



**Eric J. Nestler** - Plenary Speaker

Nash Family Professor of Neuroscience,

Chair, Dept of Neuroscience &

Director, Friedman Brain Institute, Mount Sinai School of  
Medicine

Presentation Title: **New Insight into the Neurobiology of Depression**

Dr. Eric Nestler's research aims to better understand the molecular mechanisms of drug addiction and depression. His laboratory uses animal models of these disorders to identify the ways in which drugs of abuse or stress change the brain to lead to addiction- or depression-like syndromes, and to use this information to develop improved treatments of these disorders.

### **Honors**

- 1987 Pfizer Scholar for New Faculty
- 1987 Sloan Research Fellow
- 1989 McKnight Scholar Award
- 1990 Jordi Folch-Pi Award, Am. Soc. for Neurochem.
- 1994 Efron Award, Am. Coll. of Neuropsychopharmacol.
- 1995-2001, Chair, 1999-2001 Bd. of Scientific Counselors, National Institute on Drug Abuse
- 1996 Established Investigator Award, NARSAD
- 1998 Elected to the Institute of Medicine
- 1998 Pasarow Award in Neuropsychiatry
- 2002 Basic Neuroscience Award, Collegium Internatl. Neuro-Psychopharmacol.
- 2002-2005 Natl. Advisory Mental Health Council
- 2002-2005 Council, Soc. for Neurosci.
- 2002-2006 Council, Am. Coll. Of Neuropsychopharmacol.
- 2004 Bristol-Myers Squibb Freedom to Discover Award
- 2004 Elected Fellow, Am. Assoc. for the Advancement of Science (AAAS)
- 2004 Gill Center Award for Biomolecular Science
- 2005 Elected Fellow, American Academy of Arts and Sciences
- 2008 Fondation Ipsen Prize in Neuronal Plasticity

2008 Patricia S. Goldman-Rakic Award, NARSAD

2009 Falcone Prize, NARSAD

2009-2012 Natl. Advisory Drug Abuse Council

2010 Rhoda and Bernard Sarnat International

2010 Prize in Mental Health, Institute of Medicine

2011 President Am. Coll. Of Neuropsychopharmacol

2012 Anna Monika Prize in Depression Research (2012).

**Fifteen representative publications since 2003 out of ~500 total.**

1. McClung, C.A. and Nestler, E.J. (2003) Regulation of gene expression and cocaine reward by CREB and  $\Delta$ FosB. *Nature Neurosci.* 11:1208-1215.
2. Kumar, A., Choi, K.-H., Renthall, W., Tsankova, N.M., Theobald, D.E.H., Truong, H.-T., Russo, S.J., LaPlant, Q., Whistler, K., Neve, R.L., Self, D.W., and Nestler, E.J. (2005) Chromatin remodeling is a key mechanism underlying cocaine-induced plasticity in striatum. *Neuron* 48:303-314.
3. Berton, O., McClung, C.A., DiLeone, R.J., Krishnan, V., Russo, S., Graham, D., Tsankova, N.M., Bolanos, C.A., Rios, M., Monteggia, L.M., Self, D.W., and Nestler, E.J. (2006) Essential role of BDNF in the mesolimbic dopamine pathway in social defeat stress. *Science* 311:864-868.
4. Tsankova, N.M., Berton, O., Renthall, W., Kumar, A., Neve, R.L., and Nestler, E.J. (2006) Sustained chromatin regulation in hippocampus in a mouse model of depression and antidepressant action: A novel role for HDAC5. *Nature Neurosci.* 9:519-525.
5. Russo, S.J., Bolanos, C.A., Theobald, D.E., DeCarolis, N.A., Renthall, W.R., Kumar, A., Winstanley, C.A., Renthall, N.E., Wiley, M.D., Self, D.W., Russell, D.S., Neve, R.L., Eisch, A.J., and Nestler, E.J. (2007) The IRS2-Akt pathway in midbrain dopaminergic neurons regulates behavioral and cellular responses to opiates. *Nature Neurosci.* 10:93-99.
6. Krishnan, V., Han, M.-H., Graham, D.L., Berton, O., Renthall, W., Russo, S.J., LaPlant, Q., Graham, A., Lutter, M., Lagace, D.C., Ghose, S., Reister, R., Tannous, P., Green, T.A., Neve, R.L., Chakravarty, S., Kumar, A., Eisch, A.J., Self, D.W., Lee, F.S., Tamminga, C.A., Cooper, D.C., Gershenfeld, H.K., and Nestler, E.J. (2007) Susceptibility and resistance to social defeat are mediated through molecular adaptations in brain reward regions. *Cell* 131:391-404.
7. Renthall, W., Maze, I., Krishnan, V., Covington, H.E., Xiao, G.H., Kumar, A., Russo, S.J., Graham, A., Tsankova, N., Kerstetter, K.A., Kippin, T.E., Neve, R.L., Haggarty, S.J., McKinsey, T.A., Bassel-Duby, R., Olson, E.N., and Nestler, E.J. (2007) Histone deacetylase 5 epigenetically controls behavioral adaptations to chronic emotional stimuli. *Neuron* 56:517-529.

8. Krishnan, V. and Nestler, E.J. (2008) Molecular neurobiology of depression. *Nature* 455:894-902. PMID: PMC2721780
9. Renthal, W., Kumar, A., Xiao, G.H., Wilkinson, M., Covington, H.E. III, Mze, I., Sikder, D., Robison, A.J., LaPlant, Q., Dietz, D.M., Russo, S.J., Vialou, V., Chakravarty, S., Kodadek, T.J., Stack, A., Kabbaj, M., and Nestler, E.J. (2009) Genome wide analysis of chromatin regulation by cocaine reveals a novel role for sirtuins. *Neuron* 62:335-348. PMID: PMC2779727
10. Maze, I., Covington, H.E. III, Dietz, D.M., LaPlant, Q., Renthal, W., Russo, S.J., Mechanic, M., Mouzon, E., Neve, R.L., Haggarty, S.J., Ren, Y.H., Sampath, S.C., Hurd, Y.L., Greengard, P., Tarakovsky, A., Schaefer, A., and Nestler, E.J. (2010) Essential role of the histone methyltransferase G9a in cocaine induced plasticity. *Science* 327:213-216. PMID: PMC2820240
11. Vialou, V., Robison, A.J., LaPlant, Q.C., Covington, H.E. III, Dietz, D.M., Ohnishi, Y.N., Mouzon, E., Rush, A.J. III, Watts, E.L., Wallace, D.L., Iñiguez, S.D., Ohnishi, Y.H., Steiner, M.A., Warren, B., Krishnan, V., Neve, R.L., Ghose, S., Berton, O., Tamminga, C.A., and Nestler, E.J. (2010)  $\Delta$ FosB in brain reward circuits mediates resilience to stress and antidepressant responses. *Nature Neurosci.* 13:745-752. PMID: PMC2895556
12. Lobo, M.K., Covington, H.E. III, Chaudhury, D., Friedman, A.K., Sun, H.S., Damez-Werno, D., Dietz, D., Zaman, S., Koo, J.W., Kennedy, P.J., Mouzon, E., Mogri, M., Neve, R.L., Deisseroth, K., Han, M.H., and Nestler, E.J. (2010) Cell type specific loss of BDNF signaling mimics optogenetic control of cocaine reward. *Science* 330:385-390. PMID: PMC3011229
13. Covington, H.E. III, Maze, I., Sun, H.S., Wu, E.Y., Dietz, D., Lobo, M.K., Ghose, S., Neve, R., Tamminga, C.A., and Nestler, E.J. (2011) A role for repressive histone methylation in cocaine-induced vulnerability to stress. *Neuron* 71:656-670. PMID: PMC3163060
14. Dietz, D.M., Sun, H.S., Lobo, M.K., Cahill, M.E., Chadwick, B., Gao, V., Koo, J.W., Mazei-Robison, M.S., Dias, C., Maze, I., Damez-Werno, D., Dietz, K.C., Scobie, K.N., Ferguson, D., Christofell, D., Ohnishi, Y., Hodes, G.E., Zheng, Y., Neve, R.L., Hahn, K.M., Russo, S.J., and Nestler, E.J. (2012) Essential for Rac1 in cocaine-induced structure plasticity of nucleus accumbens neurons. *Nature Neurosci.* 15:891-896. NIHMSID #366080
15. Koo, J.W., Mazei-Robison, M.S., Chaudhury, D., Juarez, B., LaPlant, Q., Ferguson, D., Feng, J., Sun, H.S., Scobie, K.N., Damez-Werno, D., Crumiller, M., Ohnishi, Y.N., Ohnishi, Y.H., Mouzon, E., Dietz, D.M., Lobo, M.K., Neve, R.L., Russo, S.J., Han, M.H., and Nestler, E.J. (2012) BDNF is a negative modulator of morphine action. *Science* 338:124-128. NIHMSID #432501