



MEMORANDUM OF UNDERSTANDING
BETWEEN
UDAYANA UNIVERSITY, BALI, INDONESIA
AND
BANGOR UNIVERSITY, THE UNITED KINGDOM



The University of Udayana (UNUD), Bali-Indonesia and Bangor University, UK hereinafter referred to as the "Parties";

Considering their common interest in promoting the mutual cooperation in the area of education and research;

Desiring to expand the basis for academic and educational cooperation; and

Pursuant to the prevailing laws and regulations in their respective countries, as well as the procedures and policy of the Government of Indonesia and the Government of the United Kingdom concerning academic and educational cooperation;

HAVE AGREED as follows:

**ARTICLE I
OBJECTIVE**

The objective of this Memorandum of Understanding is to develop academic and educational cooperation on the basis of equality and reciprocity and to promote relations and mutual understanding between the Parties. The Parties will encourage direct contact and cooperation between their faculty and administrative staff, departments and research institutions.

**ARTICLE II
SCOPE OF COOPERATION**

The Parties undertake to promote and develop academic cooperation in the following ways:

1. Visit by, and exchange of graduate and undergraduate students for study and research;
2. Visit and exchange – of staff for research, teaching and discussion;
3. Exchange of information including, but not limited to, exchange of library materials and research publications; and
4. Joint research activities

**ARTICLE III
PLAN OF OPERATION**

The Udayana University and Bangor University will designate representatives to monitor the development of programs. As they conduct discussions in collaboration with the appropriate faculty and staff, they will proceed to exchange working plans describing the details of the projects and exchange activities and laying out the terms of participation for faculty, staff, and students. Once mutually agreeable plans have been devised, detailed

implementation agreement shall be signed by the two institutions. Approval by the appropriate authorities may need to be secured in Bali, Indonesia, and United Kingdom.

The Plan of Operation will include such items as:

- a. Elaboration of the responsibilities of each institution for the agreed upon activities;
- b. Schedules for the specific activity;
- c. Budgets and sources of financing for each activity; and
- d. Any other items deemed necessary for the efficient management of the activity.

ARTICLE IV FINANCIAL ARRANGEMENT

The Parties understand that all financial arrangements will have to be negotiated and will depend on the availability of funds.

ARTICLE V INTELLECTUAL PROPERTY RIGHTS AND DISCLOSURE OF INFORMATION

1. If either Party wishes to disclose confidential data and/or information resulting from the cooperative activities under this Memorandum of Understanding to any third party, the disclosing Party must obtain prior consent from the other Party before any disclosure can be made; and
2. Any arrangement arising from this Memorandum of Understanding involving intellectual property rights pertaining to research, publication, and/or commercial purposes shall be determined by specific arrangements to be agreed upon by the Parties at the time and included in a formal agreement.

ARTICLE VI LIMITATION OF PERSONNEL ACTIVITIES

The Parties shall ensure that their personnel engaged in the activities under this Memorandum of Understanding will not engage in political affairs and any ventures of activities in Indonesia and the United Kingdom outside the program of cooperation under this Memorandum of Understanding.

ARTICLE VII SETTLEMENT OF DIFFERENCES

Any differences arising out of the interpretation and/or the implementation of this Memorandum of Understanding shall be resolved amicably through consultation and/or negotiation by the Parties.

ARTICLE VIII AMENDMENT

This Memorandum of Understanding may be amended at any time, by mutual written consent of the Parties. Such amendment shall come into effect on the date as may be determined by the Parties and shall form an integral part of this Memorandum of Understanding.

ARTICLE IX ENTRY INTO FORCE, DURATION AND TERMINATION

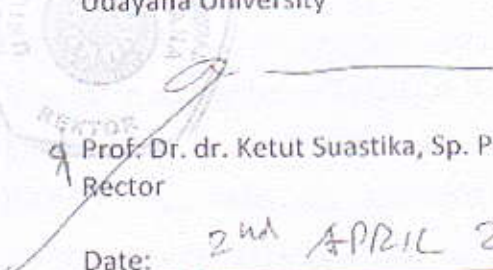
1. This Memorandum of Understanding shall enter into force on the date of its signing.

2. This Memorandum of Understanding shall be valid for a period of 5 (five) years, unless it is terminated at any time by either Party by giving written notification to the other Party 6 (six) months in advance.
3. The termination of this Memorandum of Understanding shall not affect the validity and duration of any on-going projects or activities until the completion of such projects or activities.

IN WITNESS WHEREOF, the undersigned have signed this Memorandum of Understanding.

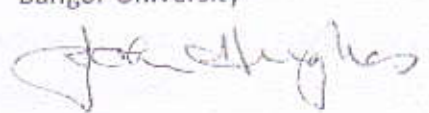
Signed in duplicate in the year two thousand and fifteen in the English language, both texts being equally authentic.

For
Udayana University


Prof. Dr. dr. Ketut Suastika, Sp. PD.KEMD
Rector

Date: 2nd APRIL 2015

For
Bangor University


Professor John G Hughes
Vice Chancellor

Date: 20TH MARCH 2015



MATERIAL TRANSFER AGREEMENT
BETWEEN
The Indonesian Biodiversity Research Center
Udayana University Bali Indonesia
as DONOR
AND
Molecular Ecology and Fisheries Genetics
Laboratory
as RECIPIENT



With the spirit of collaboration and equal right to promote science, and in accordance to international regulation as well as national regulations in Indonesia and The United Kingdom, we, the head of The Indonesian Biodiversity Research Center Udayana University Bali Indonesia as DONOR and the Molecular Ecology and Fisheries Genetics Laboratory as RECIPIENT, with the acknowledgement of both supervisor offices, agree the following term and condition for the transfer of material from the donor to the recipient.

1. The recipient may use the materials for scientific research only. Any other uses such as bio-prospecting efforts are prohibited and must be dealt with under a separate MoA/MoU document.
2. The recipient shall not sell, distribute or use the material for profit or any other commercial application.
3. The recipient agrees to acknowledge the source of the material in any publications reporting use of it.
4. No rights are granted to recipient under any patent, patent application or other proprietary rights of institute other than the right to use the material in research, subject to the term of this agreement.
5. The recipient agrees not to transfer the material to any third party without a written permission from the donor.
6. None of the materials were from protected species (according to Indonesian government) and from species listed in IUCN (critically endangered, endangered, threatened and near threatened), or from the CITES list (the Convention on International Trade in Endangered Species of Wild Fauna and Flora).


7. After research is completed, any materials left shall be brought back to Indonesia. For any publication produced during the collaboration, the Indonesian researcher's name involved in the work shall be written as author(s) or co-author (s) that depends on the level of his/her/their contribution in the work.

Description of Materials

As attached

By Signing Below, I Acknowledge That I Have Read And Understood This Agreement, and that I Agree to Comply with its Terms and Conditions. Failure to comply with its terms and conditions will be made known internationally.

RECIPIENT

Name: Dr. Mark de Bruyn Sign 

Date 24/03/2015

Position: Senior Lecturer in Molecular Ecology and Evolution, Bangor University

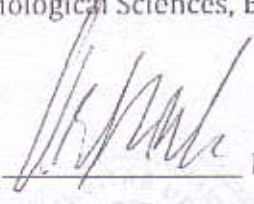
Acknowledged by

Name: Prof. Chris Freeman Sign 

Date 24.3.15

Position: Head of School, School of Biological Sciences, Bangor University


DONOR

Name: Prof. Dr G N Mahardika Sign 

Date 28/03/2015

The head of IBRC Univ Udayana Bali Indonesia

Acknowledged by

Name: Prof. Dr. dr. Ketut Suastika, Sp. PD,KE:MD; Sign 

Date 2/04/2015

Rector of Udayana University

Attachment
MATERIAL TRANSFER AGREEMENT
BETWEEN

The Indonesian Biodiversity Research Center
Udayana University Bali Indonesia
as DONOR

AND

Molecular Ecology and Fisheries Genetics Laboratory

as RECIPIENT

TYPE AND VOLUME OF SPECIMEN:

Specimen 1. Water samples only - fresh water and sea water samples which have been processed to search for trace amounts of DNA molecules, known as 'environmental DNA' or 'eDNA'. No animal or plant tissue or specimens need to be taken. Lake water DNA extract will be stored in the form of TE buffer (comprised of Tris and EDTA), 50 μ l (0.05ml) will be taken to Bangor under the care of Indonesian researchers who will come to Bangor for the initial lab work on these DNA extractions.

Specimen 2. Fish DNA extract - DNA extract processed from fish found in local markets, or fish tissue stored by Udayana. Fish specimens will have a small fin clip taken and DNA extracted in the lab in Indonesia. No fin clips from species on the CITES list will be taken. The tissue will be stored with Udayana University, and the DNA extract which is stored in TE buffer will be taken to Bangor under the care of Indonesian researchers who will come to Bangor for the initial lab work on these DNA extractions.

TYPES AND METHODS OF INSPECTION: water eDNA will be extracted in Indonesia where Indonesian students and scientists will be trained in this skill. Water eDNA will be analysed further in the UK or other country that will be agreed by the DONOR. PCR will be performed on water DNA, and universal primers will be used to search for species biodiversity using the COI, 12S and 16S gene. Species-specific primers will be used to search for trace DNA left by particular fish of interest.

PLAN OF OPERATION (PO)
Between
The Indonesian Biodiversity Research Center Udayana University Bali Indonesia
And
Molecular Ecology and Fisheries Genetics Laboratory
Bangor University, United Kingdom

This Plan of Operation is made and entered into by and between The Indonesian Biodiversity Research Center Udayana University Bali Indonesia and Molecular Ecology and Fisheries Genetics Laboratory Bangor University, United Kingdom, referring to the Memorandum of Understanding (MoU) signed on xxx March 2015 by both parties, and pursuant to the prevailing laws and regulations of the respective countries, both parties have agreed as follows:

Article 1

Objectives

The parties, subject to the terms of the MoU and the laws, rules, regulation and national policies from time to time in each country, agree to strengthen, promote, and develop mutual cooperation in conducting research collaboration in the project entitled "Environmental DNA for Rapid Assessment of Biodiversity and Conservation Priorities in Indonesia".

Article 2

Scope of Specific Cooperation

Both parties agree to implement the program as follow

1. Scope

- a. Training in Indonesia and UK
A one week training course will be held at Udayana University to introduce the use of eDNA to detect microbial species from water. This intensive workshop will provide training on both the theoretical underpinnings and hands-on lab-based analysis of eDNA to all partner teams, and to the wider Indonesian scientific community. A second one week training course will be held at Bangor University, and will provide training for Indonesian participants in the analysis of eDNA molecular datasets, from initial data sorting and archiving through to the final statistical analysis and interpretation of results.
- b. Sample collection in Indonesia
Researchers from Bangor University and Udayana University will visit freshwater and marine sites in different areas of Indonesia, where water samples will be collected and filtered.
- c. Sample preparation in Indonesia
Researchers from Bangor University and Udayana University will extract the DNA from the filters in the lab facilities at Udayana University.
- d. Sample analysis in UK
DNA extracts will be brought to Bangor University under the supervision of the Indonesian researchers from Udayana University, where some initial exploratory work will be conducted (test PCRs, running of gels etc). Duplicate samples will be stored at the University of Udayana, Indonesia.
- e. Sample analysis in Denmark

DNA extracts will be amplified for metabarcoding and sequenced using the next-generation facilities at Copenhagen University, Denmark.

f. Common publications

All publications arising from the samples collected in Indonesia will involve the researchers who participated in the project from Bangor and Udayana University as co-authors.

g. International conference attendance

Once the project is complete, researchers from Bangor University and Udayana University will attend an international conference to disseminate the results of the project.

2. Goal

- a. Provide training experience for early career researchers from the UK and Indonesia in field, laboratory and transferable skills, combining specialist cutting-edge skills within a multidisciplinary environment which is increasingly important for careers in industry or academia.
- b. Develop a new integrated methodology for collecting, analyzing and synthesizing the range of information required to monitor aquatic biodiversity using environmental DNA for evidence-based management and policy decision-making.
- c. Improved awareness in the global scientific and general public community of the value of aquatic ecosystems and how to most effectively monitor them using environmental DNA.
- d. Establish collaboration between Bangor University and Udayana University that will facilitate future research and action to effectively protect and preserve aquatic ecosystems.

Article 3

Rights and Obligations

1. Rights of Udayana University

- a. The staff and students will be trained in sample collection, sample preparation, and sample analysis
- b. Author and/or co-authorships will be given in accordance to international scientific norms
- c. Develop specific research questions and to be responsible for publication(s)
- d. Conducting studium generale on the research topic

2. Rights of Bangor University

- a. Assistance in research permit and immigration process
- b. Assistance in conducting training (venue, participants, and equipment)
- c. Utilization of related lab facilities at IBRC and other places at Udayana University
- d. Assistance in transporting specimens

3. Obligations of IBRC Udayana University

- a. Provide assistance in research permit and immigration process
- b. Provide assistance in conducting training (venue, participants, and equipment)
- c. Permission to utilize related lab facilities at IBRC and other places at Udayana University
- d. Provide assistance in transporting specimens

4. Obligations of Bangor University

- a. The staff and students to be trained in sample collection, sample preparation, and sample analysis

- b. Author and/or co-authorship in accordance to international scientific norms
- c. Develop specific research questions and responsible for publication(s)
- d. Conducting studium generale on the research topic

Article 4
Project funding

"Environmental DNA for Rapid Assessment of Biodiversity and Conservation Priorities in Indonesia" funded by the Global Innovation Initiative. Amount of funding received:
£147,995.00 = IDR 2,949,706,674.18

Article 5
Settlement of Dispute

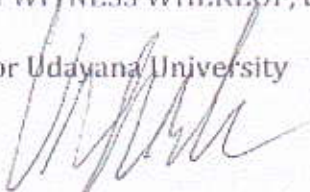
The Parties shall endeavour to resolve amicably any dispute concerning the interpretation and implementation of this PO. Any unresolved dispute shall be settled by means of direct negotiations between the Parties

Article 6
Entry into Force, Duration, and Termination

1. This PO shall enter into force upon the signature by the representatives of the Parties, and valid for 2 (two) years and can be extended upon agreement of both Parties.
2. Either Party subject to written notice might terminate this PO at least 3 (three) months in advance.


IN WITNESS WHEREOF, the undersigned have signed this PO.

For Udayana University


(Prof. Dr. IGNK Mahardika)
The head of IBRC

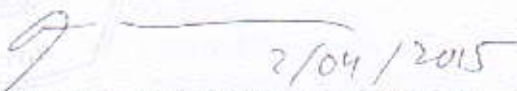
28/03/2015

For Bangor University


(Dr. Mark de Bruyn)
Molecular Ecology and Fisheries Genetics
Laboratory, Bangor University


24/03/2015

Acknowledgement


Prof. Dr. dr. Ketut Suastika, Sp. PD.KEMD
Rector

2/04/2015

Acknowledgement


Prof. Chris Freeman
Head of School, Biological Sciences, Bangor U.

24/03/15