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## Prozac effect on brain pinpointed

Prozac is one antidepressant which is recommended for under-18s



**Researchers have discovered how the widely prescribed drug Prozac acts on the brain to counter depression.**

A team at the Cold Spring Harbor Laboratory in Long Island, New York, found the drug triggers production of a type of immature brain cell.

They hope their work could aid development of new drugs and therapies for depression, and neurodegenerative diseases such as Alzheimer's.

The study appears in Proceedings of the National Academy of Science.

**“ By defining the drug's chief target we are giving a clearer idea of how perhaps to design new anti-depressant drugs and therapies** Dr Grigori Enikolopo

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It has been known for some years that Prozac is likely to relieve the symptoms of depression by somehow causing more brain cells (neurons) to be born in a particular region of the brain called the dentate gyrus.

But the origins of these neurons, and how Prozac promotes their existence, have been a mystery until now.

The researchers analysed proteins produced by different kinds of cells in the brains of adult mice.

This enabled them to track the steps involved in the complex process that converts immature stem cells into mature, specialised neurons.

### Intermediate form

They found that Prozac had a specific effect on the second step of this pathway - it stimulated production of an intermediate form of the cells called ANPs (amplifying neural progenitors).

As ANPs eventually go on to form fully-fledged neurons, this ultimately leads to increased neuron numbers in the dentate gyrus.

The researchers are now testing other antidepressants and new drugs to establish whether they act in the same way.



Lead researcher Dr Grigori Enikolopov said it may be possible to identify drugs which did have the same effect - but which might be more potent, and did not produce some of the side effects of Prozac.

He said: "Prozac is not a panacea, it does not work for everybody.

"By defining the drug's chief target we are giving a clearer idea of how perhaps to design new anti-depressant drugs and therapies."

Dr. Steven McKnight of the University of Texas Southwestern Medical Center in Dallas said the paper, while speculative, was a "solid and interesting concept".

"If a drug fosters electrical activity in the brain, that tells the brain that things are happening and that it might be good to make new neurons to deal with activity."

Paul Farmer, chief executive of the mental health charity Mind, said: "All new research on drugs is interesting, but it's worth remembering that 'talking treatments', such as cognitive behavioural therapy, are the recommended first line treatment for many cases of depression.

"Unfortunately, waiting lists for these are often very long."

