



# NeuRA

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## SCHIZOPHRENIA Factsheet

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### What is the thalamus?

The thalamus is a midline structure located directly on top of the brainstem, surrounding the third ventricle. It is thought to be primarily involved in relaying information from the brainstem and subcortex into the cortex, particularly sensation, special sense and motor signals. Every sensory system except olfaction utilises a thalamic relay to the associated cortical region. The thalamus has also been implicated in autonomic functions such as the regulation of consciousness, sleep and wakefulness. The thalamus may also have higher cognitive functions, being implicated in some emotional processing as well as memory propagation.

### What is the evidence for changes in the thalamus?

#### Structural changes

High quality evidence suggests bilateral reductions in grey matter in the thalamus of people with schizophrenia, which is of slightly larger magnitude in people with first-episode schizophrenia than in people with chronic schizophrenia.

#### Functional changes

Moderate quality evidence shows reduced activity in the left mediodorsal thalamus of people with schizophrenia during executive functioning tasks. During episodic retrieval, clusters of reduced activity in bilateral thalamus have been reported along with a cluster of increased activity in the right thalamus. There is increased activity in the right thalamus and decreased activity in the left thalamus of first-degree relatives of people with schizophrenia during executive functioning and working memory tasks. Moderate to low quality evidence suggests decreased N-acetyl aspartate/creatine ratio in the thalamus of people with chronic schizophrenia, and increased glutamate/glutamine ratio in the thalamus of people with first-episode schizophrenia. Moderate quality evidence suggests no differences in D2/D3 receptor availability between unmedicated people with schizophrenia and controls.

For more information see the technical table



## NeuRA

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*NeuRA (Neuroscience Research Australia) is one of the largest independent medical and clinical research institutes in Australia and an international leader in neurological research.*

*Diseases of the brain and nervous system pose the greatest health, economic and social burden of any disease group because they are chronic, debilitating and have no known cures.*

*Medical research is the cornerstone of efforts to advance the health and wellbeing of families and the community. Our dedicated scientists are focussed on transforming their research into significant and practical benefits for all patients.*

*While we hope you find this information useful, it is always important to discuss any questions about schizophrenia or its treatment with your doctor or other health care provider.*

### HOW YOUR SUPPORT HELPS

We are able to make significant advances due to the generosity of countless people. Your donation allows us to continue to work towards transforming lives. For information on how you can support our research, phone **1300 888 019** or make a secure donation at [neura.edu.au/donate/schizophrenia](http://neura.edu.au/donate/schizophrenia).