

✓ 1. What describes the Mossy fiber pathway correctly (2 correct answers)?

- ☐ A) Axons of neurons with cell bodies in the CA3 region of the hippocampus
- ☐ B) Axons of neurons with nerve endings in CA1 region of the hippocampus
- ☒ C) Axons of granule cells in the dentate gyrus
- ☒ D) Axons of neurons with nerve endings in the CA3 region of the hippocampus
- ☒ E) Axons of neurons with cell bodies in the entorhinal cortex

C+D

✓ 2. For which function in the brain is the hippocampal circuit considered to be important?

For the memory storage

✓ 3. What is a direct effector of nitric oxide (1 correct answer)?

- ☐ A) Protein kinase G
- ☐ B) HCN channels
- ☐ C) soluble guanylyl cyclase
- ☒ D) cytochrome C
- ☐ E) iNOS

✓ 4. Mutations of which proteins are causing Alzheimer's disease (3 correct answers)?

- ☒ A) Tau
- ☒ B) amyloid precursor protein
- ☐ C) Apolipoprotein E
- ☒ D) Presenilin 2
- ☒ E) Presenilin 1

✓ 5. Cell loss of dopamine neurons in ventral tegemental area could explain specifically? (1 correct answer)?

- ☐ A) Tremor
  - ☐ B) Rigor
  - ☒ C) Bradykinesia
  - ☐ D) joylessness
  - ☒ E) postural instability
- C

✓ 6. What can protect efficiently from the induction of parkinsonism by MPTP (2 correct answers)?

- ☒ A) Blockade of complex I in the respiratory chain
- ☐ B) Antioxidants
- ☒ C) Blockade of the dopamine transporter
- ☒ D) Blockade of monoamine oxidase B
- ☐ E) Blockade of the dopadecarboxylase

~~A B C D E~~  
C and D

✓ 7. Mutations in the gene of which protein are the basis of the most common form of hereditary parkinsonism?

*parkin → park 2*

✓ 8. Which two transporter proteins were implicated in the neurodegenerative process in amyotrophic lateral sclerosis?

• *AMPA receptor with  $\alpha$  GluR2 receptor subunit mutation*

• *Monocarboxylate lactate transporter → performed by oligodendrocytes*

✓ 9. The basic features of Huntington disease are (1 correct answer)?

☒ A) It is a sporadic disease at a frequency of 1-2 per 100,000 individuals

☒ B) It is a disease inherited in an autosomal recessive fashion

☒ C) The onset of disease occurs most often in young adulthood (second to third decade of life)

☐ D) Most patients die within 3 to 5 years after symptom onset

☐ E) Weight loss and inanition are typical late symptoms of the disease

*C is my answer*

✓ 10. What are the basic features of huntingtin (3 correct answers)?

☒ A) Its expression in the brain reflects the distribution of vulnerability

☒ B) Huntingtin fragments are localized to neuronal intranuclear inclusions in HD

☒ C) Individuals unaffected by HD contain up to 34 glutamines in their N-terminal part of huntingtin

☐ D) The C-terminal part of huntingtin contains a polyproline stretch

☒ E) There is immunoreactivity in the cytoplasm of neurons of individuals unaffected by HD



11. Which of the following endocrine diseases is caused by an autoimmune destruction of hormone producing cells (2 correct answers)?

- ☐ A) Gigantism
- ☒ B) Type I Diabetes Mellitus
- ☒ C) Hashimoto Thyroiditis
- ☐ D) Conn Syndrom
- ☐ E) Grave's Disease

✓ 12. Which of the following diseases is associated with the metabolic syndrome (2 correct answers)?

- ☐ A) Osteopetrosis
- ☐ B) Hashimoto Thyroiditis
- ☒ C) Type 2 Diabetes Mellitus
- ☐ D) Asthma bronchiale
- ☒ E) Hypertension

✓ 13. Which of the following are characteristic pathophysiologic mechanisms in Type 2 Diabetes Mellitus (2 correct answers)?

- ☐ A) Glucagon deficiency
- ☐ B) Adrenocortical insufficiency
- ☒ C) Insulin resistance
- ☒ D) Excessive hepatic glucose production
- ☐ E) Calcitonin overproduction

✓ 14. In a patient with signs and symptoms of thyrotoxicosis serum T4 levels and TSI are increased; the serum TSH level is decreased. What is the likely cause of thyrotoxicosis (1 correct answer)?

- ☒ A) Grave's disease
- ☐ B) Toxic Multinodular Goiter
- ☐ C) Toxic Adenoma
- ☐ D) TSH-Secreting Pituitary Adenoma
- ☐ E) Hashimoto Thyroiditis

✓ 16. In which of the following endocrine disorders, hypocalcaemia that leads to a hypocalcaemic tetany and therefore, significant neurological symptoms can be observed? (2 correct answers)

- ☐ A) Addison's disease
- ☐ B) Cushing's
- ☐ C) Primary hyperparathyroidism
- ☐ D) Type 2 Diabetes Mellitus
- ☒ E) Graves' Disease

✓ 17. A patient presents with weight gain, central obesity, muscle weakness, hypertrichosis and osteoporosis. On physical examination, facial and supraclavicular thrush on the neck are noted. Blood analysis reveals a low level of sodium, potassium and increased neutrophil counts but decreased eosinophils and decreased lymphocyte counts. Which of the following diagnoses are likely? (2 correct answers)

- ☐ A) Secondary hypoparathyroidism
- ☐ B) Graves' Disease
- ☒ C) ACTH-producing Pituitary Adenoma
- ☒ D) Adrenocortical Adenoma
- ☐ E) Subacute Thyroiditis

✓ 18. Which of the following signs or symptoms are typical of hypothyroidism? (2 correct answers)

- ☒ A) Feeling cold
- ☐ B) Tachycardia
- ☐ C) Fever
- ☐ D) Diarrhea
- ☒ E) Weight gain

✓ 19. Which hormone increases plasma concentrations of calcium? (2 correct answers)

- ☒ A) Parathyroid hormone
- ☐ B) Calcitonin
- ☒ C) 1,25 Dihydroxy Vitamin D
- ☐ D) Cortisol
- ☐ E) Testosterone



✓ 19. Which factor promotes osteoblastogenesis (2 correct answers)?

- ☒ A) RUNX2 (cbfa1)
- ☒ B) Osterix
- ☐ C) Ppar Gamma
- ☐ D) Laminin
- ☐ E) TNF Alpha

✓ 20. Which of the following is relevant for the pathogenesis of age related osteoporosis (2 correct answers)?

- ☐ A) Increased production of proinflammatory cytokines by mononuclear cells
- ☒ B) Low levels of calcitonin
- ☒ C) Decreased PTH levels
- ☒ D) Sex hormone deficiency
- ☐ E) Pituitary insufficiency

↓ PTH → ↓ RANKL

Calcitonin is important for Ca level.

PP: 9  
CP: 3  
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12 P

Note: nicht penäpend

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