

The JSPS Core University Program
Tokyo University of Marine Science and Technology
Kasetsart University

**Productivity techniques and effective
utilization of aquatic animal resources
into the new century**

Research Title: Productivity techniques and effective utilization of aquatic animal resources into the new century

In order to develop Fisheries Science in Asia the Japanese Society for the Promotion of Science (JSPS) established in 2000 a new exchange program in which Tokyo University of Marine Science and Technology (formerly Tokyo U. Fisheries) in Japan and Kasetsart University (K.U.) in Thailand were nominated as core universities. Under this program, researchers in both countries are able to visit and conduct collaborative research in the universities and related institutions in Japan and Thailand.

The cooperative research projects entitled "Productivity techniques and effective utilization of aquatic animal resources into the new century" include aquaculture, fisheries science, food science and technology. The core university system in this program is divided into three terms, the first term being 2000 - 2003, 2nd term including 2004 - 2006, and third term inclusive of 2007 – 2009.

There are three major scientific projects:

(1) **Development of new technology for aquaculture** using molecular biological techniques to produce genetically improved or selected fish and shellfish to in turn, produce high quality food animals. This study will identify prevention methods and to combat infectious diseases in aquaculture using histopathological and molecular biology techniques, and will also target the renovation of deteriorated aquaculture farming areas in this project.

(2) **Comparative studies on fishing technology**, from the perspective of environmental impact and the gear selectivity for optimum development on a sustainable base, through technical improvements by transferable management tools from responsible fishing operations.

(3) **Improvement of seafood quality and value-added utilization of fishery products and by products**. This study will focus on the improvement of fish and shellfish meat quality being utilized as seafood and, development of high value utilization of aquaculture wastes for industries.

Cooperative Universities in Japan

Graduate School of Fisheries, Hokkaido University
Graduate School of Agricultural Science, Tohoku University
Institute of Applied Biochemistry, University of Tsukuba
Graduate School of Agricultural and Life Science, The University of Tokyo
Faculty of Bioresources, Mie University
Graduate School of Agriculture, Kyoto University
Faculty of Applied Biological Science, Hiroshima University
Faculty of Agriculture, Kochi University
Graduate School of Agriculture, University of Kyushu
Faculty of Fisheries, Nagasaki University
Faculty of Agriculture, Miyazaki University
Faculty of Fisheries, Kagoshima University
School of Fisheries Sciences, Kitasato University
Fisheries University
College of Bioresources Sciences, Nihon University
Nippon Veterinary and Animal Science University
Faculty of Agriculture, Kinki University
Fukuyama University

18 Universities

Cooperative Universities and Institutions in Thailand

Faculty of Veterinary Sciences, Faculty of Medicine, and the Aquatic Resources Research Institute, Chulalongkorn University
Faculty of Science and Faculty of Environment and Resource Studies, Mahidol University
Faculty of Agro-Industry, Prince of Songkla University
Faculty of Agricultural Production, Maejo University
Faculty of Veterinary Medicine, Chiang Mai University
Faculty of Agriculture, Khon Kaen University
Faculty of Science, Ubon-Ratchathani University
National Center for Genetic Engineering and Biotechnology
National Institute of Coastal Aquaculture, Department of Fisheries
Marine Shrimp Research and Development Institute, Department of Fisheries
Samutsakhon Coastal Aquaculture Development Center, Department of Fisheries
Freshwater Fisheries Division, Department of Fisheries
Coastal Aquaculture Division, Department of Fisheries
Fishing Gear and Oceanic Fisheries Division, Department of Fisheries
Aquatic Animal Health Research Institute, Department of Fisheries
Fisheries Product and Processing Institute, Department of Fisheries
Institute of Ornamental Fish Research and Public Aquarium, Department of Fisheries

21 Universities and Institutes

Productivity techniques and effective utilization of aquatic animal resources into the new century

Research projects	1st phase (2000~2003)	2nd phase (2004~2006)	3rd phase (2007~2009)
1. Development of new technology for aquaculture	Gene Technology for improvement of fish and prawn	Molecular and environmental biology in shrimp aquaculture	Functional marine biotechnology
	The study on infectious diseases of farmed fish and prawn using histopathological and molecular biological techniques	Genomics and genetics in fish and shellfish	
2. The comparative studies on fishing technology	The study on infectious diseases of farmed fish and prawn using histopathological and molecular biological techniques	The study on infectious disease in fish and shellfish	The study on development of new technology for sustainable aquaculture
	Renovation of Deteriorated Shrimp Farming Areas	Fisheries biology for the resource conservation and management in the tropical area	
3. Improvement of seafood quality and value-added utilization of fishery products and by products	Comparative studies on the sustainable fishing technology	Fisheries biology for the resource conservation and management in the tropical area	Fisheries biology for the resource conservation and management in the tropical area
	Improvement of seafood quality and high value utilization of fishery products and by products	Effective utilization of marine food resources	
	High value utilization of fisheries products and by products		

Research projects in the 1st phase (2000-2003)

1. Gene Technology for improvement of fish and prawn

Project leader

Ikuo Hirono (Tokyo University of Fisheries)

Padermsak Jarayabhand (Chulalongkorn University)

2. The study on infectious diseases of farmed fish and prawn using histopathological and molecular biological techniques

Project leader

Makoto Endo (Tokyo University of Fisheries)

Nontawith Areechon (Kasetsart University)

3. Renovation of Deteriorated Shrimp Farming Areas

Project leader

Masatoshi Matsumura (University of Tsukuba)

Yont Musig (Kasetsart University)

4. Comparative studies on the sustainable fishing technology

Project leaders

Takafumi Arimoto (Tokyo University of Fisheries)

Chaichan Mahasawasde (Kasetsart University)

5. Improvement of seafood quality and high value utilization of fishery products and by products

Project leaders

Munehiko Tanaka (Tokyo University of Fisheries)

Soottawat Benjakul (Prince of Songkla University)

6. High value utilization of fisheries products and by products

Project leader

Toshiaki Ohshima (Tokyo University of Fisheries)

Wanchai Warawatanamateekul (Kasetsart University)

Research projects in the 2nd phase (2004-2006)

- 1. Molecular and environmental biology in shrimp aquaculture**
Project leaders: Takashi Aoki (Tokyo University of Marine Science and Technology)
Yont Musig (Kasetsart University)
- 2. Genomics and genetics in fish and shellfish**
Project leaders: Ikuo Hirono (Tokyo University of Marine Science and Technology)
Padermsak Jarayabhand (Chulalongkorn University)
- 3. The study on infectious disease in fish and shellfish**
Project leaders: Makoto Endo (Tokyo University of Marine Science and Technology)
Nontawith Areechon (Kasetsart University)
- 4. Effective utilization of marine food resources**
Project leaders: Munehiko Tanaka (Tokyo University of Marine Science and Technology)
Soottawat Benjakul (Prince of Songkla University)
- 5. Fisheries biology for the resource conservation and management in the tropical area**
Project leaders: Takafumi Arimoto (Tokyo University of Marine Science and Technology)
Chaichan Mahasawasde (Kasetsart University)

Research projects in the 3rd phase (2007-2009)

- 1. Functional marine biotechnology**
Project leaders: Ikuo Hirono (Tokyo University of Marine Science and Technology)
Anchalee Tassanakajon (Chulalongkorn University)
- 2. The study on development of new technology for sustainable aquaculture**
Project leaders: Masashi Maita (Tokyo University of Marine Science and Technology)
Nontawith Areechon (Kasetsart University)
- 3. Effective utilization of marine food resources and bio-active compounds**
Project leaders: Munehiko Tanaka (Tokyo University of Marine Science and Technology)
Worawattanamateekul Wanchai (Kasetsart University)
- 4. Fisheries biology for the resource conservation and management in the tropical area**
Project leaders: Takafumi Arimoto (Tokyo University of Marine Science and Technology)
Chaichan Mahasawasde (Kasetsart University)

Joint Seminars

**2001 Sep. 29-30 Tokyo University of Marine Science and Technology, Tokyo
Sustainable shrimp culture and health management**

**2002 Nov. 18 Rayong, Thailand
Perspective Approaches for Environmental and Health Management in Aquaculture**

**2003 Dec. 14-16 Rayong, Thailand
Productivity and food safety in aquaculture**

**2004 Dec. 20-21 Kasetsart University, Bangkok
Management of Food Safety in Aquaculture and HACCP**

**2005 Dec. 19-21 Kasetsart University, Bangkok
Productivity techniques and effective utilization of aquatic animal resources into the new century-1**

**2006 Dec. 18-19 Kasetsart University, Bangkok
Productivity techniques and effective utilization of aquatic animal resources into the new century-2**

**2007 Dec. 18-19 Bangkok, Thailand
Sufficient economy philosophy for the sustained development of fisheries**

2008 Tokyo, Japan

2009 Tokyo or Bangkok

Number of exchanged scientists

From Japan

2000: 21

2001: 16

2002: 28

2003: 26

2004: 29

2005: 38

2006: 51

2007: 46

From Thailand

:21

:31

:25

:34

:35

:29

:29

:33