

Anti-human NPC1 monoclonal antibodies (Monoclonal antibodies that inhibit the entry of Ebola virus)

Researcher Information

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Research Ideas and Technology Seeds

- Originality and advantages of our therapeutic candidate: Based on our previous successful strategies of establishing functional monoclonal antibodies, we tried to produce functional monoclonal antibodies against human NPC1, the Ebola virus host receptor. Many antibodies were established, including some that inhibit Ebola pseudovirus infection in a dose-dependent manner. Since NPC1 is a host factor, there could be concerns about host toxicity. However, inhibition of NPC1 function by the antibody treatment is reversible. Although a genetic disease of NPC1 exists, it is not lethal. Therefore, short-term administration of the monoclonal antibodies during infection would be acceptable, considering the high severity of Ebola hemorrhagic fever. Another advantage of our monoclonal antibodies is that since the target is a host protein, there is no concern about the resistant viruses.

- Modality: mouse monoclonal antibody

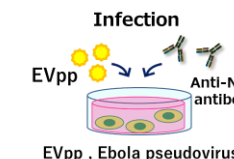
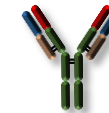
Background and Unmet Needs

- Because Ebola virus infection is an extremely deadly infectious disease, it is classified as a BSL4 pathogen. In recent years, sporadic outbreaks have occurred many times in Africa, and countermeasures are urgently needed. Although vaccine development is progressing and two monoclonal formulations targeting the viral surface glycoprotein have been approved worldwide, these are still not sufficient. Given the problem of drug-resistant viruses, we are developing infection inhibitors targeting the host receptor NPC1 with monoclonal antibodies.

Research Overview Diagram

- Graphical abstract

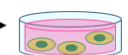
Establishment of a structure-recognizing anti-human NPC1 monoclonal antibodies.



Inhibition assay for Ebola virus infection

Medium change

Luciferase assay



Future Plans

- We will evaluate prophylactic and therapeutic efficacy and safety of our antibodies through in vivo animal studies.
- We welcome collaborative research using our antibodies.
- IPRs: not yet applied