# **US Army Medical Research and Materiel Command**





#### Features and advantages:

- Protects BALB/C strain mice from a lethal challenge with mouseadapted Ebola Zaire virus
- Protects C57BL/6 strain mice from a similar challenge
- Binds specifically to epitopes on the Ebola virus GP
- Mabs are of the lgG1 and lgG2a subclass
- Can produce Mabs with desired characteristics by phage display, or common cell line types
- Can prepare as a mixture of Mabs to prevent, treat, and detect infections

## **Monoclonal Antibodies to Ebola Glycoprotein**

This invention provides a method for using individual antibodies or mixtures thereof for the detection, prevention, and therapeutic treatment of Ebola virus infections, both *in vitro* and *in vivo*. The invention describes Ebola glycoprotein (GP) monoclonal antibodies (Mabs) and epitopes recognized by these Mabs. The invention includes several different Mabs against Ebola viral strains that are representative of five different antibody types. The MAbs were protective against Ebola challenge when administered prophylactically or therapeutically to mice.

Ebola viruses cause acute, lethal hemorrhagic fevers in humans and nonhuman primates. No vaccines or treatments currently exist against these viruses. Understanding of the immune mechanisms that mediate protection is limited. The membrane-anchored viral GP is the only one known to occur on the surfaces of both virions and infected cells, and is presumed responsible for receptor binding and fusion of the virus with host cells. Ebola GP may therefore be an important target of protective antibodies.

For the most effective Mabs, the amount required to protect mice was within an achievable human therapeutic dose of 3 – 5 mg/kg. Some of the Mabs were effective when administered two days after challenge, during which significant viral replication had occurred.

### **Patent Status**

**Patent No.:** 6,630,144 **Issued:** October 7, 2003

**Available from:** www.uspto.gov

Docket No.: RIID 99-28

### **Point of Contact**

#### Dr. Paul C. Mele

Director, Office of Research and Technology Applications USAMRMC. MCMR-ZA-J

504 Scott St., Ft. Detrick, MD 21702-5012 E-mail: paul.mele@amedd.army.mil

Voice: 301-619-6664/2032/7219 Fax: 301-619-5034

**KEYWORDS**: Ebola; monoclonal antibodies; protection; production; animal

studies