

様式 A-1
(FY2025)

2026 年 2 月 9 日

サイエンス・ダイアログ 実施報告書

1. 学校名：岐阜県立恵那高等学校
2. 講師氏名：Dr. Ahmed M. REFAAT MOHAMED MOSTAFA
3. 講義補助者氏名：清水 秀宇 様
4. 実施日時：2026 年 2 月 3 日(火) 13:45 ~ 15:25
5. 参加生徒：1 年生 12 人、2 年生 18 人 (合計 30 人)
備考：1~2 年理数科の生徒
6. 講義題目：How B Cells Change Antibodies: An Introduction to Class Switch Recombination
7. 講義概要：相分離が制御するクラススイッチ組換えでの DNA 修復とゲノム再編成機構の解明
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 25 分 質疑応答時間 20 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：講師から事前にいただいたアブストラクト
9. その他特筆すべき事項：

講師からの講義に加え、本校生徒が自分たちの課題研究(物理、化学、生物)に関する発表を英語で行い、講師から質疑応答やアドバイスを受けた。

Form B-2
(FY2025)
Must be typed

Date (日付)
04-02-2026 (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) Ahmed Mohamed Refaat Mohamed Mostafa
(ID No. P25117)

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

- Participating school (学校名): Gifu Prefectural Ena High School

- Date (実施日時): 03-02-2026 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目):
How B Cells Change Antibodies: An Introduction to Class Switch Recombination

- 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) 25 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 projector

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

The immune system protects our body by producing antibodies. Antibodies help us fight infections such as bacteria and viruses. B cells are special immune cells that make antibodies. At first, B cells produce only one type of antibody. Later, they can change the antibody type to better fight different infections. This process is called class switch recombination (CSR).

During CSR, the DNA inside B cells is cut and rejoined in a controlled way. This allows the cell to change from one antibody class to another, such as from IgM to IgG or IgA. Although this process is very useful, it is also risky because DNA breaks can cause damage if they are not repaired correctly.

In this lecture, I explained how CSR works and why it is important for immune defense. I also introduced recent research showing how RNA, proteins, and special structures called

condensates help organize DNA repair during CSR. Understanding these mechanisms helps us learn how the immune system stays healthy and how problems in DNA repair can lead to disease.

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

The Q&A session was particularly engaging, with students asking insightful questions about career paths in science. The assistance from the staff and teachers on-site was exceptional and made the event run very smoothly

- 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。):

The lecture was excellent. Dr. Ahmed explained his complex research in a way that was easy for high school students to understand. The students were very engaged and asked good questions. It was a perfect fit for this program.

