



Novel Method for Preventing Recurrence of Herpes Simplex Virus

The University of Florida is seeking a company interested in commercializing a novel method for preventing the spread and recurrence of herpes simplex virus. Herpes afflicts approximately one in four women and one in five men. The blistering sores caused by the disease are painful and are the leading cause of corneal blindness in the United States and Europe. Researchers at the University of Florida have developed a gene therapy that employs hammerhead ribozymes to inhibit herpes viral replication. When administered by a single injection after the initial infection, the therapy provides life-long inhibition of recurring outbreaks.

Potential Applications

- ◆ Injectable therapeutic vaccine controls herpes virus infection
- ◆ Potential for future use as preventative vaccine

Potential Advantages

- ◆ Single injection provides life-long protection against recurrent outbreaks
- ◆ Effective against corneal, conjunctival, and stromal cell infections, for which topical antiviral medications cannot be used
- ◆ Minimizes discomfort by preventing spread of the initial infection to other areas of the body
- ◆ Combats reactivating infections of the eye and brain, minimizing morbidity to immunocompromised individuals and infected infants

The Technology

Existing antiviral treatments must be taken during recurring infections and only curtail the severity and timeframe of symptoms; by contrast, the therapy at hand prevents recurrence. The novel approach of this technology is its employment of hammerhead ribozymes, RNA enzymes that can cleave mRNA, deactivating it and leaving it to be digested by the intracellular degradation mechanism. These ribozymes target sequences in several genes of the herpes virus and block viral replication. Defective forms of the herpes simplex virus type I (HSV-1) function as vectors to deliver the ribozymes to cells capable of sustaining infection. The technology can potentially be used as a preventative vaccine against all outbreaks.



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The Inventors

Dr. Alfred Lewin (at left in photo) is a professor of Molecular Genetics and Microbiology at the University of Florida's College of Medicine. He was a consultant for the Government of Indonesia on yeast-based vaccines, and in 2002 was awarded the Shaler Richardson Professorship in Ophthalmic Sciences. He also worked with the NIH as a reviewer on the Small Business Study Section in Genetic Sciences and the Microbial Physiology and Genetics Study Section. Dr. Lewin serves on the Advisory Panels on Cell Biology and Cell Cycle and Growth Control for the American Cancer Society, and on the Editorial Board for Mitochondrion (Elsevier Press). His primary area of research is gene therapy using ribozymes.

Dr. David Bloom is an Assistant Professor in Molecular Genetics and Microbiology at the University's College of Medicine. He obtained his Ph.D. from Vanderbilt University and completed a postdoctoral fellowship at UCLA. He was nominated for the prestigious Howard Hughes Medical Institute Investigator and received the Burroughs Wellcome Fund Investigator in Pathogenesis Award.

Jia Liu is a Ph.D. candidate in the University's Interdisciplinary Program in Biomedical Sciences, with an advanced concentration in genetics.

Dr. Gregory S. Schultz is a Professor of Obstetrics and Gynecology and

Director of the Institute for Wound Research at the University of Florida. His research focuses on the role of growth factors, cytokines and proteases in wound healing in the skin and the eye. His research has been continuously funded by grants from the National Institutes of Health. Dr. Schultz has published over 170 research papers, chapters and review articles, with more than 4,400 cites. He has multiple patents in the area of wound healing and is a consultant for companies in the pharmaceutical and biotechnology industries.

Dr. Sonal Tuli (not pictured) is on the Corneal clinical faculty at the University of Florida College of Medicine Department of Ophthalmology. Her specialties are Cornea/External Disease and Contact lens/Refractive Surgery.



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