



Center for Marine Environmental Studies (CMES), Ehime University,  
Joint Usage/Research Center, Leading Academia in Marine and Environment  
Pollution Research (LaMer)

## **Fiscal Year 2023 (April, 2023 – Mar, 2024) Joint Usage / Research Application**

**Aims of LaMer:** To promote environmental research, Ehime University is operating a joint usage/research center “LaMer” by practical use of the environmental specimen bank (es-BANK) and related analytical equipment, the research vessel (R/V) “Isana”, and Ehime University-De La Salle University International Collaborative Research Laboratory. LaMer aims to implement advanced cutting-edge research in environmental sciences via international collaboration. Application for joint usage, collaboration and research meeting through LaMer is invited for the fiscal year 2023.

### 1. Category of application

Applications including original research ideas of the applicants for the following four categories (A, B, C and D) are welcome. Members in the application must include researcher(s) outside Ehime University and faculty member(s) of LaMer (see “Faculty members of LaMer, Center for Marine Environmental Studies, CMES” at item 15, although anyone among the members can be a principal investigator of the project.

#### A. General collaboration on chemical pollution and coastal environment researches

Research projects to use analytical equipment (see “Joint usage equipment list” in Table 1 at item 16) and samples stored in es-BANK.

#### B. Creation of new discipline and Interdisciplinary fusion research

Joint research projects related to the following research topics 1 and 2, proposed by the research team of multiple LaMer members, are welcome. In addition, other research proposals from researchers outside LeMer members are also called for.

#### **Research 1:**

Research Title: Pathogen and pest control with reduced drug dependence and  
environmental impact: towards sustainable infectious disease control  
and agriculture

Research Team: Kozo Watanabe, Hisato Iwata, Tatsuya Kunisue, Xinyu Guo, Akihiko Morimoto

Outline: The objective of this flagship project is to propose a sustainable approach to control  
infectious diseases and increase agricultural productivity while minimizing the environmental

and ecological impact of chemicals derived from pharmaceuticals, pesticides, and other agents. The project has four topics: 1) development of biologically based technologies for pathogen and pest control that reduce chemical use, 2) comprehensive detection and search for environmentally persistent and bio-accumulative agents, 3) modeling of the movement and spread of chemical contaminants derived from agents from watersheds to coastal areas, and 4) modeling of the various processes by which agents pose toxic effects on wildlife such as fish, birds, and mammals. By integrating these topics in a multidisciplinary manner, we will ultimately predict the effects of the introduction of technologies to biologically control pathogens and pests on the environment and ecosystem. Field research will be conducted in Asian countries and domestic regions in Japan with close ties to LaMer staffs.

## **Research 2:**

Research Title: Creation of platform for signal toxicity evaluation starting from the development of neurotransmission network disturbance detection method

Research Team: Kei Nomiyama, Hisato Iwata

Outline: Environmental pollutants include endocrine disrupting chemicals that disrupt/inhibit endogenous hormones and pesticides that disrupt/inhibit neurotransmission. However, these actions are believed to have something in common and are an idea for a new mechanism of action called "signal toxicity". In this theme, we aim to establish a new imaging technology and develop a sensitive biomarker in order to detect neurotransmission network disturbance caused by signal toxicity, which could not be detected by conventional exposure and toxicity tests. We also aim to establish a new method for monitoring chemical exposure and its biomarkers by conducting in vivo/in vitro exposure tests. As a future, we aim to establish these single detection/diagnosis technologies as a "signal toxicity assessment platform".

## **Others:**

New discipline and interdisciplinary fusion research proposed by applicants.

### **C. International joint research on Asian environmental problems**

Collaboration research by international team including LaMer members focusing on environmental survey and research in Asia.

### **D. International symposium and research meeting**

Organization of international or domestic meeting. Attendees of foreign researchers, young scientists and graduate students are encouraged.

## **2. Duration of joint usage/research**

Joint usage/research starts from April 1, 2023 and is expected to end by February 28, 2024.

## **3. Qualification of applicant and participant**

Researchers affiliated to Japanese and foreign universities, institutes and private companies can apply (including graduate students and fifth and sixth grade students of six-year universities). Other persons who can be recognized as suitable for applying by the LaMer Committee can also apply. Student's applications should fulfill the following conditions.

- 1) If the student applicant is the PI, his/her supervisor should also participate in the project. Recognition note by the supervisor (Form 2) must be attached with the application.
- 2) If the student is included as a member, recognition note by the supervisor (Form 2) must be attached with the application.

#### 4. Budget

LaMer offers travel funds and accommodation expenses to the members and supporting staff of the project if the application is accepted. In the case of category A, B, and C, part of expenses for purchasing consumables will be provided through the LaMer member of the project. In the case of category D, expenses for rental charges of the venue for the seminar, symposium, and meeting, printing expenses of abstract book and travel expenses for the participants will be supplied through the LaMer faculty member. All the expenses in the application form may be reduced depending on the yearly total budget of LaMer.

#### 5. How to apply

Please discuss with LaMer member(s) listed in item 15. Fill in the attached form (Form 1) and submit by e-mail to the address below.

#### 6. Deadline of application

All application forms should be submitted to LaMer Office by **January 27, 2023**.

#### 7. Contact information

All application forms and documents should be sent to:  
LaMer Office of Research Support Division,  
Ehime University, Bunkyo 2-5, Matsuyama, 790-8577 Japan  
**E-mail: [lamer@stu.ehime-u.ac.jp](mailto:lamer@stu.ehime-u.ac.jp)**  
Tel: +81-89-927-8187

#### 8. Selection of the project

Selection of the projects will be made by the screening and reviewing by LaMer Committee. In particular, "necessity, creativity, and possibility of achievement" will be an important criterion for judgment.

#### 9. Notification of selection

The decision by LaMer Committee will be notified to the principal investigator by early April.

## 10. Specifying acknowledgement

When reporting the outcome from the joint usage, collaboration, and seminar and meeting, please add a brief acknowledgement as shown in the following example. Additionally, please submit printed matters (manuscript reprint, abstract book and so on) to the LaMer Office (see item 7).

Example of acknowledgement

“This study was supported by the Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT) to a project on Joint Usage/Research Center, Leading Academia in Marine and Environment Pollution Research (LaMer).”

## 11. Report of research product and meetings

Principal investigator should report the outcome of research and/or meeting by February 28, 2024. Form 3 should be used for submitting the report to LaMer Office. The report will be open to the public through the LaMer website. If the report must be kept confidential for patent application, please contact the LaMer Office.

## 12. Intellectual property right

If the intellectual property right is to be produced by the collaboration project, please consult with appropriate division of the principal investigator’s institute.

## 13. Legal process for animal experiments and recombinant DNA experiments

All of legal process should be completed by the side of applicants before starting the project.

## 14. Security export control

When the research group contains foreign researchers, a written pledge for classification is needed according to the foreign exchange control law and/or foreign trade law.

## 15. Faculty members of LaMer, Center for Marine Environmental Studies, CMES

each address should be \*\*\*\*@ehime-u.ac.jp

Director of LaMer	Hisato Iwata	iwata.hisato.mz
Division of Environmental Dynamics		
Professor	Xinyu Guo	guo.xinyu.mz
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Associate Professor	Shin-ichi Kitamura	kitamura.shinichi.mx
Senior Assistant Professor	Yumiko Obayashi	obayashi.yumiko.nn
Office for International and Social Cooperation		
Associate Professor	Yasutsugu Suzuki	suzuki.yasutsugu.ao

\* : Adjunct faculty member

16. Joint usage equipment list

Table 1, Joint usage equipment

Equipment	Person in charge
Research vessel Isana	A. Morimoto
Rosette Niskin water sampler (2L x 10 bottles) equipped on Isana	N. Yoshie
Quantitative echo sounder system equipped on Isana	N. Yoshie
Ship mounted Acoustic Doppler Current Profiler (ADCP) equipped on Isana	A. Morimoto
Remotely operated underwater vehicle (ROV) system equipped on Isana	N. Yoshie
Bottom mounted Acoustic Doppler Current Profiler (ADCP)	A. Morimoto
Submersible ultraviolet nitrate analyzer	N. Yoshie
High Performance Computer system	X. Guo
Gamma detector system	M. Kuwae
Two-dimensional gas chromatography – time-of-flight mass spectrometer (GC×GC–TOF MS)	T. Kunisue
Gas chromatography – quadrupole mass spectrometer	T. Kunisue
Gas chromatography – double focusing magnetic sector high resolution mass spectrometer	K. Nomiyama
High performance liquid chromatography – tandem mass spectrometer (LC–MS/MS)	K. Nomiyama
High performance liquid chromatography – time-of-flight tandem mass spectrometer	K. Nomiyama
All-in-one fluorescence microscope	H. Iwata
Real-time PCR system	H. Iwata
Integrated computing chemical system	H. Iwata

Germfree room for cell culture	S. Kitamura
Biohazard clean bench	K. Watanabe
Mosquito vector rearing and blood feeding system	K. Watanabe
Microinjector	K. Watanabe
Microplate reader	Y. Obayashi