

New form of antidepressant for more effective treatment for depression

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Credit: University of Huddersfield

Scientists at the University of Huddersfield led by Dr Patrick McHugh have embarked on a project that could lead to a more effective treatment for depression.

Intensive preparatory work is being carried out at the European Lead

Factory (ELF), one of the world's most advanced drug discovery research facilities. It will then provide Dr McHugh, Director of the University's Centre for Biomarker Research (CeBioR), with compounds that could be used to develop the new form of antidepressant, which might also treat other neurological conditions such as chronic pain.

"Response rates to the currently available antidepressants can be as low as 50 per cent. Moreover, it can take several weeks before an appropriate therapeutic response or lack of response becomes apparent, and during this period the patient suffers ongoing morbidity and increased risk of suicide. So there is an urgent clinical need for the development of more therapeutically effective drugs," said Dr McHugh.

His project is based on work carried out with colleagues that identified biochemical receptors that might provide novel targets for the development of improved antidepressants. For the next phase of research it is necessary to have compounds that are receptive to the drug targets.

A submission was made to the ELF by Dr McHugh and several partners across Europe, which has a vast "library" of compounds that can be screened automatically when researchers submit a chemical assay and describe their drug target. A panel of experts at the EU-backed ELF scrutinises every application to use the facility and only selects a subset of the most promising targets.

"They have a massive library of compounds and screen large volumes of compounds, which is incredible for the University of Huddersfield," said Dr McHugh, delighted that his project has been accepted by the European Lead Factory. "They will only screen targets that they think are valuable, so you have to get through an application process," he added.

Starting from a total of some ~300,000 compounds, the Lead Factory has so far narrowed the search down to 1,500 potential candidates. When the screening process has identified between 20 and 30 potential [compounds](#), their chemical structures will be given to Dr McHugh. This will then trigger the next phase of research, for which he will seek extra funding to develop this work further.

Summarising the science behind his project, Dr McHugh said: "The majority of antidepressants target the transmission of monoamine neurotransmitters. However, based on recent pharmacogenomics evidence, we have identified receptors that may provide novel targets for the development of improved antidepressant drugs.

"Our programme will look to identify a set of [small molecules](#) that can interact with and effect the activity of these receptors. Once identified, these small molecules can be further optimised for evaluation in a barrage of defined pharmacological and pre-clinical studies to elucidate their suitability as antidepressant candidates."

Provided by University of Huddersfield

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