CD200R controls sex-specific TLR7 Responses to MHV Infection.

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Conclusions

- CD200$^{-/-}$ female mice are more resistant to corona virus infection
- CD200$^{-/-}$ female mice produce more IFN-alpha after TLR7 activation, which may help in viral clearance
- Stimulation of CD200R inhibits the TLR7 mediated NFkB activity
- Gender and CD200-CD200R mediated inhibition are factors that determine the outcome of coronavirus infection

Objectives

To investigate the influence of the inhibitory CD200-CD200R axis on clearance and pathology of Mouse hepatitis virus infection (MHV).

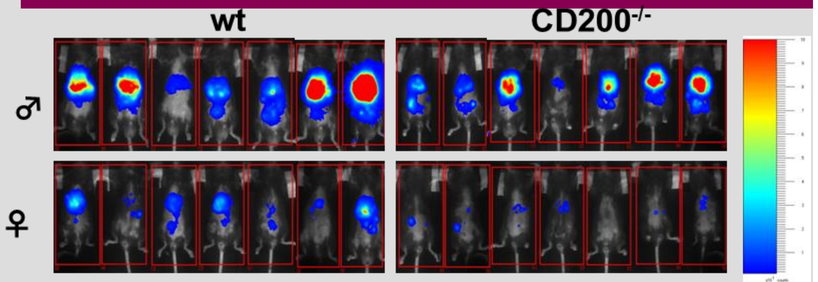
Meterials and Methods

- **Mice and viruses**: WT C57BL/6J mice and Cd200$^{-/-}$ mice. Mice were IP with 10^6 TCID50 of MHV strain A59 expressing the firefly luciferase (FL) reporter gene (MHV-EFLM)
- **Bioluminescence imaging**: mice were imaged at day 0, 2 and day 4 after D-Luciferin IP injection.
- All samples analyzed by Quantitative RT-PCR, Liver histopathology, ELISA and reporter assays.
- **Statistics**: Significance was calculated with Mann-Whitney test using GraphPad Prism software

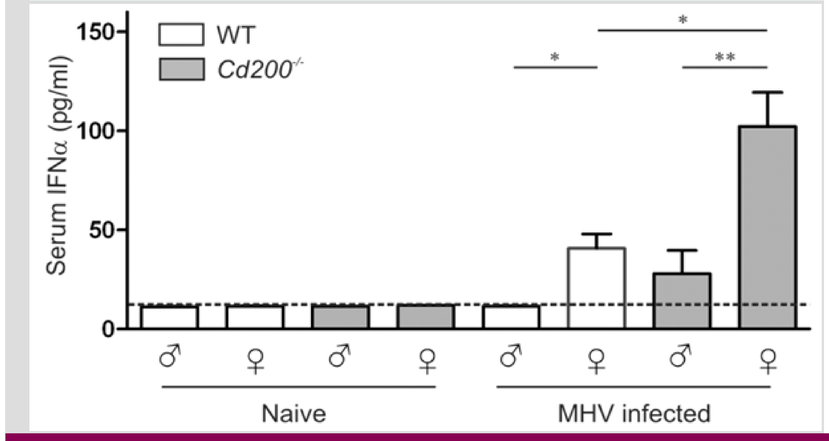
Introduction

Immunological checkpoints, such as the inhibitory receptor (CD200R), play a dual role in balancing the immune system during microbial infection. CD200R signaling strongly enhances type I interferon (IFN) production and viral clearance and improves the outcome of mouse hepatitis corona virus (MHV) infection, particularly in female mice.

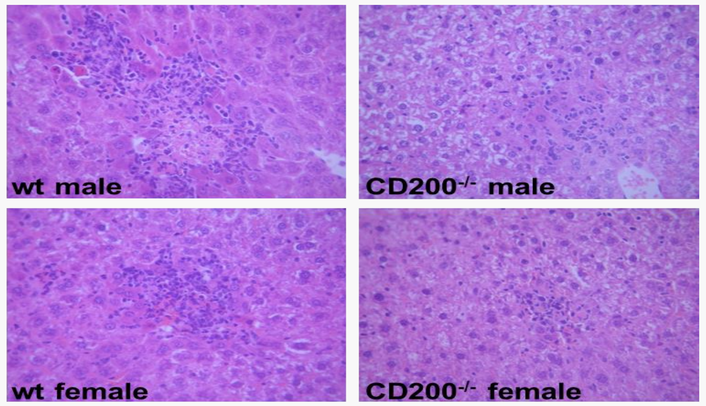
1. Results: CD200-deficiency and gender determine the outcome of MHV infection



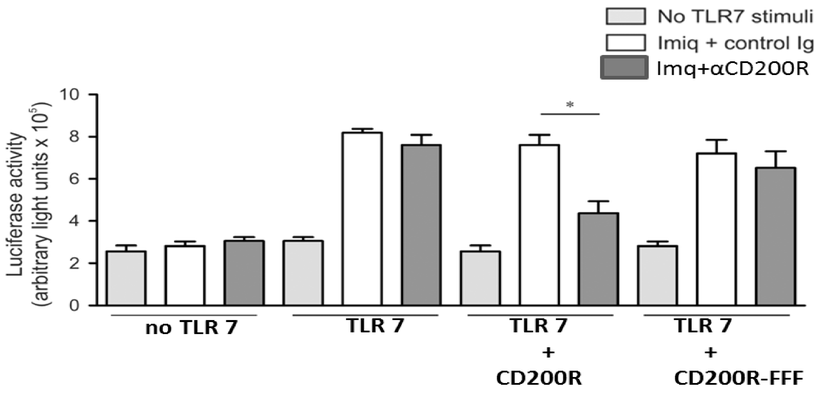
2. Results: Enhanced type1 interferon responses in females *Cd200-/-* mice



3. Results: Decreased liver pathology in female CD200-/- mice with rapid viral clearance



4. Results: Stimulation of CD200R directly inhibits TLR mediated NFkB activity



Currently we are investigating the molecular mechanism of TLR7 inhibition by CD200R

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