



# Learning Objectives 1. Animal models of addiction 2. Brain Reward Circuits 3. Neurotransmitters: Where and what type are relevant in addictive disorders? 4. Action of psychoactive substances on brain circuits and neurotransmitters 5. Neuroimaging of addiction and related phenomena, i.e. craving, relapse and recovery 6. Implication of neurobiological principles on treatment and recovery 7. Cellular and molecular mechanisms in addiction, including neuroadaptation, epigenetic phenomena, etc. 8. Genetic basis for neurobiological addictive disease vulnerability and treatment response NIH on Alcohol Abus

## Question 1:

Executive function deficits most important for relapse are most likely to be mediated by what part of brain circuitry?

- A. prefrontal cortex
- B. Hypothalamus
- C. dorsal striatum
- D. nucleus accumbens

### Question 2:

The rewarding or pleasurable effects of drugs involve predominantly which two endogenous neurotransmitters?

- A. norepinephrine and endocannabinoids
- B. dopamine and opioid peptides
- C. histamine and hypocretin (orexin)
- D. corticotropin releasing factor and dynorphin

### **Question 3:**

Which of the following neurotransmitters is activated during drug withdrawal and mediates behavioral, pituitary and sympathetic responses to stress?

- A. dopamine
- B. vasopressin
- C. neuropeptide Y
- D. corticotropin releasing factor

### **Question 4:**

Which circuitry in the brain is key for the incentive salience and habit components of the addiction cycle?

- A. amygdala and bed nucleus of the stria terminalis
- B. prefrontal cortex and cerebellum
- C. nucleus accumbens and striatum
- D. hypothalamus and periaqueductal gray

## Question 5:

Which of the following is a key part of the brain fight or flight, anxiety/stress circuitry that is activated during withdrawal from all drugs of abuse?

- A. dorsal striatum
- B. periaqueductal gray
- C. habenula
- D. amygdala























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