



Scientists Identify Two Autism Subtypes in the Brain

Description

Autism is a complex condition affecting individuals in various ways. Recent research has made a significant breakthrough by identifying two subtypes of autism. This discovery, made by an international team, could lead to better diagnosis and support.

The study used both human and mouse brain scans to find these subtypes, which differ biologically. Researchers hope this will lead to more tailored therapies and move away from a general approach often used for autism.

Neuroscientist Alessandro Gozzi from the Italian Institute of Technology highlighted that while autism has long shown variability, this study provides evidence of distinct biological bases. The team identified specific genetic and immune factors that correspond to different brain connectivity patterns.

The study examined brain scans from mice with autism-like characteristics, 940 young people with autism, and 1,036 non-autistic individuals. Two main patterns emerged: a hypoconnectivity group, with reduced brain connections linked to communication pathways in the brain, and a hyperconnectivity group, with increased connections related to the immune system, indicating more severe autism.

These findings were consistent across species and human datasets, suggesting they are genuine subtypes. However, researchers noted that only about 25% of the human brains in the study fell into these categories, indicating more research is needed.

The study opens new pathways for future autism therapies based on these biological traits. Past research identified subtypes using behavioural traits, but this study relies on brain imaging.

The researchers have made their data and tools available for other scientists. They believe larger datasets and improved techniques will reveal more subtypes in the future. The research is published in *Nature Neuroscience*.

Vocabulary List:

1. **subtypes** //ˈsʌb,taɪps// (noun): different forms or kinds within one group
2. **breakthrough** //ˈbreɪk,θruː// (noun): an important new discovery or advance
3. **connectivity** //kə,nekˈtɪvəti// (noun): how parts are joined or linked together
4. **immune** //ɪˈmjʊn// (adjective): protected from a disease or infection
5. **tailored** //ˈteɪləd// (adjective): made to fit the specific needs of people
6. **genetic** //dʒəˈnetɪk// (adjective): relating to genes and family inheritance



Comprehension Questions

Multiple Choice

1. What recent breakthrough was made in autism research?
Option: Identification of two subtypes
Option: Discovery of a cure
Option: Creation of a new therapy
Option: Establishment of a support group
2. Which tools were used to find the subtypes of autism?
Option: MRI scans
Option: Brain scans of humans and mice
Option: Blood tests
Option: Genetic sequencing
3. What does the hypoconnectivity group correspond to?
Option: Increased brain connections
Option: Reduced brain connections linked to communication
Option: Normal brain activity
Option: Higher intelligence
4. Which publication featured the study on autism subtypes?
Option: The Lancet
Option: Nature
Option: Nature Neuroscience
Option: JAMA
5. What percentage of human brains studied fell into the identified categories?
Option: 10%
Option: 25%
Option: 50%
Option: 75%
6. Who highlighted the variability of autism in the study?
Option: A neuroscientist from Harvard



- Option: Alessandro Gozzi
- Option: A psychologist
- Option: An immunologist

True-False

- 7. The study only used human brain scans to identify subtypes.
- 8. The findings were consistent across species and human datasets.
- 9. The researchers believe larger datasets will reveal fewer subtypes in the future.
- 10. The study relied on behavioral traits to identify subtypes.
- 11. Two main patterns identified were hypoconnectivity and hyperconnectivity.
- 12. The study determined a single biological basis for autism.

Gap-Fill

- 13. The study focused on identifying two subtypes of autism by using brain scans from _____ individuals.
- 14. Alessandro Gozzi is from the Italian Institute of _____ .
- 15. The hypoconnectivity group is associated with reduced brain connections linked to _____ pathways.
- 16. The research highlighted distinct biological _____ for the subtypes of autism.
- 17. The study opens new pathways for future autism _____ based on biological traits.
- 18. Only about _____ of the human brains in the study fell into the identified categories.

Answer

Multiple Choice: 1. Identification of two subtypes 2. Brain scans of humans and mice 3. Reduced brain connections linked to communication



4. Nature Neuroscience 5. 25% 6. Alessandro Gozzi

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

Gap-Fill: 13. humans 14. Technology 15. communication 16. bases 17. therapies 18. 25%

CATEGORY

1. Health - LEVEL4

POST TAG

1. Autism
2. B2
3. brain
4. ESL learning
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