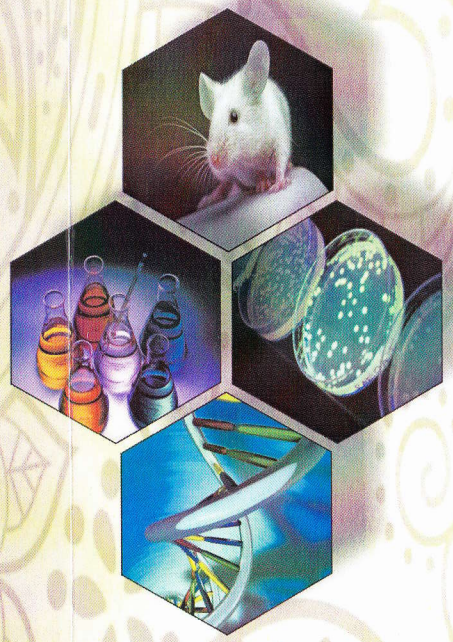
ABSTRACT BOOK

2nd International Conference on Advance Molecular Bioscience and Biomedical Engineering (ICAMBBE) 2015



Institute Biosains
University of Brawijaya
Malang, East Java, Indonesia

Krishna P. Candra.

ABSTRACT BOOK

2nd International Conference on Advance Molecular Bioscience and Biomedical Engineering (ICAMBBE) 2015

Institute Biosains Laboratory
Brawijaya University
Malang, East Java, Indonesia
August, 13th – 14th 2015

Atria Hotel and Convention
Jl. Letjen S Parman 87-89 Malang
East Java-Indonesia

President of Brawijaya University Foreword

On behalf of Brawijaya University, we would like to welcome all of invited speakers and all participant of 2nd International Conference on Advance Molecular Bioscience and Biomedical Engineering (ICAMBBE) 2015, from almost all universities in Indonesia and other foreign universities. Considering the noble aim this event, we are highly appreciate and excited to hold this event in Atria Hotel and Convention Hotel.

Brawijaya University that consists of 15 faculties and vocational education program was committed to cooperate in scientific aspect in accordance with the mission of Brawijaya Universiy to be a World Class University.

Besides that we have initiative to create a harmonization in collaboration among Academics, Business (Industry) and Government (ABG). We proud that Biosains Laboratory as a part of Brawijaya University could start and bridging this collaboration, therefore it could become a role model for other and basic foundation to achieve our purpose become a university that applied an ABG collaboration. Firstly Biosains UB collaborated with PT. BioFarma (Persero) Bandung to product Diagnostic Kit and Seed Vaccines.

Since 2011, UB is one of main council of Indonesia-German Networking for Teaching-Training-Research Collaboration (IGN-TTRC), during four years. This year, UB continue as one of the IGN-Bioscience member on University level, a networking between several universities and researcher in Indonesia and German on focusing research collaboration, and get a chance together to hold the first workshop on research proposal of IGN-Bioscience that arranged by this networking.

This scientific event, we wish became one of the initial effort to integrate the networking and research, and also supporting the information exchange, research, and technological advances in the field of university as one approach to support molecular bioscience and biomedical issues in Indonesia.

On this occasion, we profusely thank to:

1. Dr. Ulrich Schäfer (Senior Scientist Max-Planc-Institute of Biophysical Chemistry, Göttingen)
2. Prof. Dr. Renate Renkawitz-Pohl (Prof. of Developmental Biology, Philipps-Universität Marburg)
3. Prof. Dr. Mireille Schäfer (Prof. of Developmental Biology, Universität Kassel)
4. Prof. Dr. Elisabeth Knust (Director Max-Planck-Institute of Molecular Cell Biology and Genetics, Dresden)
5. Prof. Dr. Rainer Renkawitz (Prof. of Genetics, Justus-Liebig-Universität Giessen)
6. Prof. Wolfgang Nellen (Prof. of Genetics, Universität Kassel)
7. Hidesato Ogawa, Ph.D. (Advanced ICT Research Institute Kobe, National Institute of Information and Communications Technology, Japan)
8. Takeshi Okta, Ph.D (Central Pharmaceutical Research Institute, Japan)
9. Tomohiko Sasase, Ph.D (Central Pharmaceutical Research Institute, Japan)
10. Katsuhiro Miyajima, Ph.D (Toxicology Research Laboratories, Japan)
11. Prof. Dr. drh. H. Fedik Abdul Rantam (Faculty of Veterinary Medicine, Airlangga University, Surabaya)
12. Dr.dr. Izaak Z. Akbar, SpOT(K). (Research Center for Osteoporosis, Medical Faculty, Lambung Mangkurat University, Banjarmasin)
13. Dr. Neny Nurainy, Apt. (PT. BiofarmaPersero, Bandung)
14. Akhmad Sabarudin, S.Si., M.Sc., Dr.Sc. (Department of Chemistry, UB)
15. Participants of this event from various universities

We sincerely hope that this activity is beneficial for all of us, especially in an effort to accelerate the development of education and science in Indonesia. We also hope that this first international conference can improve the quality of research in Indonesia but also make the relationship between all universities better and improving the quality of human kind.

We expect that the first international conference will be held continuously every year in Brawijaya University.

Malang, August 13th 2015
Sincerely

President of Brawijaya University
Prof.Dr.Ir. Mohammad Bisri, MS

Head of Committee Foreword

Dear participants,
On behalf of Director of Biosains UB and executive director of the ICAMBBE 2015 event, It is my great pleasure to welcome you to the 2nd International Conference on Advance Molecular Bioscience & Biomedical Engineering (ICAMBEE 2015) with theme "Advance Molecular Bioscience & Biomedical Engineering for Better Life". After the great success on the first ICAMBBE last year, we hope that all participants involve scientist, practitioners and scholar students from Indonesia and several countries will expresses their interest to participate in ICAMBBE 2015.
The objective of this conference is to share their experiences, new ideas and research results that give positive contributions for the better of our life in the future. Based on our theme we divided this conference into nine scopes could cover all aspects in life sciences

The general objectives of this International Conference are:
1. To promote research and developmental activities in Advance Molecular Bioscience & Biomedical Engineering
2. To promote and share scientific information interchange between academics, business and government in Indonesia & abroad in Advance Molecular Bioscience & Biomedical Engineering

We have 115 researcher and lecturer that participate in this conference; the most of participant is scholar student. Abstract from 40 oral presenter and 7 poster participants that will be presented on this conference provide many opportunities for discussion. Oral presentation and poster sessions were split to the nine scopes of conferences, i.e., (1) Biological and Biomedical Sciences; (2) Genetics and Human Genetics; (3) Smart Molecule and Biosensing; (4) Medical and Veterinary Sciences; (5) Biochemistry and Molecular Biology; (6) Life Sciences and Livestock Science; (7) Molecular Microbiology; (8) Nutrigenomic and Functional Food; (9) Pharmaceutical Science and Toxicology

In this event we also held two different workshops, Workshop "Genetics and Development" and Workshop "Famous through Journal". Especially for workshop "Genetics and Development", as a member of IGN-Bioscience, We feel honor that we got an opportunity to held the 1st workshop arranged by IGN-Bioscience. We believe that there will be a lot of knowledge and information that we get from six Germany invited speakers.

We wish that ICAMBBE 2015 could give significant contribution towards the science acceleration. We hope also that this conference can improve the quality of research in Indonesia and promote the quality of education in Indonesia. We hope that the first international conference will be held continuously every year in Brawijaya University. Thank you for Advanced ICT Research Institute Kobe, National Institute of Information and Communications Technology, Central Pharmaceutical Research Institute, Toxicology Research Laboratories, Japan, PT. Biofarma Bandung, Faculty of Veterinary Medicine, Airlangga University, Surabaya, Research Center for Osteoporosis, Medical Faculty, Lambung Mangkurat University, Banjarmasin, and Department of Chemistry, UB. Special Thanks for Prof. WolgangNellen to support first workshop of on Genetics and Development, and meeting for IGN-Bioscience research project. Thank you for all participant exhibitions such as PT New Module, PT Fajar Mas Murni, PT Biozatix Indonesia and Merck Millipore.

Best regard,
Head of Committe
Prof. Fatchiyah, M.Kes., PhD

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Smart Molecule and Biosensing

Molecular Microbiology, Medical and Veterinary Sciences

Genetic and Human Genetic, Life Science and Livestock

Medical and Veterinary Sciences

Poster Presentation

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Date	:	Friday, August 14th, 2015
Theme	:	Biological and Biomedical Sciences
Room	:	Ivory 2
Moderator	:	Akbar Farid H, M. Si

ID	Presenter	Title	Schedule
MM-05	Krishna P Candra, Bodhi Dharma, Ariana, Arif Ismanto, Abdul Sahid, Pintaka Kusumaningtyas	Diversity of microbes and environment characteristics during decomposition of oil palm empty fruit bunches	16.00-16.15
MM-06	Irfan Mustafa, Hiroto Ohta, Takuro Niidome, Shigeru Morimura	Isolation of sulfur oxidizing bacteria and their roles in sulfur cycle of midorikawa tidal flat, Japan	16.15-16.30

PL-1.1

The role of stem cell technology for rejuvenation

Fedik A. Rantam

Stem Cell Center, ITD Universitas Airlangga

Transplantation of stem cell mostly using mesenchymal stem cells (MSCs) that can be harvested from different sources (bone marrow, PBMCs, and umbilical cord blood, adipose, tissue, dental pulp, dental ligament and gingiva tissue) in sufficient numbers for transplantation. MSCs have then also been used for cell-based therapies especially in an allogeneic setting for more than a 25 years ago. Recent developing of stem cell can be used for rejuvenation.

Rejuvenation is the reversal of aging and thus requires a different strategy for repair of the damage that is associated with aging or replacement of damaged tissue with new tissue. Aging is an accumulation of damage. to macromolecules, cells, tissues and organs. If any of that damage can be repaired, the result is rejuvenation.

Mesenchymal stem cells (MSCs) show great promise for use in a variety of cell-based therapies. To maintain of the ability of MSCs can use some kinds to approach like a model of administration stem cells are first, implantation of stem cells from culture into an existing tissue structure, second implantation of stem cells into a tissue scaffold that guides restoration, third induction of residual cells of a tissue structure to regenerate the necessary body part, and the others substance is stem cell product with inside many kinds of growth factors.

The others hand, there are some kinds of strategy using stem cell according to rejuvenation technology, first if there is cell loss can be repaired (reversed) just by suitable needs various growth factors to stimulate cell division using stem cells like human adipose stem cell (hADSc), and others senescent cells can be removed by activating the immune system against them using haemopoietic stem cell. Secondly, for mitochondrial mutations the plan is not to repair them but to prevent harm

MM-05

Diversity of microbes and environment characteristics during decomposition of oil palm empty fruit bunches

Krishna Purnawan Candra[1,2*], Bodhi Dharma[3], Ariana[1], Arif Ismanto[4], Abdul Sahid[5], Pintaka Kusumaningtyas[6]

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[3]*Jurusan Biologi FMIPA Univ.Mulawarman, Samarinda, Indonesia*
[4]*Jurusan Peternakan Faperta Univ.Mulawarman, Samarinda, Indonesia*
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Empty Fruit Bunches (EFB) of oil palm, a lignocellulose biomass, is often used as green manure in plantation field. However, the slow composting time of the EFB is still problem in oil palm industry. Study of microbes involves and environment characteristics during EFB composting are needed to design more efficient process. Samples of EFB pile in three different ages from two different Oil Palm Refineries in East Kalimantan were used as research objects. Physical-chemical and microbial properties (temperature, pH, C/N, and microbial density) were observed. Microbial diversity base on molecular base of 16S rDNA and 18S rDNA were conducted.

Keywords: oil palm, lignocellulose, biodiversity, composting

MM-06

Isolation of sulfur oxidizing bacteria and their roles in sulfur cycle of midorikawa tidal flat, japan

Irfan Mustafa[1,2], Hiroto Ohta[2], Takuro Niidome[2], Shigeru Morimura[2]

[1]*Biology Department, Faculty of Mathematics and Natural Sciences, Brawijaya University*
[2]*Graduate School of Science and Technology, Kumamoto University*
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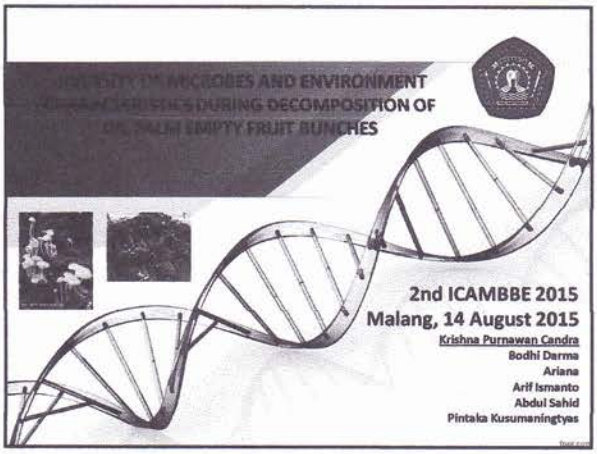
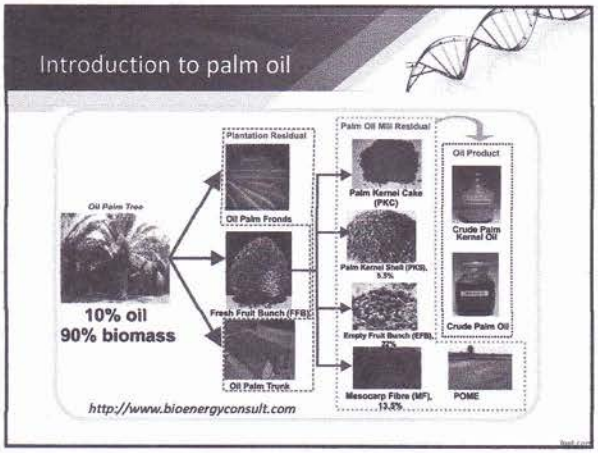
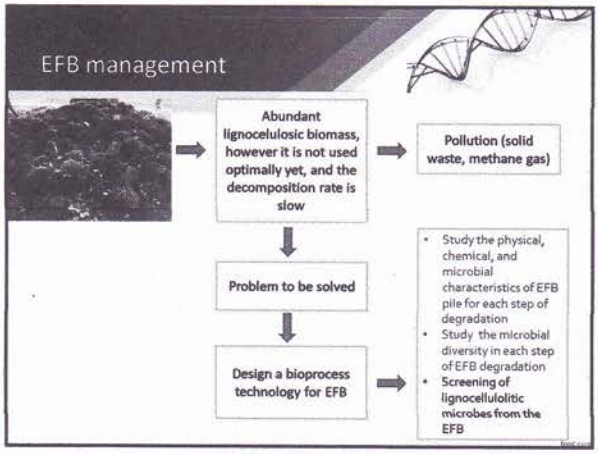
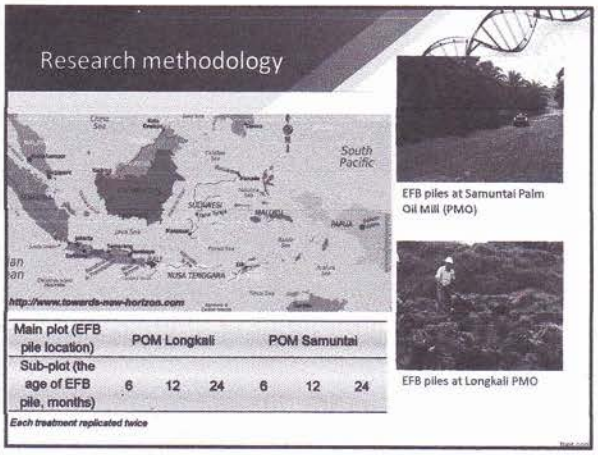
Intolerable sulfide emission was detected at several areas in tidal flats of the Ariake Sea, Japan. Sulfide is actually produced by sulfate-reducing bacteria and reoxidized by coexisting sulfur-oxidizing bacteria (SOB). The SOB is important in controlling the emitted sulfide but their specific roles in sulfur cycle of the tidal flat were not well understood. This study was conducted to give an overview about the roles of culturable SOB in the sulfur cycle of Midorikawa tidal flat. Sediment was sampled from a conserved Midorikawa tidal flat and was incubated in Thiosulfate Mineral medium. The isolated colonies were checked for physiological traits in the medium and existence of aprA and soxB genes by PCR. Their 16S rRNAs were sequenced and analyzed using BLAST to reveal their taxonomic affiliation. Heterotrophic and autotrophic sulfur-oxidizing bacteria were isolated from a conserved tidal flat in the Midorikawa Estuary, Kumamoto. The isolated strains were affiliated to classes of Alphaproteobacteria, Betaproteobacteria and Gammaproteobacteria. According to the physiological and functional marker-gene analysis, the isolates responded differently in oxidation of thiosulfate (S2O32-) and they were also potential in performing sulfide oxidation. This indicated that each of these isolates contributes to the different roles in the sulfur cycle of Midorikawa tidal flat.

Keywords: sulfur oxidizing bacteria, sulfur cycle, tidal flat









Parameters and data analysis

Physical characteristics: temperature, humidity
Chemical characteristics: pH, C/N
Microbial characteristics : microbial density
The data analyzed by ANOVA and continued by LSD

Profile of microbial diversity
(16s rDNA and 18s rDNA)

Macro-agents involve in decomposition of EFB pile

- Macro fungi
- Worms
- Insects

Profile of EFB in each steps (age stages) during decomposition

Age of EFB pile (months)	Longkali POM		Samuntai POM	
	Profil TKS	Lokasi TKS	Profil TKS	Lokasi TKS
± 6				
± 12				
± 24				

- **EFB decomposition at Longkali POM is slower than at Samuntai POM (at ±12 months, EFB at Longkali POM is still have much fiber than at Samuntai POM)**

Pile condition:
EFB pile at Longkali POM is an open pile, while at Samuntai POM the EFB pile is in the plantation area (has un-direct sun light)

Temperature and humidity profile of EFB pile during decomposition

Parameters	Age of EFB (months)	Location		Average
		Longkali POM	Samuntai POM	
Temperature (°C)	± 6	(35.65 ± 7.35) b	(35.40 ± 4.38) b	(35.52 ± 0.17) b
	± 12	(35.90 ± 2.09) b	(36.95 ± 0.28) a	(36.42 ± 0.74) a
	± 24	(33.10 ± 1.59) c	(26.0 ± 1.41) d	(29.55 ± 5.02) c
	Average	34.88 ± 17.48	32.78 ± 17.09	
Humidity (%)	± 6	73.10 ± 0.07	83.4 ± 0.57	(78.25 ± 7.28) b
	± 12	78.77 ± 0.14	88.8 ± 0.64	(83.78 ± 7.08) b
	± 24	91.6 ± 0.42	94.4 ± 0.85	(93.00 ± 1.97) a
	Average	81.15 ± 9.47	88.86 ± 5.50	

Notes: Average followed by different letter show significant difference by LSD at α of 5%).

Microbial density profile of EFB during decomposition

Age of EFB pile (months)	Location		Average
	Longkali POM (x 10^4)	Samuntai POM (x 10^4)	
± 6	33.00 ± 7.07	39.5 ± 7.07	(36.25 ± 4.60) ab
± 12	39.25 ± 7.42	44.5 ± 1.76	(41.87 ± 2.30) a
± 24	19.25 ± 3.53	39.25 ± 3.18	(29.25 ± 14.10) b
Average	30.50 ± 10.23	41.08 ± 1.80	

Notes: Average followed by different letter show significant difference by LSD at α of 5%).

Profil pH, kadar C organik, kadar Nitrogen dan C/N tumpukan TKS di PMS Longkali dan PMS Samuntai

Parameters	Age of EFB pile (months)	Location		Average
		Longkali POM	Samuntai POM	
pH	± 6	(9.14 ± 0.39) a	(8.89 ± 0.20) a	(9.01 ± 0.18) a
	± 12	(8.45 ± 0.21)ab	(7.62 ± 0.14) b	(8.03 ± 0.58) b
	± 24	(8.16 ± 0.05) ab	(3.45 ± 0.03) c	(5.80 ± 3.33) c
	Average	(8.58 ± 4.31) a	(6.65 ± 4.05) b	
C organic (%)	± 6	(19.64 ± 0.45)	(11.52 ± 1.29)	(15.58 ± 5.73) a
	± 12	(19 ± 0.98)	(11.3 ± 0.33)	(15.15 ± 5.44) ab
	± 24	(15.31 ± 2.91)	(10.22 ± 0.22)	(12.76 ± 3.59) b
	Average	(17.98 ± 2.33)	(11.01 ± 0.69)	
Nitrogen content (%)	± 6	(0.55 ± 0.04) ab	(0.53 ± 0.06) ab	(0.54 ± 0.01)
	± 12	(0.52 ± 0.05) ab	(0.49 ± 0.06) ab	(0.51 ± 0.02)
	± 24	(0.72 ± 0.08) a	(0.36 b ± 0.03) b	(0.54 ± 0.25)
	Average	(0.59 ± 0.10)	(0.46 ± 0.09)	
C/N	± 6	(36.00 ± 3.39) a	(22.10 ± 4.95) b	(29.05 ± 9.82)
	± 12	(35.95 ± 1.48) a	(23.20 ± 3.82) b	(29.57 ± 9.01)
	± 24	(21.20 ± 1.56) b	(29.85 ± 3.75) ab	(25.52 ± 6.11)
	Average	(31.05 ± 8.53) a	(25.05 ± 4.19) b	

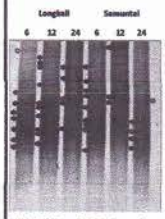
Notes: Average followed by different letter show significant difference by LSD at α of 5%).

Isolation of microbial total genome

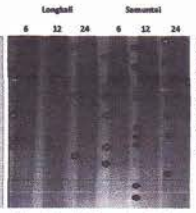
Microbial total genome

Notes:
A1 = Longkali PMO, ± 6 months
A2 = Longkali PMO, ± 12 months
A3 = Longkali PMO, ± 24 months
B1 = Samuntai PMO, ± 6 months
B2 = Samuntai PMO, ± 12 months
B3 = Samuntai PMO, ± 24 months

DGGE profile of 16S rDNA and 18S rDNA



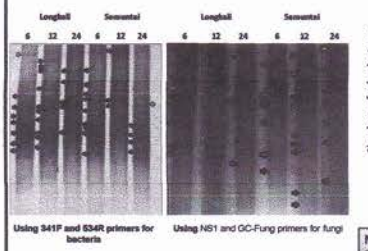
Using 341F and 534R primers for bacteria



Using NS1 and GC-Fung primers for fungi

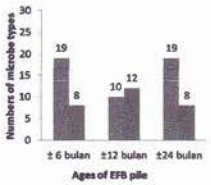
Number of microbes types identified on DGGE profile from EFB pile during decomposition at Longkali Pile (■, bacteria; ■, fungi)

DGGE profile of 16S rDNA and 18S rDNA



Using 341F and 534R primers for bacteria

Using NS1 and GC-Fung primers for fungi



Number of microbes types identified on DGGE profile from EFB pile during decomposition at Longkali Pile
(■, bacteria; ■, fungi)

Microbial diversity in EFB pile at each step (stage of age, months) during decomposition

Bacteria		PMS Longkali			PMS Samuntai		
		6	12	24	6	2	24
PMS Longkali	6	1.00					
	12	0.96	1.00				
	24	0.56	0.57	1.00			
PMS Samuntai	6	0.56	0.53	0.53	1.00		
	12	0.53	0.50	0.62	0.41	1.00	
	24	0.23	0.18	0.10	0.37	0.46	1.00

Fungi		PMS Longkali			PMS Samuntai		
		6	12	24	6	2	24
PMS Longkali	6	1.00					
	12	1.00	1.00				
	24	0.32	0.32	1.00			
PMS Samuntai	6	0.63	0.50	0.46	1.00		
	12	0.50	0.50	0.24	0.40	1.00	
	24	0.38	0.38	0.30	0.38	0.20	1.00

- Microbial community types of Longkali and Samuntai POM are different
- During decomposition, a successive process of microbial community types are detected
- The changes of physical and chemical characteristics of EFB during decomposition is one of some factors that may responsible for the microbial diversity.