET VERSCHIEDENE IMPFSHEMATA, UM INDIVIDUELLEN UND FAMILIÄREN BEDÜRFNISSEN GERECHT ZU WERDEN.^{1,2}

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1) Aktuelle Fachinformation für Encepur® Kinder.

2) Aktuelle Fachinformation für Encepur® Erwachsene



8:30

OPENING DAY 2

Session 2 | 08:40–09:40

Monday, 23. October 2023

TICK RESEARCH

Session chair: Gábor Földvári

08:40

A Cross-Kingdom Signaling Cascade Converges Immunity and Development in Ixodid Ticks

Utpal Pal

O1

09:00

Citizen science helps monitoring the risks associated with urban and introduced ticks and tick-borne pathogens in Hungary

Éva Szabó

O3

09:20

***Ixodes ricinus* seasonal questing in the south-west of Berlin: long-term data from 2010–2022**

Olaf Kahl

O4

09:40

BREAK




Session 3 | 10:10–11:50

Monday, 23. October 2023

PREVALENCE, PREVENTION, TICK-BORNE DISEASES

Session chair: Utpal Pal

- | | | |
|-------|--|----|
| 10:10 | Bacterial Agents Detected in 418 Ticks Removed from Humans during 2014–2021, France
Marie Jumpertz | 05 |
| 10:30 |  6-Valent, OspA-Based VLA15 Lyme Disease Vaccine Clinical Development Program Update
Jason Maguire | 06 |
| 10:50 | Characterization and evaluation of novel anti-tick vaccine candidates for Lyme borreliosis and other tick-borne diseases
Alexis Burnham | 07 |
| 11:10 | Molecular Genetics Aiding Defining Essential Genes and Vaccine Development Against Globally Important Tick-borne Ehrlichia chaffeensis and Anaplasma marginale.
Roman Ganta | 08 |
| 11:30 | A short story of an adaptive organism – Anaplasma phagocytophilum
Snorre Stuen | 09 |
| 11:50 | LUNCH BREAK | |



13:00–14:30 **GUIDED POSTER SESSION**

Poster Session 1 | P1–P14

Monday, 23. October 2023

DEVELOPMENTS IN LABORATORY DIAGNOSIS, AND MANAGEMENT OF TICK-BORNE DISEASES

Session Chairs: Volker Fingerle and Gabriele Margos

- P1 Serological analysis of distinct Borrelia-specific IgM antibody reactivity patterns using a preliminary novel multiparameter assay**
Matthias Morgenstern
- P2 PCR targeting the large subunit of phage terminase – a suitable tool for Borrelia diagnostic?**
Volker Fingerle
- P3 EU-wide external quality assurance study on the sensitivity and specificity of different amplification protocols for the detection of Borrelia burgdorferi sensu lato**
Volker Fingerle
- P4 Challenges and pitfalls in interpreting Western blot findings for Lyme borreliosis**
Oktavija Đaković Rode
- P5 Methodological Quality Assessment with the AGREE II Scale and a Comparison of European and American Guidelines for the Treatment of Lyme Borreliosis: A Systematic review**
Steve Ngujala Landry
- P6 Is there any advantage to using corticosteroids, nonsteroidal anti-inflammatories, hydroxychloroquine and DMARDs in the adjuvant treatment of acute Lyme borreliosis and PTLDS? A systematic review**
Steve Ngujala Landry
- P7 Importance of individual reference values in Lyme antibody testing**
Milou Kouwijzer



Poster Session 1 | P1–P14

Monday, 23. October 2023

- P8 **Evaluation of different two-tier testing strategies for the diagnosis of Lyme borreliosis**
Dieneke Hoeve-Bakker
- P9 **Comparison of a Miniaturized Multiplex Enzyme Immunoassay with the Standard Two-Tier Test for the Serologic Diagnosis of Lyme Disease in a Rural Healthcare System**
Thomas Fritsche
- P10 **Brain white matter hyperintensities in neuroborreliosis: a case-control study**
Elisabeth Lindland
- P11 **Proportion of confirmed Lyme neuroborreliosis cases among patients referred for suspected early European Lyme neuroborreliosis**
Katarina Ogrinc
- P12 **Perceptions, social representations, and experiences of suspected Lyme borreliosis in teenagers and their parents: a multicenter study**
Giulia Paoletti
- P13 **Lyme arthritis in children from laboratory perspective**
Eva Ružić-Sabljić
- P14 **Alternative Treatment Method for Crimean Congo Hemorrhagic Fever: Coupled Plasma Filtration And Adsorption**
Dilsat Tepe



PREVALENCE & ECOLOGY

Session chairs: Margarida Ruivo and Michiel Wijnveld

- P15 **Assessing public health risks due to ticks in urban green-spaces used for recreation**
Patrik Dinnéztz
- P16 **TICK-BORNE PATHOGENS IN OPERATIONAL AREAS OF THE AUSTRIAN ARMED FORCES IN THE KOSOVO**
Ina Hoxha
- P17 **Changes in the prevalence of pathogens in ticks collected from humans in Belgium, 2021 versus 2017**
Laurence Geebelen
- P18 **Borrelia burgdorferi s.l. and it´s genetic variability in five European countries**
Michal Chvostáč
- P19 **The molecular epidemiology of tick-borne infections pathogens of the genus Borrelia in natural foci of the Baikal region of Russia**
Dmitrii Kiselev
- P20 **PCR detection and typing of Borrelia burgdorferi sensu lato in Ixodes ricinus ticks collected in Bulgaria**
Teodora Gladnishka
- P21 **Two decades of research on borrelia burgdorferi sensu lato prevalence and genetic variability in questing ixodes ricinus ticks in Slovakia**
Veronika Rusňáková Tarageľová
- P22 **Genomic analysis of Francisella tularensis isolates following arthropod bites in Austria**
Alexander Indra



Poster Session 2 | P15–P26

Monday, 23. October 2023

- P23 **Study on Rickettsia spp. in ticks from Croatia**
Relja Beck
- P24 **Pathogens associated with Ixodes ricinus/Ixodes inopinatus (Acari: Ixodidae) in North Africa**
Elyes Zhioua
- P25 **Sympatric occurrence of five exophilic tick species in the Levice region (southwestern Slovakia) and their infection with tick-borne pathogens**
Barbara Mangová
- P26 **Ixodes ricinus abundance and influencing factors in northern Germany during the years 2021–2023**
Olaf Kahl

Session 4 | 14:30–15:50

Monday, 23. October 2023

EPIDEMIOLOGY

Session Chair: Michiel Wijnveld

- 14:30 **Ticking on Pandora's box: a prospective case-control study into Ixodes ricinus-borne diseases**
Dieuwertje Hoornstra O10
- 14:50 **Substantial under-ascertainment of symptomatic Lyme borreliosis cases by public health surveillance in Norway**
Emily Colby O11
- 15:10 **Tekenradar.nl a citizen science platform for tick bite surveillance in the Netherlands**
Margriet Harms O12
- 15:30 **Detection of Babesia spp. in Febrile Patients in an Endemic Area of Lyme Borreliosis in France: Epidemiological Insights**
Pierre Boyer O13
- 15:50 **BREAK**



16:15–17:30 **GUIDED POSTER SESSION**

Poster Session 3 | P27–P35

TICK-BORNE ENCEPHALITIS VIRUS

Session Chair: Maria Kazimirova

- P27 **Tick-borne encephalitis virus vaccines elicit ns1-specific antibody responses in vaccinated individuals**
Reto Lienhard
- P28 **A high throughput tbev seroneutralization assay overcomes elisa limitations**
Reto Lienhard
- P29 **Severe Tick-borne encephalitis in a teenage boy – early and late neurological sequelae**
Melita Akerfelde
- P30 **Comparison of tick-borne encephalitis (TBE) clinical disease in children and adults: a population-based study in Latvia, 2018-2020**
Zane Freimane
- P31 **Elevated levels of serum muscle enzymes in the initial phase of tick-borne encephalitis**
Petra Bogovič
- P32 **Publicly available surveillance data on tick-borne encephalitis in Europe, 2023**
Frederick Angulo
- P33 **The asymptomatic proportion of tick-borne encephalitis virus (TBEV) infected-persons may be lower but the disease burden may be higher than commonly reported in the literature**
Frederick Angulo
- P34 **Global meta-analyses of seroprevalence of tick-borne encephalitis (TBE) virus antibodies among general and high-risk groups (1960–2021)**
Patrick Kelly
- P35 **The Role of the Skin Structural Cells on the Tick-borne Encephalitis Virus Infection**
Pavĺína Bartíková



TICK-BORNE PATHOGEN PREVALENCE IN WILD AND DOMESTIC ANIMALS

Session Chair: Michael Leschnik

- P36 **Pathogens of Salah's Egyptian fruit-bat *tampan Reticulinasus salahi* (Argasidae), tick of bats and man in the Palaearctic and Afrotropic**
Eva Spitalska
- P37 **Wild boar's contribution to the prevalence of tick-borne diseases in the Baltic Sea region**
Hanna Lindell
- P38 **Molecular detection and genotyping of *Theileria* spp. in Korean water deer (*Hydropotes inermis argyropus*)**
Dongmi Kwak
- P39 **Molecular detection and characterization of *Borrelia garinii* in ticks infesting dogs in Korea**
Dongmi Kwak
- P40 **Serological Evidence of *Borrelia burgdorferi* and *Ehrlichia* spp. among Cats from Sofia District, Bulgaria**
Magdalena Baymakova
- P41 **Involvement of birds in the circulation of wide range of tick-borne pathogens**
Diana Selyemová
- P42 **Hedgehogs and lizards as important hosts of ticks in urban conditions in Slovakia**
Yuliya M. Didyk
- P43 **Infection of game animals and ticks with pathogenic agents in a region in south-western Slovakia with the sympatric occurrence of five epidemiologically important tick species**
Mária Kazimírová
- P44 **Do *Peromyscus leucopus* mice infected with *Borrelia burgdorferi* develop any clinical signs of disease?**
Yuliya Rogovska
- P45 **Tick-borne microorganisms detected in reservoir animals collected in the surroundings of two villages in Styria, Austria**
Michiel Wijnveld



Session 5 | 17:30–18:30

Monday, 23. October 2023

DEVELOPMENTS IN LABORATORY DIAGNOSIS OF TICK-BORNE DISEASES

Session Chair: Klaus-Peter Hunfeld

- 17:30 **Testing for Intrathecal Production of anti-B. burgdorferi Antibodies – Using a Microarray Immunoblot – First Findings of the Austrian Reference Laboratory for Lyme disease (RL-LD), 2023, Austria**
Romana Klasinc O14
- 17:50 **Antibiotic treatment influences antibody profiles differently for Lyme neuroborreliosis and Lyme arthritis patients**
Dieneke Hoeve-Bakker O15
- 18:10 **Evaluation of fully Automated Serology Assays and MTTT for Diagnosis of Lyme Disease**
Xiaoxing Qiu O16
- 18:30 GET-TOGETHER IN THE EXHIBITION AREA



08:30

OPENING DAY 3

Session 6 | 08:40 – 10:00

Tuesday, 24. October 2023

PATHOGENICITY & IMMUNOLOGY 1

Session chair: Klemen Strle

08:40

Evaluating the Pathogenicity of Babesia aktasi n. sp. through experimental Infection in Saanen Goats

Mehmet Can Ulucesme

O17

09:00

Lyme disease spirochete regulatory networks control production of infection-associated proteins

Brian Stevenson

O18

09:20

Uncovering Skin Tissue Signatures to Understand Tick-Associated Pathogenesis

Wenna Lee

O19

09:40

Human epidermal Langerhans cells are activated and migrate in response to tick feeding and transmission of tick-borne pathogens

Johanna Strobl

O20

10:00

BREAK



Session 7 | 10:30–12:10

Tuesday, 24. October 2023

TICK-BORNE DISEASES AND PATHOGENS

Session chair: Brian Stevenson

- | | | |
|-------|--|-----|
| 10:30 | Borrelia burgdorferi spirochetes affect vascular and neuronal structures in acute cutaneous Lyme borreliosis
Sophie Weninger | O21 |
| 10:50 | Cognitive function in patients with neuroborreliosis: A prospective follow-up from the acute phase to 12 months after treatment
Silje Andreassen | O22 |
| 11:10 | Borrelia tillae – an “old” South African Borrelia species
Gabriele Margos | O23 |
| 11:30 | Borrelia PubMLST database: towards a cgMLST typing scheme
Sabrina Hepner | O24 |
| 11:50 | Characterization of the primitive immune system of Borrelia afzelii and Borrelia garinii
Margarida Ruivo | O25 |
| 12:10 | LUNCH BREAK | |



13:00 – 14:30 **GUIDED POSTER SESSION**

Poster Session 5 | P46–P57

Tuesday, 24. October 2023

EPIDEMIOLOGY

Session Chairs: Anna Henningsson and Johanna Strobl

- P46 **Comparative study of acarological and clinical *Borrelia afzelii* in Alsace (France)**
Emilie Talagrand-Reboul
- P47 **Comparison of incidence of Lyme borreliosis in nationwide public health surveillance and sites participating in the Burden of Lyme Disease (BOLD) Study in Six European Countries**
Kate Halsby
- P48 **Estimating the under-recognized burden of Lyme Disease with administrative claims data**
James Stark
- P49 **Estimating incidence of medically attended Lyme disease and its disseminated manifestations from public literature in Germany**
Gordon Brestrich
- P50 **Case-Control Study of Individual Risk Behaviors for Lyme Disease by Residential Setting: A Survey of Adults in Lyme Disease-Endemic US States Identified from Health Insurance Claims Data**
Hannah Gould
- P51 **Lyme Disease General Practice Sentinel Scheme in Scotland**
James Douglas
- P52 **High incidence of symptomatic Lyme borreliosis cases in Scotland in 2021 after adjusting for under-ascertainment by public health surveillance**
Frederick Angulo



Poster Session 5 | P47–P58

Tuesday, 24. October 2023

- P53 Incidence of symptomatic Lyme borreliosis in Romania after adjusting for under-ascertainment in public health surveillance: Evidence for substantial burden of disease**
Frederick Angulo
- P54 Climate change & the Epidemiology of Tick-Borne Encephalitis in Switzerland**
Annora Mack
- P55 The clinical spectrum of TBE infections in adult and paediatric populations in Europe: A systematic review**
Kate Halsby
- P56 High incidence of tick-borne encephalitis among unvaccinated population in Latvia, 2018–2020 highlights the need to enhance vaccine uptake**
Zane Freimane
- P57 Epidemiological situation of tick-borne encephalitis in Belgium, an overview**
Tinne Lernout



PATHOGENICITY, IMMUNOLOGY, AND TICKBORNE PATHOGENS

Session chairs: Michael Reiter and Anna Schötta

- P58 **Role of the skin microbiote in the early transmission of *Borrelia burgdorferi sensu stricto***
Florian Baquer
- P59 **Members of the paralogous gene family 12 from Lyme disease agent *Borrelia burgdorferi* are surface exposed DNA-binding proteins**
Kalvis Brangulis
- P60 **Molecular signaling associated with neuroinvasive *Rickettsia* species**
Zuzana Sekeyová
- P61 **Genetic variation in TLR1 gene is associated with a break in immune tolerance, leading to excessive inflammation and more severe Lyme disease**
Klemen Strle
- P62 **Experimental Infection Study Reveals Differential Pathogenicity of *Babesia aktasi* n. sp. in Splenectomized versus Spleen-Intact Goats**
Sezayi Ozubek
- P63 **Out of Asia? Expansion of Eurasian Lyme borreliosis causing genospecies display unique evolutionary trajectories**
Gabriele Margos
- P64 **Genome types of seabird-associated *Borrelia garinii***
Gabriele Margos
- P65 ***Borrelia lusitaniae* highly structured populations: can you blame the tick or the vertebrate host?**
Pierre Boyer



Poster Session 6 | P58–P69

Tuesday, 24. October 2023

- P66 **Isolation of *Rickettsia slovaca* from *Dermacentor marginatus* tick collected in Slovakia**
Lenka Minichová
- P67 **A high fidelity approach enables to fully resolve the complex *Borrelia* genome**
Sabrina Hepner
- P68 **Hide and seek in LB-diagnostics – how did multi-locus sequence typing help us find *Borrelia bavariensis*?**
Noemi Zsuzsa Kovacs
- P69 **Functional analyses of the SpoVG, PlzA, and Gac regulatory networks of the Lyme disease spirochete**
Brian Stevenson



Session 8 | 14:30–15:50

Tuesday, 24. October 2023

PATHOGENICITY & IMMUNOLOGY 2

Session chair: Andreas Bergthaler

- 14:30 **Versatile roles of PFam54 orthologs in complement inactivation of *Borrelia bavariensis* isolates from Japan**
Peter Kraiczy O26
- 14:50 **Epitope spreading of Lyme autoantigen apoB-100 and CD4+ T cell responses to *Borrelia burgdorferi* Mcp4 are regulated by IL-10 in murine Lyme disease**
Robert Lochhead O27
- 15:10 **Variation in the late cornified envelope gene locus is associated with elevated Th 17 inflammatory responses and autoantibody reactivity in patients with persistent post-antibiotic Lyme arthritis**
Klemen Strle O28
- 15:30 **The white-footed deer mouse, an infection tolerant reservoir for several tick-borne agents, tempers neutrophil and interferon responses to endotoxin in comparison to the mouse and rat**
Alan Barbour O29
- 15:50 BREAK



16:15–17:30 **GUIDED POSTER SESSION**

Poster Session 7 | P70–P77

Tuesday, 24. October 2023

TICK-BORNE DISEASES

Session Chair: Ram Dessau

- P70 **Isolation of *Borrelia lusitaniae* from the blood of a patient with multiple erythema migrans**
Snežana Tomanović
- P71 ***Borrelia valaisiana* – a new tick-borne human pathogen?**
Julia Levin
- P72 **Comparison of methods for determining antibodies against *Borrelia* spp. in early and late forms of Lyme disease**
Katerina Kybicová
- P73 **Risk factor prevalence and perception for ticks and Lyme Borreliosis in the general population of 20 European countries**
Gordon Brestrich
- P74 **Feelings and therapeutic pathways of patients identified with Lyme borreliosis in the French Amazon: a qualitative study**
Tom Cartau
- P75 **Is there Lyme Borreliosis in French Guiana? Descriptive study among patients referred for a suspected Lyme Borreliosis in an Amazonian hospital between 2010 and 2022**
Tom Cartau
- P76 **Risk of heart failure among individuals tested for serum *Borrelia burgdorferi* antibodies; a nationwide population-based matched cohort study**
Malte M. Tetens
- P77 **The use of the Collaborative cross resource to study Lyme borreliosis**
Artem Rogovskyy



Poster Session 8 | P78–P85

Tuesday, 24. October 2023

PREVENTION & EPIDEMIOLOGY

Session Chair: Mateusz Markowicz

- P78 Analysis of the quality and readability of printable tools used to prevent tick bites and Lyme borreliosis in France**
Claire Ancel
- P79 Network of stakeholders and printable tools used for the prevention of tick-bites and Lyme borreliosis in France**
Claire Ancel
- P80 Seroprevalence of vector-borne relapsing fever in Kenya: a retrospective study**
Peter Kraiczynski
- P81 Seroprevalence of tick-borne encephalitis virus and *Borrelia burgdorferi* s.l. in Danish blood donors**
Anne-Mette Lebech
- P82 Seroprevalence of *Bartonella henselae* in symptomatic patients and patients with other tick-borne diseases in Czech Republic**
Eva Richtrová
- P83 Meta-analyses of the prevalence of *Borrelia burgdorferi* in questing *Ixodes ricinus* nymphs collected in Finland and Netherlands between 2006–2021**
Patrick Kelly
- P84 Meta-analysis of the prevalence of *Borrelia burgdorferi* in questing *Ixodes ricinus* nymphs collected in Germany, Poland and Norway between 2004–2020**
Patrick Kelly
- P85 Comparison of *Borrelia burgdorferi* s.l. abundance and genetic diversity between urban greenspaces and surrounding hinterland**
Grace Plahe



Session 9 | 17:30–18:30 **Tuesday, 24. October 2023**

TICK-BORNE ENCEPHALITIS VIRUS

Session chair: Franc Strle

17:30	Management of Patients with Tick-borne Encephalitis by Infectious Diseases Specialists or Neurologists Daša Stupica	O30
17:50	Tickborne Encephalitis Disease Severity, Vaccination Coverage, and Vaccine Effectiveness in Children in Switzerland, 2006–2022 Kyra Zens	O31
18:10	Increasing TBE risk areas in Poland Joanna Zajkowska	O32
18:30	END OF SESSION	
19:30	NETWORKING DINNER AT BRANDAUER SCHLOSSBRÄU	



8:30

OPENING DAY 4

Session 10 | 08:40 – 10:00

Wednesday, 25. October 2023

DIAGNOSIS AND MANAGEMENT OF LYME BORRELIOSIS

Session chair: Mateusz Markowicz

8:40

Evaluation of 11 commercial real-time PCR kits for the direct diagnosis of Lyme borreliosis

Emilie Talagrand-Reboul

O33

9:00

Skin color in Lyme disease and erythema migrans diagnosis: implications for clinical practice

Patrik Dinnétz

O34

9:20

Medical wandering and multidisciplinary management: the example of suspected Lyme borreliosis, a thematic analysis in the context of scientific and social controversy

Alice Raffetin

O35

9:40

Tick-borne diseases in the North Sea Region – a comprehensive overview and recommendations for diagnostic, treatment and management strategies

Randi Eikeland

O36

10:00

BREAK



Session 11 | 10:30–12:10

Wednesday, 25. October 2023

DIAGNOSIS AND MANAGEMENT OF LYME NEUROBORRELIOSIS

Session chair: Franc Strle

- | | | |
|-------|---|-----|
| 10:30 | Characteristics and outcome the first year after treatment of European neuroborreliosis: A prospective study
Anne Marit Solheim | O37 |
| 10:50 | Lyme neuroborreliosis and Lyme arthritis patients with active disease exhibit different antibody profiles
Tamara van Gorkom | O38 |
| 11:10 | Serum neurofilament in acute neuroborreliosis – a longitudinal study
Ingerid Skarstein | O39 |
| 11:30 | Beyond Bannwarth Syndrome: Spectrum of central nervous system affection in Lyme neuroborreliosis
Rick Dersch | O40 |
| 11:50 | CLOSING REMARKS OF THE SYMPOSIUM | |



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Fachkurzinformationen

FACHKURZINFORMATION zu Seite 8

Encepur für Kinder und Erwachsene

Encepur 0,25 ml für Kinder Injektionssuspension in einer Fertigspritze

Encepur 0,5 ml Injektionssuspension in einer Fertigspritze

Zusammensetzung: Encepur Kinder: Eine Impfdosis (0,25 ml) **Encepur für Kinder** enthält: 0,75 Mikrogramm inaktiviertes FSME-Virus, Stamm K23*, adsorbiert an hydriertem Aluminiumhydroxid (0,15 – 0,20 mg Al³⁺). Encepur Erwachsene: Eine Impfdosis (0,5 ml) **Encepur 0,5 ml** enthält: 1,5 Mikrogramm inaktiviertes FSME-Virus, Stamm K23*, adsorbiert an hydriertem Aluminiumhydroxid (0,3 – 0,4 mg Al³⁺). *Wirtssystem: primäre embryonale Hühnerzellen (PCEC) Sonstige Bestandteile: Trometamol, Saccharose, Natriumchlorid, Wasser für Injektionszwecke, Spuren von Formaldehyd, Chlortetracyclin, Gentamycin und Neomycin und mögliche Reste von Ei- und Hühnerproteinen. Pharmakotherapeutische Gruppe Frühsommer-Meningoenzephalitis Impfstoff (inaktiviert), ATC Code: J07BA01.

Anwendungsgebiete: Encepur Kinder: Aktive Immunisierung von Kindern ab dem vollendeten 1. Lebensjahr und bis zum Ende des 12. Lebensjahrs gegen Frühsommer-Meningoenzephalitis (FSME). Die Erkrankung wird durch das FSME-Virus ausgelöst, das durch Zeckenstich übertragen wird. Es sind die aktuellen nationalen Impfempfehlungen zu berücksichtigen. Nach dem vollendeten 12. Lebensjahr ist Encepur 0,5 ml oder ein anderer FSME Impfstoff für Erwachsene zu verwenden. Angezeigt ist die Impfung insbesondere bei Kindern, die sich dauernd oder vorübergehend in FSME-Endemiegebieten aufhalten. Encepur Erwachsene: Aktive Immunisierung von Personen ab 12 Jahren gegen Frühsommer-Meningoenzephalitis (FSME). Die Erkrankung wird durch das FSME-Virus ausgelöst, das durch Zeckenstich übertragen wird. Es sind die aktuellen nationalen Impfempfehlungen zu berücksichtigen. Angezeigt ist die Impfung insbesondere bei Personen, die sich dauernd oder vorübergehend in FSME-Endemiegebieten aufhalten.

Gegenanzeigen: Encepur Kinder: Überempfindlichkeit gegen den Wirkstoff oder einen der sonstigen Bestandteile oder gegen die herstellungsbedingten Spuren oder Produktionsrückstände. Kinder mit akuten behandlungsbedürftigen Erkrankungen sollen frühestens 2 Wochen nach Genesung geimpft werden. Eine mit einer Komplikation verlaufene Impfung ist bis zur Klärung der Ursache eine Kontraindikation für eine nochmalige Impfung mit dem gleichen Impfstoff. Dieses gilt insbesondere für Nebenreaktionen, die sich nicht auf die Impfstelle beschränken. Encepur Erwachsene: Überempfindlichkeit gegen den Wirkstoff oder einen der sonstigen Bestandteile oder gegen die herstellungsbedingten Spuren oder Produktionsrückstände. Personen mit akuten behandlungsbedürftigen Erkrankungen sollen frühestens 2 Wochen nach Genesung geimpft werden. Eine mit einer Komplikation verlaufene Impfung ist bis zur Klärung der Ursache eine Kontraindikation für eine nochmalige Impfung mit dem gleichen Impfstoff. Dieses gilt insbesondere für Nebenreaktionen, die sich nicht auf die Impfstelle beschränken.

Häufige Nebenwirkungen: Encepur Kinder: **Sehr häufig:** Kopfschmerzen (bei Kindern ab 3 Jahren); Schläfrigkeit (bei Kindern unter 3 Jahren); Schmerzen am Injektionsort; Fieber (über 38 °C) bei Kindern zwischen 1 und 2 Jahren **Häufig:** Übelkeit; Gelenkschmerzen; Muskelschmerzen; Rötungen der Haut sowie Schwellung am Injektionsort; Fieber (über 38 °C) bei Kindern von 3 bis 11 Jahren; grippeähnliche Beschwerden (Schwitzen, Fieber, Schüttelfrost) können sich besonders nach der ersten Impfung entwickeln, klingen aber im Allgemeinen innerhalb von 72 Stunden ab; allgemeines Unwohlsein; allgemeines Schwächegefühl. Encepur Erwachsene: **Sehr häufig:** Kopfschmerzen; Muskelschmerzen; Schmerzen am Injektionsort; allgemeines Unwohlsein. **Häufig:** Übelkeit; Gelenkschmerzen; Rötungen der Haut und Schwellung am Injektionsort; Fieber (über 38 °C); grippeähnliche Beschwerden (Schwitzen, Fieber, Schüttelfrost) können sich besonders nach der ersten Impfung entwickeln, klingen aber im Allgemeinen innerhalb von 72 Stunden ab.

Weitere Angaben zu Warnhinweisen und Vorsichtsmaßnahmen für die Anwendung, Wechselwirkungen mit anderen Arzneimitteln und sonstigen Wechselwirkungen, Fertilität, Schwangerschaft und Stillzeit und Nebenwirkungen entnehmen Sie bitte der veröffentlichten Fachinformation. Inhaber der Zulassung: Bavarian Nordic A/S; Philip Heymans Allé 3; 2900 Hellerup; Dänemark. **Rezeptpflicht/Apothekenpflicht:** Rezept- und apothekenpflichtig, wiederholte Abgabe verboten. **Zulassungsnummer:** Encepur Kinder: 2-00268 Encepur Erwachsene: 2-00236 **Stand der Information:** Oktober 2020

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