

様式 A-1
(FY2024)

2024 年 11 月 21日

サイエンス・ダイアログ 実施報告書

1. 学校名・実施責任者氏名: 千葉県立磯辺高等学校 ・ 植草 智代
2. 講師氏名: Dr.Stewart Biedeman MEIN
3. 講義補助者氏名:
4. 実施日時: 2024 年 11 月 21 日 (木) 11:55 ~ 12 :45
5. 参加生徒: 3 年生 28 人、 年生 人、 年生 人 (合計 人)
備考: 普通科理系クラスの生徒
6. 講義題目: Particle Therapy in the Treatment of Cancer:When Physics Meets Medicine
7. 講義概要: Who am I?
What is cancer?
What is radiation therapy?
What is a medical physics?
Summary
8. 講義形式:
☒対面 ・ ☐オンライン (どちらか選択ください。)
 - 1) 講義時間 30 分 質疑応答時間 15 分
 - 2) 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)
プロジェクター使用による講義
 - 3) 事前学習
☒有 ・ 無 (どちらかに○をしてください。)
使用教材 Vocabulary sheet
9. その他特筆すべき事項:

専門的な分野についても分かり易いパワーポイントスライドのおかげで、生徒たちも関連した質問ができる程度には理解できていました。ありがとうございました。

Form B-2
(FY2024)
Must be typed

Date (日付)

(Date/Month/Year: 01 日/12 月/2024 年)

Activity Report -Science Dialogue Program-
(サイエンス・ダイアログ 実施報告書)

- Fellow's name (講師氏名): Dr. Stewart Biedeman Mein IV (ID No. PE24020)

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

Dr. Sodai Tanaka

- Participating school (学校名): Chiba Prefectural Isobe high school

- Date (実施日時): 21 日/11 月/2024 年 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目):

Introduction to Medical Physics: a story from an international scientist

- Lecture format (講義形式):

◆☒ Onsite ▪ ☐ Online (Please choose one.)(対面 ・ オンライン)((どちらか選択ください。))

◆Lecture time (講義時間) 45 min (分), Q&A time (質疑応答時間) 15 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 TV Screen

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

The lecture began with a self-introduction where I shared details about myself, my hometown, my educational background, and experiences working and living abroad. I then gave a brief explanation of why I started the JSPS fellowship in Japan and my current work at the National Institutes for Quantum Science and Technology (QST) in Chiba. There, we study and use radiation to treat cancer, specifically utilizing a very targeted, precise, and potent form of therapy, called particle therapy, that is more effective compared to other typical radiation treatments.

Next, I provided an overview of cancer: what it is, what causes it, and how we treat it. I discussed the roles of the radiation therapy treatment team, which consists of doctors, nurses, and medical physicists. As a medical physicist, I explained the role of a medical physicist, a relatively unknown field, and introduced the discipline of medical physics, which applies physics and technology in medicine using both ionizing and non-ionizing radiation.

I gave a brief overview of what radiation is, discussing its types and how it's used in medical diagnostics and therapy. We also looked at some interesting machines used in radiation therapy that help diagnose and treat patients. Finally, I concluded the lecture by reflecting on my experience working as an international scientist and encouraged the students to consider studying and working abroad, emphasizing the benefits of gaining international experience in their future careers.

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

The students asked insightful and thought-provoking questions during the Q&A. Several students were curious about the societal perspective on radiation, especially the negative associations and fears surrounding its use. They asked how these misconceptions could be improved, and I explained the importance of educating the public about the science behind radiation and its safety when used in controlled, medical contexts. Additionally, two students asked about novel cancer treatments, such as immunotherapy and stem cell therapy, and ways to prevent cancer, discussing lifestyle factors and early detection methods. One student in particular impressed me by having read a scientific paper prior to the lecture and asking an advanced question about the impact of oxygen concentration in the tumor cells during radiation treatment. This is a key factor in radiation therapy, as hypoxic (low-oxygen) conditions in tumors can contribute to resistance to treatment.

- Impressions and comments from the lecture assistant (講義補助者の方から、本プログラムに対する意見・感想等がありましたら、お願いいたします。):

