SD4428

※弊会記入欄

（学校用）

様式 A-1

(FY2023)

2024 年　2 月　14 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: 埼玉県立川越女子高等学校　：　松本　未来

2. 講師氏名: Dr. Arpna KUMARI

3. 講義補助者氏名:

4. 実施日時: 2024 年　2 月　14 日（ 水 ）　10:10　～　12:10

5. 参加生徒:　2 年生　35 人、　　年生　　人、　　年生　　人（合計　　人）
   備考:（例:理数科の生徒）SSH クラスの生徒

6. 講義題目: 栄養条件に応じた翻訳制御とリボソームタンパク質の役割

7. 講義概要: 講師の出身国についての話、研究に興味を持ったきっかけ、講師の研究内容について

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　70 分　　質疑応答時間　40 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）
      プロジェクターを使用し、スライドを利用した講義

   3) 事前学習
      有 ・ (無)（どちらかに〇をしてください。）
      使用教材

9. その他特筆すべき事項:

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Form B-2
(FY2023)
Must be typed

Date（日付）14/02/2024
（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）: **Arpna Kumari**　（ID No. **P22391**　）

- Name and title of the accompanying person（講義補助者の職・氏名）**Not applicable (**There was no accompanying person**)**

- Participating school（学校名）: **Saitama Prefectual Kawagoe Girl's High School**

- Date （実施日時）: **14/02/2024**　（Date/Month/Year:日/月/年）

- Lecture title（講義題目）: **Selection of Ribosomal Protein Mutant(s) Showing Specific Phenotype to Low Ca Condition (培地 Ca 濃度に応じて成長が変化するシロイヌナズナのリボソームタンパク質変異体の選抜)**

- 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）55　min（分）, Q&A time（質疑応答時間）40　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.

Selection of Ribosomal Protein Mutant(s) Showing Specific Phenotype to Low Ca Condition
培地 Ca 濃度に応じて成長が変化するシロイヌナズナのリボソームタンパク質変異体の選抜

Arpna Kumari, Toru Fujiwara
Department of Applied Biological Chemistry, The University of Tokyo, Yayoi, Bunkyo-ku, Tokyo 113-8657, Japan

Nutrient deficiency in soil is one major crises around the world that suppress the plants' yield. Undoubtedly, many strategies have been developed and still in many are in progress but for some nutrients adopting fertilization strategies cannot be an absolute solution. For example, calcium (Ca); which is one of the essential macronutrients in plants and its deficiency is not caused by lack of Ca in soil. But, the Ca deficiency is mediated by some

soil conditions as well as its mode of transport in plants *i.e.*, its inability to move from older to younger leaves because Ca mainly transported passively (*i.e.*, apoplastic pathway) *via* transpiration pull. Thus, it is important to explore molecular mechanisms related to Ca deficiency and tolerance in plants. Although, several studies have been performed on the molecular mechanism of the development of Ca deficiency symptoms in plants, however, there are rarely reports available on the roles of ribosomal proteins (RPs) under Ca deficit. Ribosome (*i.e.*, protein machinery) in eukaryotes consist of two subunits, larger subunit (60S) and smaller subunit (40S). In *Arabidopsis thaliana*, 60S and 40S consist of 48 and 33 RPs, respectively. Thus, these 81 distinct RPs are encoded by 252 genes and each RP is encoded by two to seven paralogous genes. Thus, in this work, to explore the roles of ribosomal proteins under low Ca conditions, 21 ribosomal proteins mutants were used to observe the phenotypic variations (root length and shoot fresh weight) as compared to wild-type (Col-0).

Keywords: Nutrient deficiency, ribosomal proteins, reverse genetics, phenotypic screening.

◆Other noteworthy information（その他特筆すべき事項）:
It was a wonderful experience with the students of Saitama Prefectual Kawagoe Girl's High School. They all were excited to interact thus, we had great discussion on different aspects of research topic, career in science, importance of English, etc.

- 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。）: **Not Applicable**


Research Background