

Form B-2
(FY2020)
Must be typed

Date (日付)
09/11/2020 (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): Mahmoud Ibrahim Farahat (ID No. P19114)

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

- Participating school (学校名): Hiroshima Kokutaiji High School

- Date (実施日時): 06/11/2020 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目):

Tissue Engineering: Future of Mankind

- Lecture format (講義形式):

◆Lecture time (講義時間) 120 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 Projectors and conducted experiments

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

Tissue engineering (組織工学) principally aims to develop biological substitutes to restore, maintain, or improve tissue functions. Biomaterials became an important part of tissue engineering researches. Biomaterials refer to material used to make artificial organ, rehabilitation devices or prosthesis to treat or replace natural body tissue. Several types of biomaterials are widely used in Tissue engineering including Hydrogels such as Alginate and Collagen gels. I have been working in Biomaterials field with special focus on uses of hydrogels in organ regeneration research. The final goal of tissue engineering is to generate living 3D bioengineered tissues that mimics (模倣した) natural tissues. For example, salivary gland (唾液腺) regeneration is an important research topic as salivary gland damage can happen by factors such as tumors or radiotherapy, causing dry mouth syndrome (ドライマウス症候群-xerostomia) and oral infections. Traditional therapies such as saliva (唾液) inducing drugs and failed to efficiently treat the symptoms. So, tissue engineering (組織工学) of a salivary gland replacement organ (代用器官) would be an excellent way to treat this disease. I have been working in a multidisciplinary project (学際プロジェクト) that combined several fields of science, such as physics, mathematics,

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biomaterials (生体材料) and computer science to:

1. Make biomimetic models (バイオミメチックモデル) to know how salivary gland is formed naturally.
2. Make new material-based approaches for salivary gland tissue synthesis (唾液腺組織合成).

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

- 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。):