（For JSPS Fellow）

Form B-5

Date（日付）20/11/2012

（Date/Month/Year：日/月/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）: Quan Li （ID No. P11413 ）

- Participating school（学校名）: Hyogo Kakogawa Higashi High School

- Date （実施日時）: 20/11/2012 （Date/Month/Year:日/月/年）

- Lecture title（講演題目）: Mitochondria in Neurodegeneration

ミトコンドリアと神経変性疾患

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

I started the lecture from the introduction of my ethnic background (Korean/Chinese) and my hometown (Harbin, China). Then, I moved to the topic of personal experience and scientific career. I started group living from age 13 in a Korean Middle School, and learned Chinese, Korean and English there. I got a bachelors degree in medicine from Harbin Medical University in 2001, and then started research as a Ph.D. student in molecular biology and pathology at Osaka City University. After 4 years of Ph.D. training, I moved to Denver, Colorado and started the pharmaceutical study as a postdoctoral fellow. In Denver, I met my husband and received a great present from our marriage-the birth of our 1st daughter in 2007. In the following year, I moved to St. Louis, Missouri with my family and started a new research project in a Christopher Hobler (a famous American singer, diagnosed as amyotrophic lateral sclerosis (ALS) in 2001)-funded Lab. In 2009, a beautiful baby girl became our new family member, also I upgraded to a mom with 2 kids. Enlarged family tree and duty didn't stop my feet to scientific exploration. Our (both my husband and I) research activities have been strongly supported by my great mother.

As a scientist, I have consistently studied mitochondrial dysfunction as a causative role of two types of common neurodegenerative diseases: ALS and Parkinson's disease (PD). ALS is a progressive disease affecting both upper and lower motor neurons and is clinically characterized by muscle wasting. Although the cause of these diseases still remains unclear, a bunch of evidence has demonstrated that mitochondrial dysfunction is involved in the

pathogenesis of these diseases. Given that mutations have been identified in the gene encoding Cu/Zn-superoxide dismutase (SOD1), a component of mitochondrion, in some patients of ALS, I have studied the normal function of SOD1, how some stress induces cell death through SOD1 dysfunction and how mutant SOD1 found in ALS is different from normal SOD1. My studies in Osaka and St. Louis provide a couple of avenues to understanding the significance of mitochondrial localization of both normal and mutant SOD1 in pathological progress of ALS: (i) stress-induced release of normal SOD1 coupled with cytochrome c (apoptosis initiator) indicated a possible cooperation of 2 proteins in apoptotic cell death. (ii) aggregation-based mitochondrial accumulation of mutant SOD1 results the protein composition changes in mitochondria due to the impaired protein import machinery. Furthermore, throughout the research activity in Denver, I established a potential model system for oxidative stress induced cell death in PD and found some candidate compounds that could suppress the oxidative stress-mediated dopaminergic cell death and therefore that might be used as an effective medicine for PD in the future. But I had no chance to introduce the 3rd research project based on PD.

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

- Lecture format（講演形式）:

◆Lecture time（講演時間） 90 min（分）, Q&A time（質疑応答時間） 15 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））

I prepared powerpoint slides, total 54 pieces.

The projector was prepared by Kakogawa Higashi High School.

◆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））

ほとんど英語で進行して、重要な部分とか、難しい、理解しがたいところだけ日本語で説明をしました。質問は日本語と英語で受け入れてますが、其々言葉に対応して回答しました。

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

None

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

- 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。）