

THE
Flexner
DISCOVERY
LECTURE SERIES

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DEPARTMENT OF SURGERY AND
VANDERBILT BRAIN INSTITUTE

NORA D. VOLKOW, M.D.

ADVANCES IN ADDICTION SCIENCE

AUGUST 29, 2013
4:00 P.M.
208 LIGHT HALL

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Upcoming Discovery Lecture:

WYLIE BURKE, M.D., PH.D.
University of Washington

September 19, 2013
208 Light Hall / 4:00 P.M.

VANDERBILT  UNIVERSITY
MEDICAL CENTER

ADVANCES IN ADDICTION SCIENCE

Addiction is a disorder that involves complex interactions between genes, development and the social environment. Studies employing neuroimaging technology paired with behavioral measurements, and more recently genetics, have led to remarkable progress in elucidating neurochemical and functional changes that occur in the brains of addicted subjects. Although large and rapid increases in dopamine have been linked with the rewarding properties of drugs, the addicted state, in striking contrast, is marked by significant decreases in brain dopamine D2 receptor mediated signaling. Such decreases are associated with dysfunction of prefrontal regions including orbitofrontal cortex, cingulate gyrus and dorsolateral prefrontal cortex and impaired striato frontal connectivity. In addiction, disturbances in salience attribution result in enhanced value given to drugs and drug-related stimuli at the expense of other reinforcers and promote inflexible behaviors. Dysfunction in inhibitory control systems, by decreasing the addict's ability to refrain from seeking and consuming drugs, ultimately results in the compulsive drug intake that characterizes the disease. Discovery of such disruptions in the fine balance that normally exists between brain circuits underlying reward, motivation, memory and self-control have important implications for designing multi-pronged interventions for the prevention and treatment of addictive disorders. This lecture will highlight recent advances in the science of addiction and its treatment and will emphasize the importance of training and education in this area at an academic and public health level.



NORA D. VOLKOW, M.D.

**DIRECTOR
NATIONAL INSTITUTE ON DRUG ABUSE
NATIONAL INSTITUTES OF HEALTH
MEMBER, INSTITUTE OF MEDICINE**

Dr. Volkow is Director of the National Institute on Drug Abuse at NIH. She pioneered the use of brain imaging to investigate the effects of drugs in the human brain and has demonstrated that drug addiction is a brain disease. She has published more than 600 scientific articles and edited three books. She has received multiple awards, including membership in the Institute of Medicine, named one of Time Magazine's "Top 100 People Who Shape our World", included as "One of the 20 People to Watch" by Newsweek magazine and named "Innovator of the Year" by U.S. News & World Report.