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Anti-human OCLN monoclonal antibodies (Monoclonal antibodies that inhibit the entry of hepatitis C virus)

Researcher Information

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- Collaborator: Osaka Univ. etc.

Research Ideas and Technology Seeds

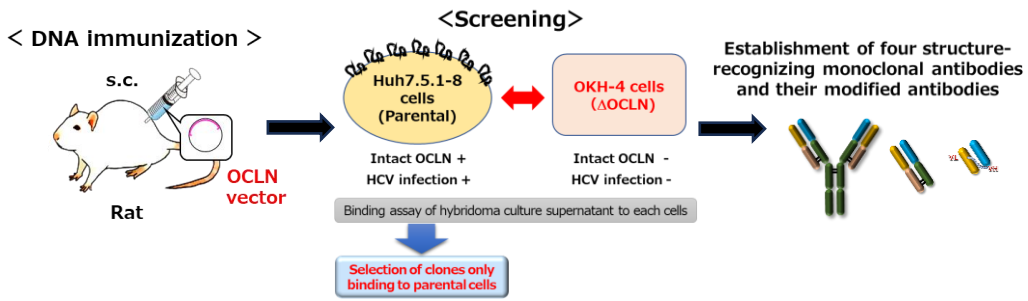
- Originality and advantages of our therapeutic candidate: To obtain functional antibodies against membrane proteins, we selected DNA immunization method. For antibody screening, we used differential binding screening with virus-susceptible cells (parental cells) and OCLN-knockout cells derived from these parental cells. This enabled the efficient acquisition of functional structure-recognizing antibodies, and finally we obtained four monoclonal antibodies. We also confirmed that these antibodies strongly inhibited hepatitis C virus infection in cultured cells and mouse infection models.
- Modality: rat monoclonal antibody (full body, Fab, scFv, human chimeric)
- Ref.: J. Virol. 92, e02258-17, 2018; BBRC 514, 785, 2019; J. Biochem. 166, 297, 2019; Traffic 20, 753, 2019; FEBS Lett. 595, 220, 2021; BPB Rep. 4, 142, 2021; Sci. Rep. 12, 20243, 2022 etc.

Background and Unmet Needs

- These monoclonal antibodies were developed with the aim of expanding treatment options by obtaining novel drug candidates that inhibit viral entry processes, different from existing therapeutic targets, and also as a countermeasure against drug-resistant viruses. These antibodies are also useful as analytical tools for research on hepatitis C virus infection mechanism and various diseases involving the host factor OCLN.

Research Overview Diagram

- Graphical abstract (Strategy for establishing functional monoclonal antibodies)



Future Plans

- We are seeking collaborative research partners.
- IPRs: Japan Patent No. 6771725