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2013 Women in Neuroscience Lectureship
Dana Gabuzda

Authored by Johnny He

Dr. Dana Gabuzda has been selected by the International Society for Neurovirology to present "The Women in Neuroscience Lectureship" at the 12th International Symposium on Neurovirology in Washington, DC, USA. This prestigious lectureship was established to emphasize and celebrate the major contributions of outstanding women in the advancement of biomedical science and, in particular, neurovirology and related disciplines.

Dr. Gabuzda received her BA from Bryn Mawr College in 1979 and MD from Harvard Medical School in 1983. She completed clinical training in neurology at Massachusetts General Hospital in 1987 and basic research training in neurovirology and HIV/AIDS research at Johns Hopkins in 1989 and Dana-Farber Cancer Institute in 1991. Following her training, she became an Assistant Professor in Neurology at Harvard Medical School and was promoted to Associate Professor in 1996 and to Professor in 2005 with an affiliated appointment in Microbiology at Dana-Farber Cancer Institute and Harvard Medical School.

Dr. Gabuzda has conducted HIV/AIDS research since the beginning stages of the epidemic, starting in 1983 as a resident in medicine and neurology at Massachusetts General Hospital. Her early studies on HIV Vif protein and neurovirology fostered a long-standing interest in molecular mechanisms of HIV-host interactions and laid the foundation for her independent research programs, which have evolved over the years to cover various aspects of HIV pathogenesis. Dr. Gabuzda's current research focuses on: (1) virus-host interactions that determine differences in host responses to viral infection and dysregulated innate immunity; (2) HIV infection of macrophages in the brain and mechanisms underlying development of HIV-associated neurological disorders; (3) role of activated monocytes/macrophages in driving chronic inflammation and end-organ pathology during HIV infection; (4) mechanisms by which cocaine abuse augments chronic inflammation, immune dysregulation, metabolic disorders, and disease progression in populations with and without HIV or HCV; (5) identification of biomarkers and metabolite signatures predictive for development of neurocognitive disorders, vascular disease, and accelerated aging in HIV-infected individuals; (6) HIV infection in aging populations, with particular interest in understanding mechanisms

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underlying accelerated aging in these populations. For these studies, she has successfully adapted genetic, biochemical, computational, and systems biology approaches including generation, analysis, interpretation, and visualization of large-scale datasets, developing SQL databases, and using bioinformatics for data integration, network prediction, and pathway analysis. She uses ensemble classifiers, machine learning tools, and other computational methods to identify dataset features predictive of class or outcomes. Her elegant combination of these highly innovative and state-of-the-art techniques has contributed immensely to our understanding of HIV infection and pathogenesis. She has published over 110 peer-reviewed original research articles in the HIV/AIDS field.

HIV/neuroAIDS has continued to be one of Dr. Gabuzda's major research interests. Her lab published one of the first studies demonstrating that HIV infects macrophages in the brain of patients with HIV-associated dementia. Her group first discovered usage of chemokine receptors CCR5 and CCR3 by HIV to infect brain macrophages/microglia and identified genetic variants of HIV that increase macrophage tropism and neurotropism of HIV through enhancing interactions between the viral envelope and the viral receptor/co-receptor, CD4 and CCR5. Dr. Gabuzda's work showed that increased plasma and CSF levels of soluble CD14, a biomarker of monocyte activation, are associated with impaired neurocognitive testing in viremic but not in aviremic patients on ART. Among her significant accomplishments, Dr. Gabuzda built a public database for HIV sequences in brain (HIVBrainseqDB.org) and used machine-learning tools to identify viral genetic signatures in brain and CSF predictive of neurocognitive outcomes in patients with ongoing viral replication. These cutting-edge and seminal research accomplishments have provided many insights into HIV infection and pathogenesis in the central nervous system.

Dr. Gabuzda's outstanding scientific contributions have been recognized by many prestigious awards, including a Barr Investigator Award in Cancer Research (1993), a Howard Temin Award (1995), an Elizabeth Glaser Scientist Award from the Pediatric AIDS Foundation (1998), and an Avant Garde DP1 Award for HIV/AIDS research from NIH/NIDA (2009). She also serves on the External Scientific Advisory Boards of the University of Pennsylvania and University of California San Diego Centers for AIDS Research and as an Investigator on the Advisory Committee for the Chicago site of the Multicenter AIDS Cohort Study (MACS).

Dr. Gabuzda is actively involved in teaching, training, and leadership activities in basic and translational research at Harvard Medical School and at national and international levels. She has trained numerous graduate students and postdoctoral fellows in HIV research, including several who are now leaders in neurovirology research. She served as Associate Head of the Harvard Ph.D. Program in Virology from 2006-2011 and remains active in mentoring neurology residents and fellows interested in neuro-ID and neuroimmunology research. Dr. Gabuzda is scientific role model for both male and female trainees, combining brilliance and creativity with leadership skills and a tremendous ability to motivate people around her.

Dr. Gabuzda is truly a leading researcher in the areas of HIV molecular biology and pathogenesis, particularly neuropathogenesis. We are pleased to recognize her scientific accomplishments through the Women in Neuroscience Lectureship.

Women in NeuroVirology (WIN) Committee

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The Women in Neuroscience Lectureship is sponsored by the Women in NeuroVirology (WIN) Committee, which is part of the governance of the International Society for NeuroVirology. The purpose of the Lectureship is to emphasize and celebrate the major contributions of outstanding women toward the advancement of biomedical science and, in particular, neurovirology and related disciplines. Initiated in 2006 at the 7th International Symposium on NeuroVirology, this will be the sixth Women in Neuroscience Lectureship to feature a prominent woman in the field of neuroscience. The International Society for NeuroVirology will accept nominations for the 13th International Symposium on NeuroVirology for the Spring of 2015. Please send all inquiries and nominations to mail@isnv.org.

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