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SCIENTIFIC PROGRAM

**48th ANNUAL CONFERENCE OF SOCIETY FOR VECTOR ECOLOGY
YOSEMITE, CALIFORNIA
OCTOBER 7 – 11, 2018**

SUNDAY – OCTOBER 7, 2018

2:00 – 6:00 **REGISTRATION**

4:00 – 6:00 **BOARD MEETING**

NO OTHER ACTIVITY

MONDAY – OCTOBER 8, 2018

8:00 – 8:05 **WELCOME**
Lyle Petersen lxp2@cdc.gov
Vice President
Division of Vector-Borne Diseases, Centers for Disease
Control and Prevention, Ft. Collins, CO

8:05 – 8:15 **AWARD PRESENTATIONS**
Lyle Petersen lxp2@cdc.gov
Vice President
Division of Vector-Borne Diseases, Centers for Disease
Control and Prevention, Ft. Collins, CO
Lal Mian lmian@csusb.edu
President
Cal State University, San Bernardino, CA

- 8:15 – 8:25 **ANNOUNCEMENTS**
Major S. Dhillon mdhillon@northwestmvcd.org
Executive Director, SOVE, Corona, CA
- 8:25 – 8:50 **PRESIDENTIAL ADDRESS**
Lal Mian lmian@csusb.edu
President
- 8:50 – 9:30 **KEYNOTE ADDRESS: William Reisen**
- 9:30 – 10:00 **REPORTS FROM OVERSEAS SOVE REGIONS:**
EURO SOVE
Alexandra Chaskopoulou achaskopoulou@ars-ebcl.org
USDA-ARS European Biological Control Lab, Greece
BRAZILIAN SOVE
Paulo Pimenta pimenta@cpqrr.fiocruz.br
FIOCRUZ, Belo Horizonte, Minas Gerais, Brazil
ASIAN SOVE
Rui-De Xue xueamcd@gmail.com
Anastasia Mosquito Control District, St. Augustine, FL
INDIAN SOVE
Ashwani Kumar ashwani07@gmail.com
National Institute of Malaria Research (ICMR), DHR,
Govt. of India
- 10:00 – 10:30 **BREAK**
- 10:30 – 12:30 **SYMPOSIUM 1: GENOMICS AND GENETIC MANIPULATION
OF VECTORS**
Moderators: Gregory Lanzaro gclanzaro@ucdavis.edu
Vector Genetics Laboratory, Dept. of Pathology,
Microbiology and Immunology, School of Veterinary
Medicine, University of California, Davis, CA
Ravi Durvasula ravi.durvasula@lumc.edu
Loyola University Medical Center, Maywood, IL

- 10:30 Innovating genetic technologies to combat disease vectors
Omar S. Akbari oakbari@ucsd.edu
 University of California, San Diego, CA
- 10:50 Updatable gene-drive technology for vector control
Ethan Bier ebier@ucsd.edu
 University of California, San Diego, CA
- 11:10 Genomic Study of population structure and dispersal for genetically engineered mosquito trials
Yoosook Lee yoslee@ucdavis.edu
 Vector Genetics Laboratory, Dept. of Pathology, Microbiology and Immunology, School of Veterinary Medicine, University of California, Davis, CA
- 11:30 Overview of Paratransgenic Strategies: New molecules and delivery systems
Ravi Durvasula ravi.durvasula@lumc.edu
 Loyola University Stritch School of Medicine, Chicago, IL
- 11:50 Development of a paratransgenic strategy to control sand fly vectors of leishmaniasis
Ivy Hurwitz ihurwitz@salud.unm.edu
 Center for Global Health, University of New Mexico School of Medicine, Albuquerque, NM
- 12:10 Blocking Xylella fastidiosa transmission using paratransgenic sharpshooters
Arinder Arora arinder.arora@gmail.com
 Cornell University, Ithaca, NY

12:30 – 1:30 **LUNCH: HOSTED**

1:30 – 3:30 **SYMPOSIUM 2: VECTOR-BORNE ZONOSIS**
Moderators: Melissa Nolan msnolan@mailbox.sc.edu
 University of South Carolina, SC
Gilbert Kersh hws7@cdc.gov
 Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Atlanta, GA

- 1:30 Eco-epidemiology of Anaplasma and Ehrlichia in Wisconsin
Susan Paskewitz smpaskew@wisc.edu
 University of Wisconsin, WI
- 1:55 Spotted fever Rickettsioses
Gilbert Kersh hws7@cdc.gov
 Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Atlanta, GA
- 2:20 Hunters and Chagas disease risk
Sarah Gunter sm22@bcm.edu, Baylor College of Medicine, Houston, TX
- 2:45 Omics approaches to interrupting Chagas transmission in Central America
Lori Stevens lori.stevens@uvm.edu, University of Vermont, Burlington, VT, Patricia Dorn dorn@loyno.edu, Loyola University New Orleans, LA, Carlota Monroy mcarlotamonroy@gmail.com, San Carlos Universidad, Guatemala, Silvia Justi silvinhajusti@gmail.com, Walter Reed and Smithsonian, Washington, DC, Judith Keller judith.keller@uvm.edu, University of Vermont, Burlington, VT, Raquel Lima raquel.lima@uvm.edu, University of Vermont, Burlington, VT and Bryan Ballif ballif@uvm.edu, University of Vermont, Burlington, VT
- 3:10 Leishmaniasis in Texas: Phlebotomine sand fly ecology and phylogenetics
Stavana Strutz stavana@utexas.edu, University of Texas, TX
- 3:30 – 4:00 **BREAK**
- 4:00 – 5:30 **SYMPOSIUM 3: PATHOGENS AND DISEASE OUTCOMES, VIRAL EVOLUTION ALTERING VECTOR/HOST DYNAMICS AND ADAPATION AND DISEASE TRANSMISSION, VECTOR COMPETENCE**
Moderators: Aaron Brault abrault@cdc.gov
 Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Ft. Collins, CO
Nisha Duggal nduggal@vt.edu
 Virginia Polytechnic Institute and State University

- 4:00 Impact of recent West Nile virus evolution on host competence
Nisha Duggal nduggal@vt.edu
Virginia Polytechnic Institute and State University
- 4:15 Vectorial capacity of *Aedes aegypti* for dengue and chikungunya viruses across the landscape in Argentina
Laura Kramer laura.kramer@health.ny.gov
Arbovirus Laboratory, Wadsworth Center, New York State Department of Health, and School of Public Health, State University of New York at Albany
- 4:30 Tick determinants of Powassan virus transmission
Saravanan Thangamani sathanga@utmb.edu
University of Texas Medical Branch (UTMB), Galveston, TX
- 4:45 Relapsing fever *Borrelia* in ticks, mammals, and people in California
Alan Barbour abarbour@uci.edu, University of California, Irvine, CA
- 5:00 Incrimination of *Amblyomma americanum* as a vector for Heartland and Bourbon viruses
Marv Godsey mig9@cdc.gov
Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Ft. Collins, CO
- 5:15 Capacity of an insect-specific flavivirus to interfere with Zika virus infection of and transmission by *Aedes aegypti*
Hannah Romo vym8@cdc.gov, Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Ft. Collins, CO
- 6:00 – 8:00 **RECEPTION**

TUESDAY – OCTOBER 9, 2018

- 7:30 – 9:00 **FIRST WOMEN OF SCIENCE MEETING –
HOSTED BREAKFAST**
SPEAKER: Kacey Ernst kernst@email.arizona.edu
University of Arizona, AZ
“Women in Vector Control: Propelling Communities
Towards Action”
Melissa Nolan msnolan@mailbox.sc.edu
University of South Carolina, SC, Patricia Dorn
dorn@loyno.edu, Loyola University New Orleans, LA
and Raquel Lima raquel.lima@uvm.edu, University of
Vermont, VT
- 9:00 – 5:00 **FIELD ECOLOGY DAY: YOSEMITE NATIONAL PARK
LUNCH: HOSTED**
- 6:30 **DINNER AT TENAYA LODGE: HOSTED**

WEDNESDAY – OCTOBER 10, 2018

- 7:00 – 9:00 **POSTER SESSION - HOSTED CONTINENTAL BREAKFAST**
- P1: Current Status of the Toxorhynchites Subgenus Lynchiiella**
Brian Byrd bdbyrd@email.wcu.edu, Western Carolina University, NC;
Thomas Zavortink, Yvonne-Marie Linton and Brittania Bintz
- P2: Occurrence and phenology of phlebotomine sand flies in Southwest
Germany**
Sandra Oerther sandra.oerther@gmail.com, KABS, Germany

P3: Rarity of *Borrelia burgdorferi* (sensu lato) species in *Ixodes pacificus* in southern California

Alan Barbour abarbour@uci.edu, University of California Irvine, Irvine, CA; Kristen Brao and Vanessa Cook

P4: *Culex* species composition at the University of Florida Swine Research Unit: Before and after the *Culex coronator* invasion

Dan Kline dan.kline@ars.usda.gov, USDA-ARS, CMAVE, Gainesville, FL; Joyce Urban and Kiva Kern

P5: Age grading individual field collected *Aedes aegypti* mosquitoes: qPCR versus near-infrared spectrophotometry (NIRS)

Michael Riehle mriehle@ag.arizona.edu, University of Arizona, Tucson, AZ; Teresa Joy, Kathleen Walker and Kacey Ernst

P6: Genomic characteristics of *Aedes aegypti* in California

Yoosook Lee yoosook.lee@gmail.com, University of California, Davis, CA; Hanno Schmidt, Travis Collier, Katherine Brisco, Anthony Cornel and Gregory Lanzaro

P7: Interspecific mating in invasive *Aedes* species in California

Erik Blosser erik.blosser@gmail.com, University of California, Davis, CA; Irka Bargielowski, Yoosook Lee, Gregory Lanzaro, Kendra Person and Allison Weakley

P8: Population genomic evaluation of Mali and the Comoros for the release of genetically engineered mosquitoes for malaria control

Hanno Schmidt hschmidt@ucdavis.edu, University of California, Davis, CA; Yoosook Lee, Mark Hanemaaijer, Oscar Kirstein, John Marshall, Travis, Collier, Montgomery Slatkin, Anthony Cornel and Gregory Lanzaro

P9: Interspecific introgression as a mechanism for the evolution of insecticide resistance in African malaria vectors

Oscar David Kirstein odkirstein@ucdavis.edu, University of California, Davis, CA; Yoosook Lee, Mark Hanemaaijer, Hanno Schmidt, Allison Weakley, Allison Chang, Hans Gripkey, Anthony Cornel and Gregory Lanzaro

P10: How did *Anopheles coluzzii* from Sao Tome and Principe acquire the *kdr* allele?

Mark Hanemaaijer markhanemaaijer@gmail.com, University of California, Davis, CA; Hans Gripkey, Allison Weakley, Kendra Person,

Hanno Schmidt, Oscar Kirstein, Yoosook Lee, Anthony Cornel and Gregory Lanzaro

P11: Analysis of natural genetic variation in *Aedes aegypti* vector competence for dengue virus

Luciano Cosme luciano.cosme@yale.edu, Yale University, New Haven, CT; Ademir Jesus Martins, Andrea Gloria-Soria, Rosilainy Surubi Fernandes, Luiz Paulo Brito, Luana Carrara, Ricardo Lorenc-Oliveira and Jeffrey Powell

P12: The genetic basis of host preference in *Culex tarsalis*

Bradley Main bradmain@gmail.com, University of California, Davis, CA; Tara Thieman, Hanno Schmidt, Titus Brown and Christopher Barker

P13: Detecting hybrid individuals in crosses between *Aedes triseriatus* and *Aedes hendersoni* with Linear Discriminant Analysis

Anthony Kiszewski akiszewski@bentley.edu, Bentley University, Waltham, MA and Nina Sokolov

P14: Survival and reproduction of *Culicoides sonorensis* (Diptera: Ceratopogonidae) orally infected with epizootic hemorrhagic disease virus serotype 2

Dinesh Erram derram@ufl.edu, Florida Medical Entomology Laboratory, UF/IFAS, Vero Beach, FL and Nathan Burkett-Cadena

P15: Molecular identification and phylogenetic analysis of Laelapidae mites (Acari: Mesostigmata)

Jana Radzijeuskaja jana.radzijeuskaja@vdu.lt, Vytautas Magnus University, Lithuania; Evelina Kaminskiene, Algimantas Paulauskas and Michal Stanko

P16: Understanding the evolution of *Trypanosoma cruzi* across its entire endemic range

Raquel Lima raquel.lima@uvm.edu, University of Vermont, Burlington, VT; Lori Stevens, Patricia Dorn and Cai McCann

P17: Blowin' in the wind: *Aedes aegypti* dispersal in southern California

Matteo Marcantonio matmarcantonio@ucdavis.edu, University of California, Davis, CA; Trinidad Reyes and Christopher Barker

P18: Susceptibility profile of *Aedes aegypti* from Montclair, California to commonly used pesticides

Tianyun Su tsu@wvmvcd.org, West Valley MVCD, Ontario, CA; Jennifer Thieme, Min Lee Cheng and Michelle Brown

P19: Comparison of in vitro and in vivo blood-feeding in *Culex quinquefasciatus*

Tianyun Su tsu@wvmvcd.org, West Valley MVCD, Ontario, CA; Patrick Mullens, Quan Vong, Taylor Lura and Michelle Brown

P20: A model to predict the density of *Ixodes ricinus* in Central Europe
Gerhard Dobler gerharddobler@msn.com, Bundeswehr Institute of Microbiology, Munchen; Katharina Brugger, Melanie Walter, Lidia Chitimia-Dobler and Franz Rubel

P21: The ecological dimensions of vector competence.

Lisa Couper lisabelcouper@gmail.com, Stanford University, Stanford, CT; Steven Sun and Andrea Sweil

P22: Historical changes in distribution of *Aedes aegypti* and *Ae. albopictus* in Hawaii revealed by ecological niche modeling

Durrell Kapan dkapan@calacademy.org, Institute for Biodiversity Science and Sustainability, California Academy of Sciences, San Francisco, CA; Karl Lindberg, Jim Henderson and Jonathan Winchester

P23: Impact of Hurricane Maria over *Aedes aegypti* female population in Caguas, PR

Gilberto Felix ckn5@cdc.gov, Center for Disease Control, San Juan, Ouerto Rico; Damaris Rodriguez, Ryan Hemme and Roberto Barrera

P24: Impact of temperature on the extrinsic incubation period of Zika virus in *Aedes aegypti*

Olivia Winokur ocwinokur@ucdavis.edu, University of California, Davis, CA; Bradley Main, Jay Nicholson and Christopher Barker

P25: The effect of temperature and relative humidity on the survival of *Anopheles* after forced mating in the laboratory

Siriporn Phasomkusolsil siripornp.fsn@afirms.org, US Army Medical Comp., Armed Forces Research Institute of Medical Sciences, Thailand; Yossasin Kertmanee, Nantaporn Monkanna, Sakon Khaosanorh, Kanchana Pantuwatana, Jaruwan Tawong and Silas Davidson

P26: Comparison of *Anopheles dirus* and *An. cracens* blood feeding behavior, survival rates and fecundity during the first and second blood meals

Orawan Wongnet orawanw.ca@afirms.org, US Army Medical Comp., Armed Forces Research Institute of Medical Sciences, Thailand; Siriporn Phasomkusolsil, Kanchana Pantuwattana, Jaruwan Tawong and Silas Davidson

P27: Location of a source of carbon dioxide by female *Culex quinquefasciatus* in a wind tunnel

Emerson Lacey emerson.lacey@ucr.edu, University of California Riverside, CA and Ring Carde

P28: Landing behavior of female *Aedes aegypti* on visual, human skin odor, and heat cues following an encounter with an elevated concentration of carbon dioxide.

Benjamin Demasi-Sumner bdema001@ucr.edu, University of California Riverside, CA and Ring Carde

P29: Site occupancy preferences of *Culicoides stellifer* and implications for integrated vector management of epizootic hemorrhagic and bluetongue diseases

Emily Dinh emily.n.dinh@gmail.com, University of Florida, Gainesville, FL and Jason Blackburn

P30: Evidence and variation in nectar feeding from wild *Aedes aegypti* mosquitoes from an arid environment

Trang Dang Weitemier trangdang@email.arizona.edu, University of Arizona, Tucson, AZ; Kathleen Walker, Michael Riehle and Kacey Ernst

P31: Attraction of stable flies and mosquitoes to pesticide-coated stickers designed for house fly management

Jerry Hogsette jerry.hogsette@ars.usda.gov, USDA-ARS-CMAVE, Gainesville, FL

P32: Demise and recovery of horse fly populations in Louisiana marshes following the Deepwater Horizon oil spill

Claudia Husseneder chusseneder@agcenter.lsu.edu, Louisiana State University Agricultural Center, Baton Rouge, LA and Lane Foil

P33: The CDC autocidal gravid ovitraps combined with attractants increase collection of *Aedes aegypti*

Rudy Xue xueamcd@gmail.com, Anastasia Mosquito Control District, St. Augustine, FL; Hui Liu, Daneil Dixon and Denna Autry

P34: Detection and identification of *Leishmania* species within naturally infected sand flies from temporary refugee camps in Greece

Alexandra Chaskopoulou achaskopoulou@ars-ebcl.org, USDA ARS European Biological Control Laboratory, Thessaloniki, Greece; Alexandros Fotakis Emmanouil, Ioannis Giantsis and John Vontas

P35: Seasonal dynamics of sand fly population (Diptera: Psychodidae: Phlebotominae) in North-Eastern Romania

Christine Cazan Pop cristina.cazan@usamvcluj.ro, University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Romania; Ioana Raluca Pastrav, Andrei Daniel Mihalca and Bulent Alten

P36: An easily deployable attractant of blood-seeking and ovipositing Aedes mosquitoes: Promising results from initial field trials

Paul Leisnham leisnham@umd.edu, University of Maryland, College Park, MD and Megan Saunders

P37: Seasonal activity of Ixodes inopinatus and Ixodes ricinus and prevalence of pathogens in a sympatric focus in southeastern Germany

Lidia Chitimia-Dobler lydiachitimia@gmail.com, University of Hohenheim, Stuttgart; Silke Wolfel, Ramona Rieb, Sabine Schaper, Giulia Lemhofer, Malena Bestehorn and Gerhard Dobler

P38: The history of West Nile virus and surveillance in Lubbock County, Texas mosquitoes

Steven Peper steve.peper@ttu.edu, Texas Tech University, Lubbock, TX; Alexander Wilson-Fallon, Katelyn Haydett, Hannah Greenberg and Steven Presley

P39: Crossover Dynamics of Culex pipiens and Culex restuans influence Interannual West Nile Virus Transmission

Ryan Tokarz rtokarz@iastate.edu, Iowa State University, Ames, IA and Ryan Smith

P40: Communal mosquito latrines: harvesting mosquito excreta for arbovirus detection

Dagmar Meyer dagmar.meyersteiger1@jcu.edu.au, College of Public Health, Medical and Veterinary Sciences, James Cook University, Australia; Ana Ramirez, Andrew van den Hurk and Scott Ritchie

P41: Modeling the spatial and temporal distribution of Aedes aegypti and Aedes albopictus using integrated surveillance data from the Southeastern United States

Brooke Borgert bab@ufl.edu, University of Florida, Gainesville, FL; Bingyi Yang, John Smith, Florida Mosquito Control Consortium and Derek Cummings

P42: Comparative susceptibility of Plasmodium vivax infection in wild and colonized Anopheles stephensi

Ajeet Kumar Mohanty ajeet.nimr@gmail.com, ICMR-National Institute of Malaria Research, India; Praveen Balabaskaran Nina, Shuvankar Ballav, Smita Vernekar, Sushma Parkar, Maria D'souza, Wenyun Zuo, Edwin Gomes, Laura Chery, Shripad Tuljapurkar, Neena Valecha, Pradipsinh K. Rathod and Ashwani Kumar

P43: Evaluating plague activity in the northern Sierra Nevada, California
Elizabeth Andrews elizabeth.andrews@cdph.ca.gov, California Department of Public Health, Elk Grove, CA; James Tucker and Mark Novak

P44: A study on canine heartworm disease in Santa Clara County
Noor Tietz noor.tietze@cep.sccgov.org, Santa Clara County Vector Control District, San Jose, CA; Nidhi Bandrapalli and Babak Ebrahimi

P45: Detection of bacterial symbionts in Culicoides midges
Corey Brelsfoard corey.brelsfoard@ttu.edu, Texas Tech University, Lubbock, TX; Hunter Hall and Hunter Covey

P46: Does yearly and seasonal variation of blood feeding in Culicoides drive Bluetongue virus and Epizootic hemorrhagic disease virus circulation?

Agustin Quaglia aquaglia@ufl.edu, University of Florida, Vero Beach, FL; Bethany McGregor, Katherine Sayler, Samantha Wisely and Nathan Burkett-Cadena

P47: Temporal aspects of postmortem detection of bluetongue and epizootic hemorrhagic disease virus in the bone marrow of white-tailed deer

Lane Foil lfoil@agcenter.lsu.edu, Louisiana State University, Baton Rouge, LA; Jonathan Roberts, James LaCour and Michael Becker

P48: Implicating Culicoides spp. as vectors in the transmission of epizootic hemorrhagic disease virus in Florida

Bethany McGregor bmgreg@ufl.edu, University of Florida, Vero Beach, FL; Kristin Sloyer, Katherine Sayler, Olivia Goodfriend, Carolina Acevedo, Samantha Wisely and Nathan Burkett-Cadena

P49: The effects of conspecific immature and adult stages on the oviposition site-selection of *Phlebotomus papatasi* – the vector of old-world cutaneous leishmaniasis

Gideon Wasserberg g_wasser@uncg.edu, University of North Carolina, Greensboro, NC; Danielle Kowacich, T. Shymanovich, L. Ponnusamy, C. Apperson, C. Schal and E. Hatano

P50: The role of visual cues and photoperiod in regulating oviposition site selection in *Phlebotomus papatasi*, vector of old-world cutaneous leishmaniasis

Gideon Wasserberg g_wasser@uncg.edu, University of North Carolina, Greensboro, NC; T. Shymanovich, L. Faw, N. Hajhashemi, L. Ponnusamy, C. Apperson, C. Schal and E. Hatano

P51: The role of anthropogenic land-use change in driving disease emergence in coupled vector-host systems: zoonotic cutaneous leishmaniasis as a case system

Gideon Wasserberg g_wasser@uncg.edu, University of North Carolina, Greensboro, NC; Jimmie Teague, Alexis Barbarin, and Carl Williams

P52: Distribution and infection rate of ticks in Santa Clara County parks

Babak Ebrahimi babak.ebrahimi@cep.sccgov.org, Santa Clara County Vector Control District, San Jose, CA; Noor Tietze, Richard Shatzel, Menou Thaopraseuth, Caroline Driscoll and Mark Marden

P53: Identifying a potential reservoir for an emerging tick-borne relapsing fever pathogen, *Borrelia miyamotoi*, in California

Samantha Sambado sbsambado@gmail.com, San Francisco State University, San Francisco, CA and Andrea Swei

P54: Phylogeography of *Borrelia spirochetes* in *Ixodes* spp. ticks highlights differential risk of tick-borne disease transmission in California

Melissa Hardstone Yoshimizu melissa.yoshimizu@cdph.ca.gov, California Department of Public Health, Richmond, CA; Ian Rose, Denise Bonilla, Natalia Fedorova, Robert Lane and Kerry Padgett

P55: Approach to evaluating surveillance for Lyme disease in a low incidence state

Sharon Brummitt sibrummitt@ucdavis.edu, University of California, Davis, CA; Anne Kjemtrup and Woutrina Smith

P56: An eco-epidemiologic investigation into a human case of hantavirus from an unexpected region in California

Tina Feiszli tina.feiszli@cdph.ca.gov, California Department of Public Health, Richmond, CA; Melissa Yoshimizu, Anne Kjemtrup, Sharon Messenger, Amanda Poulsen, Angie Nakano and Kerry Padgett

P57: When “Spillover” becomes a flood. Maintenance of Sin Nombre virus in cactus mice (*Peromyscus eremicus*) at Scotty’s Castle, Death Valley, USA.

Joseph Burns joseph.burns@cdph.ca.gov, California Department of Public Health, Ontario, CA; Marco Metzger, Sharon Messenger, Renjie Hu, Curtis Fritz and Vicki Kramer

P58: Investigating the prevalence of tick-borne bacterial pathogens in Florida

Carrie De Jesus carriedejesus@ufl.edu, University of Florida, Gainesville, FL; Claudia Ganser, William Kessler, Zoe White, Greg Glass and Sam Wisely

P59: Rickettsial agents found in ticks collected from *Sus scrofa* in southeastern United States

Bryan Ayres ylt9@cdc.gov, Centers for Disease Control and Prevention, Atlanta, GA; Angela James, Morgan Wehtje and William Nicholson

P60: Seasonal activity of adult ixodid ticks at a regional park in Los Angeles County, California

Sarah Billeter sarah.billeter@cdph.ca.gov, California Department of Public Health, Ontario, CA and Renjie Hu

P61: Next generation surveillance of Triatominae (Reduviidae): Radio-telemetry, canine scent detection, and time-lapse photography

Rachel Curtis-Robles rcurtis@cvm.tamu.edu, Texas A&M University, College Station, TX; Justin Bejcek, Edwin Valdez, Devin Christopher, Graham Hickling, Gabriel Hamer and Sarah Hamer

P62: Passive tick and triatomine surveillance in Texas, 2014-2017

Whitney Qualls whitney.qualls@dshs.texas.gov, Texas Department of State Health Services, Austin, TX

P63: Identification and quantification of Chagas disease vector blood meal sources using protein mass spectrometry

Judith Keller judith.keller@uvm.edu, University of Vermont, Burlington, VT; Raquel Lima-Cordon, Bryan Ballif, Carlota Monroy and Lori Stevens

P64: Argas giganteus and tick-borne pathogens associated with paralysis in wild birds in the southwest, USA

Lisa Auckland lauckland@cvm.tamu.edu, Texas A&M University, College Station, TX; Patricia Latas, Pete Teel and Sarah Hamer

P65: Can zoological parks enhance entomological surveillance networks?

Lee Cohnstaedt lee.cohnstaedt@ars.usda.gov, Arthropod-Borne Animal Diseases Research Unit, United States Department of Agriculture, Manhattan, KS; Dustin Swanson and James Carpenter

P66: Impact of Bti larvicide treatment in public drainage structures on mosquito immatures within central Arizona

Daniel Williamson danielwilliamson@email.arizona.edu, University of Arizona, Tucson, AZ; Kathleen Walker and Dawn Gouge

P67: Plant oils are capable of synergizing multiple insecticides and inhibiting detoxification enzymes in Aedes aegypti

Edmund Norris ejnorris@iastate.edu, Iowa State University of Science and Technology, Ames, IA; Jacob Johnson, Aaron Gross, Joel Coats and Lyric Bartholomay

P68: Modeling the effect of aerial spraying on the relative abundance of Culex tarsalis and Culex pipiens

Karen Holcomb kmholcomb@ucdavis.edu, Davis Arboviral Research and Training Laboratory, Davis, CA; Robert Reiner and Christopher Barker

P69: Impacts of ULV adulticiding on the vectorial capacity of the Zika Vector

Kathleen Walker krwalker@cals.arizona.edu, University of Arizona, Tucson, AZ; Michael Riehle, Dawn Gouge and Kacey Ernst

P70: Luring malaria vectors to their death: evaluating the potential of bovine zooprophylaxis using eprinomectin

Nancy Hinkle nhinkle@uga.edu, University of Georgia, Athens, GA; Annie Rich, Seth Irish, T. Dean Pringle and Michael Green

P71: Development of a classical sterile insect technique (SIT) program for Aedes aegypti control in Lee County, Florida

David Hoel hoel@lcmcd.org, Lee County Mosquito Control District, Lehigh Acres, FL; Rachel Morreale and T. Wayne Gale

P72: Significantly reduced survival and fecundity of irradiated female *Aedes aegypti* pupae in a SIT program

Ken Linthicum kenneth.linthicum@ars.usda.gov, USDA Center for Medical, Agricultural and Veterinary Entomology, Gainesville, FL; Robert Aldridge, Jedidiah Kline, Jordan Coburn, Seth Britch, Leigh Boardman, and Daniel Hahn

P73: Timing of lambda-cyhalothrin and pyriproxyfen barrier treatments for *Aedes albopictus* management

Isik Unlu iunlu@mercercounty.org, Mercer County Mosquito Control, Trenton, NJ; Gregory Williams, Ilia Rochlin, Yi Wang and Randy Gaugler

P74: Residual activity of pyriproxyfen against mosquito developmental stages inhabiting catch basins in Riverside County, Southern California

Lal Mian lmian@csusb.edu, California State University, San Bernardino, CA; Angela Caranci, Jesus Ramos, Nikia Smith, William Van Dyke, and Major Dhillon

P75: Paint: A novel cost effective, low frequency application vector control

Hiroyuki Nagano nagano@als.kansai.co.jp, Kansai Paint Co. Ltd., Tokyo, Japan; Kalpana Abe, Dilip Munasinghe and Kamal Chauhan

P76: Recent advances in WALSTTM application technology for control of DENV, ZIKV and WNV vectors

Peter DeChant peter.dechant@valent.com, Valent BioSciences Corporation, Libertyville, IL; Seleena Benjamin, Banugopan Kesavaraju, Leanne Lake and Steven Krause

P77: *Lutzomyia longipalpis*, a disease vector case review: Can simultaneous metatranscriptomic and transcriptomic analyses aid its control?

Christina McCarthy mccarthychristina@gmail.com, National University of La Plata, Argentina; Lorena Caligiuri, Soraya Acardi, M. Soledad Santini, O. Daniel Salomón, Gaston Rozadilla, Jorgelina Moreiras Clemente and Nagila Secundino

P78: Integrated vector management for *Aedes aegypti* during 2016 Zika epidemic in Caguas, PR

Damaris Rodriguez mzn9@cdc.gov, Center for Disease Control, San Juan, Puerto Rico; Gilberto Felix, Ryan Hemme and Roberto Barrera

P79: The CDC Southeastern Center of Excellence in Vector Borne Diseases: Gateway Program

Rhoel R. Dinglasan rdinglasan@epi.ufl.edu, University of Florida, Gainesville, FL; Jeff Bloomquist, John Beier, Matthew DeGennaro, Derek Cummings, Gregory Glass, Samantha Wisely and Thomas Unnasch

P80: Attempts to establish local colonies of sand flies at the AFRIMS Insectary in Bangkok, Thailand

Jaruwan Tawong jaruwant.ca@afirms.org, Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand; Sakon Khaosornrh, Kanchana Pantuwatana, Boonsong Jaichapor, Alongkot Ponlawat, Siriporn Phasomkusolsil and Silas Davidson

P81: Adult mosquito distribution associated with premise-condition index and socioeconomics of neighborhoods in San Antonio, Texas

Megan Wise De Valdez megan.wisedevaldez@tamusa.edu, Texas A&M University, San Antonio, TX; Joel Obregon and Oluwaseun Aloba

P82: Fight the Bite: Applying remote sensing technologies to detect mosquito breeding habitats of importance

Sarah Gunter sm22@bcm.edu, Baylor College of Medicine, Houston, TX; Abi Oluyomi, Mustapha Debboun, Chris Fredregill, Kyndall Dye-Braumuller, Tim Nedwed, Jerry Helfand and Melissa Nolan

P83: Deer keds (*Lipoptena*) collected from cervids: distribution, diversity and infections with vector-borne pathogens in Fenoscandia and Baltic countries

Algimantas Paulauskas algimantas.paulauskas@vdu.lt, Vytautas Magnus University, Lithuania; Kamile Klepeckiene, Irma Razanske and Jane Radzijeuskaja

P84: A survey of ectoparasites collected from Norway rats in homeless camps in Oakland, California

Adena Why adena.why@acgov.org, Alameda County Vector Control, San Leandro, CA; Bruce Kirkpatrick and David James

P85: Rickettsial infections among cats and cat fleas in Riverside County, California

Greg Williams gwilliams@northwestmvcd.org, Northwest Mosquito and Vector Control District, Corona, CA; Kristin Mullins, Alice Maina, Laura Krueger, Ju Jiang, Robert Cummings, Allan Drusys, Major Dhillon and Allen Richards

P86: Exploring alternative methods for pyrethroid synergists against resistant mosquitoes

Ellis Johnson ellisjamesj@gmail.com, University of Nebraska, NB; Leslie Rault, Scott O'Neal and Troy Anderson

P87: Out-of-Site, Out-of-Mind: Mosquito production in subsurface stormwater infrastructure

Robert Cummings rcummings@ocvector.org, Orange County Mosquito and Vector Control District, Garden Grove, CA; Amber Semrow, Kiet Nguyen and Tim Morgan

9:00 – 10:30 **SYMPOSIUM 4: EMERGING TICK-BORNE DISEASES**

Moderator: Neeta Connally connallyn@wcsu.edu

Western Connecticut University, Danbury, CT, USA

Bryon Backenson bryon.backenson@health.ny.gov

Bureau of Communicable Disease Control, Albany, NY

9:00 Emergence of Heartland virus in Tennessee

Abelardo Moncayo abelardo.moncayo@tn.gov

Tennessee Department of Health, TN

9:15 Borrelia mayonii and "those other kinds of Lyme disease" in Minnesota

Jenna Bjork jenna.bjork@state.mn.us

Minnesota Department of Health, MN

9:30 Emergence of Powassan virus in North America

Gregory Ebel gregory.ebel@colostate.edu

Department of Microbiology, Immunology and Pathology, Colorado State University, CO

9:45 Emerging Rickettsial diseases

William Nicholson wan6@cdc.gov

Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Atlanta, GA

10:00 The other Babesia: Eco-epidemiological investigations of Babesia duncani

Andrea Swei aswei@sfsu.edu, San Francisco State University,

Kerry O'Connor kerry.ocon@gmail.com, Lisa

Couper lisabelcouper@gmail.com, Jose

Thekkiniath jose.thekkiniath@yale.edu, Patricia

Conrad paconrad@ucdavis.edu, Kerry Padgett kerry.padgett@cdph.ca.gov, Joseph Burns joseph.burns@cdph.ca.gov, Melissa Yoshimizu melissa.yoshimizu@cdph.ca.gov, Ben Gonzales ben.gonzales@wildlife.ca.gov, Brandon Munk brandon.munk@wildlife.ca.gov, Nicholas Shirkey nicholas.shirkey@wildlife.ca.gov, Lora Konde lora.konde@wildlife.ca.gov, Choukri Ben Mamoun choukri.benmamoun@yale.edu, Robert Lane blane@berkeley.edu and Anne Kjemtrup anne.kjemtrup@cdph.ca.gov

10:15 Evidence for the impacts of climate change on the emergence of Lyme disease in Canada
Nick Ogden nicholas.ogden@canada.ca
National Microbiology Laboratory, Public Health Agency of Canada

10:30 – 12:00 **SYMPOSIUM 5: VECTOR CONTROL IN VARIOUS PARTS OF THE WORLD**

Moderators: Norbert Becker norbertbecker@web.de
German Mosquito Control Association (KABS), Speyer & University of Heidelberg, Heidelberg, Germany
Paulo Pimenta pimenta@cpqrr.fiocruz.br
FIOCRUZ, Belo Horizonte, Minas Gerais, Brazil

10:30 Vector control methods in India
Ashwani Kumar ashwani07@gmail.com
National Institute of Malaria Research (ICMR), DHR, Govt. of India

10:45 Mosquito control in Switzerland, a country divided by the ridge of the Alps
Eleonora Flacio eleonora.flacio@supsi.ch
University of Applied Sciences and Arts of Southern Switzerland, Bellinzona, Switzerland
Peter Luethy peter.luethy@micro.biol.ethz.ch
Organization Institute of Microbiology ETHZ, Zurich, Switzerland

- 11:00 Nuisance and vector mosquito control in Greece – the past and the future
Spiros Mourelatos mourelatos@ecodev.gr
 Ecodevelopment S.A., Greece
- 11:15 Aedes aegypti control in Manaus, Brazil
Sergio Luz sergioluz@amazonia.fiocruz.br, FIOCRUZ, Belo Horizonte, Minas Gerais, Brazil
- 11:30 The faith of mosquito control in Germany
Norbert Becker norbertfbecker@web.de
 German Mosquito Control Association (KABS), Speyer & University of Heidelberg, Heidelberg, Germany
- 12:00 – 1:00 **LUNCH: HOSTED**
- 1:00 – 3:00 **SYMPOSIUM 6: CDC REGIONAL CENTERS OF EXCELLENCE IN VECTOR-BORNE DISEASES**
Moderators: Rhoel Dinglasan rdinglasan@epi.ufl.edu
 University of Florida Emerging Pathogens Institute, Gainesville, FL
Susan Paskewitz smpaskew@wisc.edu
 University of Wisconsin-Madison, WI
- 1:00 Northeast Center of Excellence in VBD: The Northeast Regional Center's applied research program
Laura Harrington lch27@cornell.edu
 Cornell University, Ithaca, NY
- 1:20 Southeast Center of Excellence in VBD- Gateway Program: Molecular approaches to enhance mosquito surveillance
Rhoel Dinglasan rdinglasan@epi.ufl.edu
 University of Florida Emerging Pathogens Institute, Gainesville, FL
Matthew DeGennaro mdegenna@fiu.edu
 Florida International University, Miami, FL

- 1:45 Midwest Center of Excellence in VBD: Applied tick and mosquito control programs
Susan Paskewitz smpaskew@wisc.edu
 University of Wisconsin, WI
 Michael Kaufman kaufma15@msu.edu Michigan State University, MI
- 2:10 The Pacific Southwest Center of Excellence in VBD: Mosquito and tick research at the Pacific Southwest Center of Excellence
Chris Barker cmbarker@ucdavis.edu
 University of California, Davis, CA
- 2:35 Western Gulf Center of Excellence in VBD (WGCVBD): Insecticide resistance management (IRM) and the impact on vector control programs
David Ragsdale dragsdale@tamu.edu
 Texas A&M University, TX
- 3:00 – 3:30 **BREAK**
- 3:30 – 5:00 **SYMPOSIUM 7: STUDENT ORAL PRESENTATIONS**
Faculty Coordinator: Bill Van Dyke
bvandyke@northwestmvcd.org
 Assistant District Manager, NWMVCD, Corona, CA
Student Moderators: Casey Parker caseyparker@ufl.edu,
 Florida Medical Entomology Laboratory, University of Florida, Vero Beach, FL and **Bethany McGregor**
bmgreg@ufl.edu, Florida Medical Entomology Lab, Vero Beach, FL
- 3:30 Fight the Bite: An elementary school education campaign to combat container-mosquitoes
Casey Parker caseyparker@ufl.edu, Florida Medical Entomology Laboratory, University of Florida, Vero Beach, FL, C. Roxanne Connelly csz5@cdc.gov, Centers for Disease Control and Prevention, Ft. Collins, CO, Sebastian Galindo sgalindo@ufl.edu, University of Florida, Gainesville, FL, Anthony Andenoro andenoro@ufl.edu, University of Florida, Gainesville, FL

- 3:40 Effects of blacklight LED versus incandescent bulb and carbon dioxide for sampling abundance and diversity of Culicoides in Florida
Kristin Sloyer ksloyer@ufl.edu, University of Florida, Vero Beach, FL, Samantha Wisely wisely@ufl.edu, University of Florida, Gainesville, FL, and Nathan Burkett-Cadena nburkettcadena@ufl.edu, University of Florida, Vero Beach, FL
- 3:50 Multi-modal foraging cues attract mosquitoes (Diptera: Culicidae) to inflorescences
Dan Peach dan_peach@sfu.ca, Simon Fraser University, BC, Regine Gries mgries@sfu.ca, Simon Fraser University, BC, Nathan Young nwyoung@sfu.ca, Simon Fraser University, BC, Elton Ko eltonk@sfu.ca, Simon Fraser University, BC, Adam Blake adam@ajblake.info, Simon Fraser University, BC, Huimin Zhai robbyzhai@gmail.com, Simon Fraser University, BC and Gerhard Gries gries@sfu.ca, Simon Fraser University, BC
- 4:00 Impaired reproductive function in axenic Aedes aegypti females
Ruby Harrison ruby.harrison25@uga.edu, University of Georgia, Athens, GA, Mark Brown mrbrown@uga.edu, University of Georgia, Athens, GA and Michael Strand mrstrand@uga.edu, University of Georgia, Athens, GA
- 4:10 Vector-borne disease across transnational borders: parasite surveillance and elimination strategies throughout the Americas
Marie Kasbaum marie.a.kasbaum@uth.tmc.edu, Baylor College of Medicine, Melissa Nolan, Baylor College of Medicine- Texas Children's Hospital, William Contreras, El Salvador Ministry of Health, and Stanley Rodriguez, Universidad de El Salvador
- 4:20 Dog-vector-parasite interactions in the Chagas disease system: cardiac health impacts in naturally-infected government working dogs
Alyssa Meyers ameyers@cvm.tamu.edu, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX, Julia Purnell, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX, Megan Ellis, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, CO, Lisa Auckland, College of Veterinary Medicine and Biomedical

Sciences, Texas A&M University, College Station, TX, Marvin Meinders, Office of Health Affairs, Department of Homeland Security, Washington, D.C., John Sanders, Office of Health Affairs, Department of Homeland Security, Washington, D.C., Ashley Saunders, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX, and Sarah Hamer, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX

4:30 Effects of landscape and demographic factors on West Nile virus infection in *Culex quinquefasciatus* Say in Harris County and the City of Houston, Texas

Karen Poh karenpoh@tamu.edu, Texas A&M University, College Station, TX, Oswaldo Villena, University of Maryland, College Park, MD, Martin Reyna-Nava, Harris County Public Health Mosquito and Vector Control, Houston, TX, Chris Fredregill, Harris County Public Health Mosquito and Vector Control, Houston, TX, Mustapha Debboun, Harris County Public Health Mosquito and Vector Control, Houston, TX, Rudy Bueno Jr., Texas A&M University, College Station, TX, and Gabriel L. Hamer, Texas A&M University, College Station, TX

4:40 The feeding ecology of *Aedes albopictus* in Long Island, New York

Kara Fikrig kmf227@cornell.edu, Cornell University, Ithaca, NY, Laura Harrington lch27@cornell.edu, Cornell University, Ithaca, NY

4:50 Habitat prioritization for mosquito control: A spatial approach

Ryan Tokarz rtokarz@iastate.edu, Iowa State University, IA and Robert Novak, University of South Florida, FL

6:00 **BUSINESS MEETING:**

Lal Mian lmian@csusb.edu

President

Major S. Dhillon mdhillon@northwestmvcd.org

Executive Director

THURSDAY – OCTOBER 11, 2018

8:00 – 10:00 SYMPOSIUM 8: VECTOR-BORNE DISEASE OUTBREAKS AND TRENDS

Moderators: Vicki Kramer vicki.kramer@cdph.gov

California Department of Public Health, CA

Ken Gage klg0@cdc.gov, Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Ft. Collins, CO

8:00 The Yosemite hantavirus outbreak: 10 cases, 2 depositions, and 6 years later

Mark Novak mark.novak@cdph.ca.gov

California Department of Public Health, CA

8:20 Epizootic plague transmission in Yosemite

Mary Beth Danforth mary.danforth@cdph.ca.gov

California Department of Public Health, CA

8:40 Pneumonic plague in Madagascar

Paul Mead pfm0@cdc.gov, Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Ft. Collins, CO

9:00 Re-emergence of St. Louis Encephalitis virus in California and the Southwest

Lark Coffey lcoffey@ucdavis.edu

University of California Davis, CA

9:20 The Zika virus epidemic: Current situation and lessons learned in preparation for the next vector-borne disease outbreak

Ben Beard cbb0@cdc.gov, Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Ft. Collins, CO

9:40 The spread and continued circulation of West Nile virus in the USA

Daniele Swetnam dmswetnam@ucdavis.edu

University of California Davis, CA

10:00 – 10:30 **BREAK**

10:30 – 12:00 **SYMPOSIUM 9: CHALLENGES OF VECTOR CONTROL IN THE USA**

Moderators: William Walton william.walton@ucr.edu

University of California, Riverside, CA

Ben Beard cbb0@cdc.gov

Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Ft. Collins, CO

10:30 Control of *Aedes aegypti* in the continental United States – tools and evaluations

Roxanne Connelly csz5@cdc.gov

Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Ft. Collins, CO

10:45 Tick control – what tools are available and how well have they been evaluated?

Jean Tsao taso@msu.edu

Michigan State University, East Lansing, MI

Howard Ginsberg hginsberg@usgs.gov, United States Geological Survey, Graham Hickling ghicklin@utk.edu, University of Tennessee, Knoxville and Nicholas Ogden

nicholas.ogden@canada.ca, National Microbiology Laboratory, Public Health Agency of Canada

11:00 The state of public health entomology in the U.S. – where are we and where do we need to be?

Laura Harrington lch27@cornell.edu

Cornell University, Ithaca, NY

11:20 The good, the bad and the ugly of local vector control – how do science and public perception play out during an vector-borne disease outbreak?

Carina Blackmore carina.blackmore@flhealth.gov

Division of Disease Control and Health Protection, Florida Department of Health, Tallahassee, FL

11:40 Making a compelling case for the value of public investments in vector control at local, state, and federal levels

Oscar Alleyne osalleyne@naccho.org

Public Health Program, National Association of County and City Health Officials, Washington, DC

12:00 – 1:30 **SYMPOSIUM 10: VECTOR-HOST INTERACTIONS AND THEIR IMPLICATIONS FOR PATHOGEN MAINTENANCE, SURVEILLANCE AND VECTOR CONTROL**

Moderator: Gideon Wasserberg g_wasser@uncg.edu

University of North Carolina at Greensboro, NC

Rebecca Eisen dyn2@cdc.gov, Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Ft. Collins, CO

- 12:00 Differences in nymphal tick questing behavior help explain geographic variation in Lyme disease risk
Graham Hickling ghicklin@utk.edu, University of Tennessee, TN and Jean Tsao taso@msu.edu, Michigan State University, East Lansing, MI
- 12:15 North meets South: Changing dynamics of *Ixodes scapularis*, *Borrelia burgdorferi* and risk of Lyme disease in Virginia
Holly Gaff hgaff@odu.edu
Old Dominion University
- 12:30 The backyard integrated tick management study: Understanding peridomestic risk and prevention of *Ixodes scapularis* – associated diseases in the northeastern US
Neeta Connally connallyn@wcsu.edu
Western Connecticut University, Danbury, CT, USA
- 12:45 Comparative ecology of urban *Aedes* and *Culex* species in California
Chris Barker cmbarker@ucdavis.edu
University of California, Davis, CA
- 1:00 The role of kissing bug behavior and host community composition in Chagas disease ecology in Texas
Sarah Hamer shamer@cvm.tamu.edu
Texas A&M University, TX
- 1:15 Vector-host coupling and its implications to vector-borne disease dynamics and control: Sand fly – sand rat interactions and implications for cutaneous Leishmaniasis transmission and control
Gideon Wasserberg g_wasser@uncg.edu
University of North Carolina at Greensboro, NC

Clifford Smyth, University of North Carolina at Greensboro, Greensboro, NC, Adam Eury, University of North Carolina at Greensboro, Greensboro, NC, Zvika Abramsky, Ben-Gurion University of the Negev, Beer-Sheva, Israel, Gil Ben-Natan, Ben-Gurion University of the Negev, Beer-Sheva, Israel, Burt Kotler, Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Israel, Alon Warburg, The Kuvim Center for the Study of Infectious and Tropical Diseases, The Hebrew University of Jerusalem, Jerusalem, Israel, Hans-Herman Thulke, Helmholtz Centre for Environmental Research, Leipzig, Germany Ido Tsurim, School of Sciences, Achva Academic College, Israel

1:30 **CLOSING OF THE CONFERENCE**
President Lal Mian