

Development of novel companion PET diagnostics and therapeutic agents for myocarditis

Principal Investigator

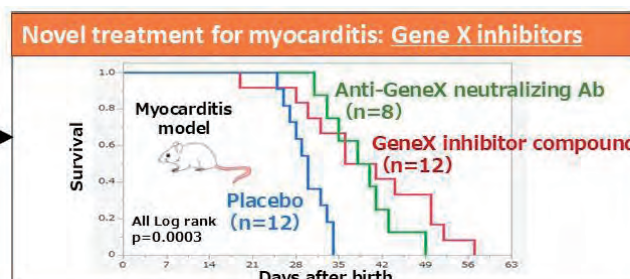
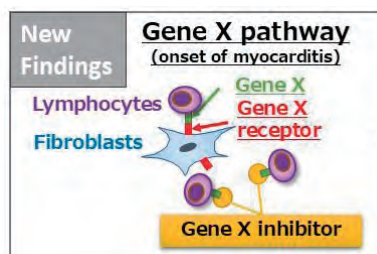
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Project Outline

Myocarditis is a fatal disease with currently no effective treatments. In recent years, myocarditis has been accompanied with severe infections including Covid-19, mRNA vaccines, and immune checkpoint inhibitors, which are frequently used in the cancer field. Therefore, there is an extremely high need for the development of effective diagnostic and therapeutic methods for myocarditis.

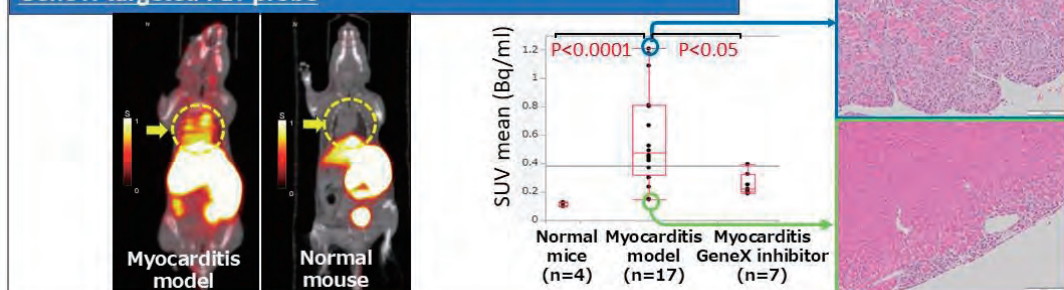
In the previous study, we have clarified that activated lymphocytes expressing Gene X are involved in the onset of myocarditis, and that Gene X inhibitors improve the prognosis of myocarditis models. Furthermore, we have created a novel PET probe by labeling the Gene X inhibitor with the radioactive C11 nuclide, and successfully detected Gene X-positive lymphocytes infiltrating the myocardium in a myocarditis model by PET/CT. In addition, Gene X inhibitors were more effective in the myocarditis model with high accumulation of the PET probe. From the above, this PET probe is not only a non-invasive diagnostic agent for myocarditis that replaces the conventional highly invasive myocardial biopsy, but also a companion diagnostic agent for Gene X inhibitors. Therefore, it is expected that the combination of these two seeds will significantly improve the prognosis of myocarditis. We are now looking for companies that will cooperate with us to obtain clinical proof of concept for this PET formulation and Gene X inhibitors.



Goals

Approval for the **treatment** of myocarditis

Novel non-invasive and companion diagnostics for myocarditis: Gene X-targeted PET probe



Approval for the **diagnostic** of myocarditis

Target disease: Myocarditis (2,200 people/year in Japan, 1.8 million people/year worldwide)

Patent information: Substance patent, application patent

Features: Combination of companion PET diagnostic and therapeutic drug can significantly improve prognosis

Issues: Need company support to obtain clinical POC

Desired company collaboration: Support for clinical trials and licensing out