



International Conference on

Sexually Transmitted Diseases, AIDS and Parasitic Infections

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Parasitology, Infectious Diseases, STDs and STIs

September 21-22, 2017 San Antonio, TX, USA

Keynote Forum
Day 1



John Howard

Applied Biotechnology Institute Inc., USA

Orally delivered subunit vaccines: A tool to increase the immune response for sexually transmitted diseases while eliminating the cold chain and lowering the cost of immunizations

An orally delivered and heat-stable subunit vaccine can eliminate the cold chain, needles and skilled personnel to deliver the injections. This can lead to a low-cost, convenient method of immunization with higher compliance and a reduction, if not elimination, of disease. Many approaches have shown proof-of-principle yet an oral vaccine has remained an elusive goal due to many practical problems that hamper commercialization. These include a subpar immune response, the need for high levels of antigen to overcome the natural digestion process and the inability to scale-up and stockpile antigens due to instability at ambient temperatures. We have developed a platform that can overcome these barriers by first accumulating the antigen in maize grain orders-of-magnitude higher than reported in other systems. Next, novel methods for processing using a supercritical fluid extractor (SFE) further enhanced the immune response and impart greater heat stability. The resultant material is then formulated into tablets with a precise dosage suitable for oral delivery. Using hepatitis B surface antigen (HBsAg) as the lead candidate, a robust immune response has been demonstrated in sera as well as tissues that do not respond to the parenterally administered antigen. This includes mucosal tissues that can be the first line of defense for many diseases. This includes a strong mucosal response observed in the urogenital tissues which may provide greater protection for sexually transmitted pathogens. In addition to the lead candidate, other vaccine candidates will be discussed that demonstrate the breadth of the platform including the potential to use this technology for HIV/AIDS. This provides a new tool for increased efficacy, lower cost, cold chain-independence and a more convenient vaccine.

Biography

John Howard has completed his PhD in Biochemistry at the University of California at Riverside. He went on to establish and lead a biotechnology group at two Fortune 500 companies and later founded a start-up biotechnology company. For the past 10+ years, he has been the President of ABL, a biotechnology company focused on developing novel products for human and animal health products. He is the author or inventor of more than 150 papers.

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Notes:



Tesfaye Belay

Bluefield State College, USA

Cold-induced stress and *chlamydia* genital infection on a mouse model

Genital infection by *Chlamydia trachomatis* (CT) is the most common bacterial sexually transmitted disease worldwide. The infection can cause serious reproductive health complications including pelvic inflammatory disease and infertility. Stress is considered as a risk factor for various infections, however, its effect on chlamydia genital infection remains unknown. In this study, exposure of mice to cold water for five minutes every day for 24 days resulted in a greater intensity of *Chlamydia muridarum* genital infection and a high rate of infertility. Cold-induced stress was associated with decreased mRNA and protein levels of major cytokines and chemokines in the spleen and genital tract but with increased noradrenaline (NE) and adrenaline levels. Furthermore, supplement of NE *in vitro* exerted an immunosuppressive effect on splenic T-cell production of cytokines, but a decreased *C. muridarum* shedding in the genital tract of β 1Adr/ β 2Adr receptor knockout mice. These results suggest that cold-induced stress induces the production of catecholamines, which may play a critical role in the modulation of the immune system leading to increased susceptibility and greater intensity of *Chlamydia* genital infection that could promote the development of complications including *Chlamydia*-induced infertility in mice.

Biography

Dr. Tesfaye Belay is currently a professor of biology at Bluefield State College (BSC), WV. He earned a Bachelor of Science in biology from Addis Ababa University in Ethiopia and Masters of Science in microbiology and PhD in botany and plant pathology from Michigan State University. Before joining BSC in 2005, he served as postdoc at Georgia State University, Morehouse School of Medicine, Clark University and an adjunct instructor of biology at Morehouse College and Spelman College. He has authored and co-authored 27 articles that have appeared in many peer-reviewed scientific journals. He has trained more than 50 undergraduate students in basic biomedical research that have presented their research findings at both local and national meetings. He has won several awards including outstanding researcher award from all Thurgood Marshall Member institutions throughout the nation 2009, faculty of the year at BSC in 2015. Dr. Belay is a member of the American Society for Gravitational and Space Research, American Society for Microbiology, and the Association of American Immunologists.

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Helieh S Oz

UK Medical Center, USA

Neglected opportunistic diseases of disparity: Chagas and toxoplasmosis commonality, sexual to congenital transmission and therapeutic modalities

Chagas disease burdens millions of people in Latin America (22% congenital) and threatens those in Southern States and California as an emerging disease in USA. *Trypanosoma Cruzi* (*T. Cruzi*) is important cause of gastrointestinal and cardiovascular disease. It is transmitted by *Triatoma* vector, congenital and sexual or via blood transfusion. Acute infectious inflammatory disease is accompanied by a chronic asymptomatic stage; however, 20% to 40% of infected individuals ultimately develop chronic cardiomyopathy and megacolon due to immunosuppression or aging. Center for Disease Control (CDC) reports Chagas as a hidden public health risk with over 300,000 people living in U.S.A borders (>30,000 in Los Angeles) to be infected with *T. cruzi*. Amongst 2000 cardiac surgeries in Houston, TX 0.05% cases and 2.7% of Hispanic patients were found to be infected mostly due to contaminated blood transfusion. In Brazil about 5% of HIV patients had a coinfection with *T. Cruzi*. Chagas coinfection in AIDS/HIV patients manifests as central nervous system involvement which is detected mostly after death. Toxoplasmosis is another opportunistic organism with an estimated 1.5 billion people globally predicted to be infected. Toxoplasmosis is one of the most important congenital disorders, inflammatory syndromes as well as foodborne illnesses and hospitalization. *Toxoplasma* is transmitted by contaminated food and animal products (cysts form), water, fruits, vegetables (oocysts), maternally or sexually acquired through semen (tachyzoites). Toxoplasmosis is also a neglected disease of poverty and prominent in rural areas. Similar to *T. Cruzi*, *Toxoplasma* causes a complex immune-inflammatory reaction in vital organs with the surge of chemokines and cytokines. Subsequent acute phase, the organisms lodge in cyst forms predominantly in muscles and CNS awaiting reactivation due to immunosuppression or AIDS/HIV. *Toxoplasma* infects all nucleated cells with a specific tropism for central nervous system and a mind altering, psycho-behavior and fatal attraction. *Toxoplasma* impairs neurons responsible for instinct defensive and judgment behaviors adjacent to limbic regions of sexual desire. Pregnant mom with newly acquired acute or reactivated toxoplasmosis transmits organism via placenta to her fetus with grave life threatening consequences. Current available therapies are inefficient or have severe side effects in congenital and chronic toxoplasmosis. There is an urgent need for safe and effective therapeutic modalities against toxoplasmosis as well as possible effective vaccines to eliminate the infectious agents in definitive host. This presentation will include some of the speaker's investigations in the field as well as transmission, immunomodulation, and pathogenesis of Chagas and toxoplasmosis; to discuss current available treatments in practice, and to explore experimental therapies for potential future clinical trials.

Biography

Helieh S Oz has DVM, MS (U IL); PhD (U MN) and clinical translational research certificate (UK Med Center). She is an active member of American Association of Gastroenterology (AGA) and AGA Fellow (AGAF). She is a Microbiologist with expertise in infectious and inflammatory diseases, drug discoveries, pathogenesis, innate/mucosal immunity, molecular biology, and micronutrient. She has over 90 publications in areas of chronic inflammatory disorders (e.g. pancreatitis, hepatitis, colitis), and infectious diseases (e.g., Toxoplasmosis, Trypanosomiasis, Babesiosis, *Pneumocystis* pneumonia). She has served as Lead Editor for special issues, gut inflammatory, infectious diseases and nutrition (*Mediators Inflammation 2017*); nutrients, infectious/inflammatory diseases (*Nutrients 2017*); Gastrointestinal inflammation and repair: Role of microbiome, infection, nutrition (*Gastroenterology Research Practice 2016*), and Co-Editor for parasitic infections in pediatric clinical practice (*J. Pediatric Infectious Disease*) and Member of Editorial Board and avid reviewer for several peer-reviewed journals.

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Keynote Forum
Day 2



Mandy J Hill

McGovern Medical School, USA

Indicators of sexual script development among young, sexually-active, substance-using African American women

Statement of the Problem: The HIV epidemic in the US continues to disproportionately affect the health of young, African American women. The focus here is on predictors of sexual scripts, which are roadmaps to sexual decision making. The objective is to examine life experiences, normative beliefs, and cultural predictors of sexual scripts that place young, sexually-active, substance-using, African American women (YSSAAW), a population with significant vulnerability to HIV, at even greater risk of becoming HIV positive.

Methodology & Theoretical Orientation: Face-to-face, tablet-assisted, semi-structured interviews were conducted with 30 YSSAAW in a private or public emergency department in Houston, TX, USA. Interviews were professionally transcribed, then coded by a trained 3-member coding team. One interview was used to create the codebook. Codes were organized into primary themes during face-to-face meetings. Inter-coder reliability was assessed and confirmed using Cohen's Kappa statistics, demonstrating a nearly perfect agreement between coders 1 and 2 ($K=0.93$).

Findings: Three primary themes were described as predictors of sexual scripts: emotional wounds, norms, and decision making. Prevalent codes among YSSAAW within the emotional wounds theme included infidelity (43.33%) and parental dynamics (56.67%). Under the norms theme, we found 66.7% of YSSAAW discussed their communication norms and 30% disclosed cultural norms. Within the sexual decision making theme, we gained relevant information and implications on relationship longevity and having an STI history among 46.67% of the sample.

Conclusion & Significance: Primary indicators of high risk sex revealed sexual scripts that demonstrated gender-based power differentials; thereby, supporting utility of a theoretical framework that includes the Sexual Script Theory and the Theory of Gender and Power. The logic model illustrates how emotional wounds from life experiences (i.e. trauma, abuse, abandonment) and socially acceptable norms establishes the sexual script of YSSAAW; whereby, high risk sex is the most likely outcome relative to prevention strategies.

Biography

Mandy J Hill academic portfolio to date has demonstrated feasibility of HIV prevention through formative intervention work that is designed to meet the people where they are, including the emergency department. Her current research agenda is to adapt efficacious interventions to varied settings where vulnerable populations at especially high risk for HIV infection can be accessed. Trained as a Clinical Researcher, she has advanced a prevention-based public health agenda within a clinical environment. She published 22 peer reviewed manuscripts, of which 10 she first authored, in diverse areas addressing health disparities among minority populations, coupled national and international presentations and extramural funding support from the CDC and the NIH through the American Psychological Association and Centers for AIDS Research, as well as industry sponsored research. In summary, her expertise includes randomized clinical trial development and implementation, and integrating public health-based prevention research into varied settings that include the emergency department.

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Reza Nassiri

Michigan State University, USA

Perspective on HIV epidemic, prevention and control

AIDS remains a public health and social problem threatening global population. There are approximately 36.7 million people currently living with HIV and tens of millions of people have died of AIDS-related causes since the beginning of the epidemic. The greatest prevalence and incidence remains in Eastern and Southern Africa with 19 million (52%) affected. While new cases have been reported in all regions of the world, approximately two-thirds are in sub-Saharan Africa, with 46% of new cases in Eastern and Southern Africa. In the endemic regions outside the western countries, many people living with HIV or at risk for HIV do not have access to prevention, care, and treatment. In addition to affecting the health of individuals, HIV impacts households, communities, and the development and economic growth of nations. Many of the countries affected by HIV epidemic also suffer from other infectious diseases, food insecurity, and other serious problems. The number of people newly infected with HIV, especially children, and the number of AIDS-related deaths have declined over the years. The number of people with HIV receiving treatment increased to more than 18 million in 2016. However, a new gap exists. While studies show declines in new infections among adults observed earlier in the epidemic, incidence is now rising in some areas of the world particularly in China and India. HIV epidemic has led to a resurgence of tuberculosis (TB), particularly in Africa. TB is a leading cause of death for people with HIV worldwide. In 2015, approximately 11% of new TB cases occurred in people living with HIV. Interestingly, between 2004 and 2014 TB deaths in people living with HIV declined by 32%, largely due to the scale up of joint HIV/TB services. From our experience of HIV preventive work in the Dominican Republic, effective prevention strategies include behavior change programs, condom use, HIV testing, blood supply safety, harm reduction efforts for injecting drug users, and male circumcision. Additionally, recent research has shown that providing HIV treatment to people with HIV significantly reduces the risk of transmission to their HIV-negative partners. Pre-exposure antiretroviral prophylaxis (PrEP) has also been shown to be an effective HIV prevention strategy in individuals at high risk for HIV infection. In 2015, WHO recommended PrEP as a form of prevention for high-risk individuals in combination with other prevention methods. Additionally, in 2016, the U.N. Political Declaration on HIV/AIDS stated PrEP research and development should be accelerated. Numerous studies suggest that prevention should be based upon “evidenced-based knowledge of epidemic” directed to tailor the prevention and control measures to the local context and epidemiology, and using a combination of sustainable strategies.

Biography

Reza Nassiri is a Professor of Clinical Pharmacology, Professor of Family and Community Medicine, and Lecturer in Global Health, Infectious Diseases and Tropical Medicine at Michigan State University College of Osteopathic Medicine. His research interests focuses on Clinical Pharmacology of HIV/AIDS & TB, prevention and control of infectious diseases, neglected tropical diseases, community health, global health, and socio-ethical determinants of health. He works on international public health issues and has expertise in global health education, research, policy and governance. He has made contributions in various fields of medical sciences including clinical investigation and health education. On the basis of his extensive experience and expertise in HIV/AIDS and TB, he developed Clinical Research Programs in Brazil, South Africa, Haiti, Dominican Republic and Mexico. The core foci of such programs are socio-cultural, bio-ethical determinant of HIV/AIDS and TB prevention, control and intervention.

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