

Neurobiology Quiz

27 questions

Name: _____ Date: _____ Score: _____

1. According to the analysis of the 'Richmond Anomaly', what specific leadership failure characterised the club's environment in 2016?

- (A) A 'deficit model' focusing on player weaknesses.
 - (B) A 'laissez-faire' approach leading to a lack of structure.
 - (C) An over-reliance on external statistical data over intuition.
 - (D) A lack of disciplinary measures for underperforming players.
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2. In the context of the 'Cortisol Tax', how does hypertonicity specifically impact an athlete's physical performance?

- (A) It decreases muscle elasticity and increases rupture risk.
 - (B) It accelerates the rate of aerobic respiration in the muscle.
 - (C) It enhances the 'stretch-shortening' cycle of the tendons.
 - (D) It prevents the build-up of lactic acid during high-intensity bursts.
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3. What physiological shift occurs during the 'stupid brain effect' when an athlete is under extreme survival stress?

- (A) Blood flow is rerouted from the prefrontal cortex to the amygdala.
 - (B) Dopamine levels spike to increase complex problem-solving speed.
 - (C) The prefrontal cortex becomes hyper-vascularised to manage the crisis.
 - (D) Serotonin suppresses the amygdala to maintain strategic clarity.
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4. Which catabolic process is triggered by cortisol to provide emergency fuel, often at the expense of muscle tissue?
- (A) Proteolysis
 - (B) Lipogenesis
 - (C) Neurogenesis
 - (D) Glycogen synthesis
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5. What was the primary objective of the 'Triple H' sessions introduced by Damien Hardwick?
- (A) To create a 'permission structure' for vulnerability and authentic connection.
 - (B) To identify which players lacked the 'mental toughness' for finals.
 - (C) To establish a clear hierarchy of leadership within the player group.
 - (D) To rehearse the strategic 'game plan' through emotional storytelling.
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6. In the 'Thriving Cocktail' (D.S.O.E.), what is the primary role assigned to Oxytocin?
- (A) To directly antagonise and dampen the release of cortisol.
 - (B) To provide natural pain relief and a sense of euphoria.
 - (C) To act as the 'reward' molecule for achieving physical goals.
 - (D) To regulate the sleep-wake cycle and baseline metabolic rate.
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7. How does Anandamide interact with CB₁ receptors to regulate the stress response?
- (A) It provides retrograde inhibition to stop neurons from firing aggressively.
 - (B) It increases the sensitivity of the HPA axis to external stimuli.
 - (C) It triggers the 'downregulation' of receptors to prevent over-stimulation.
 - (D) It acts as a primary catecholamine to stimulate the prefrontal cortex.
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8. What statistical 'smoking gun' provided evidence for Richmond's transition from a catabolic to an anabolic biological terrain?
- (A) An unprecedented lack of soft tissue injuries throughout the season.
 - (B) A record-breaking number of high-speed sprints per game.
 - (C) Highest average testosterone levels ever recorded in the AFL.
 - (D) The fastest average reaction time during contested ball situations.
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9. According to the 'Phew' protocol, why is conventional pharmacology often less effective than the 'Play State' for long-term health?
- (A) Pharmacology relies on substitution, which leads to receptor downregulation.
 - (B) Natural hormones have a higher molecular weight than synthetic drugs.
 - (C) External drugs cannot cross the blood-brain barrier effectively.
 - (D) Synthetic chemicals are unable to trigger the release of Oxytocin.
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10. What did the '5 coffee' mandate represent in the context of the team's biological rewiring?
- (A) A manual intervention to repair the team's social fabric and trust.
 - (B) A dietary requirement to increase caffeine-induced alertness.
 - (C) A method to monitor player movement outside of official training hours.
 - (D) A strategy to increase the player group's public visibility.
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11. Dustin Martin's 2017 transformation is attributed to the concept of 'disciplined freedom'. What did this entail biologically?
- (A) Letting go of internal chatter and the need for external validation.
 - (B) Adhering to a rigid, high-cortisol training regime for better focus.
 - (C) Using intense physical exertion to suppress all other neurotransmitters.
 - (D) Developing a reliance on the 'Hunter, Gatherer' reactive brain.
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12. Why did Richmond's opponents experience accelerated fatigue in the second half of games compared to the Tigers?
- (A) Their high-cortisol state forced an inefficient reliance on accelerated glycolysis.
 - (B) Richmond had a significantly higher average VO_2 max across the squad.
 - (C) Opponents were suffering from the immediate downregulation of their adrenal glands.
 - (D) Richmond utilised exogenous ketones to bypass the need for glycogen.
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13. In the Phew framework, what is the 'terrain theory' of health?
- (A) The belief that internal biological environment dictates the risk of chronic disease.
 - (B) The geographical mapping of sports performance across different climates.
 - (C) A strategy for managing ground conditions on a football field.
 - (D) The idea that performance is limited by the physical resistance of the athlete's environment.
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14. What is the primary role of the Endocannabinoid System (ECS) as described in the 'Richmond Anomaly' research?
- (A) It acts as a natural braking system to restore balance after stress.
 - (B) It mobilises adrenaline for the 'Hunter, Gatherer' survival response.
 - (C) It is responsible for the catabolic breakdown of muscle tissue.
 - (D) It prioritises blood flow to the reactive amygdala during contests.
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15. Which specific neurotransmitter is upregulated by 'social play' and acts as the 'master key' to Richmond's biological resilience?
- (A) Anandamide
 - (B) Noradrenaline
 - (C) Glutamate
 - (D) Cortisol
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16. How did Trent Cotchin's leadership style change after the 2016 season?
- (A) He shifted from a 'perfect captain' model to one of empathetic servant leadership.
 - (B) He adopted a more authoritarian approach to ensure strict discipline.
 - (C) He focused exclusively on his own individual performance to lead by example.
 - (D) He increased the level of public accountability for teammate errors.
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17. According to 'Phew', what is the evolutionary 'wrong turn' humanity has taken?
- (A) Over-reliance on the anxious, inefficient 'Hunter, Gatherer' brain.
 - (B) The transition from a nomadic lifestyle to a sedentary one.
 - (C) The development of high-tech medicine over traditional healing.
 - (D) A failure to develop the prefrontal cortex in sync with the amygdala.
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18. In the analysis of the 2017 season, what is the 'Verdict' regarding the cause of Richmond's late-game surges?
- (A) They had 'full tanks' due to low-cost, sustainable aerobic metabolism.
 - (B) They utilised superior psychological intimidation techniques.
 - (C) The 'Triple H' sessions were conducted during half-time intervals.
 - (D) They were physically larger and more resilient to tackle impact.
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19. What is 'Sakinah', and how does it relate to the Phew Protocol's goal?
- (A) A state of deep tranquillity and biological surplus.
 - (B) A specific dietary supplement used to boost Anandamide.
 - (C) The technical name for the retrograde signaling process.
 - (D) A traditional football tactic focusing on defensive stability.
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20. What role did Jack Riewoldt play in the team's new biological architecture?
- (A) The 'emotional barometer' who celebrated others' success with vigour.
 - (B) The tactical architect who redesigned the forward line strategy.
 - (C) The primary enforcer who maintained a high-tension competitive edge.
 - (D) A quiet leader who modelled stoicism under pressure.
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21. The 'Richmond Anomaly' text argues that Coach Damien Hardwick's transformation began with which specific event?
- (A) A direct confrontation by his wife, Danielle, about his loss of personality.
 - (B) The delivery of a truckload of manure to the club headquarters.
 - (C) A data analysis report proving the inefficiency of the 2016 season.
 - (D) The board of directors giving him a final warning and a new game plan.
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22. What is the biological consequence of 'functional downregulation' of CB₁ receptors due to chronic stress?
- (A) The body removes its own 'brake pads', leaving the stress response unchecked.
 - (B) The prefrontal cortex becomes hyper-sensitive to strategic patterns.
 - (C) The adrenal glands increase their efficiency in clearing cortisol.
 - (D) Muscle tissue becomes hyper-elastic to prepare for flight.
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23. How does the 'Play State' terrain affect the body's 'apoptosis' mechanism?
- (A) It removes the 'biological blockade' that protects damaged cells.
 - (B) It accelerates apoptosis in healthy muscle tissue to save energy.
 - (C) It permanently deactivates the cell's 'external kill switches'.
 - (D) It triggers the 'internal shields' of the mitochondria.
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24. Bachar Houli's role as a 'Spiritual Anchor' contributed which specific element to the Richmond culture?
- (A) A perspective of gratitude and brotherhood that went 'beyond football'.
 - (B) A strict disciplinary code based on religious principles.
 - (C) The introduction of Islamic 'Prophetic Medicine' as the primary training diet.
 - (D) An emphasis on secular stoicism to balance the team's emotions.
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25. Which term describes the body's 'emergency fuel-burning mode' that leads to proteolysis?
- (A) Accelerated glycolysis
 - (B) Sustainable homeostasis
 - (C) Anabolic restoration
 - (D) Vagal social engagement
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26. What is the 'Critical Mass' message referred to in the 'Phew' source text?
- (A) An 'Evolution Solution' delivered by 'Guides' to free humanity.
 - (B) The exact point where a team's dopamine levels ensure victory.
 - (C) The maximum amount of cortisol a human athlete can tolerate.
 - (D) The weight of the manure dumped at Richmond's headquarters.
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27. According to 'Phew', what is the ultimate goal of achieving 'Sovereign Health'?
- (A) To clear the static of survival-mode to better fulfil one's purpose.
 - (B) To achieve a state of permanent physical immortality.
 - (C) To eliminate the need for any social or emotional connection.
 - (D) To maximise the 'Cortisol Tax' for extreme short-term gains.
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 **Answer Key**

1. **A** *The text describes the 2016 coaching staff as suffocating players with an autopsy of failure and a relentless focus on what they could not do.*

2. **A** *Chronic high-level muscle clenching reduces fluidity and shortens the effective range of movement, making soft tissue tears more likely.*

3. **A** *During high-stress HPA axis activation, the strategic command centre (PFC) is taken offline in favour of the reactive, primitive brain.*

4. **A** *Cortisol initiates the breakdown of muscle and connective tissue to flood the bloodstream with emergency sugars.*

5. **A** *By sharing personal stories (Hero, Hardship, Highlight), the team replaced the mask of toughness with genuine human bonds.*

6. **A** *Oxytocin signals systemic safety to the nervous system, functioning as a powerful anxiety reducer that counters stress chemicals.*

7. **A** *Anandamide travels backwards across the synapse to the sending neuron, effectively acting as a 'brake' on panic signals.*

8. **A** *The text argues that the anabolic 'Play State' allowed for real-time tissue repair, preventing the major ruptures typical of stressed athletes.*

9. **A** *External loud signals cause the body to pull its own receptors offline, whereas internal signals like Anandamide prompt regeneration.*

10. **A** *By forcing connections with unfamiliar teammates, the club dismantled cliques and promoted a baseline of safety.*

11. **A** *By moving beyond fear and expectation, Martin's nervous system was liberated, allowing for arguably the greatest individual season in history.*

12. **A** *Stressed athletes burn fuel in a destructive 'emergency' mode, whereas Richmond maintained a sustainable aerobic metabolism.*

13. **A** *The text posits that a high-cortisol 'terrain' blocks the body's ability to clear damaged cells, whereas a 'Play State' terrain supports quality control.*

14. **A** *The ECS uses Anandamide to provide negative feedback to the HPA axis, hitting the 'mute button' on waves of panic.*

15. **A** *Known as the 'bliss molecule', it activates the internal regulatory system to neutralise the cortisol tax.*
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16. **A** *Cotchin unburdened himself of the club's weight and focused on the success of younger players, transmission of safety rather than stress.*
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17. **A** *The text suggests humans lost the ability to access their optimal 'Respiration Mode' in favour of a permanent state of survival.*
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18. **A** *By avoiding the catabolic cortisol tax, they conserved glycogen, allowing for unstoppable energy bursts when opponents were 'bankrupt'.*
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19. **A** *The protocol aims for Sakinah to clear the 'static of survival-mode' so one can better fulfil their purpose and service.*
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20. **A** *Riewoldt shifted from being a 'petulant' source of cortisol to a hype man for the brotherhood, channelling passion into care.*
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21. **A** *Her statement 'You are not the man I married' shattered his ego and forced a shift from authoritarianism to humility.*
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22. **A** *To turn down the 'noise' of constant threat signals, the body pulls receptors offline, making it harder to stop the panic response.*
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23. **A** *By reducing chronic stress, the body allows its quality control systems to identify and remove malfunctioning or precancerous cells.*
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24. **A** *His faith provided a layer of values that transcended winning and losing, grounding the team in a larger purpose.*
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25. **A** *Cortisol forces the system into this inefficient mode to mobilise energy immediately, regardless of the physical cost to tissues.*
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26. **A** *The text mentions a blueprint delivered from another time to help humans escape their self-imposed biological prison.*
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27. **A** *Sovereign Health is not about escape or intoxication, but a disciplined return to a state where one can serve others and fulfil prayers.*
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