

Houston Philosophical Society

640th Meeting

Cohen House

November 18, 2010

Under the leadership of President Herb Ward, the Society gathered for a reception and dinner meeting. Following dinner, visitors and guests were introduced.

The election of seven new members took place.

The following nominees were presented to the membership for a vote:

	Section	Nominee	Nominators	
1.	A	Biegert, Edward Carl	Talwani (A)	Baker, S (A)
2.	F	Kapadia, Asha Seth	O'Driscoll-Levy (B)	Nelson (F)
3.	B	Miller, William Farrington	Schoolar (B)	Old (C)
4.	F	Peeler, Thomas Gorden	Cannady (E)	Lusk, III (F)
5.	E	Skidmore, Louis H.	Widrig (E)	Fleming (D)
6.	E	Whiting, Sarah	Cannady (E)	Todd (E)
7.	E	Wittee, Ron	Cannady (E)	Todd (E)

The nominees were elected by written vote of the members present.

President Ward introduced the speaker, Wayne Shandera

He is a physician, epidemiologist, and teacher at Baylor College of Medicine where he is an Assistant Professor of Medicine. He is a 1973 graduate of Rice University (Weiss College, BA, biology, summa cum laude) and 1977 graduate of the Johns Hopkins University School of Medicine. He did postgraduate training in internal medicine at Stanford University teaching hospitals and in infectious diseases at the Massachusetts General Hospital, a principal Harvard University teaching affiliate. In addition he served as an Epidemic Intelligence Officer with the Centers for Disease Control and in 1981 submitted with Los Angeles colleagues the first report of a syndrome now referred to as AIDS. His experiences were the subject of a National Public Radio interview feature in 2006 on the 25th anniversary of the report. He currently attends on the medicine service at Ben Taub General Hospital, teaches courses at Baylor College of Medicine on Human Rights and Medicine and on the impact of our entry into the Nuclear Era on Medicine. He annually edits a Viral Diseases chapter for a leading international medicine textbook. He completed boards in internal medicine and infectious diseases, manages as a clinician about 250 indigent HIV-infected patients and was the recipient of the Bradley Scott award

for care of HIV/AIDS patients. He has published over 30 peer-reviewed publications and lectured and presented his research in over 25 nations.

Presentation

Houston and Global Infections, Malaria, HIV

Wayne Xavier Shandera, MD

Baylor College of Medicine

Malaria and the acquired immunodeficiency syndrome (AIDS) are two of three most common, single-agent, global infectious diseases (the third is tuberculosis). Malaria infected Houstonians until the early 1950s when mosquito control programs virtually eliminated local transmission. About 15-20 cases continue to be diagnosed locally every year among immigrants from Central America and travelers returning from Africa, usually native Africans who are away for protracted periods. The human immunodeficiency virus (HIV), the cause of AIDS, affects over 30,000 Houstonians and is particularly prevalent among selected populations such as young adult African-American males, among whom 1 in 30 is infected. The response of the Houston biomedical community to malaria is virtually negligible, while the response to HIV/AIDS ranges from extensive provision of biomedical care in the private and public sector, the establishment of a series of African pediatric AIDS clinics, and a number of biomedical investigations exist, which while important, do not reach the level of significance of those on the Atlantic and Pacific coasts.

Malaria is a parasitic disease whose name evolves from its association with miasmatic conditions in Roman times. It was the cause of death of innumerable leaders, writers, entertainers, and theologians. Three Nobel prizes were awarded in the first half of the 20th century for work associated with malaria including those afforded to Lavanan, Ross, and Muller while another three Nobel prizes are peripherally associated with malaria (Golgi, Wagner-Jauregg, and Agre). The role of malaria in the fall of the Greek and Roman empires, in the establishment of American slavery, and delaying the construction of the Panama Canal are either subject to discussion (the fall of empires, slavery) or quite established (the Panama Canal). Control efforts in the 20th century include massive insecticide spraying, subject to the environmental concerns with past usage of DDT, increasing attention to bed net provision (whose efficacy wanes with time, but whose use is widely touted as highly effective by elements of society as disparate as the Houston Chronicle and soccer star David Beckham, intermittent indoor insecticide spraying, and the prescription of combination anti-malarial agents (with resistance reported to every agent developed). While malaria is controlled effectively in America, it currently kills a million persons a year, largely African children (and significantly the DDT program never included Africa), and its effect on pregnant women and their fetuses is often devastating. Future measures designed for the control of malaria include identification of new pathways in the malarial organism for pharmacologic inhibition,

development of vaccines (although to date no parasitic disease is controlled by a parasite), programs which inoculate persons with irradiated sporozoites, development of genetically modified malarial organisms (Plasmodia), inoculation of mosquitoes with antibodies against their own enzymes which prevent development of the parasite, and newer diagnostic technology that facilitates diagnosis in the developing world.

AIDS is only the latest of a host of retroviruses which infects man, such retroviruses having incorporated into the genome of man for millennia and constituting a greater percentage of the human genome than that used for coding human proteins. As such, the human species is capable of interacting with retroviruses and about 250-300 proteins are engaged in such interactions and will be the subject of extensive future analysis. The recognition in the early 1980s of opportunistic infections associated with a new syndrome, the identification of the virus causing the syndrome, the development of assays to diagnose the syndrome, the novel modeling of HIV pathogenesis which showed the extreme turnover of the virus, the advent of a host of new pharmaceuticals (practically $\frac{1}{2}$ of all antiviral pharmaceuticals are used against HIV), and the widespread dissemination of these agents to the developing world all attest to the success of the biomedical and pharmaceutical industries in addressing the AIDS crisis. Nonetheless, over 33 million persons globally are today infected, about 1 in 206 persons, and particularly high hit areas include sub-Saharan Africa where the abolition of apartheid and political administration resulted in a crisis particularly in the Republic of South Africa with 1 in 4 persons infected. In the US, concerns expressed in 2001 that the outbreak would mimic that of Africa with a majority of heterosexually-acquired cases are not sustained fully by data showing that men who have sex with men remain the largest group associated with HIV infection. National, state, and local data all show the most significant growth of the outbreak among minorities, especially young, black men. Locally a majority of indigent cases do acquire their disease heterosexually. The future of the outbreak includes an attention to a host of proven modalities (protection of the blood supply is already achieved, reduction of maternal to child transmission is achieved in the US but less so in sub-Saharan Africa, newer modalities include circumcision brigades because the foreskin dendritic cells take up HIV with great avidity, the use of vaginal microbicides impregnated with tenofovir, and the wider spread prescription of combination highly active antiretroviral therapy (HAART). Models proposing an elimination of the outbreak include treated all individuals in infected areas and testing everyone globally and treated the infected, a program which could cost about \$60-80 billion dollars.

Houston with its expertise in nanotechnology, systems biology, and gene therapy can offer much to both of these epidemics but a cooperative endeavor among scientists and clinicians who are willing to offer their efforts in the control of these disease are needed if we as a community will impact the plight of these infections and lessen the suffering globally of millions.

Recording Secretary

Earl J. Brewer MD