Novel Two-Step Method for Isolating and Testing Antibodies from Human Serum for Long-Lasting Fibroblast Growth Factor-like Neurotrophic Effects

(VA Reference No. 03-077)

Novel serum assay that could lead to identification of an efficacious FGF-like autoantibody for neurological diseases

Technology
Serum assay for isolation and testing of FGF-like autoantibodies for treatment of neurological disease

Inventor
Marc Zimering, M.D., Ph.D.
Lyons VA Medical Center
Lyons, NJ

Key Features
- Efficient method of isolating and screening FGF-like autoantibodies
- Relies upon commonly used techniques enabling use in a commercial laboratory setting
- Could lead to identification of an efficacious FGF-like autoantibody with a long-half life

Stage of Development
Reduced to practice with serum assays developed

Keywords
Therapeutic
- Drug Discovery
- CNS
- Serum Assay

Patent Status
None

Contact
Ken Levin, Ph.D.
Technology Transfer Program
Department of Veterans Affairs
Office of Research & Development (12TT)
810 Vermont Avenue, NW
Washington, DC 20420
Phone: 202-461-1713
Fax: 202-254-0460
E-mail: Ken.levin@va.gov

Technology
The Department of Veterans Affairs has developed a method for isolating and testing specific antibodies from blood of certain patients for their ability to mimic the growth and survival promoting effects of fibroblast growth factor – 2 (FGF-2).

Description
The VA has developed a novel serum assay that could lead to identification of an efficacious FGF-like autoantibody for neurological diseases. FGF2 has been shown to reduce the extent of brain injury in animal models of acute stroke and is a survival factor for a variety of neuron types. However, FGF-2 has a short half-life so systemic administration of FGF-2 may not provide effective target tissue drug concentrations while ensuring safety in peripheral organs. In contrast, FGF-like autoantibodies differ in important physical characteristics from FGF-2 and it is conceivable that FGF-like autoantibodies may be more readily targetable to specific tissues while minimizing the risk of unwanted effects in normal tissues. The technology developed by the VA provides a method and a control standard by which potential therapeutic compounds can be isolated and screened for their utility as neuroprotective or neuroregenerative agents. The technology, which relies upon commonly, used techniques and a unique preparation of autoantibodies derived from a single patient has activity similar to basic FGF on neurons.

Competitive Advantage
Long-lasting antibodies of human origin that mimic the neuron survival promoting effects of FGF may be useful in treating a number of chronic and/or acute diseases involving accelerated neuron death (Parkinson's disease, stroke, dementia). Laboratory methods of screening for antibodies that have the ability to induce neuroprotection may prove useful in developing new therapeutics.

This invention:

- Could be performed in a commercial laboratory specialized in the required methods
- Could lead to a FGF-like autoantibodies with a long half-life leading to efficacious therapy

Status
The Department of Veterans Affairs is looking for a partner for further development and commercialization of this technology through a license and the VA inventors are available to collaborate with interested companies through a Cooperative Research and Development Agreement (CRADA).