

**SHELLY B. FLAGEL, Ph.D.**  
**Curriculum Vitae**

Molecular and Behavioral Neuroscience Institute  
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**CURRENT POSITION**

2007-present      Research Investigator  
Laboratory of Dr. Huda Akil  
Molecular and Behavioral Neuroscience Institute  
University of Michigan, Ann Arbor, Michigan

**EDUCATION**

2003-2007      Postdoctoral Research Fellow  
Mentor: Dr. Huda Akil  
Molecular and Behavioral Neuroscience Institute  
University of Michigan, Ann Arbor, Michigan

1998-2003      Doctor of Philosophy in Neuroscience  
University of Michigan, Ann Arbor, Michigan  
Mentors: Drs. Terry Robinson and Delia Vázquez  
*Dissertation: Postnatal Manipulations and Vulnerability to Drug Use*

1994-1998      Bachelor of Science in Biopsychology with Honors  
University of Michigan, Ann Arbor, Michigan  
Mentor: Dr. Israel Liberzon  
*Honors Thesis: Lymphocyte Glucocorticoid Receptor Levels as a Response to Stress in an Animal Model of PTSD*

**RESEARCH AND TEACHING INTERESTS**

Behavioral Neuroscience, Neuropsychopharmacology,  
Neuroendocrinology, Hypothalamic-Pituitary-Adrenal (HPA) Axis Physiology,  
Animal Models of Psychiatric Disorders, Theories of Drug Addiction,  
Neurobiological Components of Motivation and Reward, Learning and Memory

## RESEARCH SUPPORT

- 2006-2007      Cambridge Health Alliance, National Center for Responsible Gaming (NCRG)  
Title: Individual Differences in the Propensity to Approach Signals vs. Goals: Relevance to Pathological Gambling  
Principal Investigator, \$56,197 for 18 months
- 2000-2003      Individual Pre-Doctoral NRSA Award, National Institute of Drug Abuse (NIDA)  
Title: Postnatal Chronic Stress: Vulnerability to Drug Use  
Principal Investigator, \$25,136 for 3 years

## HONORS AND AWARDS

- 2006      Invited speaker in symposium at Collegium Internationale Neuro-Psychopharmacologicum (CINP) 25<sup>th</sup> Congress in Chicago, IL
- 2005      Travel Bursary to attend the 11<sup>th</sup> Biennial European Behavioural Pharmacology Society Meeting, Barcelona, Spain
- 2004      Travel Bursary to attend the European Behavioural Pharmacology Society International Workshop on Neurobehavioral Plasticity, Rome, Italy
- 2002-2003      Neuroscience Executive Committee, University of Michigan
- 2002      Pfizer Pediatric Research Graduate Student Award, University of Michigan
- 2001-2002      President of Neuroscience Graduate Student Organization, University of Michigan
- 1999, 2001, 2002      Health Emotions Research Institute Travel Award, Madison, Wisconsin
- 2001      National Institute of Drug Abuse Director's Travel Award, CPDD 62<sup>nd</sup> Annual Conference, Scottsdale, Arizona
- 1997      Cutcheon Travel Award, University of Michigan Honors Program
- 1996      University of Michigan Honors Program (acceptance)

## PROFESSIONAL ACTIVITIES AND TEACHING EXPERIENCE

### MEMBERSHIPS IN PROFESSIONAL SOCIETIES

Society for Neuroscience  
European Behavioural Pharmacology Society  
Faculty for Undergraduate Neuroscience

### SCIENTIFIC AFFILIATIONS

Pritzker Neuropsychiatric Disorders Research Consortium  
University of Michigan Substance Abuse Research Center (UMSARC)

## AD HOC REVIEWER

*Alcohol and Alcoholism*  
*Behavioural Brain Research*  
*Brain Research Reviews*  
*Neuropsychopharmacology*  
*Neuroscience*  
*Pharmacology, Biochemistry and Behavior*  
*Psychopharmacology*

## TEACHING EXPERIENCE

2008-present	Faculty Advisor, Psychology 420 – Faculty Directed Advanced Tutorial Reading for Psychology as Natural Science
2007	Lecturer, Psychology 230 – “Introduction to Biopsychology”, University of Michigan
2004-2007	Director of Undergraduate Research Program in laboratory of Drs. Huda Akil and Stan Watson, Molecular and Behavioral Neuroscience Institute, University of Michigan
2001	Lecturer, Psychology 436 – “Introduction to Neuropsychopharmacology: Drugs of Abuse, Brain and Behavior”, University of Michigan
2000- present	Biopsychology Lab Supervisor, University of Michigan
2000	Graduate Student Instructor, Biopsychology, University of Michigan
1999 -2002	Young Neuroscientists Community Outreach Program Director/Instructor, Ann Arbor, Michigan
1997- 2002	Undergraduate Research Opportunity Program, Research Advisor, University of Michigan

## BIBLIOGRAPHY

### PEER-REVIEWED PUBLICATIONS IN SCIENTIFIC JOURNALS

Robinson TE, **Flagel SB**: Dissociating the Predictive and Incentive Motivational Properties of Reward-Related Cues Through the Study of Individual Differences. *Biological Psychiatry*, 65(10):869-873, May 2009.

Turner CA, Capriles N, **Flagel SB**, Perez JA, Clinton SM, Watson SJ, Akil H: Neonatal FGF2 alters cocaine self-administration in the adult rat. *Pharmacology, Biochemistry and Behavior*, 92(1):100-4, March 2009.

**Flagel SB**, Akil H, Robinson TE: Individual differences in the attribution of incentive salience to reward-related cues: Implications for addiction. *Neuropharmacology*, 56(S1):139-48, 2009.

- Turner CA, **Flagel SB**, Clinton SM, Akil H, Watson SJ: Cocaine interacts with the novelty-seeking trait to modulate FGFR1 Gene Expression in the Rat. *Neuroscience Letters*, 446(2-3):105-7, December 2008.
- Briand LA, **Flagel SB**, Garcia-Fuster MJ, Watson SJ, Akil H, Sarter M, Robinson TE: Persistent alterations in cognitive function and prefrontal dopamine D2 receptors following extended, but not limited, access to self-administered cocaine. *Neuropsychopharmacology* 33(12):2969-80, November 2008.
- Briand LA, **Flagel SB**, Seeman P, Robinson TE: Cocaine self-administration produces a persistent increase in dopamine D2<sup>high</sup> receptors. *European Neuropsychopharmacology*, 18(8):551-6, August 2008.
- Flagel SB**, Watson SJ, Akil H, Robinson TE: Individual differences in the attribution of incentive salience to a reward-related cue: influence on cocaine sensitization. *Behavioural Brain Research* 186(1):48-56, 2008 January.
- Flagel SB**, Robinson TE: Quantifying the psychomotor activating effects of cocaine in the rat. *Behavioural Pharmacology* 18(4):297-302, 2007 July.
- Flagel SB**, Watson SJ, Robinson TE, Akil H: Individual differences in the propensity to approach signals vs. goals promote different adaptations in the dopamine system of rats. *Psychopharmacology (Special Dopamine Issue)* 191(3):599-607, 2007 April.
- Flagel SB**, Vázquez DM, Robinson TE: Manipulations during the second, but not the first, week of life increase susceptibility to cocaine self-administration in female rats. *Neuropsychopharmacology* 28(10): 1741-1751, 2003 October.
- Flagel SB**, Neal CR Jr., Vázquez DM, Watson SJ Jr.: Effects of tapering neonatal dexamethasone on rat growth, neurodevelopment, and stress response. *American Journal of Physiology: Regulatory, Integrative, Comparative Physiology* 282:R55-R63, 2002 January.
- Liberzon I, Abelson JL, **Flagel SB**, Raz J, Young EA: Neuroendocrine and psychophysiologic responses in PTSD: symptom provocation studies. *Neuropsychopharmacology* 21(1):40-50, 1999 July.
- Liberzon I, Lopez J, Vázquez D, **Flagel SB**, Young EA: Differential regulation of hippocampal glucocorticoid receptors and negative feedback: relevance to post-traumatic stress disorder. *Journal of Neuroendocrinology*. 11(1): 11-7, 1999 January.

## THESES

**Flagel SB:** Postnatal Manipulations and Vulnerability to Drug Use. Rackham Graduate School, University of Michigan. Ann Arbor, MI, June 2003.

**Flagel SB:** Lymphocyte Glucocorticoid Receptor Levels as a Response to Stress in an Animal Model of PTSD. University of Michigan Honors Program, Psychology. Ann Arbor, MI, April 1998.

## ABSTRACTS AND POSTER PRESENTATIONS

**Flagel SB,** Mayo LM, Czuj AK, Clinton SM, Watson SJ, Robinson TE, Akil H: The role of dopamine in learning a “sign-tracking” versus a “goal-tracking” conditioned response. *Society for Neuroscience Annual Meeting*, Chicago, IL, October 2009.

Waselus M., **Flagel SB,** Jedynak J., Akil H, Robinson TE, Watson SJ: Individual differences in cocaine sensitization: effects on structural plasticity in the nucleus accumbens. *Society for Neuroscience Annual Meeting*, Chicago, IL, October 2009.

Garcia-Fuster MJ, **Flagel SB,** Mayo L, Mahmood T, Watson SJ, Akil H: Examination of adult hippocampal cell genesis at different time points of abstinence following extended access cocaine self-administration. *Society for Neuroscience Annual Meeting*, Chicago, IL, October 2009.

Perez J., Garcia-Fuster MJ, **Flagel SB,** Slusky R, Aldridge W, Watson S, Akil H: Genetic and environmental triggers of positive affect: the pursuit of animal models of “happiness”. *Society for Neuroscience Annual Meeting*, Chicago, IL, October 2009.

Garcia-Fuster MJ, **Flagel SB,** Watson SJ, Akil H: Examination of adult neurogenesis at different time points of withdrawal following extended access cocaine self-administration in Sprague-dawley rats. *American College of Neuropsychopharmacology Annual Meeting*. Scottsdale, Arizona, December 2008.

**Flagel SB,** Strongwater A, Clinton SM, Watson SJ, Robinson TE, Akil H: Individual differences in “impulsive action” vs. “impulsive choice” in rats selectively bred on the basis of a novelty-seeking trait. *Society for Neuroscience Annual Meeting*, Washington, D.C., November 2008.

Phillips PEM, Clark JJ, **Flagel SB,** Clinton SM, Robinson TE, Akil H: Transfer of phasic dopamine release from unconditioned to conditioned stimuli requires the attribution of incentive salience. *Society for Neuroscience Annual Meeting*, Washington, D.C., November 2008.

Hwang JM, **Flagel SB,** Jedynak J, Clinton SM, Robinson TE, Watson SJ, Akil H: Basal differences in spine density in a selectively bred population of rats with a predisposition for addictive behavior. *Society for Neuroscience Annual Meeting*, Washington, D.C., November 2008.

- Cameron CM, **Flagel SB**, Watson SJ, Akil H, Robinson TE: Individual differences in the propensity to attribute incentive salience to cues that predict impending reward. *Society for Neuroscience Annual Meeting*, Washington D.C., November 2008.
- Clark JJ, **Flagel SB**, Evans SB, Akers CA, Clinton SM, Robinson TE, Akil H, Phillips PEM: Transfer of dopamine-encoded “prediction errors” from unconditioned to conditioned stimuli requires an attribution of incentive salience. *International Conference on In Vivo Methods*. Vancouver, British Columbia, August 2008.
- Flagel SB**, Clinton SM, Watson SJ, Robinson TE, Akil H: Rats selectively bred on the basis of a novelty-seeking trait exhibit individual differences in the propensity to approach signals vs. goals: Implications for addiction. *Society for Neuroscience Annual Meeting*. San Diego, California, November 2007.
- Briand LA, **Flagel SB**, Paulson PE, Morrow TJ, Robinson TE: Alterations in regional cerebral blood flow following extended access cocaine self-administration in rats. *Society for Neuroscience Annual Meeting*. San Diego, California, November 2007.
- Briand LA, **Flagel SB**, Paulson PE, Morrow TJ, Robinson TE: Persistent alterations in regional cerebral blood flow following extended access cocaine self-administration. Gordon Conference Catecholamines. Oxford, England, August 2007.
- Flagel SB**, Clinton SM, Watson SJ, Robinson TE, Akil H: An animal model of individual differences in “conditionability”: relevance to psychopathology. *American College of Neuropsychopharmacology Annual Meeting*. Hollywood, Florida, December 2006.
- Flagel SB**, Watson SJ, Robinson TE, Akil H: Individual differences in the propensity to approach signals vs. goals predict differences in psychostimulant sensitization. *NIDA’s Frontiers in Addiction Research Mini-Convention*. Atlanta, GA, October 2006.
- Flagel SB**, Watson SJ, Robinson TE, Akil H: Individual differences in the propensity to approach signals vs. goals predict differences in psychostimulant sensitization. *Society for Neuroscience Annual Meeting*. Atlanta, GA, October 2006.
- Briand LA, **Flagel SB**, Watson SJ, Akil H, Sarter M, Robinson TE: Long Access Cocaine Self-Administration Leads to Persistent Cognitive Deficits. *Society for Neuroscience Annual Meeting*. Atlanta, GA, October 2006.
- Gula EL, **Flagel SB**, Turner CA, Robinson TE, Watson SJ, Akil H: A role for the fibroblast growth factor system in cocaine sensitization. *Society for Neuroscience Annual Meeting*. Atlanta, GA, October 2006.
- Flagel SB**, Simmons T, Watson SJ, Robinson T and Akil H: Differences in the dopamine system correspond to individual differences in Pavlovian conditioned approach behavior. *American College of Neuropsychopharmacology Annual Meeting*. Waikoloa, Hawaii, December 2005.

- Burghardt PR, **Flagel SB**, Britton SL, Koch LG, Watson SJ, Akil H: Risk-assessment and Anxiety-like Behavior of Rats Selectively Bred for High and Low Aerobic Capacity. *Society for Neuroscience Annual Meeting*. Washington, D.C., November 2005.
- Flagel SB**, Robinson T, and Akil H: Individual differences in conditionability: implications for substance abuse. *11<sup>th</sup> Biennial European Behavioural Pharmacology Society Meeting*. Barcelona, Spain, September 2005.
- Vawter MP, Atz ME, Meng F, Tomita H, Bolstad BM, Li JZ, Shao L, Speed TE, Choudary P, Neal C, Stead J, **Flagel SB**, Evans S, Overman K, Walsh DM, Myers R, Watson SJ, Jones EG, Akil H, Bunney WE: Mitochondrial related gene expression in affective disorders in postmortem brain: an epiphenomenon? *American College of Neuropsychopharmacology Annual Meeting*. San Juan, Puerto Rico, December 2004.
- Flagel SB**, Robinson T, Akil H: Individual differences in Pavlovian conditioned approach behavior. *Society for Neuroscience Annual Meeting*. San Diego, CA, October 2004.
- Flagel SB**, Simmons T, Robinson T, Akil H: Individual differences in Pavlovian conditioned approach behavior. *European Behavioural Pharmacology Society International Workshop on Neurobehavioural Plasticity*, Rome, Italy, September 2004.
- Flagel SB**, Vázquez DM, Robinson TE: Short-term effects of postnatal chronic intermittent manipulations: week 1 vs. week 2 of life. *Society for Neuroscience Annual Meeting*. New Orleans, LA, November 2003.
- Flagel SB**, Vázquez DM, Robinson TE: Postnatal chronic stress: vulnerability to drug abuse. *13<sup>th</sup> Annual Pediatric Research Symposium*. Ann Arbor, MI, October 2002.
- Vázquez DM, Kabbaj M, Kabbaj MH, **Flagel SB**, Akil H: Individual differences in anxiety and adrenocortical response to novelty: Contribution of parental phenotype and maternal behavior. *83<sup>rd</sup> Annual Endocrine Society Meeting*. Denver, CO, June 2002.
- Flagel SB**, Neal CR Jr., Watson, SJ Jr., Vázquez DM: Effects of early life dexamethasone treatment: behavioral analysis, corticosterone profile, neurologic development and somatic growth. *Society for Neuroscience Annual Meeting*. New Orleans, LA, November 2000.
- Neal, CR Jr., **Flagel SB**, Vázquez DM, Watson SJ Jr.: The effect of neonatal dexamethasone therapy on growth and neurologic development in the rat. *Society for Pediatric Research Meeting*. Boston, Mass., May 2000.
- Liberzon I, **Flagel SB**, Shiroff A, Abelson JL, Young EA: Neuroendocrine and psychophysiologic responses to non-specific and traumatic stimuli in PTSD. *Society for Neuroscience Annual Meeting*. New Orleans, LA, October 1997.

Liberzon I, Taylor SF, **Flagel SB**, Fig LM, Koeppe RA: Effects of emotional content on rCBF during encoding and recognition: PET activation study. *Society for Biological Psychiatry Annual Meeting*. San Diego, CA, May 1997.

#### SLIDE SESSIONS AND ORAL PRESENTATIONS

**Flagel SB:** Invited speaker in symposium entitled “Behavior recognition : The next generation of technology for behavioral research.” *Society for Neuroscience Annual Meeting*, Washington, D.C., November 2008.

**Flagel SB:** Invited speaker in symposium entitled “Neuropharmacology of learning and memory.” 25<sup>th</sup> *Congress of Collegium Internationale Neuro-Psychopharmacologicum (CINP)*, Chicago, IL, July 2006.

**Flagel SB**, Simmons T, Robinson T, Akil H: Individual differences in Pavlovian conditioned approach behavior. *European Behavioural Pharmacology Society International Workshop on Neurobehavioural Plasticity*, Rome, Italy, September 2004.

**Flagel SB**, Vázquez DM, Robinson TE: Postnatal chronic stress: vulnerability to drug abuse. *Society for Neuroscience Annual Meeting*. Orlando, FL, November 2002.

**Flagel SB**, Vázquez DM, Robinson TE: Postnatal chronic stress: vulnerability to drug abuse. 13<sup>th</sup> *Annual Pediatric Research Symposium*. Ann Arbor, MI, October 2002.

#### REFERENCES

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