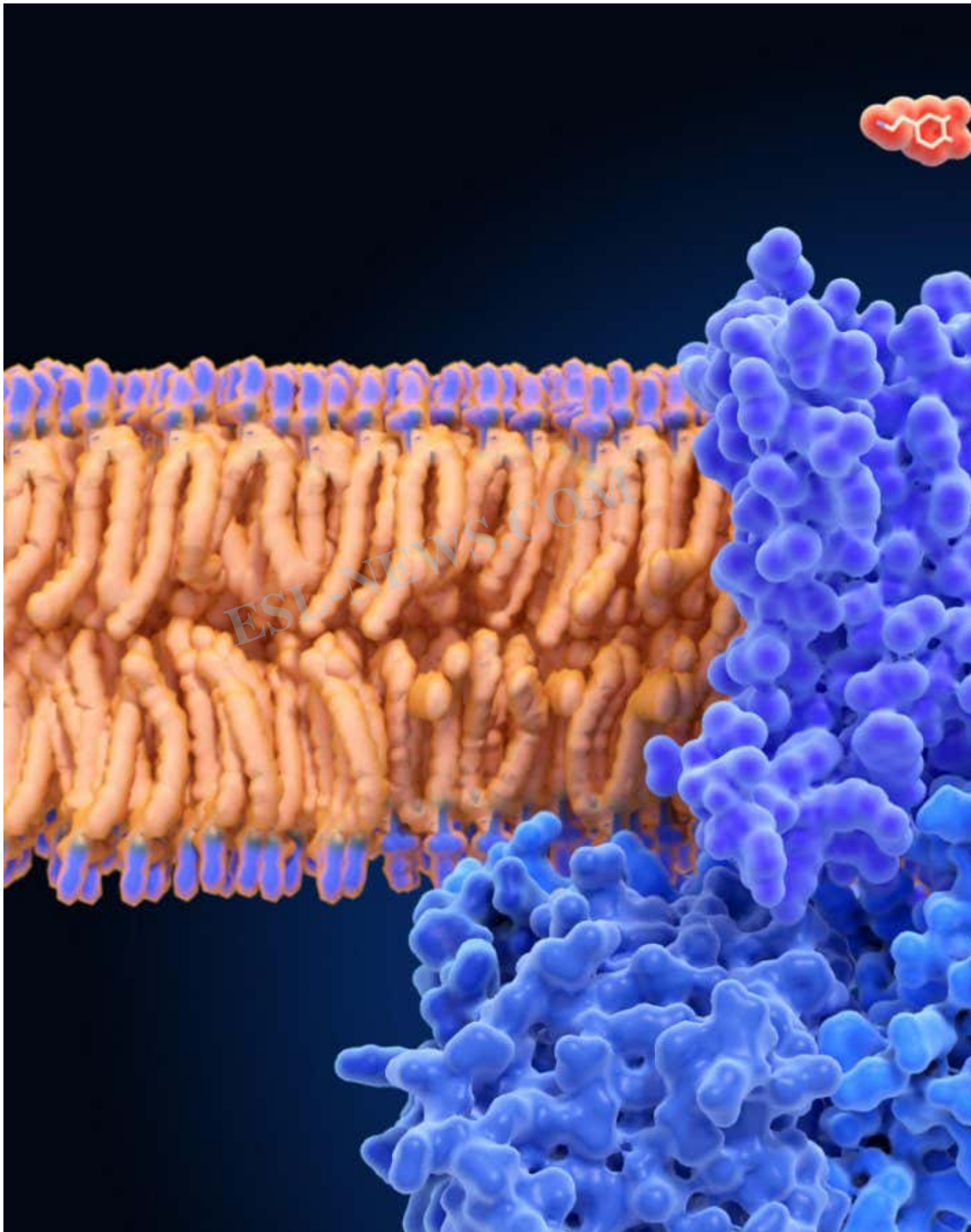




## Pain Relief: Placebo Effect Without Dopamine?

### Description

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Dopamine (red) approaching one of its receptors (blue)

JUAN GAERTNER/SCIENCE PHOTO LIBRARY/ALAMY

The relationship between the hormone and neurotransmitter dopamine and the placebo effect may not be as straightforward as previously thought. Research conducted by Ulrike Bingel and colleagues from the University Hospital Essen in Germany challenges the belief that dopamine plays a significant role in pain relief through the placebo effect.

Contrary to popular belief, a study involving 168 individuals revealed that changes in dopamine levels did not impact their perception of pain or their anticipation of pain relief. This suggests that other factors, such as opioids and cannabinoids, may have a more significant influence on the placebo effect for pain relief.

Bingel suggests that hormones like oxytocin and noradrenaline could also play a role in the placebo effect and should be explored in future studies. While dopamine may not be directly linked to pain relief through placebos, it could come into play in situations where individuals are more motivated to experience pain relief.

Understanding the placebo effect could lead to innovative therapies for more effective pain management. Lauren Atlas from the National Institutes of Health in Bethesda, Maryland, emphasizes the importance of verbal instructions and social factors in shaping the placebo effect, which may not be mediated by dopamine.

Topics:

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## Vocabulary List:

1. **Neurotransmitter** /,njʊə.rəʊ.træns'mɪt.ər/ (noun): A chemical substance that transmits signals across a synapse from one neuron to another.
2. **Perception** /pə'sep.ʃən/ (noun): The way in which something is regarded understood or interpreted.
3. **Anticipation** /æn,tɪs.tɪ'peɪ.ʃən/ (noun): The action of anticipating something; expectation or prediction.
4. **Innovative** /'ɪn.ə.veɪ.tɪv/ (adjective): Featuring new methods; advanced and original.
5. **Motivated** /'mɒʊ.tɪ.veɪ.tɪd/ (adjective): Having a strong reason or incentive to do something.
6. **Significant** /sɪg'nɪf.ɪ.kənt/ (adjective): Sufficiently great or important to be worthy of attention; noteworthy.

## Vocabulary quizzes

**Multiple Choice ( Select the Correct answer for each question. )**



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1. Which of the following is a chemical messenger that transmits signals across a synapse?  
Option: Perception  
Option: Anticipation  
Option: Neurotransmitter  
Option: Innovative
  2. The scientific methods used in the investigation of crimes are related to which field of study?  
Option: Insights  
Option: Transmissible  
Option: Forensic  
Option: Emerged
  3. What term best describes the act of being watchful or alert for possible danger or difficulties?  
Option: Diverse  
Option: Vigilance  
Option: Characteristics  
Option: Efficacy
  4. Which activity involves an astronaut working outside a spacecraft in space?  
Option: Milestone  
Option: Spacewalk  
Option: Capsule  
Option: Pioneering
  5. What term refers to the process of introducing new ideas or methods?  
Option: Tailored  
Option: Management  
Option: Milestone  
Option: Innovation
  6. Which term best describes a range of different things or having variety?  
Option: Underutilized  
Option: Contraindications  
Option: Diverse  
Option: Insights
  7. What term describes having a strong reason to act or accomplish something?  
Option: Exhibitors  
Option: Transmissible  
Option: Motivated  
Option: Emerged



8. Which term refers to the ability to acquire and apply knowledge and skills?

Option: Predominantly

Option: Symptoms

Option: Vigilance

Option: Intelligence

9. Which term signifies the action of creating or preparing something carefully?

Option: Spacewalk

Option: Capsule

Option: Formulated

Option: Pioneering

10. What term denotes something that is important or meaningful?

Option: Suit

Option: Innovation

Option: Significant

Option: Tailored

**Gap-Fill ( Fill in the blanks with the correct word from the vocabulary list. )**

11. The students waited with \_\_\_\_\_ for the exam results to be announced.

12. Efficient \_\_\_\_\_ is essential for the success of any organization.

13. The virus is highly \_\_\_\_\_ and can be easily spread among populations.

14. A new leadership style has \_\_\_\_\_ in the company following the appointment of the new CEO.

15. Fever cough and fatigue are common \_\_\_\_\_ of the flu.

16. The study aimed to determine the \_\_\_\_\_ of the new drug in treating the condition.

17. The training facility is currently \_\_\_\_\_ and not operating at full capacity.

18. The marketing campaign was \_\_\_\_\_ to appeal to the younger demographic.

19. The breed of dog has specific \_\_\_\_\_ that make it well-suited for hunting.



20. The company is known for its \_\_\_\_\_ work in developing cutting-edge technology.

**Matching Sentences ( Match each definition to the correct word from the vocabulary list. )**

21. The research study provided valuable into consumer behavior.
22. The astronaut climbed into the space before the mission.
23. The completion of the project marked a significant for the team.
24. The company prides itself on its approach to product development.
25. The astronaut put on the space before the spacewalk.
26. The evidence presented in court helped solve the crime.
27. The team a detailed plan for the project implementation.
28. Maintaining constant is crucial in high-security areas.
29. His exceptional allowed him to solve complex problems effectively.
30. The resources were and could have been better utilized for the project.

**Answer**

**Multiple Choice:** 1. Neurotransmitter 2. Forensic 3. Vigilance 4. Spacewalk 5. Innovation 6. Diverse 7. Motivated 8. Intelligence 9. Formulated 10. Significant

**Gap-Fill:** 11. Anticipation 12. Management 13. Transmissible 14. Emerged 15. Symptoms 16. Efficacy 17. Underutilized 18. Tailored 19. Characteristics 20. Pioneering

**Matching sentence:** 1. Insights 2. Capsule 3. Milestone 4. Innovative 5. Suit 6. Forensic 7. Formulated 8. Vigilance 9. Intelligence 10. Underutilized

**CATEGORY**

- 1. Sci/Tech - LEVEL4

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