Development for ex vivo diagnostic equipment for triglyceride deposit cardiomyovasculopathy

Principal Investigator

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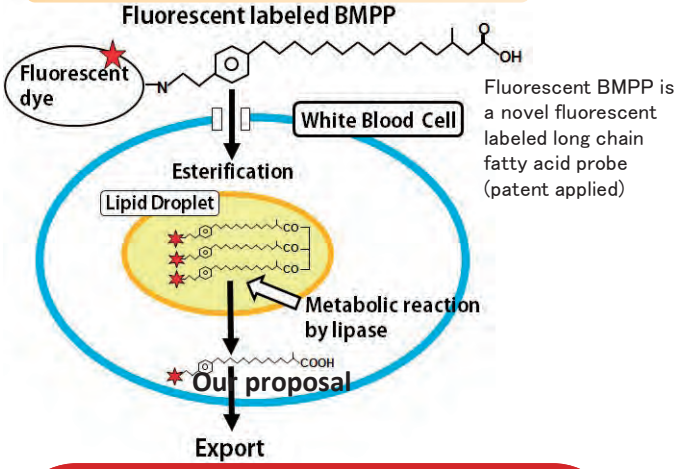
Project Outline

Triglyceride deposit cardiomyovasculopathy (TGCV) is a novel cardiovascular disorder, which was discovered in patients requiring cardiac transplantation in Japan (Hirano K, et al. N Engl J Med. 2008) (ORPHA code: 565612). Patients with TGCV exhibit intractable heart failure and coronary artery disease with ectopic TG deposition in cardiomyocytes and vascular smooth muscle cells.

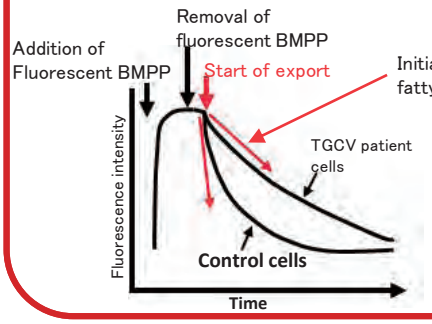
We developed a potential drug for TGCV (coded as CNT−01) and have succeeded phases I, I/IIa, and IIa clinical trials, providing the proof of concept. The diagnosis for TGCV has been made using myocardial scintigraphy with radioactive long chain fatty acid, however no screening method is available. The aim of the present study is to develop a medical equipment by which *ex vivo* diagnosis for TGCV can be made using peripheral blood cells.

Developed regent and principle



Fluorescent BMPP is a novel fluorescent labeled long chain fatty acid probe (patent applied)

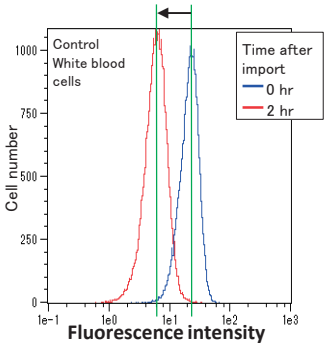
Fatty acids metabolism velocity are quantified as the degrees of fluorescence decay

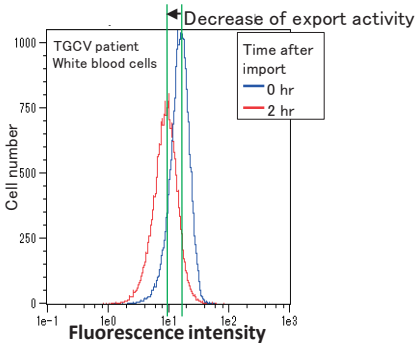


We need to automate these processes !

Proof of principle

The decrease in fluorescent BMPP export activity can be detected using white blood cells from TGCV patient (patent pending)





We successfully produced a fluorescent−labeled long chain fatty acid analogue and have obtained a proof of principle for the diagnosis of TGCV using this reagent. We look forward to seeing biotech company which will collaborate with us (Patent applied: Tokugan 2020−117350・PCT/JP2021/025687).