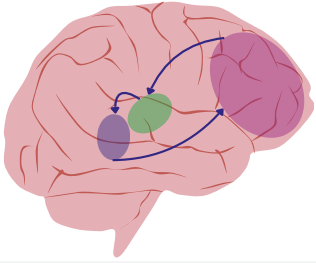


Neural biomarkers discovered for Obsessive-Compulsive Disorder

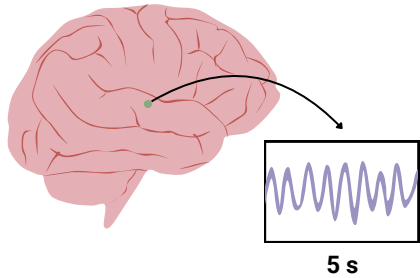
Researchers have identified, with great temporal and spatial specificity, what happens deep in the brain during obsessive thoughts and compulsive behaviours. Using electrodes deep in the brain, they saw how specific brainwaves became activity. These brain waves serve as a biomarker for obsessive compulsive disorder (OCD).

OCD is a **psychiatric disorder** in which people suffer from **obsessive thoughts** (obsessions) and **compulsive behaviours** (compulsions). An example could be an obsessive fear of contamination.



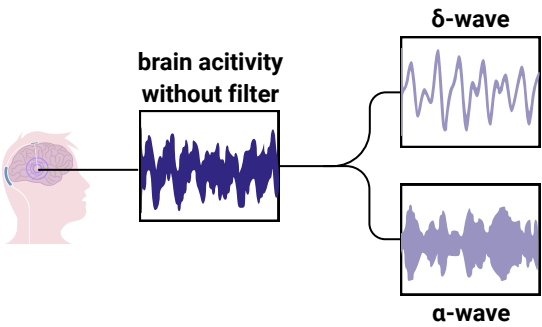
In OCD, **communication is disrupted** between the cerebral cortex, the striatum, and the thalamus. Together, these areas of the brain form the **CSTC circuit**.

Severe OCD is sometimes treated with **deep brain stimulation (DBS)**. This involves placing **electrodes** deep in the brain to electrically stimulate parts of the CSTC circuit.



In this study, the implants were used to measure brain activity. That way, the activity could be measured with **very high spatial and temporal precision**.

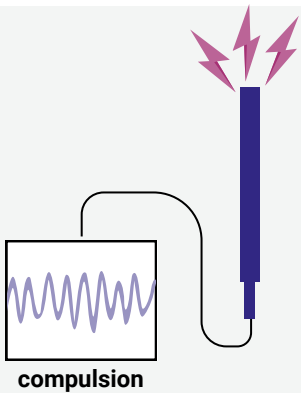
OCD patients were asked to **purposefully generate obsessive thoughts and carry them out a few moments later**. During this period, their brain activity was recorded at the location that is normally stimulated by DBS.



The brain activity was then filtered according to brain waves with different frequencies. Two of these waves, the **alpha- and delta-waves**, were noticeably present when carrying out the compulsive behaviour and could therefore serve as a **biomarker for OCD**.

Better treatments

Currently, deep brain stimulation still works as a sort of **'always on'-system**. The electrodes are constantly sending electrical signals, without distinguishing between moments in which that may, or may not, be necessary. The newly discovered biomarkers pave new ways towards a more targeted approach.



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