

Form B-2  
(FY2020)  
Must be typed

Date (日付)  
23/10/2020 (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): Christina Andica (ID No. P20113)

- Name and title of the accompanying person (講義補助者の職・氏名)

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- Participating school (学校名): Kamaishi High School

- Date (実施日時): 20/10/2020 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目): The Power of Diffusion MRI in Parkinson's Disease

- Lecture format (講義形式):

◆ Lecture time (講義時間) 80 min (分), Q&A time (質疑応答時間) 20 min (分)

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

(講義方法 (例: プロジェクター使用による講義、実験・実習の有無など))

Used projector

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- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.

The main aims of my lecture were to introduce the students to radiology and research in radiology. I want the students to know that there are many essential things that we can do through research and the fun things about research. My lecture consisted of 4 parts: (1) Introduction to Indonesia and my background; (2) Introduction to Radiology; (3) The power of diffusion MRI in Parkinson's disease; and (4) Life as researcher and research achievements.

#### Introduction to Indonesia and my background.

The general information, cultural diversities, education system of Indonesia and the lecturer personal background, such as education background and why the lecturer chose to come to Japan and learned in Juntendo University, were introduced.

#### Introduction to Radiology

Radiology is a branch of medicine that uses imaging technology to diagnose or treat disease. There are many kinds of imaging modalities, including x-ray, CT-scan, and MRI, used in the clinical settings, and each modality has its mechanism, advantages, and disadvantages. The radiologists elaborate on the patient's history and radiological features and signs to make a diagnosis.

**The power of diffusion MRI in Parkinson's disease**

Parkinson's disease is the second most common neurodegenerative disease, with the slowness of movement, tremor, and impaired balance as the main symptoms. Parkinson's disease's motor symptoms were caused by the dopaminergic neuron loss in the substantia nigra and nigrostriatal projection loss. In Parkinson's disease, nerve cell damage will have been going for a long time before symptoms become apparent; thus, early diagnosis is crucial. Also, Parkinson's disease cause not only motor symptoms but also various symptoms, including neurocognitive and psychiatric disorders. Advanced diffusion MRI techniques, such as neurite orientation dispersion and density imaging, were applied to: detect Parkinson's disease as early as possible; find measures that can be used to follow the progress of the disease, and show the pathogenesis of the disease. As a result, it was possible to detect decreased neurite density in the nigrostriatal pathway of patients with Parkinson's disease. It was also demonstrated that Parkinson's disease patients with neurocognitive and psychiatric disorders had wider decreases in neurite density. Recently, using advanced diffusion MRI techniques, it was also possible to demonstrate neural compensation mechanisms in Parkinson's disease that can be useful for treatment development.

**Life as researcher and research achievements**

Daily life as a researcher and achievements that can be obtained by a researcher was introduced.

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

The history and medical and technical terms related to radiology, particularly diffusion MRI and Parkinson's disease, were explained to the students to understand the research better.

- 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。):