

(For JSPS Fellow)

Form B-5

Date (日付)

08/11/2016(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): Dr. SAUMYA AWASTHI (ID No. P 16090)
- Participating school (学校名): Tochigi Prefectural Utsunomiya Girl's High School, Utsunomiya City, Japan.
- Date (実施日時): 17/10/2016 (Date/Month/Year: 日/月/年)
- Lecture title (講演題目): (in English) FUN WITH GUN 1 PROTEIN
(in Japanese)

- Lecture summary (講演概要): Please summary your lecture 200-500 words.

The GENOMES UNCOUPLED 1 (GUN1) gene has been reported to encode a chloroplast-localized pentatricopeptide-repeat protein, which acts to integrate multiple indicators of plastid developmental stage and altered plastid function, as part of chloroplast-to-nucleus retrograde communication. Upon illumination, proplastids differentiate into functional chloroplasts in developing photosynthetic tissues of cotyledons, leaves, and stems (Jarvis and López-Juez, 2013). Chloroplast biogenesis also occurs during the growth of young green tissues, as cells expand and mature chloroplasts undergo division by binary fission (Okazaki et al., 2010). This process is characterized macroscopically by rapid greening of the young chloroplast and microscopically by the concomitant formation of thylakoid membranes and the reorganization of nucleoids, i.e., DNA-containing structures without defined boundaries, which differ in number, size, and distribution within plastids at different developmental stages, and harbor the plastid gene expression (PGE) machinery. Six genome uncoupled (gun) mutants have been characterized in *Arabidopsis thaliana* that fail to repress transcription of the nuclear gene *Lhcb1.2* after NF treatment, and are thus impaired in retrograde signaling (Susek et al., 1993; Mochizuki et al., 2001; Larkin et al., 2003; Koussevitzky et al., 2007; Adhikari et al., 2011; Woodson et al., 2011). Five of these genes, GUN2-6, were found to be involved in tetrapyrrole biosynthesis (TPB), whereas GUN1, which encodes a nucleoid-localized pentatricopeptide repeat protein (PPR), has been shown to have a role in PGE, and to act as an integrator of multiple retrograde signals, since *gun1* mutants are unique in exhibiting a *gun* phenotype in response to both norflurazon and lincomycin (Gray et al., 2003; Koussevitzky et al., 2007). However, the exact molecular role of GUN1 remains enigmatic until the new insights provided.

- Language used (使用言語): English

- Lecture format (講演形式):

◆Lecture time (講演時間) 45 min (分), Q&A time (質疑応答時間) 15 min (分)

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

(講演方法 (例: プロジェクター使用による講演、実験・実習の有無など))

Used Projector

◆Interpretation (ex.: assistance by accompanied person, provided Japanese explanation by yourself) (通訳 (例: 同行者によるサポート、講師本人による日本語説明))

By myself

◆Name and title of accompanied person (同行者 職・氏名)

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

- Impressions and opinions from accompanied person (同行者の方から、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。):