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METHAMPHETAMINE ADDICTION: “Pre-Clinical Testing of a Novel Immunotherapy”

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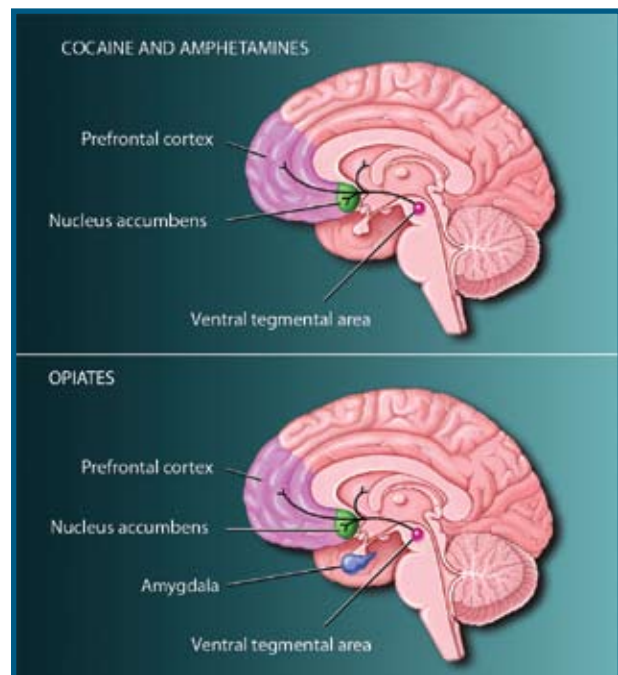
Supported by the National Institute on Drug Abuse, National Institutes of Health

GRANT DESCRIPTION

Methamphetamine addiction is a growing epidemic in our nation, yet there are no FDA-approved medications to treat methamphetamine dependence. In line with NIDA’s mission to support research that will improve drug abuse treatment, the long-term objective of our translational research program is to develop treatments that effectively promote, hasten, or augment brain healing and cognitive recovery following methamphetamine dependence and abuse. It is postulated that methamphetamine alters blood brain barrier permeability thereby exposing central nervous system (CNS) antigens and facilitating the development of anti-CNS responses. Thus, the short-term objective to be addressed by this grant is to test the proof of concept that immunotherapy using recombinant T-cell receptor ligands can regulate immune factors, concurrently triggering healing responses in the brain and improving methamphetamine-induced cognitive impairment.

SCIENCE AND HEALTH IMPLICATIONS

Methamphetamine abuse is known to cause neuronal injury and neuroanatomical changes that are associated with cognitive impairments. These cognitive impairments have been shown to persist during recovery and likely contribute to high relapse rates and poor treatment outcomes. We plan to test a drug that is hypothesized to reverse the brain damage



Brain Reward Drug Systems. Scientists are not certain about all the structures involved in the human brain reward system. However, studies of rat and monkey brains, and brain imaging studies in humans, have provided many clues. These illustrations show what areas are most likely part of the reward systems in the human brain.



IN THE LAB: Recovery Act Stories



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inflicted by the immune system as a consequence of methamphetamine abuse. Discovery of a treatment that could enhance brain repair and cognitive recovery following methamphetamine addiction would represent a major scientific breakthrough that could broadly impact the whole field of addiction treatment. Following the completion of our two-year project, the scientific impact to the field of substance abuse research will be substantial and will potentially offer a new treatment strategy for methamphetamine dependence and abuse that could be readily tested in humans.

RESEARCH IMPACT: IN THEIR WORDS

“These funds will support novel research and result in the creation of new jobs, while also preserving existing positions. Specifically, one new clinical study coordinator and one new research associate were hired who were RN or PhD level professionals, respectively. Additionally, one research assistant and one medical laboratory technician were retained whose salary support would otherwise have ended.”

–Jennifer Loftis, Primary Investigator

The Society for Neuroscience (SfN) is the world’s largest organization of scientists and physicians devoted to advancing understanding of the brain and nervous system. Since its inception in 1969, the Society has grown from 500 members to more than 40,000.