

FY2013

JSPS Core-to-Core Program  
-Strategic Research Networks-  
Research Report

Project No.	23003
Research Theme	Forming Research and Educational Hubs of Medical Physics
Duration of Project	Apr.1, 2013 ~ Mar.31, 2016
Core Institution in Japan	Osaka University

#### Implementing Organizations

Country	Japan
Core Institution	Osaka University
Co-Chair (name and title)	Nariaki Matsuura, Professor
Number of Cooperating Institutions	6
Cooperating Institutions	Hyogo Ion Beam Medical Center / Osaka Medical Center for Cancer and Cardiovascular Diseases, Dept. of Radiotherapy / National Cerebral and Cardiovascular Center Research Institute/Univeristy of Tokyo/Kyoto Univeristy/Juntendo Unvierisity

Country	USA
Core Institution	Indiana University
Co-Chair (name and title)	Indra J DAS
Number of Cooperating Institutions	2
Cooperating Institutions	Purdue University/Univeristy of Minnessota
Matching Fund	Fund of the department of Radiation Oncology or the IU Health Proton Therapy Center Research fund from Varian Medical Research

Country	The Netherlands
Core Institution	Univeristy of Groningen
Co-Chair (name and title)	Sytze Brandenburg, Professor
Number of Cooperating Institutions	1
Cooperating Institutions	Paul Sherrer Institute
Matching Fund	Fund of Groningen University and the University Medical Centre Groningen

## Result of Program Implementation

Faculty and students visited the partner institutions and cooperating ones for a minimum of three weeks and for a maximum of eleven months, and carried out joint researches. Although the visiting duration is short, fruitful results have been obtained. Students visiting the University hospital have also received the clinical training as medical physicist, and learned the know-how of clinical practice.

In August, Indiana University held "Osaka University – Indiana University Medical Physics seminar", in which the results of the collaborative researches were reported and joint research projects were discussed. In September, an International School on Medical Physics was held in Osaka University. The main theme was the particle therapy. Five researchers from the partner institutions, Indiana University, Minnesota University, University of Groningen gave lectures on latest research developments as well as basic things. Five researchers from particle therapy institutions in Japan also gave lectures.

## Achievements in FY2013 (Self Review)

The academic staff and students were sent to the partner institutions to carry out the six research subjects; 1. Development of the next generation particle radiotherapy device, 2. Dose calculation for high-accuracy radiotherapy, 3. Development of the next generation diagnostic devices, 4. The research on the image-guided adaptive radiotherapy, 5. Development of cancer information system, 6. Research on particle beam radiation biology. The number of publications in the collaboration with Indiana University and University of Groningen were five, and the number of the relevant publications were 16.

University of Tokyo and Juntendo University successfully joined in the current project. More achievements than ever will be obtained in the collaboration.

## Future Plan (Measures toward Achieving Research Objectives)

Young academic staff and graduate students will visit Indiana University, Minnesota University and University of Groningen, and continuously carry out the joint researches to achieve the concrete results. They will gain knowledge in clinical practice by attending clinical conference, and will feed back to the medical physics education and clinical practice.

Although many members of this project have been sent to the partner institutions, Osaka University has accepted few visitors. We will actively accept researchers from the partner institutions and the cooperating ones who are studying on the heavy particle therapy.

Since it is effective to have a particle therapy facility in order to apply the result obtained in this project quickly, we will work toward introducing particle therapy facility relating with Osaka University in Osaka.