

様式 A-1  
(FY2025)

2025 年 12 月 22 日

## サイエンス・ダイアログ 実施報告書

1. 学校名： 東京都立多摩科学技術高等学校
2. 講師氏名： Dr. Mehraj HASAN
3. 講義補助者氏名： 村田 遥紀 様
4. 実施日時： 2025 年 12 月 18 日（木） 10 : 00 ~ 12 : 00
5. 参加生徒： 1 年生 193 人、 年生 人、 年生 人（合計 193 人）  
備考：(例：1 年生全員)
6. 講義題目： Heterosis in Chinese Cabbage
7. 講義概要： バングラデッシュの文化紹介、研究者になった経緯、  
白菜の交配に関する遺伝子学的アプローチ
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 90 分 質疑応答時間 30 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（どちらか選択ください。）  
使用教材： 事前に講師から送られたレジュメと PTT スライド資料
9. その他特筆すべき事項：

特になし。

Form B-2  
(FY2025)  
Must be typed

Date (日付) 26/12/2025  
(Date/Month/Year: 日/月/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): HASAN Mehraj (ID No. P24384 )
- Name and title of the lecture assistant (講義補助者の職・氏名)  
Mr. Haruki Murata
- Participating school (学校名): Tokyo Metropolitan Tama High School of Science and Technology
- Date (実施日時): 18/12/2025 (Date/Month/Year: 日/月/年)
- Lecture title (講義題目): Science Dialogue: Introduce Bangladesh, motivation for being a researcher, and facts and findings of my research
- 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) 90 min (分), Q&A time (質疑応答時間) 30 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

- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.  
I described the liberation, language, population, religious and cultural celebrations, cuisine, transportation, and tourist destinations of my home country, Bangladesh. I also discussed the differences in living and food expenses between Bangladesh and Japan. I explained to the students why I wanted to work in the field of research. I gave a detailed explanation of my findings on heterosis—the superiority of F1 hybrids (first filial generation from a cross between male and female parents) over parental lines. Here, I primarily discussed genetic research, including the identification of genomic areas and the process of gene identification. Before sharing my research findings, I explained in detail about the crossing (how can we develop F1 hybrids?), heterosis (how can we measure heterosis?), and problems associated with heterosis. I explained to them that heterosis disappears in next generations, such as in F2 (F2 is developed from a crossing between male and female flowers of F1 hybrids). Therefore, we cannot collect seeds from F1 hybrids, as it reduces production. In contrast, production of F1 seeds is difficult and expensive, which ultimately cause higher market price. I then gave them an explanation of how we could resolve the issues. I also introduced them to the plant cell (how it looks), the existence of chromosomes in a plant cell, and how DNA exists in chromosomes, and chromosome number. I used human chromosome numbers as an example, as it generally teaches high school students.

Then I gave them the idea on DNA-sequence, and it can create variations of characters. I used an example of skin tone of Japanese (white skin) vs. African (black skin) vs. Bangladesh (brown skin). Then I shared my research results, where I discovered a genomic region and transferred genes to the next generations, where we fixed the heterosis issue and were able to collect seeds over generations. My research included transcriptome and epigenome analysis. Since this section is complex and challenging for high school students to comprehend, I just mentioned these technologies in a quick explanation to give them about the current technologies.

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

I tried to explain in easy-to-understand terms/words and did not explain in much depth. Students were responding to me during the lecture, which made it enjoyable for me.

- 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。):

本講義は英語で理解することを目的とされていたので、補助する場面は多くはなかったですが、質疑応答で生徒の皆さんの疑問を解決する通訳ができていたら幸いです。また、必要に応じて講義内容の補足説明を行うことも考えていましたが、受講生の事前学習の状況や研究内容の理解度をあらかじめ把握できていれば、より適切にサポートできたのではないかと感じました。

## History of Bangladesh

