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Research Interests

The objective of my research program is to develop antibody-based medications for use in treating the neurological problems associated with drug abuse. The projects involve the integration of multidisciplinary basic science studies with the application of these scientific discoveries to the treatment of human disease. These studies utilize molecular design, hybridoma technology, antibody engineering techniques, as well as studies of the effects of drug of abuse on brain function. Large scale production of antibodies as drugs is accomplished through the use of bioreactors, along with the development of the technology for the molecular and biological engineering of plant-derived antibodies. For the in vivo testing of the antibody-based medications, a comprehensive series of pharmacokinetic/ pharmacodynamic studies following active and passive immunization are being conducted in animal models of human drug abuse. A major goal of these studies is to better understand the mechanism by which these new medications can be used to treat adverse chemical effects on the central nervous system. Thus, these studies are serving as a prototypic system to acquire knowledge that can be applied to antibody-based therapy for a wide variety of human diseases.