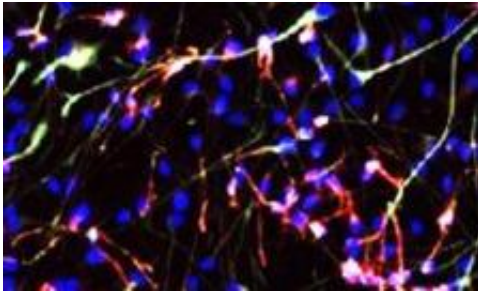


New method could fast-track existing drugs as novel treatments for depression

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Research from King's College London reveals a new method of repurposing existing drugs as novel treatments for depression, using laboratory studies of brain cells.

The results reflect a growing movement towards repurposing drugs that have been developed for one condition to tackle another. This approach effectively bypasses the discovery phase of [drug](#) development, which could save significant time and money in finding effective treatments.

Finding ways to fast-track the discovery of new antidepressants is crucial as around half of all people diagnosed with depression do not respond to first-line treatments.

Published today in the *Journal of Psychopharmacology*, this new study

measured the effects of two types of antidepressant on levels of gene expression (activity) in [stem cells](#) in the hippocampus. Previous research has shown that hippocampal stem cells are altered in depressed patients and are the catalyst for the action of some antidepressants.

Using a method known as 'connectivity mapping', the researchers identified gene activity signatures unique to antidepressants. They then searched for the same or very similar signatures in a database of more than 1,300 medications that are currently used to treat a wide range of illnesses.

This process identified two drugs with the same signatures as antidepressants tested in the first part of their study, which means they could have the potential to be repurposed as treatments for depression. The two drugs identified using this process will now be tested to discover whether they are clinically effective treatments for depression.

Dr Sandrine Thuret, corresponding and joint senior author of the study, from the Institute of Psychiatry, Psychology & Neuroscience (IoPPN) at King's College London, said: 'Thanks to advances in technology we're now using [big data analytics](#) to uncover molecular similarities between diseases, allowing researchers to identify drugs already used for one disorder that have the potential to be repurposed as treatments for another illness.'

Dr Timothy Powell, first author of the study, also from the IoPPN at King's College London, said: 'These results are particularly exciting as they show the potential of this method to vastly accelerate or even bypass the discovery phase of [drug development](#). This would have clear economic benefits and save precious time in finding a treatment that works for each individual. The next step will be trying to further validate whether the compounds we identified have a clinically meaningful effect on depression symptoms.'

Dr Gerome Breen, joint senior author from the NIHR Biomedical Research Centre at South London and Maudsley NHS Foundation Trust and the IoPPN, King's College London, said: 'The ability of genomics to provide tools for drug discovery has been utilised for a long time in cancer research, in particular. Now we have shown that this method can also work for mental health, providing valuable information about new drugs that could be investigated in [depression](#).'

More information: Timothy R Powell et al. Transcriptomic profiling of human hippocampal progenitor cells treated with antidepressants and its application in drug repositioning, *Journal of Psychopharmacology* (2017). [DOI: 10.1177/0269881117691467](https://doi.org/10.1177/0269881117691467)

Provided by King's College London

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