

*e-ASIA Joint Research Program
Progress Report*

1. Project Title: Health impact of Opisthorchiasis infection in Cambodia and Vietnam : prevalent surveillance of Opisthorchiasis and risk surveillance for liver cancer.

2. Joint Research Period: Oct.2nd,2016 ~ Mar.31st,2018

3. Principal Investigators:

- Japan: Kazuko MIYAMOTO, Professor, University of Yamanashi
 - Planned Funding Period: Oct. 2, 2016-Mar. 31, 2020
- Cambodia: Virak Khieu, Manager of National Helminth Control Program, National Center for Parasitology, Entomology and Malaria Control (CNM)
 - Planned Funding Period: Oct, 2, 2016-Mar. 31, 2020
- Vietnam: Nguyen Thu Huong, Deputy of Head, Department of Science and Training National Institute of Malaria, Parasitology and Entomology (NIMPE)
 - Planned Funding Period: Oct, 2, 2016-Mar. 31, 2020

4. Summary of the Progress of the Joint Research:

4-1 Japan-Cambodia collaboration

Collaboration researches have progressed in Cambodia mentioned bellow;

1) Collaboration research of Stool Examination (SE)

- 1) Finding new endemic areas widely (>20% of EPR: egg positive rate, by Kato-Katz thick smear method)

We found new endemic areas of *O. viverrini* in several provinces; in Preah Vihear, Stung Treng which are near Lao border; in Kratie where S. Mekongi is endemic and MDA is provided along the Mekong; in Kampong Thom province near the Tonle Sap Lake.

- 2) The highest endemic village;>80% of EPR

In Prey Veng province, in the south part of Cambodia, we found some of endemic villages and one of them showed the highest EPR (more than 80%).

- 3) Low ERP in 4 provinces around the Tonle Sap Lake (except Kampong Thom)

We examined 16 villages around the Tonle Sap Lake which is the biggest lake in Cambodia, but those of 15 villages showed no endemic, 0-<10% EPR.

- 2) The first liver function research conducted in high EPR villages in Prey Veng and Kampong Cham

Liver function examination had provided for 97 persons in 2 provinces. It was the first research regarding liver function in Cambodia. The data analysis is being processed now.

3) Behavior research for Raw-Fish consumption

The data analysis is being processed now. The participants of the interview listed 7 kinds of raw fish dishes. They enjoy eating those dishes and are not to be forced to eat them by others.

4) Intermediate hosts survey and reservoir hosts surveillance

Surveillance for intermediate hosts of snails and fresh-water fish was conducted in the endemic areas.

Activity range of reservoir hosts of dogs and cats were monitored in some of endemic areas.

5) Finding e-DNA trial

We have started e-DNA research of *O. viverrini* in Cambodia. We had small seminars in Cambodia before starting sampling. There is no PCR laboratory in Cambodia, so we instructed sampling technique only.

We sampled water from fish ponds around the endemic areas and detected e-DNA of *O. viverrini* from only one sample, though we examined more than 30 samples in Cambodia.

6) Making endemic area map 2017 by CNM

CNM also conducted SE by their research budgets. They made “the endemic map 2017” using total results of SE. It showed new endemic areas were added in 12 provinces

4-2 The collaboration research in Vietnam

1) Finding e-DNA trial and instructed the technique in Vietnam

We have started e-DNA research of *O. viverrini* in Vietnam. We had small seminars and the Japanese lecturer instructed the technique of e-DNA analysis, because they have a laboratory for PCR.

We sampled water from fish ponds around the endemic areas and detected e-DNA of *O. viverrini*. No positive samples were found.

4-3 The collaboration program among 3 countries; Japan, Cambodia and Vietnam

1) Collaboration activities

We could not arrange collaboration meeting in 2017, because our schedule had not been matched. We plan the collaboration program of 3 countries in the program year of 2018.

5. Scientific Achievements and Implemented Activities (Research Exchange, Workshop, Publication, etc. if any):

**For this item, please fill in the attached Excel file.*

6. Future Goals and Plan of Activities within and after the project period:
 - 1) Goals and Plan of Activities within the project period
 - (1) Holding the workshop of *O. viverrini* infection under the collaboration of 3 countries in the final year.
 - (2) Creating an endemic area map the whole of Cambodia
 - (3) Serve the scientific results to making the national health program to prevent *O. viverrini* in Cambodia.
 - 2) Future Plan of Activities after the project period
 - (1) To support to maintain an appropriate laboratory, because there is no laboratory to proceed necessary analysis in Cambodia. So that they will be able to analyze their samples in their own country
 - (2) To support to establish the national health plan including prevention program of *O. viverrini* in Cambodia.
7. Recommendations and Comments to the Program (if any):
(ex. Any support to request from the Program in order to achieve item 6.)

Lists of Achievements and Implemented Activities

1. Original Publication of Articles etc.

[Notes]
Please fill in **only the achievements of this project** by country in order of publication date. Only “published” is targeted, but please write “in press” too only for Final Report.
Please count Proceedings with peer review as original paper.
The information on this form is only disclosable. Please submit Non-disclosable information in a separate file.

1. 1 Original Publications (Articles co-authored among Research Teams)

All Authors' Names, Title, Journal Name, Volume, Edition, Page, Year of Publication	DOI Code	Publication Status	Remarks (e.g. publication in top level journals etc.)
Taro Kagaku and Jiro Kagaku, Distinct roles of MLCK and ROCK in the regulation of membrane	doi: 10.1083/jcb.201506	in press	

0

Total

1. 2 Original Publications (Articles by Single Team only)

All Authors' Names, Title, Journal Name, Volume, Edition, Page, Year of Publication	DOI Code	Publication Status	Remarks (e.g. publication in top level journals etc.)	Country name of the team
Taro Kagaku and Jiro Kagaku, Distinct roles of MLCK and ROCK in the regulation of membrane	doi: 10.1083/jcb.201506	in press		Thailand

0

Total

Lists of Achievements and Implemented Activities

2. presentations at Academic Conferences etc. (Seminars, Workshops, Symposia)

【Notes】

Please fill in **only the achievements of this project** by country in order of presentation date.
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2. 1 Conference Presentations (Joint Presentations among Research Teams)

Date	Type of Presentation	Speaker, "Title", Conference Name, Location, etc.
March 4, 2018	Guest/Invited Speaker	Taro Kagaku, "xxx", yyy, Tokyo,
March 7, 2017	Oral Presentation	Kazuko MIYAMOTO, "Opisthorchis viverrini infection in Cambodia: until now and from now", NTDASIA2017, Thailand
November 25, 2017	Oral Presentation	Kazuko MIYAMOTO, "Opisthorchis viverrini infection in Cambodia: Finding new endemic areas", Global Health 2017, Tokyo
March 23, 2018	Guest/Invited Speaker	Kazuko MIYAMOTO, "Opisthorchis viverrini infection in Cambodia: Finding new endemic areas", Symposium14, The Japanese Society for Hygiene, Tokyo

2 Total

2. 2 Conference Presentations (by Single Team)

Date	Type of Presentation	Speaker, "Title", Conference Name, Location etc.	Country name of the team
March 4, 2018	Guest/Invited Speaker	Taro Kagaku, "xxx", yyy, Tokyo,	Thailand

0 Total

Lists of Achievements and Implemented Activities

3. Workshops, Seminars, Symposia and Other Events (Organized by the Project)

【Notes】
Please fill in **only the achievements of this project** in order of event date.
The information on this form is only disclosable. Please submit Non-disclosable information in a separate file.

Event duration	Name of Organizer	Title of the Event	Location (Country, City, Venue)	Number of Participants (Including Team Members)	Overview
Mar 4-16, 2018	Taro Yamada	○○○○○	Germany, Hamburg, ○○○○○	10	
February 17, 2017	Kazuko MIYAMOTO	Seminar for e-DNA	Cambodia, Phnom Penh, CNM	9	Lectured by Toshifmi MINAMOTO
February 20, 2017	Kazuko MIYAMOTO	Seminar for e-DNA	Vietnam, Hanoi, NIMPE	8	Lectured by Toshifmi MINAMOTO
February 16, 2018	Kazuko MIYAMOTO	Seminar for Ultrasound	Cambodia, Phnom Penh, CNM	8	Lectured by Masaru Muraoka

3Total

Lists of Achievements and Implemented Activities

4. Record of Research Exchanges

【Notes】

Please fill in the record of **research exchange only of this project**.

“Duration of exchange” is not the number of days stayed on the site, but the number of days from departure to return home.

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Date of Departure	Date of Return	Last Name & First Name	Country of Affiliation	Affiliation	Position	Exchange Destination (Country, City, Research Organization etc)	Description of Exchange Content/Purpose	Duration of Exchange (autocompleted)
January 6, 2016	January 16, 2016	Taro Yamada	Japan	Yamada University	Professor	NANOTEC, NECTEC, Bangkok	〇〇	11
February 16, 2017	February 19, 2017	Kazuko MIYAMOTO	Japan	University of Yamanashi	Professor	CNM, Phnom Penh	e-DNA research for <i>O. viverrini</i>	4
February 20, 2017	February 21, 2017	Kazuko MIYAMOTO	Japan	University of Yamanashi	Professor	NIMPE, Hanoi	e-DNA research for <i>O. viverrini</i>	2
March 7, 2017	March 10, 2017	Kazuko MIYAMOTO	Japan	University of Yamanashi	Professor	Khon Kean Univ.	NTDASIA2017	4
August 21, 2017	August 30, 2017	Kazuko MIYAMOTO	Japan	University of Yamanashi	Professor	CNM, Phnom Penh	Stool exam & field research for <i>O. viverrini</i>	10
February 8, 2018	February 22, 2018	Kazuko MIYAMOTO	Japan	University of Yamanashi	Professor	CNM, Phnom Penh	SE & field research for <i>O. viverrini</i>	15
March 10, 2018	March 12, 2018	Kazuko MIYAMOTO	Japan	University of Yamanashi	Professor	CNM, Phnom Penh	e-DNA & field research for <i>O. viverrini</i>	3
February 16, 2017	February 19, 2017	Toshifumi MINAMOTO	Japan	Kobe University	Associate Prof.	CNM, Phnom Penh	e-DNA research for <i>O. viverrini</i>	4
February 20, 2017	February 22, 2017	Toshifumi MINAMOTO	Japan	Kobe University	Associate Prof.	NIMPE, Hanoi	e-DNA research for <i>O. viverrini</i>	3
February 11, 2018	February 16, 2018	Chieko NIBOSHI	Japan	Kobe University	Master student	CNM, Phnom Penh	Food consumption research for <i>O. viverrini</i>	6
February 12, 2018	February 16, 2018	Masaru Muraoka	Japan	University of Yamanashi	Assistant Prof.	CNM, Phnom Penh	Ultrasound examination	5
February 12, 2018	February 16, 2018	Natsuko Nakakuki	Japan	University of Yamanashi	Assistant Prof.	CNM, Phnom Penh	Ultrasound examination	5
March 10, 2018	March 12, 2018	Noriko HIRAYAMA	Japan	University of Yamanashi	Assistant Prof.	CNM, Phnom Penh	e-DNA & field research for <i>O. viverrini</i>	3
April 23, 2017	May 4, 2017	Masashi KIRINOKI	Japan	Dokkyo Medical University	Associate Prof.	CNM, Phnom Penh	Intermediate hosts & reservoir hosts survey	12
April 22, 2018	May 2, 2018	Masashi KIRINOKI	Japan	Dokkyo Medical University	Associate Prof.	CNM, Phnom Penh	Intermediate hosts & reservoir hosts survey	11

Total (Person) 14

Total (Person-day) 87

Lists of Achievements and Implemented Activities

5. Patent Applications

【Notes】

Please fill in **only the achievements of this project** by country in order of presentation date.
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5. 1 Independent Applications by Single Team

Application Number	Name of Patent/Patent Name	Application Date	Patent Applicants (Fill in All Members)	Publication Number (leave blank if unpublished)	Inventor	Country of Application	Registration Number (leave blank if unregistered)	Country Name of the Team
WO20xx-xxxxxx		January 21, 2016	〇〇 Univ、Univ.of xx	WO/2016/xxxxxx	〇〇〇〇、〇〇・〇〇	PCT	WO20xx-xxxxxx (20xx.xx.xx)	Thailand

0

Total (Number of Application)

0

Total (Number of Registration)

5. 2 Joint Applications

Application Number	Name of Patent/Patent Name	Application Date	Patent Applicants (Fill in All Members)	Publication Number (leave blank if unpublished)	Inventor	Country of Application	Registration Number (leave blank if unregistered)
WO20xx-xxxxxx		January 21, 2016	〇〇 Univ、Univ.of xx	WO/2016/xxxxxx	〇〇〇〇、〇〇・〇〇	PCT	WO20xx-xxxxxx (20xx.xx.xx)

0

Total (Number of Application)

0

Total (Number of Registration)

Lists of Achievements and Implemented Activities

6. Awards

【Notes】

Please fill in **only the achievements of this project** by country in order of date of Award.
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Date of Award	Name of Award	Recipient	Remarks	Country Name of the Team
December 24, 2015	〇〇 Prize	Taro Yamada		Thailand

0

Total