

JSPS Core-to-Core Program
FY2012 Implementation Plan (Project No. : 21003)

Research Theme Construction of cardiac tissue using integrated gene, cell, and tissue engineering technology and its application for the treatment of cardiac failure

Duration of Project 4/11/2011 – 3/31/2014 (36months)

Core Institution in Japan (Co-Chair) Osaka University Graduate School of Medicine
(Yoshiki Sawa)

Implementing Organizations

○ **Japan**

Japan	Core Institution	Osaka University Graduate School of Medicine	
	Co-Chair (name and title)	Professor Yoshiki Sawa	
	Cooperating Institutions	Osaka University Kyoto University Tokyo Woman's Medical University	Number of Cooperating Institutions 3

○ **Partner Countries**

Finland	Core Institution	University of Helsinki	
	Co-Chair (name and title)	Professor Ari HARJULA	
	Cooperating Institutions	University of Kuopio, AIV Institute University of Tampere	Number of Cooperating Institutions 2

Germany	Core Institution	Hannover Medical School	
	Co-Chair (name and title)	Professor Axel HAVERICH	
	Cooperating Institutions	University of Rostock University of Düsseldorf Heidelberg University	Number of Cooperating Institutions 3

Objectives of Research Exchange (including the five years after the project finishes)

The goal of this project is to promote and enhance international research activities for cardiac tissue engineering and to apply the tissue engineered cardiac tissue to clinical use in patients with severe heart disease. In order to develop this consortium, international collaboration of young scientists of each country is one of the most important activities. Annual seminar and symposiums are planned. We will start international research works to create three dimensional cardiac tissue in patients with severe heart failure between Finland, Germany, and Japan. International hub formation is the final goal of this program.

Results to the present

We have established academic agreement between Osaka, Hannover, and Helsinki. More than 15 young researchers have been exchanged in this program. Kick-off meeting, Progress meeting, summer seminar, and international workshop have been held in Wien, Geneva, Tamere, and Nagoya. The results of joint research have been presented in international conferences and have been published in peer-reviewed journals. The activities and research informations are always up-dated in our home page (<http://jsps-osaka-u.jpn.org/jp/index.html>).

Summary of FY 2012 Exchange Plan

Joint Research

Using temperature-responsible cell sheet, autologous segment of small intestine, and mesenchymal stem cells or iPS cells, we try to construct a tissue engineered three-dimensional cardiac tissue, which can be transplanted into the human heart. 1) Experiments using large animal with mesenchymal stem cells is performed in Helsinki, 2) Experiments using cell sheet is done in Osaka and Hannover. 3) Experiments using autologous segment of small intestine as a scaffold of cardiac tissue is underway in Hannover.

Seminar

We will make international symposium for young researchers on 10th June, and also international seminar on 11th June in Yokohama during the 11th annual meeting of Japanese society of Regenerative medicine. In August 2012, the a summer seminar is done in Hannover, Germany.

Researcher Exchanges

Dr. Shunsuke Saito stays in Hannover from April 2012 till March 2013 to perform animal experiment for cardiac tissue engineering. Dr. Yukiko Imanishi stays in Helsinki from April to November 2012 to make research works on stem cells. Antti Siltanen comes from Helsinki to Osaka for 1 years to perform iPS cell research. Furthermore, several Japanese researchers are planned to visit Helsinki and Hannover for a week to exchange information.