



**International Conference
on Biological Science 2015**

*"Towards the sustainable use of biodiversity
in a changing environment: from basic to applied research"*

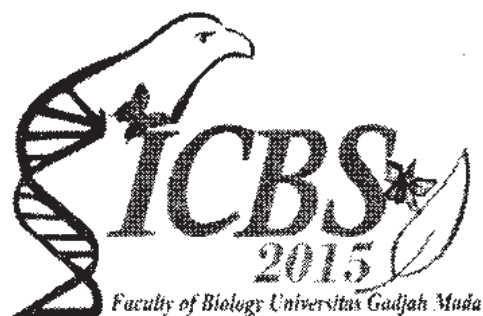
Program and Abstract Book

Yogyakarta, Indonesia
September 18-19, 2015



Faculty of Biology
Universitas Gadjah Mada

**INTERNATIONAL CONFERENCE
ON BIOLOGICAL SCIENCE**



**“Towards the sustainable use of biodiversity
in a changing environment: from basic to applied
research”**

**PROGRAM AND
ABSTRACT BOOK**

Organized by:



**FACULTY OF BIOLOGY
UNIVERSITAS GADJAH MADA
YOGYAKARTA**



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ORGANIZING COMMITTEE'S WELCOMING SPEECH

On behalf of the whole program committee I would like to welcome you to the International Conference on Biological Science 2015, hosted by the Faculty of Biology, Universitas Gadjah Mada, and supported by the university through the BOPTN project.

The biennial ICBS has facilitated an international dialogue on biodiversity since 2009, and in this fourth conference, we continue this tradition of uniting the spirit of science with the endeavors of scientists. We received an extraordinary and diverse number of submissions for this year's conference, and of those we are delighted to host over 250 presenters from countries including Japan, Australia, Malaysia, Philippines, Ethiopia, Netherlands, South Korea, Saudi Arabia, Germany, the United Kingdom, and of course our very own country, Indonesia. We are confident that this diversity in nationalities and disciplines will be reflected in the stimulating and informative exchanges of scientific knowledge that will occur over the next two days.

Papers from this year's ICBS will be published in AIP Conference Proceedings, and KnowledgeE Proceedings which will be indexed in a number of databases, such as Scopus and Web of Science. We believe that with the help of these open access publications, each presenter will be able to take advantage of the truly international scope of the conference and their work will be easily accessible from anywhere in the world.

Finally, organizing a conference with the scope of the ICBS 2015 would be impossible without the efforts of our organizing committee, so we would just like to thank everyone who put countless hours of diligent work over the past year into bringing this conference together. We also wish to acknowledge the members of the scientific committee, who had the arduous task of reviewing hundreds of submissions in a very short span of time. We are also very grateful for the support of our sponsors and exhibitors.

To our keynote speaker, invited speakers, workshop facilitators, session moderators, and all of our oral and poster presenters, we say: here's to the surpassing of scientific horizons.

Tri Rini Nuringtyas
Chair of Organizing Committee



DEAN'S OPENING REMARKS

Assalamu'alaikum warakhmatullahi wabarakatuh.

- Your Excellency, Rector Universitas Gadjah Mada
- Your Excellency, Director General of Ecosystem and Natural Resources Conservation, Ministry of Environment and Forestry
- Distinguished speakers
- Dear Colleagues
- Ladies and gentlemen:

It is my great pleasure to welcome all of you to the International Conference on Biological Science (ICBS 2015) at Yogyakarta. This event is hosted by the Faculty of Biology, UGM as a part of the 60th anniversary celebration.

In line with the vision of the Faculty of Biology to be the leader in tropical biodiversity research, this year ICBS theme is "Towards the Sustainable Use of Biodiversity in a Changing Environment: From Basic to Applied Research". I expect that, through in-depth reviews and discussion, this conference will facilitate the exchange of most updated research findings, and comprehend better measures to achieve a more rational balance between development and conservation of biodiversity.

In addition to being a regular scientific meeting, this conference is also a platform for knowledge exchange among scientists, professionals, government officials and the industry. Specifically, the purpose of this conference is to:

1. Increase awareness of environmental sustainability, and to improve the capability to identify the best environmental conservation policies,
2. Increase consciousness and understanding of the sustainable management and potential economics value of tropical biodiversity,
3. Strengthen the international scientific network of biologist and biology-related scientists,
4. Share and exchange progress and information in various fields of biological research.

On this occasion, I would like to sincerely acknowledge Dr. Ir. TahrirFathoni, M.Sc. (Director General of Ecosystem and Natural Resources Conservation,



Ministry of Environment and Forestry, Republic of Indonesia) for being here with us as keynote speaker. I would also like to extend my gratitude to the invited speakers:

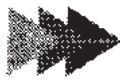
1. Prof. L. Hartanto Nugroho, M.Agr. (Universitas Gadjah Mada)
2. Prof. Andrew Campbell (Charles Darwin University),
3. Prof. Abdulrahman Saad Aldawood (King Saud University)
4. Prof. Masayuki Sakakibara (Ehime University),
5. Dr. Koichi Hasegawa (Chubu University),
6. Dr. Julius Durr (Warwick University),
7. Dr. Kirsten A. Leiss (Leiden University),
8. Mr. Dwi Nugroho Adhiasto (The Wildlife Conservation Society).

I am very pleased to have such great speakers present at our conference today. I am looking forward to a productive discussion among all of the participants, including both the speakers and the audience.

I would like to extend my appreciation to the Steering Committee, Organizing Committee, academic reviewers for their dedication. My appreciation also goes to participating companies and sponsors for their support. Finally, thank you to all participants for sharing their work in this conference. I hope this conference will be interesting to all of you.

Wassalamu'alaikum warakhmatullahi wabarakatuh.
Best regards,

Suwarno Hadisusanto



P 1.17 THE CLONING OF TOLUENE-DEGRADING GENE FROM THE GENOME OF *Pseudomonas putida* ISOLATE INTO THE *Escherichia coli* ORIGAMI HOST CELL

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One of organic wastes that are often produced by petrochemical industry is toluene, a naturally-slow-decomposed compound. The presence of toluene degrading gene can be useful to accelerate toluene degradation. In this study, we aims to clone the toluene gen from *Pseudomonas putida* isolated from waste. The toluene degrading, *tol-like*, gene was derived from *P. putida* genome cutting with *Xba*I, *Bam*HI, *Eco*RI or *Sac*I. The fragments were then cloned on pUCP18 into *Escherichia coli* Origami host cells. Selections of transformants were performed on Luria-Bertani (LB) agar containing 100 ig/mL of ampicillin and then on Bushnell Haas Agar (BHA) containing toluene as the sole carbon source. There were 31 colonies of *E. coli* transformants grew on LB-amp plate. Selections on BHA-toluene showed that none of the transformants, *E. coli* bearing empty plasmid or *P. putida* could grow on 4, 8 40 or 400 ppm of toluene. It might be that the amounts of carbon are too low at these concentrations. At 1% of toluene, the *E. coli* bearing empty plasmid and 4 transformants were unable to grow, whilst *P. putida* grew well. Amongst the 27 transformants able to grow on 1% BHA-toluene, 12 transformants contained *Bam*HI-restriction fragment and 9 others contained *Xba*I-restriction fragment.

Keywords: toluene, *Pseudomonas putida*, toluene degrading gene, cloning



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