

(For JSPS Fellow)

Form B-2  
(FY2018)

Date (日付)  
28/02/2019 (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): Nguyen Lu Phuong (ID No. 17078)
- Participating school (学校名): Kyuyo High School, Okinawa
- Date (実施日時): 27/02/2019 (Date/Month/Year: 日/月/年)
- Lecture title (講演題目): Apply Computational Fluid Dynamics method to simulate the transportation of air pollutants to human and non-human primate airways
- Name and title of your accompanying person (講義補助者 職・氏名)  
Mr. Kyuma Yutaro (Graduate student)
- Lecture format (講演形式):  
◆Lecture time (講演時間) 50 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))  
Presentation used projector

- Lecture summary (講演概要): Please summary your lecture 200-500 words.  
In the presentation, i have introduced about my scientific career. And by take this oppoturnity, information of Vietnam including geographical location, population, area, culture, great persons, and scientists were given during the inroduction part. After introduction, the lecture was continue with information of ambient air pollution, indoor air pollution, the harmful of air pollutant and how its impact to human health. The impact of air pollution on health depends on age and overall health condition of the individual, especially for children, elderly and outdoor workers. Continuously, the history of fluid dynamics and its application was mentioned in the presentation. The Computational Fluid Dynamics (CFD) technique was introduced with the aim to predict the airflow field distribution and particle trajectory in human and non-human primate airways. Inhaled toxic particles were injected to respiratory system after analyzed the airflow. The Lagrangian approach was applied to compute particle trajectories, and particle concentration distributions in the airway models. The effects of the airflow pattern on particle transport mechanisms, e.g., deposition, transportation, and pass through to trachea region, was presented. The deposition locations of particle were identified among Asian airway, European airway and monkey airway. A link between the human and monkey respiratory geometries, the airflow pattern, and particle deposition were found. It is necessary to predict the deposition sites of particles precisely in

order to make a hotspot map where the tumors perhaps formed. Exposure hotspot maps were established to provide a key tool in health impact assessment.

- Overall advice or comments to future participants in the program (今後の講師へのアドバイス):

This program is useful and necessary for high school students. The science dialogue is a great chance for me to provide students new finding. The scientists can inspire the young generation via their lecture with fullfil of new knowledge. This program should be maintained to introduce scientific achievement to high school students in the years to come.

- Other noteworthy information (その他特筆すべき事項):

- Impressions and comments from the accompanying person (講義補助者の方から、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。)

**本事業は高校生が英語を学ぶ(聞く、話す)上で貴重な経験であると感じた。また、高校生が大学ではどういう研究を行っているか、その研究が社会でどのように役立てられているかを知るいい機会である。実際に生徒から「英語を学ぶ意欲が向上した」「大学で数値解析を行いたい」「海外で研究者になりたい」といった声を聞くことができた。**