

Study reveals most impactful neuroscience research

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A study of the 100 most-cited neuroscience articles has revealed that 78 of these papers cover five topics, including neurological disorders, the prefrontal cortex, brain connectivity, brain mapping and methodology studies. The study allows scientists, policy-makers and investors to quickly identify the most-cited articles and impactful research in neuroscience.

Neuroscience research aims to understand neural structure and function, and how this relates to behavior, normal physiological processes and disease. [The discipline is growing rapidly, with scientists publishing more articles each year.](#) As researchers learn more and develop new techniques, the number of research topics grows, and it can be difficult to get a handle on the field as a whole.

"It can be difficult for newcomers to the neuroscience field or clinicians to identify the major research topics," explains [Andy Wai Kan Yeung](#) of the University of Hong Kong, lead author on the study, which was recently published in [Frontiers in Human Neuroscience](#). Yeung and colleagues set out to identify and analyze the 100 top-cited (referenced by other articles) papers in neuroscience.

"The aim was to provide a starting point for people conducting literature searches, so that they could quickly and easily identify the most cited work in the whole field," says Yeung. In theory, high numbers of citations should reveal articles with a big [impact](#) in the field, and comparing citations can be an impartial and convenient way to find

papers that have made a splash.

The team searched for neuroscience manuscripts on the Web of Science database, which lists citation data for articles dating to 1945. They identified and analyzed the 100 most-cited neuroscience articles and recorded information about each one, including the journals they were published in, research topic and year of publication. They also looked at the impact factor of each respective [journal](#), which, put simply, is the average number of cites an [article](#), in given a journal, receives per year.

The team found that the top 100 articles were published between 1972 and 2009, and the total number of cites for each article ranged from 2,138 to 7,326, with an average of 3,087. Cites were fairly evenly distributed throughout the 100 articles, meaning that no one article, or group of articles, had a disproportionately high number.

However, articles tend to attract more cites over time, with older articles having more time to be cited, while journal impact factors change over time. So, to level the playing field, the researchers also compared adjusted citation counts (the average citation count per year since the article was published) and adjusted journal impact factors (the average impact factor of the journal per year, since the article was published).

Almost half of the journals in the list have long histories, such as *Nature* and *Science*, which were established in the late 1800s. The researchers compared some of the most prestigious journals with high impact factors with the other journals on the list. "Adjusted journal impact factor did not have a significant correlation with adjusted [citation](#) count," says Yeung. "This was surprising, as it is intuitive to think that important articles published in prestigious journals should have more citations".

When the team grouped the papers in terms of research topic, 78 on the list covered five topics including neurological disorders, the [prefrontal](#)

[cortex](#), [brain connectivity](#), [brain mapping](#) and methodology studies. Papers investigating brain connectivity were quite recent, indicating that this topic has recently increased in popularity and importance.

The study can help anyone interested in identifying the most important [neuroscience](#) topics. "Hopefully this study will encourage researchers to look at the identified articles and build on this impactful work," says Yeung.

More information: [DOI: 10.3389/fnhum.2017.00363](https://doi.org/10.3389/fnhum.2017.00363)

Provided by Frontiers

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