



# Neuroscientists Discover Constantly Changing Brain Codes

## Description

Certain brain cells are thought to respond in the same way to the same things. For example, specific neurons always activate when we see certain shapes or colours. This idea is important because it helps the brain react consistently to our surroundings. When Laura Driscoll started her research at Harvard University in 2012, she wanted to see if this was true by studying mouse neurons over time.

However, Driscoll found that the brain activity changed after several days. Neurons that fired in one location on the first day did not respond in the same way weeks later. This surprised Driscoll and changed her research direction. In 2017, she reported that while some neurons reacted predictably in the short term, their responses reorganised over weeks.

Many scientists were doubtful about these findings, thinking they might be due to experimental errors. Yet, more studies showed similar changes in neuron behaviour, which researchers now call representational drift. This means neurons can change how they respond over time.

Understanding this drift is important because it may help scientists learn how memories work and how to design better brain-computer connections. Researchers are still exploring why the brain can maintain stable behaviour even when its neurons are changing.

## Comprehension Questions

### Multiple Choice

1. What did Laura Driscoll start researching at Harvard University in 2012?

- Option: The effects of color on neurons
- Option: The response of mouse neurons over time
- Option: The structure of brain cells
- Option: The connection between brain and computers

2. In what year did Driscoll report her findings on neuron activity?

- Option: 2010
- Option: 2012
- Option: 2015
- Option: 2017



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3. What term do researchers now use to describe changes in neuron behavior?
- Option: Neuronal adaptation
  - Option: Cognitive drift
  - Option: Representational drift
  - Option: Synaptic fluctuation
4. Which concept is highlighted by the observation that some neurons respond consistently?
- Option: Neurons are static
  - Option: Environmental influence on brain activity
  - Option: The brain's reaction consistency
  - Option: Neurons have no memory
5. What was a surprising outcome of Driscoll's research?
- Option: Neurons responded the same every day
  - Option: Neurons changed their response over time
  - Option: Neurons did not fire at all
  - Option: Neurons only activate in isolation
6. Why is understanding representational drift important according to researchers?
- Option: It helps in designing video games
  - Option: It may provide insights into memory function and brain-computer connections
  - Option: It has no real-world applications
  - Option: It explains the structure of the brain

### True-False

7. Driscoll's findings indicated that neurons responded consistently over long periods.
8. Researchers have confirmed Driscoll's findings with multiple studies.
9. Laura Driscoll conducted her research at Stanford University.
10. Representational drift refers to a change in how neurons respond over time.
11. Neurons always maintain their original response patterns regardless of time.
12. Studying neuron behavior could improve brain-computer connections.



## Gap-Fill

13. Driscoll started her research at Harvard University in \_\_\_\_\_.
14. The concept where neurons change their responses over time is known as \_\_\_\_\_  
drift.
15. Some neurons reacted predictably in the short term, but their responses \_\_\_\_\_ over  
weeks.
16. Understanding this drift can help scientists learn how \_\_\_\_\_ work.
17. Neurons that fired in one location on the first day did not respond in the same way  
\_\_\_\_\_ later.
18. Researchers are exploring how the brain can maintain stable \_\_\_\_\_ even when its  
neurons are changing.

## Answer

**Multiple Choice:** 1. The response of mouse neurons over time 2. 2017 3. Representational drift 4. The brain's reaction consistency 5. Neurons changed their response over time 6. It may provide insights into memory function and brain-computer connections

**True-False:** 7. False 8. True 9. False 10. True 11. False 12. True

**Gap-Fill:** 13. 2012 14. representational 15. reorganised 16. memories 17. weeks 18. behaviour

## CATEGORY

1. Sci/Tech - LEVEL2

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