

VACCINES FOR ENTERIC DISEASES

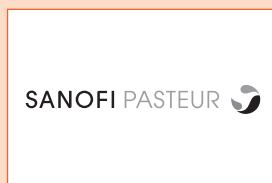
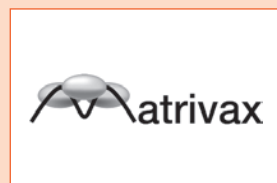
8-10 July 2015, The Royal College of Physicians of Edinburgh, Edinburgh, UK

FINAL ORAL PROGRAMME & POSTER PROGRAMME VED 2015

SCIENTIFIC ADVISORY PANEL

Duncan Steele (*Bill & Melinda Gates Foundation, USA*)
Timo Vesikari (*University of Tampere, Finland*)
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Myron M. Levine (*University of Maryland, USA*)
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Claire-Lise Chaignat (*WHO, Switzerland*)
John D. Clements (*Tulane University, USA*)

Umesh Parashar (*CDC, Atlanta, USA*)
Julie E. Bines (*Royal Children's Hospital, Melbourne, Australia*)
David Sack (*Johns Hopkins University, Baltimore, Maryland, USA*)
Mark Riddle (*NMRC, Bethesda, Maryland, USA*)
Armelle Phalipon (*Pasteur Institute, Paris, France*)
Lou Bourgeois (*PATH, Washington DC, USA*)
Robert Hall (*NIAID/NIH, Bethesda, Maryland, USA*)
Serge Debrus (*GSK Biologicals, Wavre, Belgium*)
Ladaporn Bodhidatta (*AFRIMS, Bangkok, Thailand*)
Bernd Benninghoff (*GSK Biologicals, Wavre, Belgium*)
Daniel Cohen (*Tel Aviv University, Tel Aviv, Israel*)
Martin Mengel (*Agence de Médecine Préventive, Paris, France*)
Robert F. Bargatze (*Takeda Vaccines Inc., Bozeman, Illinois, USA*)
Hugues Bogaerts (*Consultant, Takeda Vaccines, Belgium*)



07.30 onwards

Arrival, Registration & Coffee

08.45-09.00

'Welcome to Edinburgh'

'VED 2015 in Edinburgh: Britain's Premier Medical City'

Robert Hall (NIAID/NIH, Bethesda, Maryland, USA)

SESSION 1: DIARRHOEAL DISEASE BURDEN – NEW INSIGHTS

Moderators: Anita Zaidi (Gates Foundation, Seattle, Washington, USA) and Mike Levine (University of Maryland, Baltimore, Maryland, USA)

09.00-09.30

'True burden of enteric pathogens utilizing advanced molecular techniques: Re-analysis of the GEMS data'

Eric Houpt (University of Virginia, Charlottesville, Virginia, USA)

09.30-10.00

'Potential contribution of nutritional and long-term outcomes on the cost-effectiveness of entero-toxicogenic *Escherichia coli* and *Shigella* vaccination'

Richard Rheingans¹, Lindsey Laytner¹, Mirna Amaya¹ and Deborah Atherly²
(¹ University of Florida, Gainesville, Florida, USA; ² PATH, Seattle, Washington, USA)

10.00-10.20

'Vaccines against West African Ebolavirus, a diarrheal disease'

Myron M. Levine (University of Maryland, Baltimore, Maryland, USA)

10.20-10.40

'Achieving public health impact with vaccines: The role of advocacy'

Deborah Kidd and Richard Walker (PATH, Washington DC, USA)

10.40-11.00

Coffee Break & Posters Set-Up

SESSION 2: THE DEVELOPMENT OF ETEC VACCINES

Moderators: Ann-Mari Svennerholm (University of Gothenburg, Gothenburg, Sweden)

11.00-11.20

'Dose-dependent spectrum of illness and immune response profiles after primary infection and following homologous re-challenge in a low dose enterotoxigenic *E. coli* (ETEC) challenge model'

Subhra Chakraborty, Clayton Harro, Barbara DeNearing, Malathi Ram, Louis Bourgeois, Nicole Bauers, Jorge Flores, Len Dally, Richard Walker and David Sack
(Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA)

11.20-11.40

'Induction of long term immunological memory by an oral inactivated multivalent ETEC vaccine in Swedish volunteers'

Anna Lundgren and Ann-Mari Svennerholm (University of Gothenburg Vaccine Research Institute, Sahlgrenska Academy, Sweden)

11.40-12.00

'T cell responses to an oral inactivated multivalent ETEC vaccine'

Anna Lundgren, Ana Cárdeno, Joanna Kaim and Ann-Mari Svennerholm (University of Gothenburg Vaccine Research Institute, Sahlgrenska Academy, Sweden)

12.00-12.20

'DmLT adjuvanted live attenuated enterotoxigenic *Escherichia coli* (ETEC) vaccine candidate protects against virulent ETEC in a human ETEC challenge model'

Michael Darsely, Clayton Harro, Subhra Chakraborty, David Sack, Barbara DeNearing, Louis Bourgeois, Nicole Bauers, Len Dally, Alan Fix and Richard Walker (Johns Hopkins University, Baltimore, Maryland, USA)

12.20-12.40

'A CFA-toxoid MEFA elicits antibodies protecting against seven CFAs (CFA/I, CS1 – CS6) and two toxins (LT, StA) of enterotoxigenic *Escherichia coli* (ETEC)'

Xiaosai Ruan¹, David A. Sack² and Weiping Zhang¹ (¹ Kansas State University, Manhattan, Kansas, USA; ² Johns Hopkins University, Baltimore, Maryland, USA)

12.40-13.00

'Detailed LT antibody analysis on ETEC clinical trial samples'

Elizabeth Norton², Milton Maciel Jr.¹, Robin Baudier², Carli Cunningham², Ursula Janikowski², Renee Laird¹, Ramiro Gutierrez¹, Stephen Savarino¹ and John Clements² (¹ Naval Medical Research Center, Silver Spring, Maryland, USA; ² Tulane University, New Orleans, Louisiana, USA)

13.00-14.00

Lunch Break & Posters

SESSION 3: VACCINE DEVELOPMENT AGAINST SHIGELLA

Moderators: Armelle Phalipon (Pasteur Institute, Paris, France) and Malabi M. Venkatesan (WRAIR, Bethesda, Maryland, USA)

14.00-14.20

'Clinical evaluation of the *S. flexneri* bioconjugate vaccine'

M. Riddle¹, R. Kaminski², C. Di Paolo³, C. Porter¹, R. Gutierrez¹, K. Paolino², K. Clarkson², C. Duplessis¹, C. Soltis², C. Strelez², K. Jaep¹, A. Castellano², M. Wacker³ and V. Gambillara³ (¹ Naval Medical Research Center, Silver Spring, Maryland, USA, ² Walter Reed Army Institute of Research, Silver Spring, Maryland, USA, ³ Glycovaxyn AG, Schlieren, Switzerland)

14.20-14.40

'Development of a simple and transferable bactericidal assay for *Shigella flexneri* 2a, *S. flexneri* 3a, and *S. sonnei*'

Jisheng Lin¹, Mark A. Smith², William H. Benjamin¹, Robert W. Kaminski², Lillian Van De Verg³, Heather Wenzel³ and Moon H. Nahm¹
(¹ University of Alabama at Birmingham, Birmingham, Alabama, USA; ² Walter Reed Army Institute of Research, Maryland, USA; ³ PATH, Washington DC, USA)

14.40-15.00

'Safety and immunogenicity of a *Shigella sonnei* generalized modules for membrane antigens (GMMA) vaccine administered by intramuscular, intranasal, and intradermal route'

Christiane Gerke¹, Laura B. Martin¹, Pierre Loulergue², Odile Launay², David Lewis³, Aldona Greenwood³, Dani Cohen⁴, Allan Saul¹, Audino Podda¹ and the *Shigella sonnei* clinical trial consortium (¹ Sclavo Behring Vaccines Institute for Global Health, Siena, Italy; ² CIC Cochin-Pasteur, Paris, France; ³ University of Surrey, Guilford, Surrey, UK; ⁴ Tel Aviv University, Tel Aviv, Israel)

15.00-15.20

'A randomized, double-blinded, placebo-controlled, dose-escalation, age-descending study to assess the safety and tolerability of live, attenuated, oral *Shigella* WRSS1 vaccine candidate in Bangladeshi adults and children'

R. Raqib¹, A. Mily¹, A. Fix², P. Sarker¹, N. Bauers², K. Zaman¹, K. Talukder¹, R.W. Kaminski³, L. Van de Verg² and M.M. Venkatesan³ (¹ Centre for Vaccine Sciences, ICDDRDB, Dhaka, Bangladesh; ² Enteric Vaccine Initiative, Vaccine Development Global Program, PATH, Washington, USA; ³ Walter Reed Army Institute of Research, Maryland, USA)

15.20-15.40

'Development of a broad-spectrum vaccine against shigellosis'

Jae-Ouk Kim (*International Vaccine Institute, Seoul, Korea*)

15.40-16.00

'Agent and host-related factors supporting the global emergence of *S. sonnei* shigellosis'

Dani Cohen, Shiri Meron-Sudai, Anya Bialik, Sophy Goren, Amit Hochberg, Uri Rubinstein, Ofry Levy, Ravit Bassal and Shai Ashkenazi
(*Tel Aviv University, Tel Aviv, Israel*)

16.00-16.15

Tea Break & Posters

**SESSION 4:
NOROVIRUS**

Moderators: Ben Lopman (*CDC, Atlanta, Georgia, USA*)
and Mark Riddle (*NMRC, Silver Spring, Maryland, USA*)

16.15-16.35

'Comprehensive assessment of genetic and immunologic factors in norovirus outbreaks in long-term care facilities'

Jan Vinjé, Veronica P. Costantini, Emily M. Cooper, Hope L. Hardaker, Lore E. Lee, Marieke Bierhoff, Paul R. Cieslak and Aron J. Hall
(*Centers for Disease Control, Atlanta, Georgia, USA*)

16.35-16.55

'Optimal composition of a norovirus GI-GII VLP vaccine: Strain selection and inclusion of rotavirus VP6 "rods" for adjuvant function'

Timo Vesikari, Maria Malm and Vesna Blazevic
(*University of Tampere, Tampere, Finland*)

16.55-17.15

'Development of a candidate VLP norovirus vaccine'

Robert Bargatze, Charles Richardson, Paul Mendelman, Frank Baehner, Astrid Borkowski and Robert Goodwin
(*Takeda Vaccines Inc., Deerfield, Illinois, USA*)

17.15-17.30

'The burden of norovirus diarrhea in Nicaraguan children: Results from a population-based study'

Sylvia Becker-Dreps¹, Filemon Bucardo², Samuel Vilchez², Luis Enrique Zambrana³, Lan Liu⁴, Leslie Barclay⁵, Jan Vinjé⁵, Michael G. Hudgens⁶, Lennart Svensson⁷, Johan Nordgren⁷, Margarita Paniagua² and Félix Espinoza²
(*1 University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA; 2 National Autonomous University of Nicaragua (UNAN-León), León, Nicaragua; 3 Center for Epidemiology and Health (CIDS), León, Nicaragua; 4 Harvard School of Public Health, Boston, Massachusetts, USA; 5 Centers for Disease Control and Prevention, Atlanta, Georgia, Atlanta, USA; 6 Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA; 7 Linköping University, Linköping, Sweden*)

17.30-17.45

'Active surveillance for medically-attended acute gastroenteritis and norovirus infection in a US managed care population'

Aron J. Hall¹, Allison L. Naleway², Elizabeth J. Esterberg², Emilio E. DeBess³, Christianne Biggs⁴ and Mark A. Schmidt² (*1 Centers for Disease Control and Prevention, Atlanta, Georgia, USA; 2 Kaiser Permanente Northwest, Portland, Oregon, USA; 3 Oregon Health Authority, Portland, Oregon, USA; 4 Oregon Health Authority, Hillsboro, Oregon, USA*)

17.45-18.00

'Modeling norovirus transmission and strategies for vaccination in the United States'

Molly K. Steele, Justin V. Remais, Andreas Handel and Benjamin A. Lopman
(*Emory University, Atlanta, Georgia, USA; Centers for Diseases Control, Atlanta, Georgia, USA*)

18.00-18.15

'A phase II randomised, placebo-controlled, double-blind study of two formulations of bivalent virus-like particle (VLP) norovirus candidate vaccine in healthy US adults'

Frank Baehner, Jakob P. Cramer, Martin Elmlinger and Paul Mendelman
(*on behalf of the NOR-201 Study Group*)
(*Takeda Pharmaceuticals International GmbH, Zurich, Switzerland*)

18.15-19.15

VED 2015 Welcome Reception & Poster Session

Sponsored by Takeda Vaccines



**SESSION 5:
FRONTIERS IN ENTERIC VACCINOLOGY**

Moderators: Dani Cohen (*Tel Aviv University, Tel Aviv, Israel*)
and Tom Wierzbza (*PATH, Washington DC, USA*)

08.30-08.50

'Clayton Harro Memorial Lecture'

'Protective efficacy of an enterotoxigenic *E. coli* fimbrial tip adhesin vaccine given with LTR192G by intradermal vaccination against experiment challenge with CFA/I-ETEC in adult volunteers'

C. Harro¹, R. Gutierrez², M. Riddle², C. Porter², M. Maciel², S. Poole², R. Laird²
and S. Savarino² (*1 Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA; 2 Naval Medical Research Center, Silver Spring, Maryland, USA*)

08.50-09.10

'Enteric vaccines adjuvants: Overview and mechanism of action of enterotoxin-derived adjuvants'

Jan Holmgren, Maximilian Larena, Michael Lebens, Anna Lundgren
and Manuela Terranoni (*University of Gothenburg, Gothenburg, Sweden*)

09.10-09.30

'Physiologic and immunologic consequences of exposure to ETEC enterotoxins'

Lisa T. Read, Rachel W. Hahn, Carli C. Thompson, David L. Bauer,
Elizabeth B. Norton, Jacob P. Bitoun, and John D. Clements
(*Tulane University School of Medicine, New Orleans, Louisiana, USA*)

09.30-09.50

'Experimental ETEC infections: Going beyond the 'running stool log'

Chad K. Porter¹, Mark S. Riddle¹, Ashley N. Alcalá¹, David R. Tribble²,
David Sack³, Clayton Harro³, Subhra Chakraborty³, Ramiro L. Gutierrez¹,
Stephen J. Savarino¹, Mike Darsley⁴, Robin McKenzie³, Anne Berit Guttormsen⁶,
Hans Steinsland⁶ and A. Louis Bourgeois⁵ (*1 Naval Medical Research Center, Silver Spring, Maryland, USA; 2 Infectious Disease Clinical Research Program, Bethesda, Maryland, USA; 3 Johns Hopkins University, Baltimore, Maryland, USA; 4 MD Biologic, LTD, Cambridge, Massachusetts, USA; 5 PATH, Washington, DC, USA; 6 University of Bergen, Bergen, Norway*)

09.50-10.10

'The novel oral vaccine delivery technology SmPill® significantly increases vaccine-specific intestinal antibody responses'

Stephanie Longet¹, Christopher Davitt¹, Edel McNeela¹, Vincenzo Aversa³,
Joshua Tobias², Michael Lebens², Monica Rosa³, Jan Holmgren², Ivan Coulter³
and Ed C. Lavelle¹ (*1 Trinity College Dublin, Dublin, Ireland; 2 University of Gothenburg, Gothenburg, Sweden; 3 Dublin City University, Dublin, Ireland*)

10.10-10.30

'Understanding pathogen behaviour *in vivo* for the rational design of safer live attenuated bacterial vaccines'

Andrew Grant, Chris Coward, Sarah Peters, Olivier Restif, Richard Dybowski,
Olusegun Oshota, Simon Clare, Gordon Dougan, Duncan Maskell
and Pietro Mastroeni
(*Department of Veterinary Medicine, University of Cambridge, United Kingdom/ Wellcome Trust Sanger Institute, Hinxton, United Kingdom*)

10.30 -10.50

Coffee Break & Posters

**SESSION 6:
COMBINED VACCINES**

Moderators: Richard Walker (*PATH, Washington DC, USA*)
and Melody Mills (*NIH/NIAID, Bethesda, Maryland, USA*)

10.50-11.10

'Advances in the development of a combined *Shigella*-ETEC vaccine'

Eileen Barry, Tao Wu, Christen Grassel and Myron Levine
(*Center for Vaccine Development, University of Maryland School of Medicine, Baltimore, Maryland, USA*)

11.10-11.30

'ShigEETEC™, a live attenuated vaccine inducing serotype independent protection against *Shigella* and immune response against ETEC toxins'

Shushan Harutyunyan, Michael Aichinger, Petra Krause, Valéria Szijjártó,
Gábor Nagy, Eszter Nagy and Tamás Henics
(*EveliQure Biotechnologies GmbH, Vienna, Austria*)

11.30-11.50

'Chromosomal super-recombineering in development of an oral vaccine for simultaneous protection against both enteric fevers and Shigellosis'

Madushini N. Dharmasena¹, Manuel Osorio¹, Scott Stibitz¹
and Dennis J. Kopecko^{1,2}
(*1 U.S. FDA-Center for Biologics Evaluation and Research, Silver Spring, Maryland, USA; 2 Protein Potential, LLC, Rockville, Maryland, USA*)

11.50-12.00

'Development of a live attenuated vaccine against typhoid fever and shigellosis'

Yun Wu, Sumana Chakravarty, Mingli Li, Tint Tint Wai, Dennis J. Kopecko,
Stephen L. Hoffman and B. Kim Lee Sim
(*Protein Potential LLC, Rockville, Maryland, USA*)

12.00-12.20

'ETEC-C. jejuni Capsule Conjugate Vaccine Immunogenicity and Protective Efficacy in *A. nancymae*'

Nathanael D. Reynolds¹, Amritha Ramakrishnan¹, Mark P. Simons¹, Nelum Dorabawila², Zuchao Ma³, Alexander Maue², Renee Laird², Steven Poole²,
Yang Liu², Milton Maciel Jr.², Mario A. Monteiro³, Stephen J. Savarino²
and Patricia Guerry² (*1 Naval Medical Research Unit 6, Lima, Peru; 2 Naval Medical Research Center, Silver Spring, Maryland, USA; and 3 University of Guelph, Guelph, Ontario, Canada*)

12.20-12.40

'Development of Typhetec®: An oral typhoid-ETEC vaccine'

Rocky Cranenburgh (*Prokarium Ltd, Keele Science Park, Keele, Staffordshire UK*)

12.40-13.30

Lunch Break & Posters

**SESSION 7:
NEGLECTED ENTERIC PATHOGENS**

Moderators: Beth Kirkpatrick (*University of Vermont, Burlington, Vermont, USA*)

13.30-13.50

'Invasive *Salmonella* infections in Africa and implications for vaccination programs'

Florian Marks *et al.* (*International Vaccine Institute, Seoul, Korea*)

13.50-14.10

'Utility of a *Cryptosporidium* human challenge model as a platform to guide development of vaccines and therapeutics'

C.E. Lyon, C.D. Huston, M. Carmolli, S.A. Diehl, E.R. Colgate and B.D. Kirkpatrick
(*University of Vermont, Burlington, Vermont, USA*)

14.10-14.20

'Safety and immunogenicity of a *Campylobacter* capsule-conjugate vaccine in healthy adult volunteers'

R. Gutierrez¹, R Gormley¹, M. Riddle¹, C. Porter¹, K. Paolino², A. Maue¹, R. Laird¹,
N. Dorabawila¹, K. Jaep¹, A. Castellano², M. Monteiro³ and P. Guerry¹
(*1 Naval Medical Research Center, Silver Spring, Maryland, USA; 2 Walter Reed Army Institute of Research Clinical Trials Center, Silver Spring, Maryland, USA; 3 University of Guelph, Guelph, Ontario, Canada*)

14.20-14.40

'Vaccines against *Campylobacter jejuni* based on polysaccharide capsules'

Patricia Guerry¹, Yuening Jiao², Nelum Dorabawilla¹ and Mario A. Monteiro²
(*1 Naval Medical Research Center, Silver Spring, Maryland, USA; 2 University of Guelph, Guelph, Ontario, Canada*)

14.40-15.00

'*Helicobacter pylori* infection in early childhood and growth at school age'

Khitam Muhsen, Sophy Goren and Dani Cohen
(*Tel Aviv University, Tel Aviv University, Israel*)

15.00-15.20

Tea Break & Posters

**SESSION 8:
CHOLERA**

Moderators: David A. Sack (*Johns Hopkins University, Baltimore, Maryland, USA*) and Robert Hall (*NIAID/NIH, Bethesda, Maryland, USA*)

15.20-15.40

'Update on the developments of OCV with regard to stockpile, GAVI and use of vaccine in outbreaks'

Dominique Legros (*WHO Global Cholera Task Force, Geneva, Switzerland*)

15.40-16.00

'Characterizing the regional distribution and burden of cholera in Africa'

Sean M. Moore, Andrew S. Azman and Justin Lessler
(*Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA*)

16.00-16.20

'Clinical and environmental surveillance for *Vibrio Cholerae* in resource constrained areas: Application during a one year surveillance in the far north region of Cameroon'

Amanda K. Debes, Jerome Ateudjieu, Walter Ebile, Malathi Ram, Etienne Guenou and David Sack
(*Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA*)

16.20-16.35

'Safety and immunogenicity of the killed bivalent (O1 and O139) whole-cell oral cholera vaccine in the Philippines: Results of the first Asian study outside the Indian subcontinent'

Naveena Aloysia¹, Yael Thollot², Maria Rosario Capeding³, Ma. Liza Antoinette Gonzales⁴, Anvar Rasuli and Mandeep Dhingra¹ (*1 Shantha Biotechnics Ltd, Hyderabad, India; 2 Sanofi Pasteur, Lyon, France; 3 Research Institute for Tropical Medicine, Muntinlupa City, Philippines; 4 Philippine General Hospital-University of the Philippines, Manila, Philippines*)

16.35-16.50

'Is the use of a single dose of killed whole cell oral cholera vaccine justified in response to outbreaks?'

Andrew S. Azman^{1,3}, Francisco J. Luquero^{2,4}, Iza Ciglenecki³, Rebecca F. Grais², David A. Sack⁴ and Justin Lessler¹ (*Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA; 2 Epicentre, Paris, France; 3 Médecins Sans Frontières, Geneva, Switzerland; 4 Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA*)

16.50-17.05

'Oral cholera vaccine use in South Sudan, 2014'

Abdinasir Abubakar¹, Francisco J. Luquero², Andrew S. Azman³, Iza Ciglenecki⁴, Trina Helderman⁵, Haley West⁶, John Rumono⁷, Stephen Martin⁸ and Dominique Legros⁸ (*1 World Health Organization, Juba, Republic of South Sudan; 2 Epicentre, Paris, France; 3 Johns Hopkins University, DOVE Project, Baltimore, USA; 4 Médecins Sans Frontières, Geneva, Switzerland; 5 Medecair, Geneva, Switzerland; 6 International Organization for Migration, Juba, Republic of South Sudan; 7 Ministry of Health, Juba, Republic of South Sudan; 8 World Health Organization, Geneva, Switzerland*)

17.05-17.20

'Redevelopment of a single-dose live-attenuated oral cholera vaccine CVD 103-HgR'

Jakub K. Simon¹, Wilbur H. Chen², Mitchell B. Cohen³, Beth D. Kirkpatrick⁴, Caroline E. Lyon⁴, Robert H. Hall⁵, Michael Lock¹, Myron M. Levine² and Marc Gurwith¹ (*1 PaxVax, Inc., Redwood City, California, USA; 2 University of Maryland School of Medicine, Baltimore, Maryland, USA; 3 Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA; 4 University of Vermont College of Medicine, Burlington, Vermont, USA; 5 National Institute of Allergy and Infectious Diseases, Bethesda, Maryland, USA*)

17.20-17.35

'Development of a '2nd generation' vaccine for epidemic response and endemic country use'

Marc Gurwith¹, Jakub K. Simon¹, Wilbur H. Chen², Mitchell B. Cohen³, Beth D. Kirkpatrick⁴, Caroline E. Lyon⁴, Robert H. Hall⁵, Michael Lock¹ and Myron M. Levine² (*1 PaxVax, Inc., Redwood City, California, USA; 2 University of Maryland School of Medicine, Baltimore, Maryland, USA; 3 Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA; 4 University of Vermont College of Medicine, Burlington, Vermont, USA; 5 National Institute of Allergy and Infectious Diseases, Bethesda, Maryland, USA*)

17.35-17.50

'Validity of the estimates of cholera vaccine protective effectiveness derived from the test-negative design'

Mohammad Ali, Young Ae You, Dipika Sur, Suman Kanungo, Deok Ryun Kim, Jacqueline L. Deen, Lorenz von Seidlein, Thomas F. Wierzbza, Sujit K. Bhattacharya and John D. Clemens
(*Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA*)

17.50-18.05

'AfriChol, the African Cholera Surveillance Network understanding the distribution of cholera burden in Africa and its usefulness for determining vaccine impact'

Martin Mengel (*Agence de Medecine Preventive, AMP, Paris, France*)

18.05-18.25

'Update of recent studies on oral cholera vaccine in Bangladesh and prospects for the future'

Firdausi Qadri and John Clemens *et al.* (*ICDDR, Dhaka, Bangladesh*)

Free Evening for VED 2015 Delegates

**SESSION 9:
ROTAVIRUS VACCINES**

Moderators: Umesh Parashar (*CDC, Atlanta, Georgia, USA*)

09.00-09.20

'Rotavirus vaccine effectiveness in Zambia: Preliminary results from Lusaka Province'

Laura Beres, Lungowe Njobvu, Bertha Chibwe, Annika Kruuner, Cheryl Rudd, M. Brad Guffey, Jacqueline Tate, Umesh Parashar, Jeffrey Stringer and Roma Chilengi

(*Centre for Infectious Disease Research in Zambia, Lusaka, Zambia*)

09.20-09.40

'A Phase I/II descending age, double-blinded, randomized, placebo-controlled dose escalation study to examine the safety, tolerability and immunogenicity of the P2-VP8 subunit parenteral rotavirus vaccine in healthy South African toddlers and infants'

M.J. Groome^{1,2}, A. Koen^{1,2}, A. Hugo^{1,2}, L. Jose^{1,2}, S.A. Madhi^{1,2}, M. McNeal³, N. Meyer³, B. Phillips³, N. Page⁴, M. Power⁵, A. Fix⁵, J. Flores⁵, J. Boslego⁵ and S. Cryz⁵ (*1 Medical Research Council: University of the Witwatersrand, Johannesburg, South Africa; 2 Vaccine Preventable Diseases, University of the Witwatersrand, Johannesburg, South Africa; 3 Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA; 4 National Institute for Communicable Diseases, Sandringham, South Africa; 5 PATH, Washington, DC, USA*)

09.40-10.00

'The "Performance of Oral Vaccines in Developing Countries (PROVIDE)" study: Insights into oral rotavirus vaccine underperformance'

B.D. Kirkpatrick, R. Haque, J. Mychaleckyj, M. Carmolli, D. Dickson, S.A. Diehl, U. Nayak, J. Ma, M. Lu, C. Naylor, E.R. Colgate and W.A. Petri Jr.

(*University of Vermont, Burlington, Vermont, USA*)

10.00-10.20

'Modeling the potential for vaccine-driven strain replacement following rotavirus vaccination in Belgium'

Virginia E. Pitzer¹, Joke Bilcke², Elisabeth Heylen³, Mark Zeller³, Forrest W. Crawford¹ and Jelle Matthijssens³ (*1 Yale School of Public Health, New Haven, Connecticut, USA; 2 University of Antwerp, Antwerp, Belgium; 3 University of Leuven, Leuven, Belgium*)

10.20-10.50

Coffee Break & Posters

SESSION 10: REGULATORY AND PUBLIC HEALTH CONSIDERATIONS IN ENTERIC VACCINES

Moderators: Duncan Steele

(*Bill & Melinda Gates Foundation, Seattle, Washington, USA*)

10.50-11.10

'Regulatory aspects of enteric vaccine development: A US FDA perspective'

Jon Daugherty (*CBER/FDA, Silver Spring, Maryland, USA*)

11.10-11.30

'Environmental enteropathy, malnutrition and oral polio vaccine response'

Caitlin Naylor, Jennie Ma, Miao Lu, Mami Taniuchi, Eric Houpt, Uma Nayak, Joe Mychaleckyj, Ross Colgate, Marya Carmolli, Masud Alam, Rashidul Haque, Beth Kirkpatrick and William A. Petri, Jr., for the PROVIDE Study

(*University of Virginia, Charlottesville, Virginia, USA; University of Vermont, Burlington Vermont, USA; ICDDRDB, Dhaka, Bangladesh*)

11.30-11.50

'Typhoid vaccination in the US military'

Chad K. Porter, Tia Sorrel, Indrani Mitra and Mark S. Riddle

(*Naval Medical Research Center, Silver Spring, Maryland, USA*)

11.55-12.10

'Co-administration of oral polio vaccines interferes with Rotarix immunogenicity in rural Bangladesh'

D. Emperador¹, D. Velasquez¹, C. Estivariz², B. Lopman¹, B. Jiang¹, U. Parashar¹, A. Anand² and K. Zaman³ (*1 Division of Viral Diseases and 2 Global Immunization Division, Centers for Diseases Control and Prevention, Atlanta, Georgia, USA; 3 International Centre for Diarrhoeal Disease Research, Dhaka, Bangladesh*)

12.10-12.30

'Typhoid fever protein capsular matrix vaccine: Pathway to phase 1 clinical trial'

Kevin Killeen (*Matrivax Inc., Boston, Massachusetts, USA*)

12.30-13.30

Lunch Break & Posters

**SESSION 11:
LATEBREAKERS SESSION**

Moderators: Florian Marks (*International Vaccine Institute, Seoul, Korea*)

and John Clemens (*International Centre for Diarrhoea Disease Research, Dhaka, Bangladesh*)

13.30-13.50

'Causes of prior inconsistency of protective efficacy and rationale for renewed clinical evaluation of *Salmonella* Typhi Ty21a expressing *Shigella sonnei* form 1 O-antigen'

Dennis J. Kopecko¹, Stanley Cryz², Anu Kantele³, Kim Lee Sim¹ and Stephen L. Hoffman¹ (*1 Protein Potential LLC, Rockville, Maryland, USA, 2 PATH, Washington DC, USA, 3 Helsinki Hospital, Helsinki, Finland*)

13.50-14.10

'Prevention of shigellosis during infancy through maternal immunity and vaccination early life'

Shannon J. Heine, Olga L. Franco-Mahecha, Eileen M. Barry and Marcela F. Pasetti

(*University of Maryland School of Medicine, Baltimore, Maryland, USA*)

14.10-14.30

'Combinatorial effects of secretory IgA on *Vibrio cholerae* virulence and fitness in the intestinal lumen'

Kara J. Levinson, Magdia De Jesus, Samantha Giffen, Danielle Hinds and Nicholas J. Mantis (*Wadsworth Center, New York State Department of Health, Albany, New York, USA / University at Albany, Albany, New York, USA*)

14.30-14.50

'Low cost optimized oral cholera vaccine'

Davinder Gill, Zimra Israel, Stefan Karlsson, Michael Lebens and Jan Holmgren (*Hilleman Laboratories Private Ltd., New Delhi, India/University of Gothenburg, Gothenburg, Sweden*)

14.50

Tea Break & Departure

* This final programme is correct at the time of printing. However the organizers reserve the right to make any alterations that may be required in the interests and integrity of the final conference programme.

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'Serum bactericidal assay for the evaluation of typhoid vaccine using a semi-automated colony-counting method'Jae Seung Yang *et al.*

(International Vaccine Institute, Seoul, Republic of Korea)

Poster 102

'Serum anti-rotavirus IgA as a measure of rotavirus exposure in unvaccinated infants from Malawi'Aisleen Bennett *et al.*

(Malawi-Liverpool-Wellcome Trust, Blantyre, Malawi)

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'Cross-reactivity of antibody responses to colonisation factors after immunisation with a multivalent enterotoxigenic *Escherchia coli* (ETEC) vaccine'Susannah Leach *et al.*

(University of Gothenburg, Gothenburg, Sweden)

Poster 104

'Development of a serum bactericidal assay to determine functional antibody response following vaccination against *Campylobacter jejuni*'Joanna E. Rimmer *et al.*

(NMRC, Silver Spring, Maryland, USA)

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'Plasmablast responses induced by oral enterotoxigenic *Escherchia coli* (ETEC) vaccination'

Ana Cardeno and Anna Lundgren

(University of Gothenburg, Gothenburg, Sweden)

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'Functional capacity of anti-*Salmonella* flagellin antibodies'Sharon M. Tennant *et al.*

(University of Maryland School of Medicine, Baltimore, Maryland, USA)

Poster 107

'Reactogenicity of *Salmonella* Newport flagellin prevents its use as a carrier protein in a *Salmonella* Group C conjugate vaccine'Fabien J. Fuche *et al.*

(University of Maryland School of Medicine, Baltimore, Maryland, USA)

Poster 108

'Nutrition and diarrhoea in children under age five in Tanzania: Evidence from the DHS'Melinda Judge *et al.*

(University of Western Australia, Perth, Australia)

Poster 109

'Down regulation of the gut inflammation in shigellosis with polypropyletherimine dendrimer glucosamine (PETIM-DG), a non-antibiotic based drug'Dilara Islam *et al.*

(AFRIMS, Bangkok, Thailand)

Poster 110

'Oral vaccination with live-attenuated *Salmonella* (Ty21a) generates polyfunctional vaccine and heterologous cellular immune responses at the human intestinal mucosa'Melita A. Gordon *et al.*

(University of Liverpool, Liverpool, UK)

Poster 111

'Increased severity in patients presenting to hospital with diarrhea in Dhaka, Bangladesh'Fahima Chowdhury *et al.*

(ICDDR, Dhaka, Bangladesh)

Poster 112

'Development of a nested Real-Time multiplex PCR for the typing of enteric pathogens: Application to *Campylobacter jejuni* capsule typing'Frederic Poly *et al.*

(NMRC, Silver Spring, Maryland, USA)

Poster 113

'The household economic burden of rotavirus hospitalization among children <5 years of age in selected hospitals in Bangladesh'Jahangir A.M. Khan *et al.*

(ICDDR, Dhaka, Bangladesh)

Poster 114

'Hospital-based surveillance for severe rotavirus gastroenteritis among young children in Bangladesh: Defining the potential impact of a rotavirus vaccine program'Syed M Satter *et al.*

(ICDDR, Dhaka, Bangladesh)

Poster 115

'Clinical features and molecular epidemiology of pediatric norovirus infections in Lusaka Province, Zambia'Innocent Mwape *et al.*

(CIDRZ, Lusaka, Zambia)

Poster 116

'Cholera and pregnancy'Iza Ciglenecki *et al.*

(Medecins Sans Frontieres, Geneva, Switzerland)

Poster 117

'Association of maternal immunity to rotavirus vaccine immunogenicity in Zambian infants'Roma Chilengi *et al.*

(CIDRZ, Lusaka, Zambia)

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'Seasonal variations in anti-rotavirus serum IgA antibody titre in Zambian infants'Michelo Simuyandi *et al.*

(CIDRZ, Lusaka, Zambia)

Poster 119

'Development and preclinical evaluation of tmLT, a 3rd generation heat-labile toxin derived vaccine adjuvant'Jacob P. Bitoun *et al.*

(Tulane University school of Medicine, New Orleans, Louisiana, USA)

Poster 120

'Prevalence and genetic diversity of sapoviruses in children hospitalised with gastroenteritis in South Africa'Tanya Y. Murray *et al.* (University of Pretoria, Pretoria, South Africa)

Poster 121

'Host genetic susceptibility to enteric viruses: A systematic review and meta-analysis'Anita Kambhampati *et al.*

(Centers for Disease Control and Prevention, Atlanta, Georgia, USA)

Poster 122

'Inhibitory effect of pre-existing rotavirus serum IgG and IgA to live oral rotavirus vaccine in South African infants'Sung-Sil Moon *et al.*

(Centers for Disease Control and Prevention, Atlanta, Georgia, USA)

Poster 123

'Global age distribution of pediatric norovirus cases'Kayoko Shioda *et al.*

(Centers for Disease Control and Prevention, Atlanta, Georgia, USA)

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'Cost-effectiveness of monovalent rotavirus vaccination in Malawi: A ground-up costed cohort study'

Naor Bar-Zeev *et al.*

(Malawi-Liverpool-Wellcome Trust, Blantyre, Malawi)

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'Adjusting for age and time-dependent fluctuations in rotavirus testing when assessing the effect of rotavirus immunization in children <5 years of age'

Khitam Muhsen *et al.*

(Tel Aviv University, Tel Aviv, Israel)

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'Invasive non-typhoidal *Salmonella* infection and *P. falciparum* malaria: Epidemiology in sub-Saharan Africa'

Se Eun Park *et al.*

(International Vaccine Institute, Seoul, Republic of Korea)

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'Incidence of norovirus-associated medical encounters among active duty United States military personnel and their dependent beneficiaries'

Brian Rha *et al.*

(Centers for Disease Control and Prevention, Atlanta, Georgia, USA)

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'Variations of invasive *Salmonella* infections by population size in Asante Akim North Municipal, Ghana'

Ligia Maria Cruz Espinoza *et al.*

(International Vaccine Institute, Seoul, Republic of Korea)

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'Immunomodulation by *Shigella* outer membrane vesicles: A comparative study between SOMVs and MOMVs'

Hemanta Koley *et al.*

(National Institute of Cholera and Enteric Diseases, Kolkata, India)

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'Functional antibodies against *Shigella* and their association with protection against disease in humans'

Avital A. Shimanovich *et al.*

(University of Maryland, Baltimore, Maryland, USA)

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'Preventing cholera introduction using oral vaccines'

Joseph A. Lewnard *et al.*

(Yale School of Public Health, New Haven, Connecticut, USA)

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'Dietary rice bran protects against viral gastroenteritis through preserving intestine homeostasis and promoting growth of diarrhea-reducing probiotic bacteria in gnotobiotic pigs'

Lijuan Yuan *et al.*

(VPI & State University, Blacksburg, Virginia, USA)

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'Carriers of invasive salmonellosis – results from two TSAP sites: Senegal and Guinea Bissau'

Justin Im *et al.*

(International Vaccine Institute, Seoul, Republic of Korea)

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'Comparative study and efficacy of a live *Salmonella* Gallinarum vaccine candidate secreting and adjuvant protein with SG9R in chickens'

John Hwa Lee

(Chonbuk National University, Jeonju, Republic of Korea)

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'A safe *Salmonella* Gallinarum vaccine candidate that secretes an adjuvant protein with immunogenicity and protective efficacy against fowl typhoid'

John Hwa Lee

(Chonbuk National University, Jeonju, Republic of Korea)

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'Travellers' diarrhoea epidemiology and field site development at the British Army Training Unit in Kenya: A focus on ETEC'

Patrick Connor *et al.*

(Royal Centre for Defence Medicine, Birmingham, UK)

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'IDCRP TRAVMIL: Traveller's diarrhea and other infectious disease risk assessment, outcomes, and prevention strategies among U.S. Department of Defense beneficiaries'

David Tribble *et al.*

(Uniformed Services University of Health Sciences, Bethesda, Maryland, USA)

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'Molecular re-analysis of community burdens of diarrhea in children in developing countries in the multisite MAL-ED cohort study'

James A. Platts-Mills *et al.*

(University of Virginia, Charlottesville, Virginia, USA)

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'Cost-effectiveness of traveller's diarrhea vaccination'

Richard Rheingans *et al.*

(University of Florida, Gainesville, Florida, USA)

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'Engineering of a live-attenuated *Salmonella enterica* serovar Paratyphi B vaccine'

Ellen E. Higginson *et al.*

(University of Maryland School of Medicine, Baltimore, Maryland, USA)

Poster 141

'Combined enterotoxigenic *Escherichia coli* (ETEC) – *Campylobacter jejuni* conjugate vaccines: A platform for multivalent vaccines against enteric pathogens'

Nelum Dorabawila *et al.*

(NMRC, Silver Spring, Maryland, USA)

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'Impact of co-infections on rotavirus vaccine efficacy in a clinical trial of rotavirus vaccination (PROVIDE)'

Eric Houtp *et al.*

(University of Virginia, Charlottesville, Virginia, USA)

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'Development of safe and non-self immunogenic mucosal adjuvant by recombinant fusion of cholera toxin A1 subunit with protein transduction domain'

Man Ki Song *et al.*

(International Vaccine Institute, Seoul, Republic of Korea)

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'Mapping rotavirus vaccine immunologic correlates of protection to clinical outcomes'

Ross Colgate *et al.* (University of Vermont, Burlington, Vermont, USA)