An integrated preclinical screening platform to identify novel empathogenic drugs and compounds

Stanford scientists have developed a set of preclinical assays that are specifically designed to detect empathogenic effects of a drug that may indicate applications for that molecule in treating psychiatric diseases like PTSD.

The potential for the drug MDMA to be used as an adjunct to psychotherapy for Post Traumatic Stress Disorder has recently been uncovered and the therapeutic is in Phase III clinical trials. MDMA's therapeutic mechanism derives from its ability to foster feelings of empathy, and there is no other drug in clinical use that known to have this effect. While this breakthrough promises great potential in helping psychiatric patients, MDMA also has significant abuse potential, cardiotoxicity and potential neurotoxicity. Therefore, there is a critical need to identify novel compounds with empathogenic effects and a more favorable side effect profile. Existing drug screening platforms for such drugs primarily rely on in vitro screens of receptor affinity, and preclinical behavioral assays which are not specific for prosocial or empathogen-like effects.

Stanford scientists have developed a new screening methodology which involves both a novel set of behavioral assays that are specific for prosocial behaviors in mice, and a novel application of ex vivo brain imaging that detects patterns of brain circuit activation. The behavioral screening assays are a combination of the 3-chamber assay, social conditioned place preference assay, and the social transfer of pain assay. The brain imaging assay uses techniques adapted from human neuroimaging to detect drug and behavior-dependent expression of a gene that reflects neural activity. This suite of assays could identify novel empathogenic drugs, presenting a route to new potential breakthrough treatments for PTSD and other psychiatric disorders with more favorable side effect profiles.

Stage of Development:
Inventors have performed initial validation steps for the circuit mapping and are continuing to validate behavioral assays used to detect novel empathogens.

Applications

- Drug screening platform for novel empathogens, which have applications in treating disorders like PTSD

Advantages

- Can detect empathogens that would be overlooked by current screening methodologies
- Finds potential therapies with empathogenic qualities that have already proven useful in treating PTSD in clinical trials

Innovators

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