**（For JSPS Fellow）**

**Form B-5**

Date（日付）
9/27/2012 （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）: Thomas Michael Conrad （ID No. P P11076）

- Participating school（学校名）: Kyoto Prefectural Yamashiro High school

- Date （実施日時）: 15/09/2012 （Date/Month/Year:日/月/年）

- Lecture title（講演題目）: （in English) For Science! Opportunities and Explorations

（in Japanese） N/A

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

My presentation had three parts.
First, I described science as a career, beginning with the activities of scientists. Activities of scientists can be divided into two categories: the discovery of new knowledge and the communication of knowledge. Scientists discover new knowledge by applying the scientific method. Activities to form a hypothesis include staying current by learning about other's research through reading journal articles and attending scientific presentations, and combining others ideas with your own ideas and observations to form a new idea. Second, the hypothesis is tested through experiments. A lot of planning is needed to determine the correct experiments and controls, and event then progress usually depends on a long trial-and-error process to find an experiment that produces meaningful results. Finally, analysis of results may require extensive data processing and use of statistics before deciding whether or not the data agrees with the hypothesis. I next discussed various careers open to scienists. At the bachelor's degree level, I mentioned research assistant/associate, sales representative, and lab support. At the PhD level, I discussed post-docs, professors, research scientists, as well as mentioning alternative careers such as patent lawyer or writer. Finally, I discussed what is involved in PhD education, and gave advice for college study.
Second, I discussed my most current research, including background material that presented basic ideas from genetics. I discussed what is meant by heredity, including the work of Gregor Mendel. I defined DNA as the chemical responsible for heredity, talked about DNA replication, and introduced genome sequences. I discussed the importance of mutations for changing traits and how mutations can result in diseases in humans. I also discussed selection, especially as it occurs in bacterial populations (fast growers and antibiotic resistant bacteria). Then, I discussed my current research. I discussed how I had observed that mutation rates are

observed to differ in different growth environments of bacteria. I discuss how this might relate to stress that bacteria experience in unfavorable environments (cellular stress responses).
For the third part of my presentation, Hisaji Maki assisted me in a question and answer session lasting about thirty minutes.

- Language used（使用言語）: English

- Lecture format（講演形式）:

◆Lecture time（講演時間） 60 min（分）, Q&A time（質疑応答時間） 30 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））

Powerpoint Presentation

◆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））

Prof. Maki provided an introduction, summary of the presentation, and translation for Q&A in Japanese.

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

Dr. Hisaji Maki

◆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。）