

Form B-5

Date (日付)

25/Sept/2012 (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): KALLUMADIL MATHEW (ID No. P 10772)
- Participating school (学校名): TSUKUKOMA KOMABA HIGH SCHOOL
- Date (実施日時): 15TH SEPTEMBER 2012 (Date/Month/Year: 日/月/年)
- Lecture title (講演題目): (in English) NANOTECHNOLOGY IN CANCER THERAPY
(in Japanese) _____
- Lecture summary (講演概要): Please summary your lecture 200-500 words.

Cancer is regarded as one of the greatest healthcare challenges the world is facing today. Although the treatment of cancer has seen major improvements over the past decades, the majority of cases are dealt with either systemic or invasive methods, such as chemo- and radiotherapy and surgery, respectively.

In particular for metastatic cancer, there is an urgent need for viable alternatives. The key is to provide a way to non-invasively destroy cancer cells only, leaving healthy tissue unharmed.

Magnetic nanoparticles are so small that they can easily move in the bloodstream and even into and between cells. Furthermore, we can interact with them using electro-magnets. For example, we can move them in the body, sense their location and heat them.

Magnetic hyperthermia uses the unique features mentioned above to guide, sense and heat magnetic nanoparticles and create enough heat to kill cancer cells.

The technology is comparable to induction heating where alternating magnetic fields cause a type of resonance in the material. Most cells die at temperatures of 43-45°C, thus only a few degrees above body temperature are required.

Currently, this technology is researched by directly injecting the nanoparticles into the tumour site. However, this method has the potential for intravenous introduction by coating the particles with cancer-specific antibodies that target cancer cells (see figure).

- Language used (使用言語): ENGLISH

- Lecture format (講演形式): MIXED PRESENTATION, Q&A AND QUIZZES

◆Lecture time (講演時間) 60 min (分), Q&A time (質疑応答時間) 30 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))

MAINLY PRESENTATION SLIDES, FEW BLACKBOARD DRAWINGS, 1 EXPERIMENT, MANY VIDEOS

◆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))

INTERLACED SOME PRESENTATION SLIDES WITH JAPANESE TEXT

◆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。)