Encouraging Breakthroughs in the Scientific Research, Diagnosis, Treatment, and Prevention of Tick-Borne Illnesses

Conference Features

• Hear the latest in tick-borne illness research from Johns Hopkins University, Massachusetts General Hospital, Texas A & M University, Ventria Biosciences, University of Vermont, and many others

• Learn how new diagnostic tests can more reliably detect infections

• Network with leading researchers on tick-borne diseases from Industry and Academia

Register by August 1 and SAVE up to $400!

October 29-30, 2014
Hilton Boston Back Bay | Boston, MA

Healthtech.com/Targeting-Tick-Borne-Diseases
Targeting Tick-Borne Diseases

The rapid expansion of tick-borne illness in the Americas and Europe poses great challenges for the prevention and treatment of these diseases, in both humans and animals. Though Lyme disease continues to be the predominant disease (with estimates of as many as 300,000 new cases every year in the US), new and emerging illnesses are increasingly reported. The cost for treatment of these diseases continues to rise. As humans and animals spend more time in wooded areas, the threat becomes even more urgent. This conference will address the newest science in the pathogenesis of these diseases, along with the latest research into prevention and treatment of these crippling illnesses.

WEDNESDAY, OCTOBER 29

1:00 pm Registration

BREAKING NEWS IN THE SCIENCE

2:00 Welcome Remarks by Session Chairperson

2:10 Post-Treatment Lyme Disease Syndrome: Development of a Case Definition and Future Biomarkers

John N. Aucott, Ph.D., Department of Medicine, The Johns Hopkins University School of Medicine

Post-Treatment Lyme Disease Syndrome (PTLDS) can be defined in patients who have prolonged symptoms after antibiotic treatment of Lyme disease. Diagnosis of PTLDS is made on the basis of the patient’s past history and current symptoms. Self-administered standardized instruments can be used to quantify symptoms and their impact on health-related function. Biorepositories of blood samples from patients with well characterized PTLDS are essential to develop future biomarkers for PTLDS.

2:40 Bacteria and Viral Co-Infections in Wisconsin Tick Population

Konstance Knox, Ph.D., CEO, Coppe Healthcare Solutions, Inc.

Coppe Healthcare Solutions investigated bacteria and viral co-infections in I. scapularis and D. variabilis ticks collected by the Wisconsin Department of Natural Resources. Ticks collected from the geographic survey underwent testing for the presence of Borrelia burgdorferi, Anaplasma monocytophagum, Babesia microti and Powassan/Deer Tick virus. Individual ticks were shown to harbor multiple bacterial or viral plus viral agents. These findings document that the Wisconsin tick population includes ticks that harbor one or more infectious agents, and we hypothesize that a questing tick could transmit one or more agents during a single blood meal.

3:10 The Human Immune Response in Lyme Borreliosis

Mark J. Soloski, Ph.D., Professor of Medicine, Division of Rheumatology; Director, Immunology Training Program, Johns Hopkins School of Medicine

We have applied proteomic, genomic and immune cell profiling approaches toward understanding the immune pathways activated during acute human Lyme disease and following antibiotic treatment. These studies, while identifying a Lyme disease signature, found that the host response triggered during infection has considerable heterogeneity. These results will be presented and discussed in the context of reaching a mechanistic understanding of the range of pathophysiologic responses to Borrelia burgdorferi.

3:40 Refreshment Break in the Exhibit Hall with Poster Viewing

4:20 Lysosomal β-Glucuronidase Regulates Lyme and Rheumatoid Arthritis Severity

Cory Teuscher, Ph.D., Teuscher Laboratory, University of Vermont

The spectrum of Lyme disease severity among infected patients suggests that host genetics contribute to pathogenic outcomes, particularly in patients who develop arthritis. Using a forward genetics approach, we identified the lysosomal enzyme β-glucuronidase (GUSB), a member of a large family of co-regulated lysosomal enzymes, as a key regulator of Lyme-associated arthritis severity. Severely arthritic C3H mice possessed a naturally occurring hypomorphic allele, Gusbh. C57BL/6 mice congenic for the C3H Gusb allele were prone to increased Lyme-associated arthritis severity. C3H mice expressing WT Gusb as a transgene were protected from severe Lyme arthritis. Importantly, the Gusbh allele also exacerbated disease in a serum transfer model of rheumatoid arthritis. Development of Lyme and rheumatoid arthritis in Gusbh-expressing mice was associated with heightened accumulation of GAGs in joint tissue. We propose that GUSB modulates arthritis pathogenesis by preventing accumulation of proinflammatory GAGs within inflamed joint tissue, a trait that may be shared by other lysosomal exoglycosidases.

4:50 Follistatin-Like Protein 1 is a Critical Mediator of Experimental Lyme Arthritis and the Humoral Response to Borrelia burgdorferi Infection

Charles R. Brown, Ph.D., Professor, Department of Veterinary Pathobiology, University of Missouri-Columbia

Experimental Lyme arthritis is an inflammatory arthritis caused by infection of mice with the spirochete, Borrelia burgdorferi. It recapitulates many of the disease parameters seen in human patients with Lyme arthritis, and thus serves as a model system for the investigation of disease pathogenesis. While much progress has been made in defining components of the immune response to Borrelia infection, an overall understanding of the host response leading to arthritis resistance or susceptibility remains elusive. In this review, we will focus on recent advancements of our understanding of the roles of eicosanoids as inflammatory mediators in the regulation of experimental Lyme arthritis. Eicosanoids, such as PGE2 and LTB4, are powerful regulators of inflammatory responses and thus may be important mediators of Lyme arthritis.

5:20 Welcome Reception in the Exhibit Hall with Poster Viewing

6:20 Close of Day

THURSDAY, OCTOBER 30

EMERGING DIAGNOSTICS

7:30am Morning Coffee

8:00 Opening Comments by Session Chairperson

8:05 Next-Generation Diagnostic Test for Lyme Disease

Benjamin Luft, M.D., Professor, Medicine, Stony Brook University

We have developed a novel sensitive and specific single-tier Lyme disease assay that has a wide range of coverage and specificity against Lyme disease including the early stages of the disease. The sensitivity of our assay far exceeds that of commercially available Lyme disease assays in patients in the early stages of the disease. Our results may lead to the development of a next-generation rapid, single-tier reference laboratory assay.
8:35 Performance of United States Serologic Assays in the Diagnosis of Lyme Borreliosis in Europe
John A. Branda, Ph.D., Microbiology Laboratory, Massachusetts General Hospital
Using serum samples from European LB patients, we compared the performance of European and US serodiagnostic tests, including newer-generation assays containing Vmp-like sequence, expressed or its C6 peptide. The sensitivity of each assay was determined using 64 serum samples from LB patients with early or late disease manifestations who acquired the infection in Europe. Specificity was measured using 100 sera from healthy subjects from a nonendemic area. European assays outperformed analogous US assays in a conventional 2-tiered testing algorithm. However, a C6 ELISA used as a standalone test or in the second tier of a 2-tiered algorithm performed comparably to conventional 2-tiered testing using European assays, and can be used for evaluation of any patient, regardless of travel history.

9:05 Sensitive Multiplex PCR Assay to Detect Lyme Spirochetes, Anaplasma phagocytophilum and Babesia microti
Nikhil Parveen, Ph.D., Associate Professor, Department of Microbiology and Molecular Genetics, Rutgers-New Jersey Medical School
Emergence of co-infections with tick-borne pathogens in endemic regions of the USA and Europe emphasizes the need of a single test that can detect different pathogens simultaneously. Nucleic-based diagnostic tests are becoming useful in diagnosis of active infectious diseases. We have developed a real-time multiplex PCR assay to detect the presence of three tick-borne pathogens, Borrelia burgdorferi sensu lato, Babesia microti and Anaplasma phagocytophilum efficiently and accurately using the specific molecular beacon probes.

9:35 Coffee Break in the Exhibit Hall with Poster Viewing

10:05 Molecular Diagnosis of Human Anaplasmosis and Ehrlichiosis Using a Real-Time PCR Assay
Anna M. Schotthoefer, Ph.D., Marshfield Clinic Research Foundation
Human anaplasmosis and ehrlichiosis are emerging tick-borne diseases that present as non-specific, febrile illnesses, but which have the potential to be fatal. Early and accurate diagnosis and treatment are currently the most effective ways to avoid serious illness and death related to the diseases. The clinical utility of a real-time PCR assay that incorporates melt curve analysis to differentiate Anaplasma and Ehrlichia species infections will be discussed.

10:35 Immuno-PCR Detection of Lyme Disease—A Simplified and Objective Approach
Mollie W. Jewett, Ph.D., Assistant Professor, Burnett School of Biomedical Sciences, University of Central Florida College of Medicine
Immuno-PCR (iPCR) is a technique that combines ELISA-based detection specificity with the sensitivity of PCR signal amplification and has demonstrated increased sensitivity for the detection of disease biomarkers. We present evidence that iPCR is highly sensitive and specific method for the detection of Lyme disease. This is the first demonstration of iPCR for Lyme disease diagnosis and supports the replacement of two-tier testing with a more simplified and objective approach.

11:05 Sponsored Presentation (Opportunity Available)

11:35 Luncheon Presentation (Sponsorship Opportunity Available) or Lunch on Your Own

12:55 pm Comments by Session Chairperson

1:00 Old Tricks and New Trends in Diagnosis of Rickettsial Diseases: From the Lab Bench to the Bedside
Marina Eremeeva, M.D., Ph.D., DSc., Associate Professor, Core Lab Director, Environmental Health Sciences, GSU
Laboratory diagnosis of classic and emerging tick-borne rickettsial diseases is an important component of patient care and surveillance. However, in most instances confirmatory diagnosis relies on less than ideal serologic assays with limited sensitivity and temporal dependence and little utility for point-of-care treatment. This presentation will focus on a concise discussion of contemporary approaches to clinically-relevant diagnoses of rickettsioses. In particular, this imperative will be articulated for both acute stage agent specific diagnostic assays and a systems biology approach to host responses and evaluating specific biomarkers of disease and exposure.

1:30 Topical and Non-Topical Treatment of Lyme Disease Shortly After a Tick Bite
Charles Pavia, Ph.D., Academic Scientist-Professor, Biomedical Sciences, NYIT College of Osteopathic Medicine and New York Medical College
We have modified the murine animal model for LD, to determine minimally effective treatment regimens, given topically or by other parenteral routes, for preventing Borrelia burgdorferi infection. Our results show that topical applications of povidone-iodine, erythromycin and tetracycline were unable to prevent borrelial dissemination to the urinary bladder or ear. On the other hand, a one or 2 dose regimen of ceftriaxone (CTX), given, i.m. or i.d. was 90-100% effective in sterilizing the urinary bladders and ear skin of the Borrelia burgdorferi-infected mice. We conclude that the topical application of various antimicrobial preparations, that are acceptable for use in humans, are unable to prevent disseminated Lyme disease, but short-course treatment with CTX, that was given by injection, is highly curative, and should be considered for further evaluation in human clinical trials.

2:00 Immunization with a Borrelia burgdorferi BB0172-Derived Peptide Protects Mice against Lyme Disease
Maria D. Estève-Gassent, Ph.D., Assistant Professor, Department of Veterinary Pathobiology, Texas A & M University
Vaccine development efforts focused on the von Willebrand factor A domain of the borrelial protein BB0172 from which four peptides (A, B, C and D) were synthesized and conjugated to Keyhole Limpet Hemocyanin, formulated in Titer Max® adjuvant and used to immunize C3H/HeN mice subcutaneously at days 0, 14 and 21. Sera were collected to evaluate antibody responses and some mice were sacrificed for histopathology to evaluate vaccine safety. Results showed that only mice immunized with peptide B were protected against challenge with Bb. In addition, compared to the other treatment groups, peptide B-immunized mice showed very limited inflammation in the heart and joint tissues. Peptide B-specific antibody titers peaked at 8 weeks post-priming and surprisingly, the anti-peptide B antibodies did not cross-react with Bb lysates. These findings strongly suggest that peptide B is a promising candidate for the development of a new DIVA vaccine (Differentiate between Infected and Vaccinated Animals) for protection against Lyme disease.

2:30 Refreshment Break in the Exhibit Hall with Poster Viewing

3:00 Reservoir Targeted Protective Immunization against Lyme Disease (B. burgdorferi) Transmission in Mice by Oral Bait Containing ExpressTec-Made Fusion Protein Antigen
Chris MacManus, Scientist, Research and Development, Ventria Biosciences
Ventria Biosciences has demonstrated successful production of a recombinant Borrelia burgdorferi antigen (OsPa) linked with Cholera Toxin Subunit B (CTB.rOsPa) using Ventria’s ExpressTec platform for use as an oral vaccine against the spread of the Lyme disease pathogen. ExpressTec-made CTB.rOsPa maintains the correct conformation of the major antigenic epitope of native OsPa recognized by the protective IgG monoclonal antibody, as evident in functional assays. The presence of CTB has been demonstrated to have preserved adjuvant activity as demonstrated by biochemical analysis, functional binding assays and in vivo activity. Ventria and CDC scientists have shown that ExpressTec-made CTB.rOsPa vaccine confers protective immunity when administered to mice as an oral bait, as measured by increased levels of protective IgG, and protection from B. burgdorferi transmission from infected ticks. ExpressTec-made CTB.rOsPa is being developed to disrupt the transmission cycle of the Lyme disease pathogen through baiting zoonotic reservoirs in geographic areas where Lyme is a significant threat to humans.

3:30 CASE STUDY: Co-Infection of Blacklegged Ticks with Multiple Zoonotic Pathogens – Proximate and Ultimate Causes
Richard S. Ostfeld, Ph.D., Cary Institute of Ecosystem Studies

4:15 Close of Conference
SPONSORSHIP, EXHIBIT & LEAD GENERATION

CHI offers comprehensive sponsorship packages which include presentation opportunities, exhibit space, branding and networking with specific prospects. Sponsorship allows you to achieve your objectives before, during, and long after the event. Any sponsorship can be customized to meet your company’s needs and budget. Signing on early will allow you to maximize exposure to qualified decision-makers.

Podium Presentations – Available Within the Main Agenda!
Showcase your solutions to a guaranteed, highly-targeted audience. Package includes a 15 or 30-minute podium presentation within the scientific agenda, exhibit space, on-site branding and access to cooperative marketing efforts by CHI.

Breakfast & Luncheon Presentations
Opportunity includes a 30-minute podium presentation. Boxed lunches are delivered into the main session room, which guarantees audience attendance and participation. A limited number of presentations are available for sponsorship and they will sell out quickly. Sign on early to secure your talk!

Invitation-Only VIP Dinner/Hospitality Suite
Sponsors will select their top prospects from the conference pre-registration list for an evening of networking at the hotel or at a choice local venue. CHI will extend invitations and deliver prospects, helping you to make the most out of this invaluable opportunity. Evening will be customized according to sponsor’s objectives i.e.:
- Purely social
- Focus group
- Reception style
- Plated dinner with specific conversation focus

Exhibit
Exhibitors will enjoy facilitated networking opportunities with qualified delegates. Speak face-to-face with prospective clients and showcase your latest product, service, or solution.

Looking for additional ways to drive leads to your sales team? One move can make all the difference!

CHI’s Lead Generation Programs will help you obtain more targeted, quality leads throughout the year. We will mine our database of 800,000+ life science professionals to your specific needs. We guarantee a minimum of 100 leads per program! Opportunities include:
- Whitepapers
- Web Symposia
- Custom Market Research Surveys
- Podcasts

Advertising opportunities such as marketing and promotional emails are also available.

CO-LOCATED WITH:

*Inquire about exhibit space, branding and more!

For sponsorship and exhibit information, please contact:

Carolyn Benton
Business Development Manager
781-972-5412 | cbenton@healthtech.com
CONFERENCE VENUE AND HOST HOTEL
Hilton Boston Back Bay
40 Dalton Street
Boston, MA 02215
T: 617-236-1100

Discounted Room Rate: $249 s/d
Discounted Room Rate Cut-off Date: October 1, 2014

Please visit our conference website to make your reservations on-line, or call the hotel directly to reserve your sleeping accommodations. You will need to identify yourself as a Cambridge Healthtech Institute conference attendee to receive the discounted room rate with the host hotels. Reservations made after the cut-off date or after the group room block has been filled (whichever comes first) will be accepted on a space-and-rate-availability basis. Rooms are limited, so please book early.

FLIGHT DISCOUNTS
Special discounts have been established with American Airlines for this conference.

- Call American Airlines 1-800-433-1790 and use Conference code 23H4BR
- Go to www.aa.com/group and enter Conference code 23H4BR in promotion discount box
- Contact our dedicated travel agent, Rona Meizler, at (617) 559-3735 or rona.meizler@protravelinc.com

CAR RENTAL DISCOUNTS
Special discount rentals have been established with Hertz for this conference.

- Call Hertz 1-800-654-3131 and use our Hertz Convention Number (CV): 04KL0005
- Go to www.hertz.com and use our Hertz Convention Number (CV): 04KL0005
Funding Opportunities for Antibacterial Research - October 28

<table>
<thead>
<tr>
<th></th>
<th>Commercial</th>
<th>Academic, Government, Hospital-affiliated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$699</td>
<td>$399</td>
</tr>
</tbody>
</table>

**CONFERENCE PRICING**

**BEST VALUE ALL ACCESS PRICING**
Includes access to entire 4-days of programming for both the Re-Entering Antibacterial Drug Development Summit and the Targeting Tick-Borne Diseases Conference (Excludes Short Courses.)

<table>
<thead>
<tr>
<th>Registration Period</th>
<th>Early Registration Discount until August 1, 2014</th>
<th>Advance Registration Discount until September 12, 2014</th>
<th>Registrations after September 12, 2014 and on-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Registration Discount until August 1, 2014</td>
<td>$2195</td>
<td>$995</td>
<td>$1395</td>
</tr>
<tr>
<td>Advance Registration Discount until September 12, 2014</td>
<td>$2395</td>
<td>$1195</td>
<td>$1395</td>
</tr>
<tr>
<td>Registrations after September 12, 2014 and on-site</td>
<td>$2595</td>
<td>$1395</td>
<td>$1395</td>
</tr>
</tbody>
</table>

**RE-ENTERING ANTIBACTERIAL DRUG DEVELOPMENT SUMMIT 2014 THREE DAY CONFERENCE PRICING**
Includes access to 2 conferences. (Excludes Short Courses.)

<table>
<thead>
<tr>
<th>Registration Period</th>
<th>Early Registration Discount until August 1, 2014</th>
<th>Advance Registration Discount until September 12, 2014</th>
<th>Registrations after September 12, 2014 and on-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Registration Discount until August 1, 2014</td>
<td>$1795</td>
<td>$995</td>
<td>$995</td>
</tr>
<tr>
<td>Advance Registration Discount until September 12, 2014</td>
<td>$1995</td>
<td>$945</td>
<td>$995</td>
</tr>
<tr>
<td>Registrations after September 12, 2014 and on-site</td>
<td>$2195</td>
<td>$995</td>
<td>$995</td>
</tr>
</tbody>
</table>

**TARGETING TICK-BORNE DISEASES CONFERENCE SINGLE CONFERENCE PRICING**
Includes access to 1 conference. (Excludes Short Courses.)

<table>
<thead>
<tr>
<th>Registration Period</th>
<th>Early Registration Discount until August 1, 2014</th>
<th>Advance Registration Discount until September 12, 2014</th>
<th>Registrations after September 12, 2014 and on-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Registration Discount until August 1, 2014</td>
<td>$1249</td>
<td>$579</td>
<td>$579</td>
</tr>
<tr>
<td>Advance Registration Discount until September 12, 2014</td>
<td>$1449</td>
<td>$659</td>
<td>$659</td>
</tr>
<tr>
<td>Registrations after September 12, 2014 and on-site</td>
<td>$1649</td>
<td>$729</td>
<td>$729</td>
</tr>
</tbody>
</table>

**CONFERENCE DISCOUNTS**

**Poster Submission - Discount ($50 OFF):** Poster abstracts are due by September 26, 2014. Once your registration has been fully processed, we will send an email containing a unique link allowing you to submit your poster abstract. If you do not receive your link within 5 business days, please contact jring@healthtech.com. *CHI reserves the right to publish your poster title and abstract in various marketing materials and products.

**Protein Society Members:** CHI is pleased to offer all Protein Society Members a 20% discount to attend. Records must indicate you are a Protein Society member at time of registration. Please Note - Discounts may not be combined.

**REGISTER 3 - 4th IS FREE:** Individuals must register for the same conference or conference combination and submit completed registration form together for discount to apply.

**GROUP Discounts:** Discounts are available for multiple attendees from the same organization. For more information on group rates contact David Cunningham at +1-781-972-5472

If you are unable to attend but would like to purchase the Targeting Tick-Borne Diseases CD for $750 (plus shipping), please visit healthtech.com/Targeting-Tick-Borne-Diseases. Massachusetts delivery will include sales tax.

How to Register: **Healthtech.com/Targeting-Tick-Borne-Diseases**

reg@healthtech.com • P: 781.972.5400 or Toll-free in the U.S. 888.999.6288

Please use keycode TCK F when registering!

Please refer to the Registration Code below: