Lecture #06 Neuromodulatory Systems

Question 1: What disease is believed to result from loss of cell bodies of cholinergic neuromodulatory neurons?

a) Huntington's

b) Pick's

c) Hemiballismus

d) Parkinson's

e) Alzheimer's

Lecture #06 Neuromodulatory Systems

Question 2: Which is a feature of direct ion channel neurotransmission that is not shared by neuromodulators?

a) Amplification of effects by enzymes that convert multiple molecules

b) Control of overall neuronal excitability

c) Wide variety of potential ultimate effects

d) Rapid and discrete action

e) Phosphorylation of membrane proteins

Lecture #06 Neuromodulatory Systems

Question 3: What disorder results from loss of the subthalamic nucleus?

a) Hemiballismus

b) Huntington's

c) Parkinson's

d) Alzheimer's

e) Pick's

Lecture #06 Neuromodulatory Systems

Question 4: What is the most universal aspect of a neuromodulator's action?

a) It has precisely placed synapses

b) It has rapid onset

c) It is G protein coupled

d) It has rapid termination

e) It originates from billions of widely dispersed cell bodies

Lecture #06 Neuromodulatory Systems

Question 5: What is the effect of blocking DAT or NET (SLC6A2)?

a) Increased acetylcholine levels

b) Decreased arousal

c) Increased catecholamine levels

d) Decreased acetylcholine levels

e) Decreased catecholamine levels

Lecture #06 Neuromodulatory Systems

Question 6: Cocaine and amphetamines share which neuromodulatory action?

a) Reduction of symptoms of schizophrenia

b) Increasing the activity of the serotonin transporter

c) Increasing the activity of the dopamine transporter

d) Reduction of the duration and spatial extent of dopamine action

e) Increase of the duration and spatial extent of dopamine action

Lecture #06 Neuromodulatory Systems

Question 7: Where are the raphe nuclei located?

a) Hypothalamus

b) Midbrain (mesencephalon)

c) Dorsolateral pontine tegmentum

d) Basal forebrain

e) Brainstem midline

Lecture #06 Neuromodulatory Systems

Question 8: Which neuromodulator is found in the pedunculopontine and laterodorsal tegmental nuclei of the pons?

a) Gamma Amino Butyric Acid (GABA)

b) Acetylcholine

c) Galanin

d) Muscarine

e) Histamine

Lecture #06 Neuromodulatory Systems

Question 9: Which correctly matches a neuromodulator with its principal nucleus of origin?

a) Serotonin, Raphe nuclei

b) Histamine, Locus Coeruleus

c) Serotonin, Hypothalamus

d) Dopamine, Hypothalamus

e) Acetylcholine, Hypothalamus

Lecture #06 Neuromodulatory Systems

Question 10: What disease progresses from loss of the D2 striatal neurons?

a) Alzheimer's

b) Pick's

c) Parkinson's

d) Hemiballismus

e) Huntington's

Lecture #06 Neuromodulatory Systems

Question 11: Which is a common feature of the initial synthetic step for Dopamine and Serotonin?

a) Hydroxylase enzyme

b) Tyrosine amino acid

c) Tryptophan amino acid

d) 5-HTP

e) Monoamine oxidase

Lecture #06 Neuromodulatory Systems

Question 12: 5-hydroxytryptamine (5HT) is which neuromodulator?

a) Norepinephrine

b) Acetylcholine

c) Serotonin

d) Dopamine

e) Histamine

Lecture #06 Neuromodulatory Systems

Question 13: Which is a prominent inhibitory peptide neuromodulator?

a) Muscarine

b) Acetylcholine

c) Gamma Amino Butyric Acid (GABA)

d) Galanin

e) Histamine

Lecture #06 Neuromodulatory Systems

Question 14: Which neuromodulator is released by stimuli that predict reward?

a) Acetylcholine

b) Serotonin

c) Histamine

d) Dopamine

e) Norepinephrine

Lecture #06 Neuromodulatory Systems

Question 15: Where is the locus coeruleus located?

a) Dorsal medulla

b) Dorsal midbrain

c) Ventral medulla

d) Dorsal pons

e) Ventral pons

Lecture #06 Neuromodulatory Systems

Question 16: Which neuromodulator is most directly associated with reward prediction?

a) Substance P

b) Dopamine

c) Acetylcholine

d) Serotonin

e) Norepinephrine

Lecture #06 Neuromodulatory Systems

Question 17: Which is a second location of the cell bodies of dopaminergic neurons?

a) Ventral tegmental area (VTA)

b) Striatum

c) Substantia nigra pars reticulata (SNr)

d) Nucleus basalis of Meynert

e) Horizontal limb of the diagonal band of Broca (HDB)

Lecture #06 Neuromodulatory Systems

Question 18: Which enzyme is required for production of norepinephrine but not dopamine?

a) Dopamine beta hydroxylase

b) 5-HTP decarboxylase

c) Dopa decarboxylase

d) Tyrosine hydroxylase

e) Tryptophan hydroxylase

Lecture #06 Neuromodulatory Systems

Question 19: Where are the cell bodies of dopaminergic neurons?

a) Basal forebrain

b) Tuberomammillary nucleus

c) Raphe nuclei

d) Locus coeruleus

e) Substantia nigra (SNc)

Lecture #06 Neuromodulatory Systems

Question 20: Where are the cell bodies of cholinergic neuromodulatory neurons?

a) Locus coeruleus

b) Raphe nuclei

c) Substantia nigra (SNc)

d) Tuberomammillary nucleus

e) Basal forebrain

Lecture #06 Neuromodulatory Systems

Question 21: Where are the cell bodies of noradrenergic (norepinephrinergic) neurons?

a) Locus coeruleus

b) Basal forebrain

c) Tuberomammillary nucleus

d) Substantia nigra (SNc)

e) Raphe nuclei

Lecture #06 Neuromodulatory Systems

Question 22: What disease results from loss of substantia nigra (SNc) neurons?

a) Hemiballismus

b) Huntington's

c) Parkinson's

d) Alzheimer's

e) Pick's