

様式 A-1
(FY2024)

令和6 年 10月 15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: 学校法人静岡理工科大学静岡北高等学校 塚越 汐里
2. 講師氏名: Dr.MALLA, B. (Mr.) 男
3. 講義補助者氏名: 平井 聡一郎 様
4. 実施日時: 令和 6 年 9 月 18 日 (水) 13 : 20 ~ 15 : 10
5. 参加生徒: 1 年生 140 人、 年 生 人、 年 生 人 (合計 140 人)
備考: (例: 理数科の生徒)
6. 講義題目: 下水中の新型コロナウイルス変異型のハイスループット検出法の開発
7. 講義概要: ネパールの国の紹介 下水中の新型コロナウイルス変異型の検出方法について
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 分 質疑応答時間 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、講義
 - 3) 事前学習
☒有 ・ ☐無 (どちらかに○をしてください。)
使用教材 講演者のアブストラクトを読んだ
9. その他特筆すべき事項:

講演補助者の解説によって、理解が深まった。

Form B-2
(FY2024)
Must be typed

Date (日付)

19/09/2024 (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): Malla Bikash (ID No. P22365)

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

Soichiro Hirai (PhD 1st year student)

- Participating school (学校名): Shizuoka Kita High School

- Date (実施日時): 18/09/2024 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目):

Identification of Fecal Contamination Sources in different water sources in the Kathmandu Valley, Nepal and Importance of Wastewater-Based Epidemiology for Detecting SARS-CoV-2 and other pathogens.

- 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) 60 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 projector

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

Identification of Fecal Contamination Sources in Kathmandu Valley, Nepal:

Globally, millions of people lack access to clean drinking water, with fecal contamination being a major contributor, particularly in countries with poor sanitation. In Kathmandu Valley, Nepal, the demand for clean water exceeds supply, forcing residents to rely on potentially unsafe sources like groundwater and surface water.

These water sources are often contaminated with harmful pathogens from human and animal waste, posing significant health risks. The valley struggles with inadequate waste management, including leaky sewer systems, malfunctioning wastewater treatment plants, and improperly constructed septic tanks. Additionally, livestock and stray animals contribute to the contamination. To address these challenges, microbial source tracking (MST) is employed to identify the origins of fecal contamination whether from humans and/or other animals. Our research indicated that groundwater is contaminated with human, cow, and pig waste, although tube wells are relatively

cleaner. Spring water showed contamination primarily from cows and pigs, while rivers contained a mix of waste from humans, cows, pigs, dogs, and chickens.

Effective strategies must be developed to clean these water sources to prevent disease transmission and ensure safe drinking water for the community.

Importance of Wastewater-Based Epidemiology for Detecting SARS-CoV-2 and other pathogens:

Wastewater-based epidemiology is crucial for monitoring public health, especially during pandemics. This method enables the detection of pathogens in wastewater, often before symptoms appear in individuals. Regular sampling from wastewater treatment plants allows for real-time tracking of disease prevalence, offering an early warning system for various pathogens. Since 2020, we have monitored SARS-CoV-2 in Yamanashi Prefecture, utilizing quantitative polymerase chain reaction (qPCR) to analyze samples. Our team is the first in Japan to detect SARS-CoV-2 RNA in wastewater and we share the results with public health authorities to aid informed decision-making. Weekly updates are available on the Yamanashi CDC website, underscoring our commitment to community health and rapid response to outbreaks.

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

- 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。）: He mentioned that he attempted to clarify some of the complex scientific concepts in the lecture by using examples, as the audience was quite young and might find them challenging to grasp.



Treatment of wastewater

Wastewater treatment plant



Guheswori wastewater treatment plant

Different organizations involved in treating wastewater

UNHABITAT

Dhulikhel hospital

Kathmandu University

Sunga wastewater treatment



Constructed wetland