Bacteria and fungi residing in the female genital tract have been associated with elevated risks of HIV acquisition and transmission, pelvic inflammatory disease, miscarriage, preterm birth, and invasive maternal and neonatal infections. The increased availability of high-throughput genomic testing since the turn of the century has revealed a more detailed picture of these organisms than was possible when evaluation depended on microscopy and culture. The interrelationships between sexually transmitted infections, vaginal dysbiosis, vulvovaginal candidiasis, and vaginal pathobiont carriage are being elucidated, and their effects on the cervicovaginal mucosal barrier and immune system are being characterized. The mechanisms that may lead to adverse outcomes are being unraveled, and an increasing number of interventions are in clinical trials. In this meeting, the current understanding of female and male genital tract microbiology and immunology, including functional microbiology and biofilms, will be presented and knowledge gaps identified. Potential mechanisms leading to adverse outcomes, and a variety of potential prevention and/or treatment interventions, will be presented and discussed. The exponential progress made in recent years will hopefully lead to efficacious public health interventions to reduce the high prevalence of adverse sexual and reproductive health outcomes in women, especially in resource-poor settings.

Plenary Session Topics:
- Vaginal Microbiology
- Genital Tract Microbiology and Metabolomics
- Genital Tract Immunology
- Genital Tract Mucosal Defenses and Biofilms
- Genital Tract Microbiota Associations with HIV
- Genital Tract Microbiota Associations with Pregnancy and Neonatal Complications
- Vaginal Dysbiosis Prevention and Treatment Interventions I & II

Global Health Travel Award Deadline: Jul 10, 2018; Scholarship/Discounted Abstract Deadline: Aug 14, 2018; Abstract Deadline: Sep 12, 2018; Discounted Registration Deadline: Oct 11, 2018

Visit [www.keystonesymposia.org/18S6](http://www.keystonesymposia.org/18S6) for more details.
**KEystone Symposia**
on Molecular and Cellular Biology

**Role of the Genital Tract Microbiome in Sexual and Reproductive Health (S6)**
December 11-15, 2018 • Southern Sun Cape Sun • Cape Town, Western Cape, South Africa

*Scientific Organizers: Janneke van de Wijgers, Jeanne Marrazzo, Douglas Kwon and Jo-Ann Passmore*

Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation

Global Health Travel Award Deadline: July 10, 2018 / Abstract & Scholarship Deadline: August 28, 2018 / Abstract Deadline: September 12, 2018 / Discounted Registration Deadline: October 11, 2018

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**TUESDAY, DECEMBER 11**
Arrival and Registration

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**WEDNESDAY, DECEMBER 12**

**Welcome and Keynote Address**

*Janneke van de Wijgers*, University of Liverpool and University Medical Center Utrecht, UK

*Jo-An S. Passmore*, University of Cape Town, South Africa

*Douglas S. Kwon*, Harvard Medical School, USA

Jeanne M. Marrazzo, University of Alabama at Birmingham, USA

**Setting the Stage: An Overview of Advances and Controversies in Vaginal Microbiome Research**

**Vaginal Microbiology**

*Janneke van de Wijgers*, University of Liverpool and University Medical Center Utrecht, UK

*Jo-An S. Passmore*, University of Cape Town, South Africa

**Jacques Ravel**, University of Maryland School of Medicine, USA

**Progress Toward an In-Depth Understanding of the Vaginal Microbiome**

David Fredricks, Fred Hutchinson Cancer Research Center, USA

The Vaginal Microbiota and Bacterial Vaginosis

Mariya I. Petrova, KU Leuven, Belgium

**Role of Lactobacillus iners in the Vaginal Microbiota**

Rosanne Y. Hertzberger, VU University Amsterdam, Netherlands

**Short Talk: Lactobacillus crispatus Growth on Glycogen Is Dependent on its Type 1 Pullulanase Gene Variant**

**Michael France**, University of Maryland Baltimore, USA

**Short Talk: Identifying Factors that Influence the Temporal Stability of the Vaginal Microbiome**

Matthew R. Hayward, Ragon Institute, USA

**Short Talk: Cervicovaginal Microbial Strains Are Associated with Distinct Immunophenotypes**

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**Genital Tract Microbiology and Metabolomics**

*Sharon Hillier*, University of Pittsburgh School of Medicine, USA

*Tania Crucitti*, Centre Pasteur du Cameroun, Cameroon

**Caroline M. Mitchell**, Massachusetts General Hospital, USA

**Microbiota of the Female Upper Genital Tract**

**Jessica L. Proder**, Western University, Canada

**Male Genital Tract Microbiota: Insights into HIV Acquisition**

Sujatha Srinivasan, Fred Hutchinson Cancer Research Center, USA

**Metabolic Signatures of Bacterial Vaginosis**

Praveen Thumbikat, Northwestern University, USA

**Short Talk: Ubiquitous Gram-Positive Bacteria in the Male Urogenital Tract Are Disease-Causing Agents in Chronic Pelvic Pain**

Gilda Tachedjian, Burnet Institute, Australia

**Short Talk: Immune Modulatory Effects of Vaginal Microbiota Organic Acid Metabolites on Lower Female Reproductive Tract Epithelial Cells**

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**Poster Session 1**

**THURSDAY, DECEMBER 13**

**Genital Tract Immunology**

*Douglas S. Kwon*, Harvard Medical School, USA

*Zenda Woodman*, University of Cape Town, South Africa

*Jo-An S. Passmore*, University of Cape Town, South Africa

**Interplay between Genital Immunity and Microbiota, Relevant to HIV Risk**

Jordan K. Kyongo, LVCT Health, Kenya

**Associations between Vaginal Microbiota and Immune Mediators in the Vaginal Biomarkers Study in Kenya, South Africa and Rwanda**

Rupert Kaul, University of Toronto, Canada

**Impact of the Genital Microbiota and Microbiome-Focused Clinical Interventions on Mucosal Immunology and HIV Susceptibility**

Noilaig M. Bourke, Trinity College Dublin, Ireland

The Role of IFN-ε in the Immune Homeostasis of the Female Genital Tract

Ryan Cheu, University of Miami, USA

**Short Talk: The Impact of Vaginal Microbial Communities on Immune Cells Essential for Pathogen Protection and Epithelial Integrity**

Heleen Schuster, Amsterdam University Medical Center, Netherlands

**Short Talk: Exploring Microbe-Immune Crosstalk: Immunoglobulin Coating of Vaginal Microbiota.**

**Seth M. Bloom**, Massachusetts General Hospital, USA

**Short Talk: Modulation of Genital Tract CD4+ T Cell Subsets by Cervicovaginal Bacteria**

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**Genital Tract Mucosal Defenses and Biofilms**

*Lindi Masson*, University of Cape Town Medical School, South Africa

*Thomas J. Hope*, Northwestern University, USA

**Melissa M. Herbst-Kralovetz**, University of Arizona, USA

**Human in vitro Systems to Study Genital Tract Mucosal Defenses**

Hans Verstraelen, Ghent University, Belgium

**Study of In Vivo Biofilms of the Female Genital Tract**

Tania Crucitti, Centre Pasteur du Cameroun, Cameroon

**Vaginal Microbiota and Biofilms in a Clinical Trial of the NuvaRing® in Rwanda**

Remy Frossart, Centre National de la Recherche Scientifique, France

**Short Talk: Antibiotic Resistance Versus Biofilm Production in Gardnerella vaginalis**

Laura K. Syicro, University of Calgary, Canada

**Short Talk: Morphotypic Variation of Vaginal Clue Cells Broadens Understanding of Vaginal Biofilms**

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**Poster Session 2**

**FRIDAY, DECEMBER 14**

**Genital Tract Microbiota Associations with HIV/STIs**

*Pamela Phumelele Gumbi*, University of KwaZulu-Natal, South Africa

*Jorgen Skov Jensen*, Statens Serum Institut, Denmark

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*Session Chair† Invited but not yet accepted  Program current as of June 10, 2019. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/19S6.*
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Douglas S. Kwon, Harvard Medical School, USA
Genital Tract Microbiota Associations with HIV, Including Potential Mechanisms

Lindi Masson, University of Cape Town Medical School, South Africa
Metaproteomics Approaches to Understand Mucosal Inflammation and Target Cell Activation Associated with HIV Acquisition in African Women

Nichole R. Kstatt, University of Miami, USA
The Role of Vaginal Microbiota in Antiretroviral Drug Pharmacokinetics

Thomas J. Hope, Northwestern University, USA
Using Imaging Approaches to Gain Mechanistic Insights into HIV Transmission and Prevention

Rebecca M. Brotman, University of Maryland School of Medicine, USA
Short Talk: The Vaginal Microenvironment Prior to Incident STI

Lynette Denny, University of Cape Town, South Africa
Short Talk: Distinct Cervical Microbial Diversity and Community Structures by Human Papilloma Virus and Cervical Disease Status in HIV-Positive Women in South Africa

Erica L. Plummer, Melbourne Sexual Health Centre/ Central Clinical School, Monash University, Australia
Short Talk: Sexual Behaviors Impact the Vaginal Microbiota of Women Who Have Sex with Women

Genital Tract Microbiota Associations with Pregnancy and Neonatal Complications
*Hans Verstraelen, Ghent University, Belgium
*Caroline M. Mitchell, Massachusetts General Hospital, USA
Gregory A. Buck, Virginia Commonwealth University, USA
The Microbiome of the Female Reproductive Tract and Pregnancy

David MacIntyre, Imperial College London, UK
The Relationship between Vaginal Microbiota Composition and Poor Pregnancy Outcomes

David M. Aronoff, Vanderbilt University, USA
Leveraging New Tissue Models to Explore Host-Microbial Interactions in Chorioamnionitis

Muchaneta Mugabe, University of Cape Town, South Africa
Short Talk: Vaginal Microbiome and Birth Weight in a Zimbabwean Cohort

Anna Sandager Hansen, Aarhus University Hospital, Denmark
Short Talk: Subclinical Vaginal Infections and Adverse Pregnancy Outcome

Poster Session 3

SUNDAY, DECEMBER 16
Departure

Vaginal Dysbiosis Prevention and Treatment Interventions II
*Jo-Ann S. Passmore, University of Cape Town, South Africa
*Jennifer E. Balkus, University of Washington, USA

Sharon Hillier, University of Pittsburgh School of Medicine, USA
Effect of Sex Hormones on the Vaginal Microbiota and Multipurpose Prevention Technologies

Lenka A. Vodstrcil, Monash University, Australia
The Oral Contraceptive Pill Favorably Influences the Vaginal Microbiota but Sexual Activity Drives BV Recurrence

Adam J. Ratner, New York University School of Medicine, USA
Targeting Perinatal Pathogens in the Vaginal Microbiome

Gregor Reid, Lawson Health Research Institute, Canada
Short Talk: Probiotic Fermented Food for Africa

Meeting Wrap-Up: Outcomes and Future Directions
*Janneke van de Wijgert, University of Liverpool and University Medical Center Utrecht, UK

Vaginal Dysbiosis Prevention and Treatment Interventions I
*Jeanne M. Marrazzo, University of Alabama at Birmingham, USA
*Lenka A. Vodstrcil, Monash University, Australia
Jennifer E. Balkus, University of Washington, USA
Overview of Antibiotic and Antifungal Interventions

SUNDAY, DECEMBER 16
Departure