A STABILIZED SUBUNIT VACCINE FOR EBOLA VIRUS

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The ongoing Ebola epidemic in West Africa has claimed over eleven thousand lives and has highlighted our unpreparedness to counter emerging viral epidemics. While two recombinant vaccines have shown promising results in clinical trials, we have developed an alternate subunit vaccine candidate that could be called upon in the event that problems are encountered with regard to safety or protection efficacy. Our subunit vaccine candidate is based on a soluble version of the recombinant Ebola glycoprotein (GP) stabilized in its pre-fusion conformation. This protein is recognized by the neutralizing monoclonal antibody KZ52 and all three ZMapp antibodies (currently employed as a therapeutic for clinical treatment), indicating both GP1/2 and glycan cap domains are available and are presented in the desired conformation. Immunization via NanopatchTM (NP) microneedle delivery and intradermal injection were compared in C57 black mice. We assessed the antibody response elicited in immunized mice against Ebola virus (Zaire strain) using facilities at CSIRO's Australian Animal Health Laboratories in Geelong (AAHL). Promising plaque reduction neutralization titers (PRNT50 = 1/80 sera dilution) were demonstrated. Furthermore, we have shown this vaccine is thermostable, retaining significant antigenicity after extended incubation at 37°C, indicating this vaccine strategy may not require cold chain delivery. In addition, the absence of any replicative elements ensures that it is likely to have a safer profile than live recombinant vaccines.