Infectious diseases are a serious threat to world health. They are particularly devastating in tropical countries where infectious agents thrive and where healthcare resources are stretched thin. Accelerated urbanization, coupled with increased international travel, has resulted in infectious outbreaks that spread more rapidly and that now affect regions with more temperate climates, including the United States. Many diseases that had been contained, such as dengue fever, have re-emerged as global health threats. How can scientific research help us detect and fight potential epidemics? Join two leading virus researchers, Joe DeRisi and Eva Harris, as they discuss their strategies for combating today’s epidemics, while preparing for those of tomorrow.
Joseph L. DeRisi, Ph.D.

Joe DeRisi’s research on infectious diseases is characterized by extensive use of technology—such as the microarray-based ViroChip and high-throughput, next-generation DNA sequencers—to identify and analyze new viruses. Dr. DeRisi is an HHMI investigator and professor of biochemistry and biophysics at the University of California, San Francisco. He received his B.A. in biochemistry and molecular biology from the University of California, Santa Cruz, and his Ph.D. in biochemistry from Stanford University.

Dr. DeRisi will reveal the incredible diversity of viruses, from their elaborate protein structures to their varied genomes, which can be composed of DNA or RNA. He will explain how powerful new sequencing technologies he uses are based on the basic molecular biology of DNA and RNA hybridization. Harnessing nucleotide hybridization with various tricks, including new computing methods, has allowed the development of ViroChips. These are DNA microarrays that can be used to detect and classify new viruses associated with various diseases, including a devastating infection killing parrots, bee colony collapse disorder, and human SARS. He will describe how ViroChip technology has helped identify a new virus infecting Nicaraguan patients whom Eva Harris has been screening for dengue fever.

Eva Harris, Ph.D.

Eva Harris is a passionate advocate of improving the biomedical research infrastructure of developing nations. She studies dengue fever in the lab and also combats the disease in Nicaragua through initiatives in public health policy, education, and technology transfer. Dr. Harris is professor of infectious diseases at the University of California, Berkeley. She received her B.A. in biochemical sciences from Harvard University and her Ph.D. in molecular and cell biology from the University of California, Berkeley.

Dr. Harris will describe dengue fever, the rapidly emerging viral disease that has been spreading throughout Central America and the world, including the United States. The dengue virus infects individuals bitten by infected mosquitoes of several species. To study and fight the virus, Dr. Harris uses cutting-edge molecular biology, as well as community-based fieldwork. She is interested in understanding why some patients, despite fighting off a first dengue infection, develop the deadly hemorrhagic form of the illness when infected a second time. She will explain how our immune system sometimes—rather than protecting us—works against us.

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