

(For JSPS Fellow)

Form B-5

Date (日付)

(Date/Month/Year: 28 日/1 月/2013 年)**Activity Report -Science Dialogue Program-**
(サイエンス・ダイアログ事業 実施報告書)

- Fellow's name (講師氏名): Lixiang WANG (ID No. P 12426)
- Participating school (学校名): Kagoshima Ikeda High School
- Date (実施日時): 28/01/2013 (Date/Month/Year: 日/月/年)
- Lecture title (講演題目): (in English) Mitochondrial Dynamics: from Mechanism to Disease
(in Japanese) ミトコンドリアダイナミクス:メカニズムから疾患へ

- Lecture summary (講演概要): Please summary your lecture 200-500 words.

Firstly, I made a brief introduction of myself and my wonderful hometown Shenyang, the capital and the largest city of Liaoning province in the northeast China. We have Hun River — used to be called "Shen River" — on the south side of the city. The city's name, Shenyang, literally means "to the Yang side of the Shen River. The city has shenyang airport, subway, the imperial palace and the Qipanshan snow resort. I hope welcome you to Shenyang in the future.

Secondary, I have shown what I have done and am doing at Kyushu University as follows.

The proportion of dietary content has been changed dramatically. Interestingly, total caloric intake has not been changed for more than these 50 years, while the proportion of dietary fat was gradually increased up to 28% of total calorie. In 1970's, McDonald's and KFC opened one after another. Japanese take more dietary cholesterol than American, especially in young generation. Based on these changes in life style in developed countries including Japan, the number of obesity and diabetes has been increasing. Metabolic syndrome is well known to be a high risk of mortality due to cardiovascular disease. In order to develop a new strategy to overcome this condition, we are focusing on mitochondria that is a center player of energy metabolism. Mitochondria are well known as the cell's power producers. They are present in almost all the cells in the body and their number in one cell varies from just a one to thousands, depending on cell-type. Mitochondria are the organelles with a double membrane. The outer membrane is smooth while the inner membrane has many folds, called as cristae. Outer membrane consists of equal amount of phospholipids and proteins. The inner membrane comprise of huge number of protein molecules including complex electron transport chain as well as ATP synthase. In living cells, mitochondria are remarkably dynamic, continuously undergoes fusion and fission reactions. DRP1 (dynamin-related protein 1), usually located in cytosol, is recruited on the outer membrane of mitochondria to mediate fission, which results in the formation of two separate mitochondria. To study the roles of mitochondrial dynamics in pancreas beta cells and hepatocytes, we have generated Drp1 conditional knockout mice. The

mice lacking Drp1 in pancreas b cells were found to become diabetic with impaired glucose-responsive insulin secretion. On the other hand, the mice lacking Drp1 in hepatocytes developed non-alcoholic seatohepatitis (NASH). These results indicated that mitochondrial dynamics plays a key role in diabetes and NASH, 2 major phenotypes of metabolic syndrome. Therefore, mitochondrial dynamics is a potential target of therapeutics to regulate metabolic syndrome. Collectively, the field of mitochondrial dynamics has been a profound impact throughout the areas of biomedical research.

- Language used (使用言語): English and Japanese

(English 50 min / Japanese 40 min)

- Lecture format (講演形式):

◆Lecture time (講演時間) 90 min (分), Q&A time (質疑応答時間) 2~3 min (分)

◆Lecture style (ex.: used projector, conducted experiments)

(講演方法 (例: プロジェクター使用による講演、実験・実習の有無など))

Lecture with a projector followed by experimental observations of sections

◆Interpretation (ex.: assistance by accompanied person, provided Japanese explanation by yourself) (通訳 (例: 同行者によるサポート、講師本人による日本語説明))

Assistance by accompanied person

◆Name and title of accompanied person (同行者 職・氏名)

Lecturer. Dr. Masatoshi Nomura

◆Other note worthy information (その他特筆すべき事項):

English 50 min (by myself) / Japanese 40 min (by Dr. Masatoshi Nomura)

- Impressions and opinions from accompanied person (同行者の方から、本事業に対する意見・感想等がありましたら、お願いいたします。):

本事業の主旨に共感致します。知の継承、発展からイノベーションを齎す次世代の人材育成が我国の発展のみならず、人類の発展には不可欠です。世界標準の若者育成が日本の将来を救うと言っても過言ではないと思います。その意味において、本事業の益々の発展に期待致します。また私自身にとっても大変楽しい時間でした。また機会を頂ければ、微力ですが、心から喜んで参加させて頂く所存です。