

## **Develop therapeutics and vaccines against west Nile virus in transgenic plants**

My lab is interested in research to understand and optimize the expression, assembly, and function of vaccines and therapeutics in transgenic (tobacco) plants. Students will have an opportunity to participate in research in areas of molecular biology, biochemistry, biotechnology, and plant sciences. Current projects for SOLUR Apprentice student researcher include:

1. Develop a novel therapeutic for West Nile Virus (WNV) infections. We are in the process of developing a class of new monoclonal antibody-based therapeutics which are capable of pass the blood-brain barrier. This will allow the antibody therapeutics to enter the brain to neutralize WNV. The new therapeutics will be more efficacious and extend the window of treatment. This technology can be applied to develop new drugs for many other brain-related infectious and neurological diseases such as Alzheimer's.
2. Develop effective vaccines for WNV infections. We are also interested in using plant systems to developing vaccines for WNV based on several viral proteins. Genes of these viral proteins will be cloned and transformed into tobacco plants. Their expression, structure and immunological functions will be examined.
3. Discover and characterize new genetic elements to enhance pharmaceutical protein expression in transgenic plant systems. We will identify new genetic elements such as enhancers and promoters. Their impact on transgene expression will be characterized by molecular biology and biochemistry studies.

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