Neuroscience

05 December 2022 12:46

- Degeneration of the dopamine-releasing neurons of the Substantia nigra is the disease- Parkinson's disease.
- What condition is cause by a abnormal of electrical discharges of brain neurons- Epilepsy.
- Frequency of sleep spindles- 10 to 14 Hz.
- If people have damage in Broca's area then symptom will be- MOTOR APHASIA.
- In humans, making more serotonin available to brain cells typically- produce an effect on mood.
- Which type of connection provide Association fiber- Fiber tract that provides communication between different parts of the same cerebral hemisphere
- Which one of the following functions of the thalamus is FALSE?- Storage of long-term memories Neocortex
- What function is the temporal lobe associated with?- Auditory Recognition
- What is the role of melatonin in sleep cycles?- it triggers the onset of sleep
- EEGs can measure - brain wave activity
- The most prominent EEG wave pattern of an awake, relaxed adult whose eyes are closed is- alpha waves
- Papez circuit includes all of the following- amygdala
- An individual who has difficulty falling asleep and then staying asleep (wakes up at least once during the night) may be suffering from: - Insomnia
- This stage of sleep is characterized by the presence of delta waves: slow wave sleep
- The brain area that regulates activities that control the state of wakefulness or alertness of the cerebral cortex is the Reticular formation
- If people have damage in Wernicke's area of the brain, what symptom will they have - Sensory Aphasia
- A technique used to assess language dominance and memory function before ablative surgery for epilepsy - Intracarotid Amobarbital Procedure (Wada Test)
- Disruptions of cognition can result from either- Cortical Pathway disconnections
- What is name of the Stage 3 and 4 sleep - deep sleep
- When people are attentive to an external stimulus or are thinking about something, the alpha rhythm is replaced by- Beta
- The reticular activating system (RAS) is comprised of specific pathways primarily in the limbic system- non specific.
- Parkinson's disease, is caused by the degeneration of neurons in an area of the brain called the: - Substantia nigra
- In the brain, insulin receptors are found in regions involved in the regulation of food intake and body weight, especially in the hypothalamic ARC nucleus- Insulin
- Which of the following is a major neurotrophic factor in the brain involved in survival and guidance of neurons during development, and also required for the survival and function of neurons in the adult brain. BDNF
- Benzodiazepines bind at the interface of the _____on the GABAA receptor.

  α and γ subunits
- In measures of dopaminergic activity_____ have been observed in psychotically depressed patients compared with nonpsychotic depressed patients.-

  lower serum dopamine β-hydroxylase activity and higher plasma tyrosine hydroxylase
- In receptor studies downregulation and hyposensitivity of_____, receptors have been reported.

  β-adrenergic, and possibly α2-adrenergic
- Which of the following is true regarding Benzodiazepines?

  Benzodiazepines show no affinity for GABAA receptors containing α4 and α6 subunits with an arginine instead of a histidine residue.
- Which of the followings is true regarding insulin secretion?

  As the β-cell [ATP]/[ADP] ratio increases, the activity of a membrane-bound, ATP-dependent K+ channel is inhibited
- Multiple methods of measuring cortical-hypothalamic-pituitary-adrenal axis activity have provided evidence of altered function in patients with major depression, including

  ????
- α-methyl-para-tyrosine (AMPT) has negligible effects on mood in healthy subjects, but produces a return of depressive symptoms in recovered depression patients treated with - noradrenaline reuptake inhibitors
- Fill in the sentence: leptin signals nutritional status to key regulatory centers in the hypothalamus.

  Leptin
- Which of the following is not a glutamate ligand gated ion channel?- mGluRs Metabotropic Glutamate Receptors
- The leptin receptor is expressed primarily in regions of the brain known to regulate - feeding behavior
- Which of the following proteins is the most prominent in cerebral cortex?- AC1
- GABAA receptor is an example of- Ligand-gated ion channels
- The group 1 Adenylyl Cyclases are activated by Ca2+/calmodulin; half-maximal activation is achieved at a Ca2+ concentration of approximately - 150 nM
- Leptin is a peptide hormone secreted from- adipocytes in proportion to fat mass
- Multiple methods of measuring cortical-hypothalamic-pituitary-adrenal axis activity have provided evidence of altered function in patients with major depression, including

  A)higher ACTH and cortisol responses to CRF after dexamethasone pretreatment

  B)All of the answers are true

  C)higher ACTH-induced cortisol secretion

  D)elevated 5-hydroxytryptophan–induced cortisol secretion
- Adenylyl Cyclase 1 - AC1 is activated by Gαs and is thereby coupled to a variety of endocrine and neurotransmitter receptors, such as- the D1 dopamine receptor and the β-adrenergic receptor

γ waves are seen in REM sleep.
Highest γ activity in wakefulness.

Flow of the Papez Circuit (Step-by-Step)

Always write this order in exams:

1. **Hippocampus**
   ↓ via **Fornix**
2. **Mammillary Bodies (Hypothalamus)**
   ↓ via **Mammillothalamic Tract**
3. **Anterior Nucleus of Thalamus**
   ↓ to
4. **Cingulate Gyrus**
   ↓ via **Cingulum**
5. **Parahippocampal Gyrus / Entorhinal Cortex**
   ↓ back to
6. **Hippocampus** (loop closes)

ID	First name, Last name	Passport Number	Course	Start Date
26744	პრაზაი ნაზდეე ბამგალე	00009633172	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 17:27:02

12 px

00:49:38

15 Points: 0.5

Antidepressant treatment has, in recent studies, been shown to upregulate the cyclic adenosine monophosphate (cAMP)-response element-binding protein (CREB) cascade and expression of

- neurotrophin-4
- Nerve growth factor
- brain-derived neurotrophic factor
- neurotrophin-3

16 Points: 0.5

Which of the following proteins is the most prominent in cerebral cortex?

- Adenylyl Cyclase 1
- Adenylyl Cyclase 4
- Adenylyl Cyclase 3
- Adenylyl Cyclase 8

17 Points: 0.5

Which one of the following statements is not true regarding leptin?

- Leptin (Greek leptos, "thin") is a small protein (167 amino acids) that is produced in adipocytes and moves through the blood to the brain.
- The leptin receptor is expressed primarily in regions of the brain known to regulate feeding behavior
- Leptin stimulates the parasympathetic nervous system, increasing blood pressure, heart rate, and thermogenesis
- Leptin receptor interaction in the hypothalamus alters the release of neuronal signals to the region of the brain that affects appetite.

Finish

- REM sleep

23 Points: 0.5

Answer Sheet Directions: Match the EEG waves on the left with it's frequency on the right

- Delta 1-4 Hz , Theta 4-8 Hz , Alpha 8-12 Hz, Beta 12-25 Hz,
- Delta 4-8 Hz, Theta1-4 Hz, Beta 12-25 Hz, Alpha 8-12 Hz,
- Delta 1-4 Hz, Beta 8-12 Hz, Theta 12-25Hz, Alpha 4-8 8

24 Points: 0.5

The brain area that regulates activities that control the state of wakefulness or alertness of the cerebral cortex is the

- reticular formation
- pyramids
- none

25 Points: 0.5

What condition is cause by a abnormal of electrical discharges of brain neurons

- schizophrenia
- PARKINSON
- EPILEPSY

26 Points: 0.5

Finish

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26744	[illegible]	00009633172	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 17:27:02

12 px

00:49:17

31 Points: 0.5

If an individual uncontrollably falls asleep during the day, even while in the middle of a task, s/he may be suffering from:

- sleep apnea
- narcolepsy
- Insomnia

32 Points: 0.5

Papez circuit includes all of the following EXCEPT:

- cingulate gyrus
- amygdala
- hippocampus

33 Points: 0.5

A technique used to assess language dominance and memory function before ablative surgery for epilepsy

- Somatosensory evoked potential
- Visual evoked potentia
- Intracarotid Amobarbital Procedure (Wada Test)

34 Points: 0.5

EEGs can measure

- Brain wave activity

Finish

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12 px

00:49:11

36 Points: 0.5

If people have damage in Brocca's area of the brain, what symptom will they have

- ○ Sensory Aphasia
- ○ none
- ● Motor Aphasia

37 Points: 0.5

Frequency of sleep spindles:

- ○ 20 to 80 Hz
- ○ 0.5 to 4 Hz
- ○ 4 to 7 Hz
- ● 10 to 14 Hz

38 Points: 0.5

Degeneration of the dopamine-releasing neurons of the Substantia nigra is the disease

- ○ Epilepsy
- ○ Dementia
- ● Parkinson's disease

39 Points: 0.5

Finish

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26744	პრაჩაი ნამდევ ბჰოგალე	00009633172	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 17:27:02

12 px

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- 4 to 7 Hz
- 10 to 14 Hz

38 Points: 0.5

Degeneration of the dopamine-releasing neurons of the Substantia nigra is the disease

- Epilepsy
- Dementia
- Parkinson's disease

39 Points: 0.5

Scientists are able to study sleep through the recording of brain waves, accomplished by the use of:

- Positron emission tomography (PET)
- electroencephalogram (EEG)
- Magnetic resonance imaging (MRI)

40 Points: 0.5

The reticular activating system (RAS) is comprised of specific pathways primarily in the limbic system

- True
- no spesific
- False

Finish

34 Points: 0.5

EEGs can measure

- (x) Brain wave activity
- ( ) Heart attacks
- ( ) Pain in your ankle

35 Points: 0.5

In humans, making more serotonin available to brain cells typically

- ( ) counteracts the effects of alcohol
- ( ) increases the stimulatory effects of caffeine
- (x) produces an effect on mood

36 Points: 0.5

If people have damage in Brocca's area of the brain, what symptom will they have

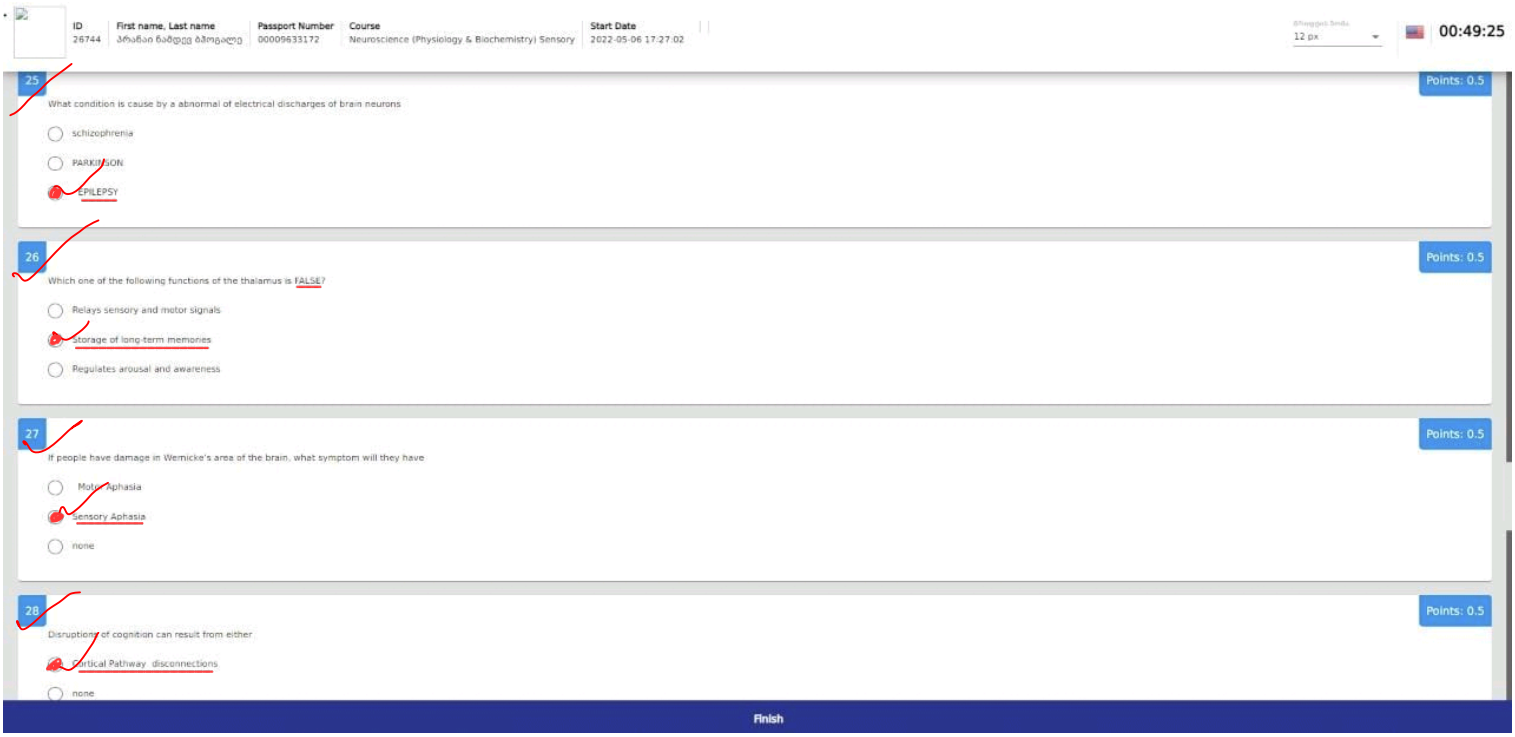
- ( ) Sensory Aphasia
- ( ) none
- (x) Motor Aphasia

37 Points: 0.5

Frequency of sleep spindles:

- ( ) 20 to 80 Hz 10-14 Hz

Finish


ID
26744
First name, Last name
Passport Number
00009633172
Course
Neuroscience (Physiology & Biochemistry) Sensory
Start Date
2022-05-06 17:27:02
12 px
00:49:25
25
Points: 0.5
What condition is cause by a abnormal of electrical discharges of brain neurons
schizophrenia
PARKINSON
EPILEPSY
26
Points: 0.5
Which one of the following functions of the thalamus is FALSE?
Relays sensory and motor signals
storage of long-term memories
Regulates arousal and awareness
27
Points: 0.5
If people have damage in Wernicke's area of the brain, what symptom will they have
Motor Aphasia
Sensory Aphasia
none
28
Points: 0.5
Disruptions of cognition can result from either
Cortical Pathway disconnections
none
Finish

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28 Points: 0.5

Disruptions of cognition can result from either

- [x] Cortical Pathway disconnections
- [ ] none
- [ ] Sub-cortical disconnections

29 Points: 0.5

Parkinson's disease, is caused by the degeneration of neurons in an area of the brain called the:

- [ ] Cerebellum
- [x] Substantia nigra
- [ ] Corpus callosum

30 Points: 0.5

What is the role of melatonin in sleep cycles?

- [x] It triggers the onset of sleep
- [ ] It keeps the brain from becoming overactive during the REM stage of sleep
- [ ] It helps the brain transition into wakefulness

31 Points: 0.5

If an individual uncontrollably falls asleep during the day, even while in the middle of a task, s/he may be suffering from:

- [ ] sleep apnea

Narcolepsy

Finish

20 Points: 0.5

What function is the temporal lobe associated with?

- ○ Brokas asea
- ○ Visual Recognition
- ● Auditory Recognition

21 Points: 0.5

The most prominent EEG wave pattern of an awake, relaxed adult whose eyes are closed is

- ● Alpha
- ○ Theta
- ○ Beta
- ○ Delta

22 Points: 0.5

During what period of sleep do we dream?

- ○ NREM sleep
- ○ Stage IV sleep
- ● REM sleep

23 Points: 0.5

Finish

18 Points: 0.5

Benzodiazepines bind at the interface of the __________ on the GABAA receptor.

- ( ) α and γ subunits
- ( ) β and γ subunits
- ( ) δ and γ subunits
- ( ) α and β subunits

Physiology

Comment: Physiology

19 Points: 0.5

This stage of sleep is characterized by the presence of delta waves:

- ( ) Stage 2 sleep
- ( ) REM sleep → β waves
- ( ) Slow wave sleep

20 Points: 0.5

What function is the temporal lobe associated with?

- ( ) Brokas asea — auditory
- ( ) Visual Recognition

Finish

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12 px

00:49:42

12 Points: 0.5

Proinsulin is converted to insulin by proteolytic cleavage, which removes

- the C-peptide and a few additional amino acid residues.
- the A-peptide.
- the C-peptide.
- the A-peptide and a few additional amino acid residues

13 Points: 0.5

Which of the following is a major neurotrophic factor in the brain involved in survival and guidance of neurons during development, and also required for the survival and function of neurons in the adult brain.

- GDNF
- BDNF
- TNF
- ANF

14 Points: 0.5

Support for overactivity of the cholinergic system in the pathogenesis of depression is based on findings such as these:

- following abrupt withdrawal of anticholinergic medications, cholinergic rebound can cause a relapse of depression
- All of the answers are true
- in some cases, mania is reduced and depression induced by lecithin, an acetylcholine precursor;
- Cholinergic input reduces REM latency (decreased REM latency is seen in major depression) and the anticholinergic properties of some antidepressants;

15 Points: 0.5

Finish

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12 px

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9

Points: 0.5

which of the following is not a glutamate ligand gated ion channel?

- AMPA receptors
- kainate receptors
- N-methyl-D-aspartate (NMDA) receptors
- mGluRs

10

Points: 0.5

Which of the followings is not a role of thermogenin?

- Thermogenin permits continual oxidation of fuel (fatty acids in an adipocyte) without ATP synthesis
- Thermogenin allows protons to reenter the mitochondrial matrix without passing through the ATP synthase complex
- Thermogenin forms a channel in the outer mitochondrial membrane
- Thermogenin forms a channel in the inner mitochondrial membrane

11

Points: 0.5

Multiple methods of measuring cortical-hypothalamic-pituitary-adrenal axis activity have provided evidence of altered function in patients with major depression, including

- Elevated corticotropin-releasing factor (CRF) concentrations in CSF
- All of the answers are true
- blunted adrenocorticotropic hormone (ACTH) and β-endorphin responses after intravenous CRF administration
- lower CRF binding in prefrontal cortex in depressed suicides

12

Points: 0.5

Finish

6 Points: 0.5

Leptin is a peptide hormone secreted from

- hepatocytes in proportion to fat mass
- hepatocytes in proportion to carbohydrate mass
- adipocytes in proportion to fat mass
- adipocytes in proportion to carbohydrate mass

7 Points: 0.5

Which of the following is true regarding Benzodiazepines?

- Benzodiazepines show no affinity for GABAA receptors containing $\alpha 4$ and $\alpha 6$ subunits with a histidine instead of an arginine residue.
- Benzodiazepines show no affinity for GABAA receptors containing $\beta 4$ and $\beta 6$ subunits with a histidine instead of an arginine residue.
- Benzodiazepines show no affinity for GABAA receptors containing $\alpha 4$ and $\alpha 6$ subunits with an arginine instead of a histidine residue.
- Benzodiazepines show no affinity for GABAA receptors containing $\beta 4$ and $\beta 6$ subunits with an arginine instead of a histidine residue.

8 Points: 0.5

GABAA receptor is an example of:

- Receptor tyrosine kinases
- G-protein coupled receptors
- Ligand-gated ion channels
- Voltage-gated ion channels

Finish

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26744	ქრაბაი ნაზდეგ ბპოგალე	00009633172	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 17:27:02

12 px

00:49:52

3

Points: 0.5

Fill in the sentence: ________ signals nutritional status to key regulatory centers in the hypothalamus.

- Serotonin
- Dopamine
- Ghrelin
- Leptin

4

Points: 0.5

Lower glucose uptake in dorsolateral pre frontal cortex in depression could reflect

- more opaminerjic activity in the cortex
- less glutaminergic activity in the cortex
- more glutaminergic activity in the cortex
- less adrenerjic activity in the cortex

5

Points: 0.5

Antidepressant treatment increases the density of

- β2-adrenergic receptors
- α1-adrenergic receptors
- β1-adrenergic receptors
- α2-adrenergic receptors

Finish

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26744	პრანაი ნამდევ ბჰოგალე	00009633172	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 17:27:02

12 px

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Biochemistry

Comment: Biochemistry

1 Points: 0.5

Adenylyl Cyclase 1 - AC1 is activated by Gαs and is thereby coupled to a variety of endocrine and neurotransmitter receptors, such as

- (x) the D1 dopamine receptor and the β-adrenergic receptor
- ( ) the D4 dopamine receptor
- ( ) the D2 dopamine receptor
- ( ) the α1-adrenergic receptor

2 Points: 0.5

The group 1 Adenylyl Cyclases are activated by Ca2+/calmodulin; half-maximal activation is achieved at a Ca2+ concentration of approximately

- ( ) 150 μM
- ( ) 150 M
- ( ) 150 mM
- (x) 150 nM

3 Points: 0.5

Fill in the sentence: Lefitin signals nutritional status to key regulatory centers in the hypothalamus.

- ( ) Serotonin
- ( ) Dopamine

Finish

ID	First name, Last name	Passport Number	Course	Start Date
26703	ქაბელაძ ეზვილველი	00004300197	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 15:57:04

ზრდადობის ზომა
12 px

00:49:42

25

Points: 0.5

Which of the following is true regarding Benzodiazepines?

- Benzodiazepines show no affinity for GABAA receptors containing α4 and α6 subunits with a histidine instead of an arginine residue.
- Benzodiazepines show no affinity for GABAA receptors containing β4 and β6 subunits with an arginine instead of a histidine residue.
- Benzodiazepines show no affinity for GABAA receptors containing α4 and α6 subunits with an arginine instead of a histidine residue.
- Benzodiazepines show no affinity for GABAA receptors containing β4 and β6 subunits with a histidine instead of an arginine residue.

26

Points: 0.5

Which of the followings is true regarding insulin secretion?

- The decrease in intracellular Ca2+ stimulates the fusion of insulin containing exocytotic vesicles with the plasma membrane, resulting in insulin secretion
- As the β-cell [ATP]/[ADP] ratio increases, the activity of a membrane-bound, ATP-dependent K+ channel is inhibited
- Glucose is phosphorylated through the action of hexokinase to form glucose 6-phosphate, which is metabolized through glycolysis, the TCA cycle, and oxidative phosphorylation.
- Glucose enters the β-cell via specific glucose transporter proteins known as GLUT 4

27

Points: 0.5

Adenylyl Cyclase 1 - AC1 is activated by Gαs and is thereby coupled to a variety of endocrine and neurotransmitter receptors, such as

Finish

ID	First name, Last name	Passport Number	Course	Start Date
26703	კაბელაშ ეზპილვილი	00004300197	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 15:57:04

12 px

00:49:39

27 Points: 0.5

Adenylyl Cyclase 1 - AC1 is activated by Gαs and is thereby coupled to a variety of endocrine and neurotransmitter receptors, such as

- the D1 dopamine receptor and the β-adrenergic receptor
- the D2 dopamine receptor
- the α1-adrenergic receptor
- the D4 dopamine receptor

28 Points: 0.5

Which of the following is a major neurotrophic factor in the brain involved in survival and guidance of neurons during development, and also required for the survival and function of neurons in the adult brain.

- TNF
- GDNF
- BDNF
- ANF

29 Points: 0.5

Lower glucose uptake in dorsolateral pre frontal cortex in depression could reflect

Finish

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26703	ქაბელიან ეზმილველი	00004300197	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 15:57:04

12 px

00:49:33

29 Points: 0.5

Lower glucose uptake in dorsolateral pre frontal cortex in depression could reflect

- less adrenerjic activity in the cortex
- more opaminerjic activity in the cortex
- more glutaminergic activity in the cortex
- less glutaminergic activity in the cortex

30 Points: 0.5

GABAA receptor is an example of:

- G-protein coupled receptors
- Ligand-gated ion channels
- Receptor tyrosine kinases
- Voltage-gated ion channels

31 Points: 0.5

Leptin is a peptide hormone secreted from

Finish

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26703	ქაბელიან ეზმილველი	00004300197	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 15:57:04

ტრიგერის ზომა
12 px

00:49:26

α2-adrenergic receptors

33 Points: 0.5

The group 1 Adenylyl Cyclases are activated by Ca2+/calmodulin; half-maximal activation is achieved at a Ca2+ concentration of approximately

- 150 μM
- 150 mM
- 150 M
- 150 nM

34 Points: 0.5

most patients with depression, although generally viewed as chemically euthyroid, have altered thyroid function, including

- blunted thyrotropin (TSH) response to thyrotropin-releasing hormone (TRH) stimulation
- All of the answers are true
- loss of the nocturnal TSH rise
- slight elevation of the serum thyroxine (T4)

Finish

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12 px

00:49:29

voltage-gated ion channels

31

Points: 0.5

Leptin is a peptide hormone secreted from

- hepatocytes in proportion to fat mass
- adipocytes in proportion to carbohydrate mass
- adipocytes in proportion to fat mass
- hepatocytes in proportion to carbohydrate mass

32

Points: 0.5

Antidepressant treatment increases the density of

- β1-adrenergic receptors
- α1-adrenergic receptors
- β2-adrenergic receptors
- α2-adrenergic receptors

Finish

ID	First name, Last name	Passport Number	Course	Start Date
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ტრიფტის ზომა
12 px

00:49:23

35

Points: 0.5

In measures of dopaminergic activity_____ have been observed in psychotically depressed patients compared with nonpsychotic depressed patients.

- lower serum tyrosine hydroxylase activity and higher plasma dopamine and HVA concentrations
- lower serum dopamine β-hydroxylase activity and higher plasma tyrosine hydroxylase
- lower cortical dopamine β-hydroxylase activity and higher plasma dopamine and HVA concentrations
- lower serum dopamine β-hydroxylase activity and higher plasma dopamine and HVA concentrations

36

Points: 0.5

Benzodiazepines bind at the interface of the _____on the GABAA receptor.

- α and γ subunits
- δ and γ subunits
- β and γ subunits
- α and β subunits

Finish

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12 px

00:49:20

37

Points: 0.5

Which of the followings is not a role of thermogenin?

- Thermogenin permits continual oxidation of fuel (fatty acids in an adipocyte) without ATP synthesis
- Thermogenin forms a channel in the inner mitochondrial membrane
- Thermogenin forms a channel in the outer mitochondrial membrane
- Thermogenin allows protons to reenter the mitochondrial matrix without passing through the ATP synthase complex

38

Points: 0.5

Proinsulin is converted to insulin by proteolytic cleavage, which removes

- the C-peptide and a few additional amino acid residues.
- the A-peptide and a few additional amino acid residues
- the A-peptide.
- the C-peptide.

39

Points: 0.5

Finish

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26703	კაბელან ეზპილველი	00004300197	Neuroscience (Physiology & Biochemistry) Sensory	2022-05-06 15:57:04

12 px

00:49:18

39

Points: 0.5

Which of the following proteins is the most prominent in cerebral cortex?

- Adenylyl Cyclase 8
- Adenylyl Cyclase 4
- Adenylyl Cyclase 3
- Adenylyl Cyclase 1

40

Points: 0.5

Support for overactivity of the cholinergic system in the pathogenesis of depression is based on findings such as these:

- following abrupt withdrawal of anticholinergic medications, cholinergic rebound can cause a relapse of depression
- All of the answers are true
- in some cases, mania is reduced and depression induced by lecithin, an acetylcholine precursor;
- Cholinergic input reduces REM latency (decreased REM latency is seen in major depression) and the anticholinergic properties of some antidepressants;

Finish

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ზრდადობის ზომა 12 px

00:49:46

Comment: Biochemistry

23 Points: 0.5

which of the following is not a glutamate ligand gated ion channel?

- mGluRs
- AMPA receptors
- N-methyl-D-aspartate (NMDA) receptors
- kainate receptors

24 Points: 0.5

The leptin receptor is expressed primarily in regions of the brain known to regulate

- circadian rhythm
- mood and anxiety
- feeding behavior
- conciseness

Finish