

## COMBATting FUTURE BIOLOGICAL THREATS – HOST-DIRECTED INTERVENTIONS TO EMERGING THREATS FOR RAPID RESPONSE

### Integrated, Rapid Antibody Discovery And Cell Line Development To Truncate Timelines For Manufacturing Readiness

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**Background Information:** As seen with SARS-CoV-2 and Mpox in recent years, emerging infectious diseases can rapidly become public health threats. Such events can also identify or magnify gaps in effective medical countermeasures that apply to military settings, be they deployment in endemic areas or forward-deployed service members at risk of biological attacks.

**Purpose, Objective, Rationale of Research:** In order to rapidly respond to such threats to the Warfighter, Emergent BioSolutions is investigating the capability for rapid discovery of monoclonal antibody (mAb) therapeutics that can produce lead candidates in a matter of weeks.

**Methods:** B cells producing mAbs are screened on the Beacon Select Optofluidic System to precisely identify promising candidates, which are then sequenced, cloned, and produced for in vitro and in vivo screening. Once sequences are known, in silico modeling of mAb candidates may identify liabilities to further refine lead candidate selection. The Beacon Select system is used to identify high-producing cell lines for manufacturing. Lead clones are identified using the Ambr15 microbioreactor system.

**Preliminary Results:** Precision antibody discovery with the Beacon Select system coupled with transposase-mediated cell line generation accelerates candidate generation and process development.

**Preliminary Conclusions:** The implementation of our high-throughput and high-efficiency technology platforms (for antibody discovery and cell line development) presents an ideal solution for rapidly identifying and developing novel therapeutics.

**Impact to JSTO mission and the Joint Force:** Taken together, these integrated capabilities enable rapid responses to emerging threats to protect the Warfighter.