Green RF-Transmitter with Cartesian Delta Sigma (ΔΣ) Upconverters

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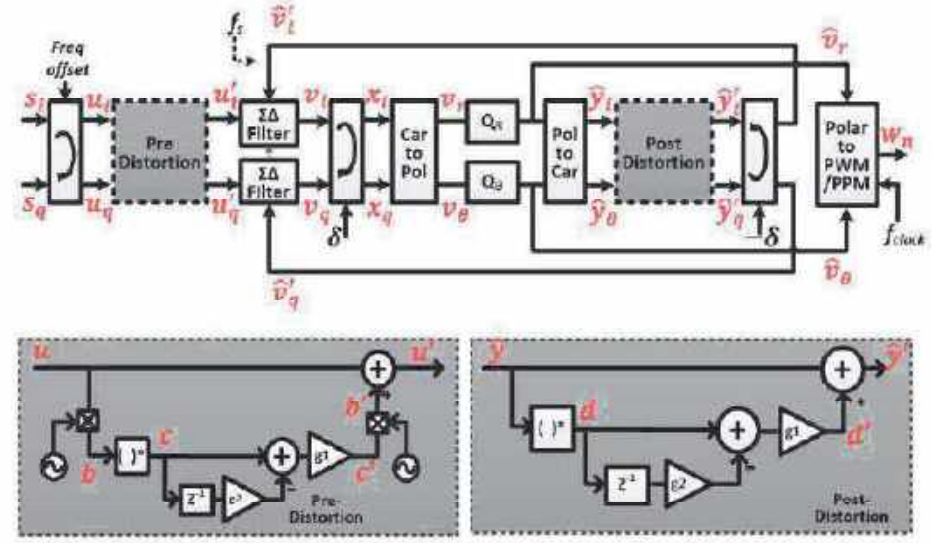
INTRODUCTION:

This contribution involves the development of a new frequency tuning method for reducing noise enhancement. A mathematical derivation has been developed to predict the size and position of the unwanted images. The signal image can be removed by pre-distorting the input signal. The above improvements will enhance the use of all-digital ΣΔ based transmitters in future wireless communication system.

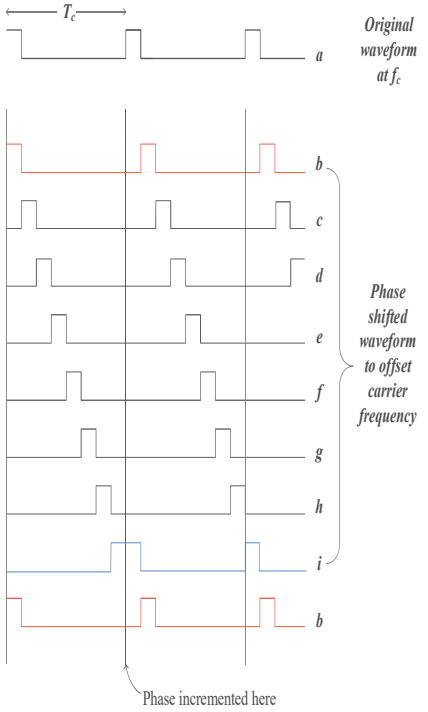
CARTESIAN ΔΣ MODULATION



The management of distortion and noise is a key design challenge as is the requirement for tunability. ΣΔ techniques can shape the noise away from the carrier band for subsequent removal in a band-pass filter, but tunability remains a problem. The proposed scheme needs to have two distortion function units: pre-distortion for image cancellation (it is put at the input to the ΣΔ) and post-distortion for noise cancellation.

Unwanted Spectral Components

- The 'Polar to PWM/PPM' block which generates a pulsed square waveform with a number of quantised pulse widths and pulse positions which represents amplitude and phase respectively.
- A phase change (θ) will cause the pulse position within the nominal carrier period to change, which is achieved by swallowing or stuffing a pulse whenever the instantaneous phase moves from one phase quantisation level to another then leads to AM distortion.
- When the pulse is high (logic '1') at the end of the carrier period, it will wrap around to the beginning of another repeating pulse in the next period resulting in a wider high pulse. This phenomenon indicates the presence of an image and other harmonic components in the spectral domain, causes harmonic production.



Harmonic Distortion Location: an analysis

(K = 1, f_{ssb}= 64 MHz, OSR_{RF} = 32, f_c= 1024 MHz)

Harmonic size (dB)	Odd quantisation α = 5, = 0.6002		Even quantisation α = 6, = 0.7074	
	Simulation	Calculation	Simulation	Calculation
Image	29.6533	30.3703	29.821	30.3703
3rd harmonic	24.4384	24.9554	26.2643	26.5090
-3rd harmonic	30.1255	30.5955	35.2057	32.1491

- Table comparison between the simulation results and the calculation of relative image, relative ±3rd harmonics.
- The pulse width, α, which gives the expected pulse width for a given input signal amplitude.
- Agreement between simulation and calculation degrades as OSR_{RF} is reduced. Two reasons for this are the increasing noise floor that masks the signals and the ΣΔ action which oscillates between various pulse widths.

RESULTS

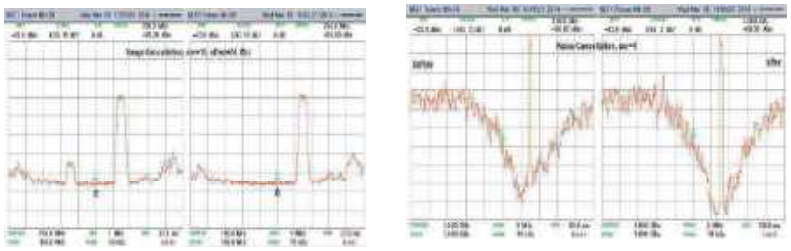


Figure 1 (Left): The figure on the left shows that the image still appears on the spectrum (before image cancellation) whereas the figure on the right shows that the image no longer appears after image cancellation.
Figure 2 (Right): The original spectrum in which the noise floor is high near the signal before and after with noise cancellation. It is evident that the noise floor is reduced and the signal band is in the ΣΔ noise null.

CONCLUSION:

- ✓ This section has identified the phenomenon of distortion problems that are generated by the 'Polar to PWM/PPM' block. These distortions reduce the dynamic range of the operating band, therefore, image and noise cancellation by using pre-distortion technique is proposed so all the operating bands can meet the spectrum mask requirements.
- ✓ The focus was on a concept design for a low-power transmitter with good linearity and high efficiency. The work concentrated on the digital upconversion of modulated signals such as required for LTE and WLAN standards. The proposed scheme is potentially an all-digital and therefore low-cost solution for multi-standard software defined radio.

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2016 Indonesian-American Kavli Frontiers of Science Symposium

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as

Participant

Surabaya-Malang, East Java, 30 July - 4 August 2016

Prof. Dr. Sangkot Marzuki
President, Indonesian Academy of Sciences

Dr. Fenny M. Dwivany
Chair, Indonesian Organizing Committee

2016 Indonesian-American
Kavli Frontiers of Science Symposium

Sirmayanti

The State Polytechnic of Ujung Pandang

Material Physics and nanotechnology

August 1- 4, 2016 - The Atria Hotel, Malang, Indonesia

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2016 Indonesian-American Kavli Frontiers of Science Symposium

August 1-4, 2016

Malang, Indonesia

Symposium Materials

2016 Indonesian-American Kavli Frontiers of Science

Indonesian Academy of Sciences – U.S. National Academy of Sciences

Malang, Indonesia –August 1-4, 2016

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2016 Indonesian-American Kavli Frontiers of Science

Indonesian Academy of Sciences – U.S. National Academy of Sciences

Malang, Indonesia – August 1-4, 2016

Program - sessions listed in Alphabetical Order

Big Data and Marine Conservation

Organizers: Fenny Dwivany and Monica Medina

INTRODUCTORY SPEAKER:

Big Data and Marine Conservation
Manuel Gonzalez, University of Queensland

SPEAKERS:

Metabolomics: A Data Driven and Multidisciplinary Approach for Various Applications in Food Science and Technology
Sastia Prama Putri, Institut Teknologi Bandung

We Punch Nature and It Will Punch Us Back: Human Impacts on Biodiversity and Their Feedbacks
Camilo Mora, University of Hawaii

From Nature's Machines to Synthetic Biomimicry

Organizers: Ari Winasti Satyagraha and Nathan Gianneschi

INTRODUCTORY SPEAKER:
Cyrille Boyer, University of New South Wales

SPEAKERS:

Biological Blueprint for the Design of Novel Solar Energy Harvesting Technology
Tatas Brotosudarmo, Ma'Chung Research University

The Molecular Mechanisms of Spider Silk Assembly
Greg Holland, San Diego State University

Mass Extinction and Citizen Science

Organizers: William Gilhooly and Topik Hidayat

INTRODUCTORY SPEAKER:

Global Identification of Eruption Magnitude Based On Topographical Reconstruction of Ancient Volcanoes
Asep Saepuloh, Bandung Institute of Technology

SPEAKERS:

Biodiversity Inventory in the Underway Sixth Mass Extinction: The Role of Citizen Science in Documenting Plant Diversity in Indonesia
Teguh Triono, The Indonesian Biodiversity Foundation

Biodiversity Inventory in the Underway Sixth Mass Extinction: Mass extinctions and Earth system perturbations
Ryan McKenzie, Yale University

The Indonesian-American Kavli Frontiers of Science symposium is sponsored by the U.S. Agency for International Development (USAID). Major support is provided by the Kavli Foundation with additional support from the U.S. National Academy of Sciences and the Indonesian Academy of Sciences.

Non-communicable Disease and Aging
Organizers: Jajah Fachiroh and Natalie Ebner

INTRODUCTORY SPEAKER:
Non-communicable diseases – The salient killer of the 21st century and beyond
Leanne Redman, Pennington Biomedical Research Center, Louisiana State University

SPEAKERS:
Intervening the Cardiovascular Disease Continuum to Combat Non Communicable Disease
Budi Anggoro, Universitas Gadjah Mada

The Obesity Pandemic: Causes, Consequences and Containment
Leonie Heilbronn, University of Adelaide

Robotics and Information Systems / Innovation
Organizers: Enid Montague and Rajesri Govindaraju

INTRODUCTORY SPEAKER:
Information & Communication Technology for Collaborative Scientific Endeavour
Ary Setijadi Prihatmanto, Institute Technology of Bandung

SPEAKERS:
Landscape of the Digital Economy in Indonesia
Yudho Giri Sucahyo, University of Indonesia

How can robots get along with people?
Ross Knepper, Cornell University

Social Decision Making / Behavioral Economics
Organizers Natalie Ebner and Teguh Dartanto

INTRODUCTORY SPEAKER:
Social Decision Making / Behavioral Economics
Steven Chang, Yale University

SPEAKERS:
The Foundation of Human Cooperative Behaviors
Felix Warneken, Harvard University

Eliminating the Fuel Subsidy in Indonesia: Using Behavioral Insights to Design Alternative Policies and Assessing Households Preferences among Them
Rimawan Pradiptyo, Universitas Gadjah Mada

2016 Indonesian-American
Kavli Frontiers of Science Symposium

Indonesian Academy of Sciences - U.S. National Academy of Sciences

Surabaya-Malang, East Java, Indonesia – July 30 – August 4, 2016

Agenda

Saturday, July 30, 2016

Indonesian attendees arrive in Surabaya and check into Novotel Surabaya - *Meeting point at Ibis Hotel, Juanda Airport*

Sunday, July 31, 2016

AUS, Indonesian and US attendees arrive at Surabaya airport *Meeting point at Ibis Hotel, Juanda Airport*

7:00 – 9:00 a.m.	Breakfast at Novotel Hotel restaurant
8:30 a.m.	USAID Workshop: Proposal Writing: Understanding the Process
10:30 a.m.	USAID Workshop: Career Launch: Making the most of your talents
12:15 p.m.	Lunch at Novotel Hotel Restaurant
1:00 p.m.	USAID Workshop: Publishing in Peer Reviewed Journals
3:00 p.m.	USAID Workshop: Career Launch: The Art of Effective Negotiation
4:30 pm	USAID Workshop adjourns
6:00 p.m.	Organizers, Chairs, Speakers meeting – *symposium meeting room*
7:00 p.m.	Dinner – Novotel Hotel Restaurant
7:00 p.m.	Dinner Lecture – "History of Science in Netherlands Indie and Indonesia"

Monday, August 1, 2016

6:00 – 7:00 a.m.	Breakfast at Novotel Hotel restaurant
7:00 a.m.	City tour Surabaya City and depart for Malang
12:00 a.m.	Visit to Asylum and Mental Health Museum, Malang
1:00 p.m.	Depart and lunch at Tea Plantation - Wonosari, Malang
1:00 - 4:00 p.m.	Field trip at Tea Plantation - Wonosari, Malang
5:00 p.m.	Arrive at Atria Hotel, Malang City
5:00 - 6:00 p.m.	Registration and put up posters
7:00 - 9:30 p.m.	Opening dinner at Royal Tugu Dome, Tugu Hotel, Malang City – *Reog dance*

Tuesday, August 2, 2016

6:00 – 9:00 a.m.	Breakfast at Atria Hotel restaurant / Put up posters
9:00 a.m.	**Welcome remarks**
9:00 a.m.	**Introduction to Kavli Program**
9:45 a.m.	**Session I**
12:00 p.m.	Lunch at Atria Hotel Restaurant
1:30 p.m.	**Session II**
4:00 p.m.	Coffee Break
4:15 - 6:00 p.m.	Flash Talks and Poster Session I
6.30 p.m.	Dinner – Atria Hotel Restaurant

Wednesday, August 3, 2016

6:00 – 9:00 a.m.	Breakfast – Atria Hotel Restaurant
9:00 a.m.	**Session III**
11:45 a.m.	Lunch - Atria Hotel Restaurant
1:15 p.m.	**Session IV**
3:45 p.m.	Coffee Break
4:00 p.m.	Flash Talks and Poster Session II
6:30 p.m.	Dinner – Tirta Gangga Restaurant and tour at Tugu Hotel, Malang City

Thursday, August 4, 2016

6:00 – 9 a.m.	Breakfast – Atria Hotel Restaurant
9:00 a.m.	**Session V**
11:45 a.m.	Lunch - Atria Hotel Restaurant
1:15 p.m.	**Session VI**
3:45 p.m.	PEER / USAID Presentation
4:30 p.m.	Presentation – Indonesian Young Academy of Science Presentation from Study Committee of SAINS45 Presentation from DIPI (Dana Ilmu Pengetahuan Indonesia/Indonesian Science Fund)
5:00 p.m.	Discussion – future direction and closing
6:30 p.m.	BBQ Pool Side Party – Atria Hotel Malang

Friday, August 5, 2016

6:00 – 9:00 a.m.	Breakfast at Atria Hotel restaurant
-11:00 a.m.	Check out of attendees not attending Kapoposang tour

Optional trip to Mt. Bromo

Thursday, August 4, 2016

10:30 p.m.	Meet in Atria Hotel-Malang Lobby
11:15 p.m.	Depart for Mt. Bromo

Friday, August 5, 2016

2:00 a.m.	Arrive at Sukapura area, move to jeeps
3.00 a.m.	Arrive at sunrise view point
5.30 a.m.	Arrive at the crater
8.30 a.m.	Breakfast at local restaurant
10:00 a.m.–3:00 pm.	Transfer to Surabaya Juanda Airport (late afternoon/evening flights) or Hotel

Saturday, August 6

Everyone departs Surabaya Hotel for Juanda Airport

Career Development Workshop, USAID/Indonesia

Dr. Geri Richmond, Presidential Chair in Science and Professor of Chemistry
University of Oregon

Indonesian-American Kavli Frontiers of Science
Surabaya, Indonesia – July 31, 2016

Workshop Description

8:30 – 10:15
Selling Your Science: The Art of Effective Proposal Writing
This workshop provides training in effective techniques for writing proposals to gain research support for a scientific or engineering project. Participants may bring an example of a proposal that they have recently completed or have in-progress. Topics include identifying the priorities of the agency or program solicitation, determining criteria for assessment and writing to the criteria, developing a format for the proposal following known guidelines, identifying the objectives of the research project and why anyone should care, discussing examples of successful proposal formats, developing a budget and cost assessment, interacting with program officers and agencies, and developing research partnerships.

10:30 – 12:00
Career Launch: Making the Most of Your Talents
The first years as a researcher in science can be exhilarating, exhausting, stressful and rewarding. This workshop provides techniques necessary for an effective career launch in STEM fields. Participants may bring a current CV for review and critique. Topics include common mistakes of new graduate students/faculty/researcher and ways to avoid them, effective in-person and cyber interviews, effective communication methods for research and teaching presentations, importance of network building and finding a mentor, building a strong CV and developing a strong internet presence.

13:00 – 14:45
Publishing in Peer Reviewed Journals
This workshop provides advice and training on publishing scientific and technical results in peer-reviewed English language journals. Participants may bring an example of a paper or outline for an article they are considering for submission to a journal. Topics include publication and review process for many journals, organizing a paper, determining when and where to publish results, identifying data to include in the publication and organizing the material, working with editors and on-line submissions, and responding to reviews.

15:00 – 16:30
The Art of Effective Negotiation
In this workshop, successful techniques for increasing communication and negotiation skills in the technical workplace will be discussed. The ground rules, and what comprises good and bad negotiation techniques will be presented in an interactive manner.

Grant Writing Workshop, USAID/Indonesia
Indonesian-American Kavli Frontiers of Science
Surabaya, Indonesia – July 31, 2016

Workshop Description

8:30 - 9:00 a.m. Introductory Remarks; Introductions - Description of Activities for the day

9:00 - 9:30 a.m. 1. Getting Started: (~15 minutes)

a) Identify potential funding sources and specific areas that overlap with your interests (Open discussion of where to find potential sources)

b) Understand the goals and objectives of the funder

c) Determine how your project will help them fund their priorities

Participant Exercise:

-Each individual should identify 1-2 very specific projects that they would like to get funded

-Break into groups of ~5 with each person to have 5 minutes to describe their project

9:30 - 10:30 am. 2. Proposal Assessment

3. Structuring the Proposal

4. Elements of a Good Proposal

5. Common mistakes of proposal writers
The Review Process

6. Summary remarks

10:30 - 12:00 Career Launch: Making the Most of your talents

12:00 - 1:00 p.m. Lunch

1:00 - 2:45 p.m. Publishing in Peer Reviewed Journals
(For scientists)

3:00 - 4:30 p.m. The Art of Effective Negotiation

Novotel Surabaya Hotel & Suites
Jalan Ngagel 173-175
60246 Surabaya
Indonesia
Tel (+62) 31/501-8900
Fax (+62) 31/501-9175
Email reservation@novotelsurabaya.com

Directions
From the Juanda Airport highway head towards Ahmad Yani Road. Continue straight on to Wonokromo train station and Ngagel Road where you will find the Novotel Surabaya Hotel and Suites on your right, opposite the Kali Mas river.

Atria Hotel Malang
Jl. Letjen S. Parman No. 87 – 89
Malang, Indonesia
Tel: +62-341-409-999

The Atria Hotel Malang is located on Jl Letien S Parman, the main avenue of Malang city. The hotel is centrally located and within easy access to a variety of locations including the Maskid Jami' Sabilillah Mosque (5 minutes), the Central Culiner Malang (10 minutes), Abdul RahmanSaleh Airport, Brawijava University / downtown Malang (15 minutes), Mall Olympic Garden (30 minutes), Batu Spectacular Night (45 minutes) and Mount Bromo (2,5 hours).

The Atria Hotel offers 4-star services, including 24-hour reception, massage service, private parking, bars and restaurants, left-luggage office, laundry, heated outdoor swimming pool and high-speed wireless.

Ari Winasti Satyagraha
Eijkman Institute for Molecular Biology
RBC Disorders
Jl. Diponegoro 69
Jakarta, 10430
Indonesia
Tel: +62 21 3917131
Fax: +62 21 3147982
E-mail: ari@eijkman.go.id

Research: RBC Membrane Disorders, G6PD Deficiency, Neonatal Jaundice, UGT 1A1, Methylation, X-chromosome inactivation

My research interests include G6PD deficiency, RBC inherited disorders, neonatal jaundice, UGT 1A1 mutations, malaria, X-chromosome inactivation and methylation pattern, and epigenetics. My lab currently is active in G6PD research in relation to malaria therapy. However, we are expanding to epigenetics study with G6PD as model.

Dian Sawitri
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Assistant Professor
Psychology
Jl. Sawunggaling 2 No. 11
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Tel: +62-081-1279-8878
Fax: +62-024-746-0051
E-mail: dian.r.sawitri@gmail.com

Research: Adolescent and adult career development; cross-cultural psychology

My research areas include adolescent and adult career development, and cross-cultural psychology. I have a project with an Australian partner regarding the career development of Indonesian academics. I propose a cross-cultural research regarding career progress of Indonesian and Australian undergraduate students, and now I am still preparing a proposal regarding the consequences of career identity in Indonesian and U.S undergraduate students. I look forward to having more collaborations with Australian, and U.S. partners.

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Electrical and Electronic Engineering
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Research: Telecommunication Engineering

My current scientific interest is to develop a low power digital transmitter structure suitable for the next future generation of cellular system. The developed structure will allow all-digital tunability eliminating the need for analog components and programmable to different wireless standards. This work is addressing green communication concept for the energy efficiency of the telecommunications sector. Its goal covers any products that can transmit or receive the information in a digital form.

Yudho Sucahyo
Universitas Indonesia
Associate Professor
Computer Science
Gedung Pusat Ilmu Komputer (PUSILKOM)
Kampus UI Salemba
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DKI Jakarta, 10430
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Tel: +62-213-106-014
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E-mail: yudho@cs.ui.ac.id

Research: e-Government, Knowledge Management, Information Security, IT Governance, Business Intelligence

My research interest is on how Internet-based technologies and policies can contribute to Digital Economy's growth. Internet-based technologies need IT resources which are applications, infrastructure, information and people. However, effective implementation of technology will need policies, including policy on privacy, information security and data sovereignty. Recent development shows that while most developing countries are drafting policies on Digital Economy, establishment of regional agreement such as TPP and RCEP will also have impact to national policy.

2016 Indonesian-American Kavli Frontiers of Science

Indonesian Academy of Sciences – U.S. National Academy of Sciences

Malang, Indonesia – August 1-4, 2016

List of Poster Presenters[2]

Biology and Medicine

1 - Diversity of Bryophytes in Jayagiri Forest, Tangkuban Perahu Mountain, West Java
Dwi Surya Artie, Indonesian University of Education

2 - Effect of edible coatings on banana fruit ripening
Fenny Dwivany, Institut Teknologi Bandung

3 - Carcinoma nasopharynx studies to identify "high-risk" population in Yogyakarta Indonesia
Jajah Fachiroh, Faculty of Medicine Universitas Gadjah Mada (UGM) Yogyakarta Indonesia

4 - Ciplukan is Ashwaganda from Indonesia
Topik Hidayat, Universitas Pendidikan Indonesia (UPI)

5 - The new technology to manage and culture seaweed in Indonesia
Ma'ruf Kasim, Halu Oleo University

6 - Potential of plasma medicine as therapeutic tools for non-communicable disease in Indonesia
Nasruddin Nasruddin, Muhammadiyah University of Magelang, Magelang, Central Java, Indonesia

7 - Omics : Dissecting The Molecular Complexity in The Jungle of Big Data
Husna Nugrahapraja, Institut Teknologi Bandung

8 - Exploring the value of natural product for targeting metabolism in cancer therapy
Agustina Nurcahyanti, Faculty of Medicine, Atma Jaya Catholic University of Indonesia

9 - Resistance of Banana and Chilli Peppers against Diverse Pathogen Attack
Aksarani Pratiwi, Institut Teknologi Bandung

10 - Genetic Population Structure for Assisting Sustainable Management and Conservation of Sumatran orangutans (Pongo abelii)
Puji Rianti, Bogor Agricultural University

11 - Parasite genotypes in relation to invasion phenotypes from falciparum malaria individual in Timika, Papua
Leily Trianty, Eijkman Institute for Molecular Biology

[2] Odd numbered posters will present on Tuesday, August 2, 2016 from 4:15-6:00 p.m.; even numbered posters will present on Wednesday, August 3, 2016 from 4:00-5:45 p.m.

Biology and Medicine

12 - Development of Kaffir Lime Leaves as A Traditional Medicine For Cancer
Woro Anindito Sri Tunjung, Faculty of Biology Universitas Gadjah Mada

Chemistry, Biochemistry and Materials

13 - Antifungal and antitermite activities of essential oil of Toona sinensis stem and its composition
Morina Adfa, University of Bengkulu

14 - Accumulation of bioactive compounds in elicited Phaseoleae seedlings
Siti Aisyah, Universitas Pendidikan Indonesia

15 - Cancer Carbohydrate Nanotechnology: Understanding and Targeting Cell Surface Glycosylation in Disease Therapy and Diagnosis
Adam Braunschweig, University of Miami

16 - Responsive Nanomaterials from In Situ TEM to In Vivo Delivery
Nathan Gianneschi, University of California, San Diego

17 - Bioleaching using Local Bacteria and Fungi as Innovative and Sustainable Technology for Lithium Extraction from Lithium Ion Batteries (LIB) Waste
Wisnu Murti, Universitas Gadjah Mada

18 - Biodegradation of Persistent Organic Pollutants (POPs) by White-rot Fungus Pleurotus ostreatus
Adi Setyo Purnomo, Institut Teknologi Sepuluh Nopember

19 - Nanoparticles for Solar Cell and Energy Storage Application
Agus Purwanto, Sebelas Maret University

20 - Toward a Mechanistic Understanding of Land-Atmosphere Exchange of Reactive Nitrogen
Jonathan Raff, Indiana University

21 - A Novel Green Isolation Method of Naturally Occurring GLI-associated oncogene Inhibitors
Yusnita Rifai, Hasanuddin University

22 - The utilization of semiconductor photocatalys materials for advance oxidation process of organic pollutant degradation
Hendri Widiyandari, Diponegoro University

23 - Highly Selective Bio-Oil Conversion Over Cu-modified H-Beta-zeolite catalyst
Wahyu Bambang Widayatno, Indonesian Institute of Sciences

Earth and Environmental Sciences

24 - The importance of species characteristics to understanding disease dynamics among diverse coral communities
Marilyn Brandt, University of the Virgin Islands

25 - Using modern environments to interpret the history of life in the geologic record
William Gilhooly, Indiana University Purdue University Indianapolis

Earth and Environmental Sciences

26 - Land use planning in complex landscapes
Elizabeth Law, The University of Queensland

27 - Ocean anoxia and the biological pump during the end-Permian mass extinction
Katja Meyer, Willamette University

28 - Can differences in pollinator communities and consequent crop pollination deficits be detected?
Akhmad Rizali, University of Brawijaya

29 - Coral reef conservation through insights in physiology and photosynthesis
Melissa Roth, University of California Berkeley

30 - Exploration of Marine Biota Bacterial Symbiont for Bioactive Compounds in Ecologically-Friendly Fashion
Venny Santosa, Satya Wacana Christian University

Mathematics, Applied Mathematics and Computer Science

31 - Imaging Technique for Fish Identification
Esa Prakasa, Indonesian Institute of Sciences (LIPI)

32 - Application of High Performance Computing for Data Compression and Reconstruction at the ALICE-CERN TPC Detector
Rifki Sadikin, Indonesian Institute of Sciences

33 - Predicting Hospital Length of Stay of Dengue Patients using Decision Tree C4.5 Algorithm
Siti Yaumi Salamah, Institut Teknologi Bandung

33A - Green RF-Transmitter with Cartesian Delta Sigma (DS) Upconverters
Sirmayanti Sirmayanti, The State Polytechnic of Ujung Pandang

34 - Smart Environment Monitoring and Analytics in Real-time System (SEMAR)
Sritrusta Sukaridhoto, Politeknik Elektronika Negeri Surabaya

Neuroscience and Psychology

35 - The Role of the Neuropeptide Oxytocin in Cognitive, Social, and Affective Aging
Natalie Ebner, University of Florida

36 - Cross-cultural dynamics of Indonesian and U.S. students' career decision making
Dian Sawitri, Diponegoro University

37 - Brain Plasticity after long term loss of central vision
Kristina Visscher, University of Alabama, Birmingham

Social Science, Economics and Public Policy

38 - The role of attitudes and norms on individual decisions: Case study of students' car purchase intentions
Prawira Belgiawan, Kyoto University

Social Science, Economics and Public Policy

39 - Enhancing Public Engagement in Environmental Sustainability: Insights from Behavioural Sciences
Navjot Bhullar, University of New England, Australia

40 - Trouble In Paradise:
How Women's Intra-Household Bargaining Power Affects Marital Stability
Miryana Vinka Dayanti, Faculty of Economics and Business, Universitas Indonesia

41 - Big data, trust and collaboration: exploring the socio-technical enablers of big data in the grains industry
Aysha Fleming, CSIRO

42 - Who Gets Paid Better: A Study On Inter-Industry Wage Differentials In Indonesian Manufacturing Sector
Putri Faradina Iskandar, Universitas Indonesia, pf.iskandar@gmail.com

43 - QEERI's Science Majlis
Yulianto (Anto) Mohsin, Northwestern University in Qatar

44 - Development of Greenpreneurship Schooling for College Student as the Strategy to Build High Global Competitiveness of Indonesia
Ai Nurlaelasari Rusmana, Indonesia University of Education

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President, Indonesian Academy of Sciences

Dr. Fenny M. Dwivany
Chair, Indonesian Organizing Committee

The Indonesian Academy of Sciences (www.aipi.or.id)

The Indonesian Academy of Sciences (AIPI) was established in 1990, by a Law of the Republic of Indonesia (No. 8/1990) on the Indonesian Academy of Sciences, as an independent body that gives opinions, suggestions, and advice to the government and society on the acquisition, development and application of science and technology. It currently has 51 members, of which 3 are honorary members, organized into five commissions - Commissions on Basic Sciences, Medical Sciences, Engineering Sciences, Social Sciences, and Art and Culture. AIPI promotes science through scientific conferences and policy discussion forums, publications, national and international relations, and other activities.

The Kavli Foundation (www.kavlifoundation.org)

The Kavli Foundation, based in Oxnard, California, is dedicated to the goals of advancing science for the benefit of humanity and promoting increased public understanding and support for scientists and their work.

The Foundation's mission is implemented through an international program of research institutes, professorships, and symposia in the fields of astrophysics, nanoscience, neuroscience, and theoretical physics as well as prizes in the fields of astrophysics, nanoscience, and neuroscience.

The Kavli Foundation was established in December 2000 by its founder and benefactor, Fred Kavli, a prominent California business leader and noted philanthropist whose foundation is currently actively involved in establishing major research institutes at leading universities and institutions in the United States, Europe and Asia.

To date, The Kavli Foundation has made grants to establish Kavli Institutes on the campuses of the University of California Santa Barbara, Stanford University, the California Institute of Technology, the University of Chicago, Columbia University, Yale University, Cornell University, the University of California San Diego, Delft University of Technology in the Netherlands, the Massachusetts Institute of Technology, Peking University, the Chinese Academy of Sciences, Harvard University, the University of Cambridge and the Norwegian University of Science and Technology.

In addition to the Kavli Institutes, six Kavli professorships have been established: two at the University of California Santa Barbara, one at University of California Los Angeles, one at the University of California Irvine, one at Columbia University, and one at the California Institute of Technology.

A Norwegian-born physicist, Fred Kavli is the founder, former chairman and chief executive officer of Kavlico Corporation in Moorpark, California. At the time the company was sold in 2000, Kavlico was one of the world's largest suppliers of sensors for aeronautics, automotive and industrial applications.

The Kavli Foundation is a private foundation qualified under IRS Section 501 (c) (3).

A special thank you to the members of the 2015-2016 Organizing Committee

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2016 Indonesian-American Kavli Frontiers of Science

Indonesian Academy of Sciences – U.S. National Academy of Sciences

Malang, Indonesia – August 1-4, 2016

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2016 Indonesian-American Kavli Frontiers of Science

Indonesian Academy of Sciences – U.S. National Academy of Sciences

Malang, Indonesia – August 1-4, 2016

Program - sessions listed in Alphabetical Order

Big Data and Marine Conservation

Organizers: Fenny Dwivany and Monica Medina

INTRODUCTORY SPEAKER:
Big Data and Marine Conservation
Manuel Gonzalez, University of Queensland

SPEAKERS:
Metabolomics: A Data Driven and Multidisciplinary Approach for Various Applications in Food Science and Technology
Sastia Prama Putri, Institut Teknologi Bandung

We Punch Nature and It Will Punch Us Back: Human Impacts on Biodiversity and Their Feedbacks
Camilo Mora, University of Hawaii

From Nature's Machines to Synthetic Biomimicry

Organizers: Ari Winasti Satyagraha and Nathan Gianneschi

INTRODUCTORY SPEAKER:
Cyrille Boyer, University of New South Wales

SPEAKERS:
Biological Blueprint for the Design of Novel Solar Energy Harvesting Technology
Tatas Brotosudarmo, Ma'Chung Research University

The Molecular Mechanisms of Spider Silk Assembly
Greg Holland, San Diego State University

Mass Extinction and Citizen Science

Organizers: William Gilhooly and Topik Hidayat

INTRODUCTORY SPEAKER:
Global Identification of Eruption Magnitude Based On Topographical Reconstruction of Ancient Volcanoes
Asep Saepuloh, Bandung Institute of Technology

SPEAKERS:
Biodiversity Inventory in the Underway Sixth Mass Extinction: The Role of Citizen Science in Documenting Plant Diversity in Indonesia
Teguh Triono, The Indonesian Biodiversity Foundation

Biodiversity Inventory in the Underway Sixth Mass Extinction: Mass extinctions and Earth system perturbations
Ryan McKenzie, Yale University

The Indonesian-American Kavli Frontiers of Science symposium is sponsored by the U.S. Agency for International Development (USAID). Major support is provided by the Kavli Foundation with additional support from the U.S. National Academy of Sciences and the Indonesian Academy of Sciences.

Non-communicable Disease and Aging
Organizers: Jajah Fachiroh and Natalie Ebner

INTRODUCTORY SPEAKER:
Non-communicable diseases – The salient killer of the 21st century and beyond
Leanne Redman, Pennington Biomedical Research Center,
Louisiana State University

SPEAKERS:
Intervening the Cardiovascular Disease Continuum to Combat Non Communicable Disease
Budi Anggoro, Universitas Gadjah Mada

The Obesity Pandemic: Causes, Consequences and Containment
Leonie Heilbronn, University of Adelaide

Robotics and Information Systems / Innovation
Organizers: Enid Montague and Rajesri Govindaraju

INTRODUCTORY SPEAKER:
Information & Communication Technology for Collaborative Scientific Endeavour
Ary Setijadi Prihatmanto, Institute Technology of Bandung

SPEAKERS:
Landscape of the Digital Economy in Indonesia
Yudho Giri Sucahyo, University of Indonesia

How can robots get along with people?
Ross Knepper, Cornell University

Social Decision Making / Behavioral Economics
Organizers Natalie Ebner and Teguh Dartanto

INTRODUCTORY SPEAKER:
Social Decision Making / Behavioral Economics
Steven Chang, Yale University

SPEAKERS:
The Foundation of Human Cooperative Behaviors
Felix Warneken, Harvard University

Eliminating the Fuel Subsidy in Indonesia: Using Behavioral Insights to Design Alternative Policies and Assessing Households Preferences among Them
Rimawan Pradiptyo, Universitas Gadjah Mada

2016 Indonesian-American
Kavli Frontiers of Science Symposium

Indonesian Academy of Sciences - U.S. National Academy of Sciences

Surabaya-Malang, East Java, Indonesia – July 30 – August 4, 2016

Agenda

Saturday, July 30, 2016

Indonesian attendees arrive in Surabaya and check into Novotel Surabaya - *Meeting point at Ibis Hotel, Juanda Airport*

Sunday, July 31, 2016

AUS, Indonesian and US attendees arrive at Surabaya airport *Meeting point at Ibis Hotel, Juanda Airport*

7:00 – 9:00 a.m.	Breakfast at Novotel Hotel restaurant
8:30 a.m.	USAID Workshop: Proposal Writing: Understanding the Process
10:30 a.m.	USAID Workshop: Career Launch: Making the most of your talents
12:15 p.m.	Lunch at Novotel Hotel Restaurant
1:00 p.m.	USAID Workshop: Publishing in Peer Reviewed Journals
3:00 p.m.	USAID Workshop: Career Launch: The Art of Effective Negotiation
4:30 pm.	USAID Workshop adjourns
6:00 p.m.	Organizers, Chairs, Speakers meeting *– symposium meeting room*
7:00 p.m.	Dinner – Novotel Hotel Restaurant
7:00 p.m.	Dinner Lecture – "History of Science in Netherlands Indie and Indonesia"

Monday, August 1, 2016

6:00 – 7:00 a.m.	Breakfast at Novotel Hotel restaurant
7:00 a.m.	City tour Surabaya City and depart for Malang
12:00 a.m.	Visit to Asylum and Mental Health Museum, Malang
1:00 p.m.	Depart and lunch at Tea Plantation - Wonosari, Malang
1:00 - 4:00 p.m.	Field trip at Tea Plantation - Wonosari, Malang
5:00 p.m.	Arrive at Atria Hotel, Malang City
5:00 - 6:00 p.m.	Registration and put up posters
7:00 - 9:30 p.m.	Opening dinner at Royal Tugu Dome, Tugu Hotel, Malang City *– Reog dance*

Tuesday, August 2, 2016

6:00 – 9:00 a.m.	Breakfast at Atria Hotel restaurant / Put up posters
9:00 a.m.	**Welcome remarks**
9:00 a.m.	**Introduction to Kavli Program**
9:45 a.m**.**	**Session I**
12:00 p.m.	Lunch at Atria Hotel Restaurant
1:30 p.m.	**Session II**
4:00 p.m.	Coffee Break
4:15 - 6:00 p.m.	Flash Talks and Poster Session I
6.30 p.m.	Dinner – Atria Hotel Restaurant

Wednesday, August 3, 2016

6:00 – 9:00 a.m.	Breakfast – Atria Hotel Restaurant
9:00 a.m.	**Session III**
11:45 a.m.	Lunch - Atria Hotel Restaurant
1:15 p.m.	**Session IV**
3:45 p.m.	Coffee Break
4:00 p.m.	Flash Talks and Poster Session II
6:30 p.m.	Dinner – Tirta Gangga Restaurant and tour at Tugu Hotel, Malang City

Thursday, August 4, 2016

6:00 – 9 a.m.	Breakfast – Atria Hotel Restaurant
9:00 a.m.	**Session V**
11:45 a.m.	Lunch - Atria Hotel Restaurant
1:15 p.m.	**Session VI**
3:45 p.m.	PEER / USAID Presentation
4:30 p.m.	Presentation – Indonesian Young Academy of Science Presentation from Study Committee of SAINS45 Presentation from DIPI (Dana Ilmu Pengetahuan Indonesia/Indonesian Science Fund)
5:00 p.m.	Discussion – future direction and closing
6:30 p.m.	BBQ Pool Side Party – Atria Hotel Malang

Friday, August 5, 2016

6:00 – 9:00 a.m.	Breakfast at Atria Hotel restaurant
-11:00 a.m.	Check out of attendees not attending Kapoposang tour

Optional trip to Mt. Bromo

Thursday, August 4, 2016

10:30 p.m.	Meet in Atria Hotel-Malang Lobby
11:15 p.m.	Depart for Mt. Bromo

Friday, August 5, 2016

2:00 a.m.	Arrive at Sukapura area, move to jeeps
3.00 a.m.	Arrive at sunrise view point
5.30 a.m.	Arrive at the crater
8.30 a.m.	Breakfast at local restaurant
10:00 a.m.–3:00 pm.	Transfer to Surabaya Juanda Airport (late afternoon/evening flights) or Hotel

Saturday, August 6

Everyone departs Surabaya Hotel for Juanda Airport

Career Development Workshop, USAID/Indonesia
Dr. Geri Richmond, Presidential Chair in Science and Professor of Chemistry
University of Oregon
Indonesian-American Kavli Frontiers of Science
Surabaya, Indonesia – July 31, 2016

Workshop Description

8:30 – 10:15
Selling Your Science: The Art of Effective Proposal Writing
This workshop provides training in effective techniques for writing proposals to gain research support for a scientific or engineering project. Participants may bring an example of a proposal that they have recently completed or have in-progress. Topics include identifying the priorities of the agency or program solicitation, determining criteria for assessment and writing to the criteria, developing a format for the proposal following known guidelines, identifying the objectives of the research project and why anyone should care, discussing examples of successful proposal formats, developing a budget and cost assessment, interacting with program officers and agencies, and developing research partnerships.

10:30 – 12:00
Career Launch: Making the Most of Your Talents
The first years as a researcher in science can be exhilarating, exhausting, stressful and rewarding. This workshop provides techniques necessary for an effective career launch in STEM fields. Participants may bring a current CV for review and critique. Topics include common mistakes of new graduate students/faculty/researcher and ways to avoid them, effective in-person and cyber interviews, effective communication methods for research and teaching presentations, importance of network building and finding a mentor, building a strong CV and developing a strong internet presence.

13:00 – 14:45
Publishing in Peer Reviewed Journals
This workshop provides advice and training on publishing scientific and technical results in peer-reviewed English language journals. Participants may bring an example of a paper or outline for an article they are considering for submission to a journal. Topics include publication and review process for many journals, organizing a paper, determining when and where to publish results, identifying data to include in the publication and organizing the material, working with editors and on-line submissions, and responding to reviews.

15:00 – 16:30
The Art of Effective Negotiation
In this workshop, successful techniques for increasing communication and negotiation skills in the technical workplace will be discussed. The ground rules, and what comprises good and bad negotiation techniques will be presented in an interactive manner.

Grant Writing Workshop, USAID/Indonesia
Indonesian-American Kavli Frontiers of Science
Surabaya, Indonesia – July 31, 2016

Workshop Description

8:30 - 9:00 a.m. Introductory Remarks; Introductions - Description of Activities for the day

9:00 - 9:30 a.m. 1. Getting Started: (~15 minutes)

a) Identify potential funding sources and specific areas that overlap with your interests (Open discussion of where to find potential sources)

b) Understand the goals and objectives of the funder

c) Determine how your project will help them fund their priorities

Participant Exercise:

-Each individual should identify 1-2 very specific projects that they would like to get funded

-Break into groups of ~5 with each person to have 5 minutes to describe their project

9:30 - 10:30 am. 2. Proposal Assessment

3. Structuring the Proposal

4. Elements of a Good Proposal

5. Common mistakes of proposal writers
The Review Process

6. Summary remarks

10:30 - 12:00 Career Launch: Making the Most of your talents

12:00 - 1:00 p.m. Lunch

1:00 - 2:45 p.m. Publishing in Peer Reviewed Journals
(For scientists)

3:00 - 4:30 p.m. The Art of Effective Negotiation

Novotel Surabaya Hotel & Suites

Jalan Ngagel 173-175
60246 Surabaya
Indonesia
Tel (+62) 31/501-8900
Fax (+62) 31/501-9175
Email reservation@novotelsurabaya.com

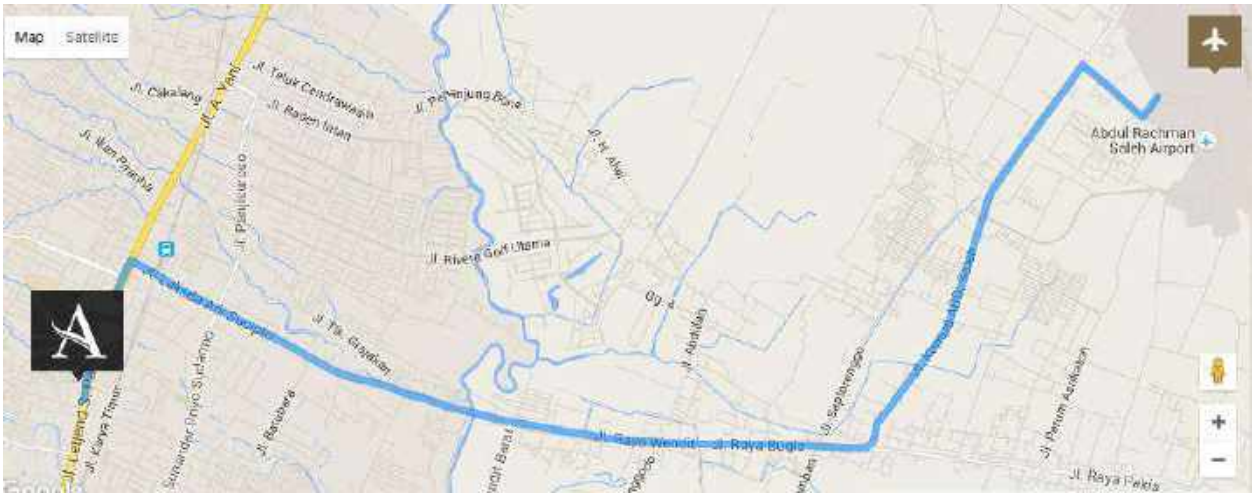
Directions
From the Juanda Airport highway head towards Ahmad Yani Road. Continue straight on to Wonokromo train station and Ngagel Road where you will find the Novotel Surabaya Hotel and Suites on your right, opposite the Kali Mas river.

Atria Hotel Malang

Jl. Letjen S. Parman No. 87 – 89
Malang, Indonesia
Tel: +62-341-409-999

The Atria Hotel Malang is located on Jl Letien S Parman, the main avenue of Malang city. The hotel is centrally located and within easy access to a variety of locations including the Maskid Jami' Sabilillah Mosque (5 minutes), the Central Culiner Malang (10 minutes), Abdul RahmanSaleh Airport, Brawijava University / downtown Malang (15 minutes), Mall Olympic Garden (30 minutes), Batu Spectacular Night (45 minutes) and Mount Bromo (2,5 hours).

The Atria Hotel offers 4-star services, including 24-hour reception, massage service, private parking, bars and restaurants, left-luggage office, laundry, heated outdoor swimming pool and high-speed wireless.



Big Data and Marine Conservation

Manuel Gonzalez, University of Queensland

As natural systems rapidly degrade worldwide, an unprecedented evolution of technology may offer an alternative for documenting and better informing conservation actions. Mass-produced, high-tech sensors and related technology make possible more, better, faster and cheaper capture of data on nature. Multi-sensor equipped smart-phones and cameras, satellite tags, drones, underwater vehicles and satellites have enabled more frequent monitoring of the natural environment, at larger scale and at finer resolution. Such rapid development of hardware and integrative frameworks have led to the rise of 'big data' as an integration of datasets, largely increasing in volume (millions to billions of records), highly dynamic (nearer real-time), and across diverse scopes (genetics, individuals, ecosystems, environment). As a consequence, interdisciplinary collaborations across biologists, oceanographers, computer scientists, engineers, among others, have made possible developments on mining, archiving, analysing and interpreting big data, with emerging and unprecedented applications for resource management and decision-making science. Such potential advances in conservation are perhaps more evident in marine conservation, where data collection is strongly limited by either accessibility to underwater settings or constrained resolution of remote sensing tools. However, it is a complex picture. Digital technology is impacting on nature conservation in a myriad of ways, creating possibilities and problems, as well as winners and losers. This is not to say that the possibilities and problems are of equal importance, but that emerging technologies can challenge our existing thinking framework and it’s arguably that conservationists can capitalise on the opportunities while reducing the associated threads. Here, I will introduce the session topic on big data in marine conservation as a frontier and emerging topic in science. Such overview will provide general insights and examples of applications of using big data to inform managing marine resources, as well as a brief analysis on current challenges.

Background Review Article:

Arts, Koen, René van der Wal, and William M. Adams. "Digital technology and the conservation of nature." Ambio 44.4 (2015): 661-673.

Article on electronic agenda book

NOTES

Metabolomics: a data driven and multidisciplinary approach for various applications in food science and technology

Sastia Prama Putri[1,2]
[1]*School of Life Sciences and Technology, Institut Teknologi Bandung, Indonesia*
[2]*Department of Biotechnology, Graduate School of Engineering, Osaka University, Japan*

Metabolomics, the global quantitative assessment of metabolites in a biological system, has played a pivotal role in various fields of science in the post-genomic era. Metabolites are the result of the interaction of the system's genome with its environment and are not merely the end product of gene expression, but also form part of the regulatory system in an integrated manner. It is a powerful approach that allows researchers to examine variation in total metabolite profiles, and is capable of detecting complex biological changes using statistical multivariate pattern recognition methods (chemometrics). It is a data driven and multidisciplinary approach combining analytical chemistry for data acquisition, and biostatistics, informatics and biochemistry for mining and interpretation of these data. The power of metabolomics lies on the acquisition of analytical data in which metabolites in a cellular system are quantified, and the extraction of the most meaningful elements of the data by using various data analysis tool. My talk will be focused on introducing the basic principles of metabolomics and its application for food science and technology, including several examples on food authentication, improvement of food quality, discrimination of food products based on their geographical origin, and basic plant physiology to understand mechanisms involved in fruit ripening processes.

Background Review Article:

Putri, Sastia Prama, Takeshi Bamba, and Eiichiro Fukusaki. "Application of metabolomics for discrimination and sensory predictive modeling of food products." *Hot Topics in Metabolomics: Food and Nutrition* (2015).

Article on electronic agenda book

NOTES

We Punch Nature and It Will Punch Us Back:
Human Impacts on Biodiversity and Their Feedbacks

Camilo Mora, University of Hawaii, Manoa

Human impacts on biodiversity are leading to extinction that largely exceeds natural background rates. This is impairing the capacity of ecosystems to deliver basic goods and services to humanity; and in turn, it is undermining efforts to improve human welfare, especially for the nearly one billion people that go hungry every day. In this presentation, I describe global scale analyses into the impacts of climate change on marine and terrestrial ecosystems and how they are making a large fraction of the world's human population vulnerable to loosing important sources of revenue, food and jobs. I will also present the results of a simple energetic model that suggest that even if human consumption is reduced, we will still be in an ecological deficit and that only scenarios that include natality reductions do quickly balance our ecological footprint on Earth. For our generation will be the decision between a crowded world or a better world.

Background Review Article:

Mora, Camilo. "Revisiting the environmental and socioeconomic effects of population growth: a fundamental but fading issue in modern scientific, public, and political circles." *Ecol Soc* 19.1 (2014): 38.

Article on electronic agenda book

NOTES

Biological Blueprint for the Design of
Novel Solar Energy Harvesting Technology

Tatas H.P. Brotosudarmo, Universitas Ma Chung

Nature harnesses solar energy very efficiently via photosynthesis. An intelligent approach toward the design of artificial system is to take the natural solar energy conversion process as a model and determine to what extent it can be replaced by artificial devices. This talk provides you an introduction of how these biological light energy harvesting devices work, especially when the organism must reconcile to the amount of incident light and the available light. Mostly, the light-harvesting device consists of photosensitizers, molecules that absorb photon at certain energy spectrum, embedded in matrixes. Sophisticated and flexible mechanism has been developed by nature in response to changing light condition. The composition and content of light absorber molecules can be changed. We also observed the plasticity of the matrix in such way it tunes the molecule to absorb light energy specific at different light spectrum. Furthermore, these biological light harvesting systems are also equipped with a photoprotection system will ensure the device from the photodamage.

Background Review Article:

Brotosudarmo, Tatas HP, et al. "The light reactions of photosynthesis as a Paradigm for solar fuel production." *Energy Procedia* 47 (2014): 283-289.

Article on electronic agenda book

NOTES

The Molecular Mechanisms of Spider Silk Assembly

Gregory P. Holland, San Diego State University

For over 300 million years spiders have evolved to produce 6 different types of silk and one glue-like substance. Spider silks are comprised almost entirely of protein and are used for a diverse range of applications ranging from web construction, egg case production and wrapping prey. The silks vary dramatically in their mechanical and physical properties with the major ampullate silk (dragline) exhibiting a strength that exceeds steel and a toughness greater than Kevlar while, the flagelliform silk has an elasticity comparable to rubber. Our lab is focused on understanding the molecular structure and dynamics of the proteins that comprise the various spider silk fibers. It is the folded structures and molecular-level organization of these proteins that imparts spider silks their impressive yet, diverse mechanical properties. We have been developing and applying a suite of nuclear magnetic resonance (NMR) techniques to probe hydrogen-bonding, side chain dynamics, and secondary structure, all of which are crucial to understanding spider silk assembly and the resulting mechanical properties. Recently, we have focused on understanding the protein-rich fluid within the various silk producing glands to determine the important biochemical triggers responsible for converting this gel-like liquid to fibers with unparalleled, yet diverse mechanical properties. Further, we succeeded in developing an approach to grow spider silk fibers directly from the gland fluid by changing the biochemical conditions such as pH. It is our belief that a better fundamental understanding of the spider silk protein molecular structure and assembly process will accelerate the ability to mimic and reproduce similar biologically inspired fibers in the laboratory.

Background Review Article:

Vollrath, Fritz. "Spider webs and silks." *Scientific American* 266.3 (1992): 70-76.

Article on electronic agenda book

NOTES

Global Identification of Eruption Magnitude Based On Topographical Reconstruction of Ancient Volcanoes

Asep Saepuloh & Tombayu Amadeo Hidayat, Bandung Institute of Technology

The magnitude of eruption termed as Volcanic Explosivity Index (VEI) is a crucial parameter for hazard mitigation purposes as well as historical study of volcanism affected the human infrastructures or ancient civilizations. The range values of VEI depend on complex parameters including buoyancy, magma viscosity, rate, and crustal strength. Commonly, the VEI is estimated by the volume of discharged volcanic products and the column height of the volcanic ashes. The common problem arises when the thickness of the volcanic products is difficult to be measured because of rough terrain, limited access, large variation of topographic undulation, and distributed materials. For ancient eruption, the erosion and denudation factors may also affect strongly to the volcanic products, therefore the discharged volume is extremely difficult to be calculated correctly. Overcoming the problem, the Digital Elevation Model (DEM) SRTM and backscattering intensity of Synthetic Aperture Radar (SAR) were used to reconstruct and calculate the primary topographic of volcanoes regardless eruption period. The topographical reconstruction based on Planèze method was used to calculate the volume of materials. The Toba and Sunda Calderas were used as study cases due to their large historical eruptions in North Sumatra and West Java, Indonesia. According to the proposed method, the volume of ejected materials from Toba and Sunda Calderas are about 165 and 20 km^3, respectively. The calculated volume agreed to the VEI 7 and 6. The lower VEI than the published reference is addressed to the erosion and denudation processes in geological time scale.

Keyword: SRTM, SAR, VEI, planeze, volcano

NOTES

Biodiversity Inventory in the Underway Sixth Mass Extinction:
The Role of Citizen Science in Documenting Plant Diversity in Indonesia

Teguh Triono, The Indonesian Biodiversity Foundation & University of Gunadarma

The attempt of describing and monitoring Earth's biodiversity in the face of imminent environmental crises due to anthropogenic reasons is enormously complex. The infrequent and time-consuming old-style methods of collecting and describing species are insufficient for the rapid discovering and documenting biodiversity in the biodiversity rich country including Indonesia before it is extinct in the ongoing sixth mass extinction process. Rapidly changing land use, forest fire, deforestation combined with the severe effect of climate change in Indonesia such as drought and flood threaten plant diversity, and reduces the window of opportunity to document it. Yet, we still have a very poor understanding of the distribution of known taxa in this complex biogeographical region.

The need to accelerate enormous complexity of exploration and documentation of plant diversity and the these process in the underway anthropogenic extinction lead to the partnerships between professional scientists with the general public in 'citizen science' activities where non-professionals collect and contribute plant species data to the serious traditional scientific activities and expedite the charting process. The organized network of the abundant resource of enthusiastic, national biology students combined with biodiversity informatics tools are the solutions for the exploration and documentation crisis. Examples of contribution of the 'Citizen Scientists' in plant diversity exploration and documentation projects and its establishment process in Indonesia are provided and discussed under the framework of the development of the Flora of Indonesia Open Access Database.

Key words: biodiversity, bioinformatics, citizen science, extinction, plant diversity

Burgess, H.K. *et al*. 2016. The Science of Citizen Science: Exploring Barriers to Use as a Primary Research Tool. *Biological Conservation* (available online 8 June 2016)
Available at http://www.sciencedirect.com/science/article/pii/S0006320716301951

Ceballos, G. *et al*. 2015. Accelerated modern human–induced species losses: Entering the Sixth Mass Extinction. *Science Advances* **1(5)**:e1400253
Available at http://advances.sciencemag.org/content/1/5/e1400253.short

Background Review Article:
Webb, Campbell O., JW Ferry Slik, and Teguh Triono. "Biodiversity inventory and informatics in Southeast Asia." *Biodiversity and Conservation* 19.4 (2010): 955-972.
Article on electronic agenda book

NOTES

Biodiversity Inventory in the Underway Sixth Mass Extinction:
Mass extinctions and Earth system perturbations

Ryan McKenzie, Yale University

Earth presently boasts the unique claim of a planet harboring of life, including complex multicellular organisms (e.g., animals). Animals evolved over the past ~700 million years – about 10% of Earth history – and their evolutionary pathway has been turbulent. Biodiversity through time reflects a balance between species extinctions and new species origination; however, discrete intervals where extinction rates drastically exceeded species origination are recognized in the fossil record. These demarcate mass extinction events. The five largest mass extinctions correspond with evidence for major environmental perturbations, notably within Earth's carbon cycle. These events not only demonstrate significant losses in diversity, but also were responsible for long-term ecosystem restructuring. Here I will discuss aspects of these 'Big 5' masses extinctions and the varying hypothesis for the driving mechanisms. I will present results from diverse data sets that aim to constrain the nature of environmental conditions, particularly changes in the ocean–atmosphere system and global climate, responsible for these extinctions. Earth is currently considered to be in the midst of the Big 6th mass extinction, and we have a lot to gain from the stories recorded in these ancient events.

Background Review Article:

Barnosky, Anthony D., et al. "Has the Earth/'s sixth mass extinction already arrived?." *Nature* 471.7336 (2011): 51-57.

Article on electronic agenda book

NOTES

Non-communicable diseases – The salient killer of the 21st century and beyond

Leanne M. Redman, Pennington Biomedical Research Center

As a whole, the life expectancy of the world's population at birth has increased. In 1900, the global average life expectancy was 31 years of age, and did not exceed 50 years in even the richest countries. Now in the 21st century, the global average lifespan has surpassed more than 65 years with 80 years reported in some countries. Life expectancy is expected to increase further and many children born after 2000 will live to celebrate their hundredth birthday.

Historically, human longevity was underpinned by mortality from communicable or infectious diseases particularly those affecting children, maternal and perinatal conditions or under-nutrition. The constant progress of modern medicine and the distribution of vaccines led to the complete or near complete eradication of numerous killer diseases including small pox and polio and survival against many infectious diseases among children. What has ensued from these successes is a demographic transition in the global population with rapidly increasing numbers of middle-aged and elderly people within societies.

As life expectancy has increased, the major causes of death have shifted from childhood diseases, to non-communicable diseases (NCD) in adulthood. As a result, a different set of diseases; cardiovascular diseases, diabetes, cancers and mental illnesses, has come into prominence, all with far less impressive treatment results. For the first time in history, mortality from NCD in every world region except Africa exceeds mortality from infectious disease, perinatal and maternal conditions and under-nutrition combined.

Global modernization has bought about changes in the built environment and chronic exposure to new behavioral and societal milieus which impact the survival of people today. Tobacco and alcohol use are indeed linked to heightened risk of morbidity and mortality from NCDs however obesity serves as the most common underlying risk factor and as such the worldwide preponderance of unhealthy diets and physical inactivity derives the most attention. Multi-sectoral policies to promote healthy diets and physical activity can prevent the onset of and reduce mortality rates from many NCDs however strategies based on the prevention of lifestyle-related risk factors in adults have met with limited success. Furthermore, the capacity of health systems to respond to the growing burden of NCDs is challenged by the fact that most of the medical interventions e.g., surgery, chemotherapy, or insulin support—are expensive and not readily available to people worldwide.

Probably the most alarming concern in the current 'obesogenic environment' is the rise of NCD in childhood. However, given the intriguing Developmental Origins of Health and Adult Disease hypothesis which posits that optimizing nutrition during critical periods such as early in life (pre-pregnancy, pregnancy and infancy) could produce long-term changes in the structure or function of an organism and influence the life-long risk of disease, the primary prevention of NCD in adulthood may need to be a lifelong goal of the next generation.

Background Review Article:

Singhal, Atul. "The role of infant nutrition in the global epidemic of non-communicable disease." *The Proceedings of the Nutrition Society* 75.2 (2016): 162-168.

Article on electronic agenda book

NOTES

Intervening the Cardiovascular Disease Continuum to Combat Non Communicable Disease

Anggoro Budi Hartopo, Universitas Gadjah Mada
Dr. Sardjito Hospital Yogyakarta, Indonesia

Noncommunicable diseases (NCDs) are chronic illnesses that consist of cardiovascular diseases (CVDs), cancers, chronic respiratory diseases, hypertension and diabetes. Worldwide, they are the biggest killers. Annually, they kill more than 36 million people (about 63% of global deaths). Among them, the death was premature suffered by more than 14 million people who die between 30 and 70 years of age. Not only in industrialized countries, the burden of death-related NCDs take place in low- and middle-income countries which have enormous amount of people carrying risks of NCDs. These countries already put up with 86% of the load of these premature deaths and loss scores of their people annually. Indonesia, the fourth most populous country in the world which makes up 3.5 % of total world population, is not exempted from this fact.

Cardiovascular diseases comprise 48% of NCDs. In Indonesia, the death due to all NCDs is 71 % in 2014, and CVDs are responsible for 37% of NCDs-related death. Indonesia is currently undergoing an epidemiological transition, with the disease burden shifting from communicable disease, mainly infectious diseases, and early life death to NCDs and longer life expectancy. The most prevalent NCDs faced by Indonesia today are CVDs, cancers, chronic respiratory diseases, hypertension and diabetes mellitus. The CVDs can be divided into two categories, i.e. ischemic heart disease and cerebrovascular disease (stroke). Ischemic heart disease is a centerpoint between pre-ischemic risk factors and post-ischemic heart remodeling which forms a sequent of continuous events.

Cardiovascular disease continuum (CDC) comprises a chain of events, started from various risk factors, advancing via copious patophysiological mechanism and finally resting into end-stage heart disease. In the base of CDC are numerous risk factors, mostly preventable, in the center is the eventful or uneventful myocardial infarction and in the peak is end-stage heart failure. Intervention in any stage along the CDC leads to cessation of the chain, slowing progression and confer cardioprotection. Medical and clinical science show that intervention in every event of the chains is proven beneficial to patients by saving more life and increasing quality of life. Therefore, in clinicians point of view, it reduces the burden of nation from NCDs.

NOTES

The obesity pandemic: causes, consequences and containment

Leonie Heilbronn, University of Adelaide

Worldwide, the prevalence of obesity has doubled, since 1980 and more than 30% of the US population is classified as obese. If we include prevalence of overweight, more than 65% of adults in developed nations, such as Australia and the USA, are affected. Obesity is also becoming an increasing problem in developing nations, and for the first time in human history, overweight is killing more people than underweight. The important question is why are our nations becoming so obese, what does this mean for health, and what can we do about it?

In the last few decades we have completely changed the way in which we live. In most nations, high energy foods are readily available and cheap, and advancements in technology have virtually eliminated the need for physical activity. We eat foods that are low in fibre, and we take antibiotics, which has changed gut microbiota. We live at thermoneutrality, with limited cold exposure, inactivating brown adipose tissue stores which burn energy. We are constantly exposed to light and eat more food at night, which has altered circadian rhythms in our peripheral clocks, and likely promotes metabolic dysfunction and we are at risk of inter-generational obesity, with exposure to over-nutrition from before birth.

Over-nutrition is clearly causal in the development of many non-communicable diseases including type 2 diabetes, cardiovascular disease, cancers, infertility, and stroke. In overweight it is not just adipose tissue stores that become fat, and have altered function and secretion of adipose derived hormones “adipokines”. Lipid accumulates also in the liver, pancreas and skeletal muscle, amongst other organs and changes the way these tissue respond to insulin, and function. Lipid goes to epicardial fat, and even to oocytes. Interestingly, not every obese individual has poor metabolic health and understanding why some people can stay healthy despite being obese may provide clues to help reduce disease as a result.

Energy restriction, whether daily or intermittently, rapidly restores lipid balance and metabolism and reduces risk of diabetes and cardiovascular disease. But caloric restriction and maintenance of lower body weights have proven extremely difficult to maintain, long term. In the past decade, we have discovered that there are a number of metabolic adaptations that occur to act against maintenance of weight loss. There are reductions in leptin, and gut derived appetite-supressing hormones that stimulate central hunger drive. There are reductions in resting energy metabolism, and physical activity that occur in response to weight loss that also set individuals up for failure, long-term. A handful of drugs that promote weight loss have made it to market but many have been withdrawn because of negative side effects, and there is a lot of activity in this space to identify new mechanisms that may help solve the obesity epidemic. Bariatric surgery whilst a solution that works well, is expensive, and cannot solve societal obesity. Prevention appears key, and policy changes to regulate the food industry may be necessary to stem this global epidemic.

Background Review Article:

Singhal, Atul. "The role of infant nutrition in the global epidemic of non-communicable disease." *The Proceedings of the Nutrition Society* 75.2 (2016): 162-168.

Article on electronic agenda book

NOTES

Information & Communication Technology for Collaborative Scientific Endeavour

Ary Setijadi Prihatmanto, Director of ITB Research Center on Information & Communication Technology, Institute of Technology, Bandung

We live in more and more interesting world. It is a very divided world and divided society but at the same time, it is a more united and getting more sustained than ever through transformation of global society into global information society. Information and communication technologies (ICTs) and also robotics have become critically important area in the advancement to the global society. Today, more than ever, ICTs are recognized as means for sustainable human, social and economic development.

Furthermore, at this moment, ICT also brings scientific endeavor into a realm beyond the traditional three distinct archetypes: empiricism, theory, and computation. In this fourth paradigm, the scientific methodology is entering an entirely new phase that involves data-intensive practices. Termed “eScience,” this fourth paradigm unites theory, experimentation, and computation, and leads to changes in the way science is funded, communicated, and published.

NOTES

Landscape of the Digital Economy in Indonesia

Yudho Giri Sucahyo, Universitas Indonesia

The reduced price of the Internet in 2007 is an important milestone of e---commerce booming in Indonesia which leads to great development of Digital Economy. As the fourth most populous country in the world and heavy users of social media, Indonesia is a big market. However, the number of Internet users in Indonesia is still less than one third of the total population, which is far short of the true potential of Digital Economy in Indonesia.

The success of Digital Economy will be determined by both Internet---based technologies and policies. We will look at the Indonesia's current condition on internet---based technologies which are information systems, infrastructure, information, and people. Successful disruptive applications such as GO---JEK (a local startup on transporation sector like Uber) and its impact to daily life of the citizens will be discussed. Digital divide of IT infrastructure will be reviewed since it is a challenge not just for domestic constituencies, but for global firms that wish to develop and serve the market.

Personal information protection and data localization are two important issues related to information. Localization regulation that was introduced in 2013 has produced significant foreign investment in Indonesia's IT sector. This increased investment will need competent IT human resources and we will look at Indonesia's strategy on increasing ICT human competency. Moreover, we will also look at the existing IT---related policies and discuss its alignment with upcoming regional trade agreement such as TPP (Trans---Pacific Partnership) and RCEP (Regional Comprehensive Economic Partnership).

NOTES

How can robots get along with people?

Ross Knepper, Cornell University

Robots of the future will act like neither today's factory robots nor the robot portrayals of Hollywood. Robots will be competent peers to people in work and home life, but they will remain limited in some surprising ways. In this talk, I describe recent research in human-robot interaction focusing on methods for robots to function on a team together with humans. Topics include planning collaborative tasks, communicating using natural modalities such as speech and gesture, and understanding one another's capabilities. What these topics have in common is the need for good models of human inference that leverage shared knowledge and the observable environment, collectively known as common ground. This work draws on and unifies ideas from linguistics, psychology, and robotics.

NOTES

Social Decision Making / Behavioral Economics

Steven Chang, Yale University

The intriguing complexity of social behaviors is a hallmark of human and nonhuman primates. A majority of these behaviors require ongoing and adaptive decisions concerning self and others. Recently, interdisciplinary efforts across psychology, ethology, neuroscience and behavioral economics have begun to help quantify complex behavioral patterns associated with social decisions and inform how biological processes evolved to deal with living in multi-individual, hierarchical societies. In this symposium, two speakers will examine the origins of complex decisions impacting others and the process of making policy decisions influencing a large group of individuals. The first speaker, Felix Warneken from Harvard University, will discuss research aimed at determining the developmental trajectories and evolutionary origins of human cooperation, focusing on social behavioral research in children and nonhuman primates. The second speaker, Rimawan Pradipto from Universitas Gadjah Mada, will discuss research designed to study policy-setting decisions using behavioral economics framework, centering on the fuel subsidy policy in Indonesia. The topics covered in this symposium will provide a snapshot of the multidisciplinary nature of ongoing research for better understanding complex human behaviors.

Background Review Article:
Chang SW, Brent LJN, Adams GK, Klein JT, Pearson JM, Watson KK, and Platt ML (2013) Neuroethology of primate social behavior. Proc. Natl. Acad. Sci., 110, 10387-10394.

Article on electronic agenda book

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The Foundation of Human Cooperative Behaviors

Felix Warneken, Harvard University

Cooperation is a hallmark of human social life. Humans assist others in everyday tasks—holding open elevator doors or pointing tourists in the right direction—and even share valuable resources such as food and money with those in need. However, the foundation of our cooperative behaviors are contested. Are humans initially driven by purely selfish motives and must be taught to be altruistic, or do we have a biological predisposition for altruism? What enables teamwork and division of labor, and how do we resist the urge to keep more than is 'fair'? Recently, studies in psychology and related fields have addressed these questions by empirically testing the circumstances under which humans cooperate.

I will present studies that aim to determine the developmental and evolutionary origins of human cooperation. By studying the cooperative behaviors of children, this research has revealed that already infants and toddlers possess surprisingly sophisticated capacities for cooperation, including altruistic helping, sharing of valuable resources, and the ability to work with others in teams. In addition, comparative work has shown that also chimpanzees possess several of the fundamental cooperative capacities previously thought to be unique to humans. However, humans and other apes appear to differ in the extent to which cooperation is shaped by social norms, especially fairness norms and social expectations about maintaining a good reputation. I conclude with the proposal how human cooperation should be studied across different cultural groups to further understand how children's adoption of social norms may shape human cooperation into its human-unique form.

Background Review Article:
Warneken, Felix. "Insights into the biological foundation of human altruistic sentiments." *Current Opinion in Psychology* 7 (2016): 51-56.
Article on electronic agenda book

NOTES

Eliminating the Fuel Subsidy in Indonesia: Using Behavioral Insights to Design Alternative Policies and Assessing Households Preferences Among Them

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The fuel subsidy in Indonesia creates huge inefficiency and inequality as the subsidy is implemented on the price of fuel, instead of being targeted at the household. Any attempt to eliminate the subsidy, no matter how plentiful and good the improvements in efficiency and equality will be, may not be perceived positively by households. This study uses insights from behavioral economics to design alternative policies and assesses households' preferences of alternative policies to eliminate the fuel subsidy in Indonesia using a computer-based survey. The results suggest, in general, participants prefer a gradual elimination of the subsidy, however respondents without a motor vehicle tend to be more receptive toward direct elimination scheme. Furthermore, respondents tend to focus more on the method of reducing the subsidy in contrast to how the subsidy saved will be reallocated.

Keywords: Fuel subsidy, computer-based survey, paired-wise comparison, preference relation, resources reallocation, multinomial probit.

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2016 Indonesian-American Kavli Frontiers of Science

Indonesian Academy of Sciences – U.S. National Academy of Sciences

Malang, Indonesia – August 1-4, 2016

List of Poster Presenters[2]

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2 - Effect of edible coatings on banana fruit ripening
Fenny Dwivany, Institut Teknologi Bandung

3 - Carcinoma nasopharynx studies to identify "high-risk" population in Yogyakarta Indonesia
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4 - Ciplukan is Ashwaganda from Indonesia
Topik Hidayat, Universitas Pendidikan Indonesia (UPI)

5 - The new technology to manage and culture seaweed in Indonesia
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6 - Potential of plasma medicine as therapeutic tools for non-communicable disease in Indonesia
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7 - Omics : Dissecting The Molecular Complexity in The Jungle of Big Data
Husna Nugrahapraja, Institut Teknologi Bandung

8 - Exploring the value of natural product for targeting metabolism in cancer therapy
Agustina Nurcahyanti, Faculty of Medicine, Atma Jaya Catholic University of Indonesia

9 - Resistance of Banana and Chilli Peppers against Diverse Pathogen Attack
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10 - Genetic Population Structure for Assisting Sustainable Management and Conservation of Sumatran orangutans (Pongo abelii)
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11 - Parasite genotypes in relation to invasion phenotypes from falciparum malaria individual in Timika, Papua
Leily Trianty, Eijkman Institute for Molecular Biology

[2] Odd numbered posters will present on Tuesday, August 2, 2016 from 4:15-6:00 p.m.; even numbered posters will present on Wednesday, August 3, 2016 from 4:00-5:45 p.m.

Biology and Medicine

12 - Development of Kaffir Lime Leaves as A Traditional Medicine For Cancer
Woro Anindito Sri Tunjung, Faculty of Biology Universitas Gadjah Mada

Chemistry, Biochemistry and Materials

13 - Antifungal and antitermite activities of essential oil of Toona sinensis stem and its composition
Morina Adfa, University of Bengkulu

14 - Accumulation of bioactive compounds in elicited Phaseoleae seedlings
Siti Aisyah, Universitas Pendidikan Indonesia

15 - Cancer Carbohydrate Nanotechnology: Understanding and Targeting Cell Surface Glycosylation in Disease Therapy and Diagnosis
Adam Braunschweig, University of Miami

16 - Responsive Nanomaterials from In Situ TEM to In Vivo Delivery
Nathan Gianneschi, University of California, San Diego

17 - Bioleaching using Local Bacteria and Fungi as Innovative and Sustainable Technology for Lithium Extraction from Lithium Ion Batteries (LIB) Waste
Wisnu Murti, Universitas Gadjah Mada

18 - Biodegradation of Persistent Organic Pollutants (POPs) by White-rot Fungus Pleurotus ostreatus
Adi Setyo Purnomo, Institut Teknologi Sepuluh Nopember

19 - Nanoparticles for Solar Cell and Energy Storage Application
Agus Purwanto, Sebelas Maret University

20 - Toward a Mechanistic Understanding of Land-Atmosphere Exchange of Reactive Nitrogen
Jonathan Raff, Indiana University

21 - A Novel Green Isolation Method of Naturally Occurring GLI-associated oncogene Inhibitors
Yusnita Rifai, Hasanuddin University

22 - The utilization of semiconductor photocatalys materials for advance oxidation process of organic pollutant degradation
Hendri Widiyandari, Diponegoro University

23 - Highly Selective Bio-Oil Conversion Over Cu-modified H-Beta-zeolite catalyst
Wahyu Bambang Widayatno, Indonesian Institute of Sciences

Earth and Environmental Sciences

24 - The importance of species characteristics to understanding disease dynamics among diverse coral communities
Marilyn Brandt, University of the Virgin Islands

25 - Using modern environments to interpret the history of life in the geologic record
William Gilhooly, Indiana University Purdue University Indianapolis

Earth and Environmental Sciences

26 - Land use planning in complex landscapes
Elizabeth Law, The University of Queensland

27 - Ocean anoxia and the biological pump during the end-Permian mass extinction
Katja Meyer, Willamette University

28 - Can differences in pollinator communities and consequent crop pollination deficits be detected?
Akhmad Rizali, University of Brawijaya

29 - Coral reef conservation through insights in physiology and photosynthesis
Melissa Roth, University of California Berkeley

30 - Exploration of Marine Biota Bacterial Symbiont for Bioactive Compounds in Ecologically-Friendly Fashion
Venny Santosa, Satya Wacana Christian University

Mathematics, Applied Mathematics and Computer Science

31 - Imaging Technique for Fish Identification
Esa Prakasa, Indonesian Institute of Sciences (LIPI)

32 - Application of High Performance Computing for Data Compression and Reconstruction at the ALICE-CERN TPC Detector
Rifki Sadikin, Indonesian Institute of Sciences

33 - Predicting Hospital Length of Stay of Dengue Patients using Decision Tree C4.5 Algorithm
Siti Yaumi Salamah, Institut Teknologi Bandung

33A - Green RF-Transmitter with Cartesian Delta Sigma (DS) Upconverters
Sirmayanti Sirmayanti, The State Polytechnic of Ujung Pandang

34 - Smart Environment Monitoring and Analytics in Real-time System (SEMAR)
Sritrusta Sukaridhoto, Politeknik Elektronika Negeri Surabaya

Neuroscience and Psychology

35 - The Role of the Neuropeptide Oxytocin in Cognitive, Social, and Affective Aging
Natalie Ebner, University of Florida

36 - Cross-cultural dynamics of Indonesian and U.S. students' career decision making
Dian Sawitri, Diponegoro University

37 - Brain Plasticity after long term loss of central vision
Kristina Visscher, University of Alabama, Birmingham

Social Science, Economics and Public Policy

38 - The role of attitudes and norms on individual decisions: Case study of students' car purchase intentions
Prawira Belgiawan, Kyoto University

Social Science, Economics and Public Policy

39 - Enhancing Public Engagement in Environmental Sustainability: Insights from Behavioural Sciences
Navjot Bhullar, University of New England, Australia

40 - Trouble In Paradise:
How Women's Intra-Household Bargaining Power Affects Marital Stability
Miryana Vinka Dayanti, Faculty of Economics and Business, Universitas Indonesia

41 - Big data, trust and collaboration: exploring the socio-technical enablers of big data in the grains industry
Aysha Fleming, CSIRO

42 - Who Gets Paid Better: A Study On Inter-Industry Wage Differentials In Indonesian Manufacturing Sector
Putri Faradina Iskandar, Universitas Indonesia, pf.iskandar@gmail.com

43 - QEERI's Science Majlis
Yulianto (Anto) Mohsin, Northwestern University in Qatar

44 - Development of Greenpreneurship Schooling for College Student as the Strategy to Build High Global Competitiveness of Indonesia
Ai Nurlaelasari Rusmana, Indonesia University of Education

Poster Number – 1

Diversity of Bryophytes in Jayagiri Forest, Tangkuban Perahu Mountain, West Java

Dwi Surya Artie, Topik Hidayat, Satrio Haryo Benowo, R.A. Yassin A., Ubaydillah Z.M.*
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ABSTRACT
Bryophytes are one of the diverse plant group in Cryptogamae (the lower plants). However, their existence on the earth remain less attention mainly due to their minute morphological structure and are situated in the highlands area which is far from the city. In fact, the Bryophytes play important role in providing a good quality of environment. The more number of the Bryophytes that we find, the better quality of environment we can get. The purpose of this research was to document the diversity of the Bryophytes in Jayagiri forest. Jayagiri forest is situated at the foot of Tangkuban Perahu mountain, Bandung, West Java. It has a high rate of rainfall (about 2,700 mm / year) with low temperatures and has a fairly humidity. This forest is suitable site to study as easy access from Bandung city and having a high diversity of the higher plants. Research methods were started with survey, collecting, recording, and ended by identification. Finally, this research can identify 16 genera of the Bryophytes, and these genera are likely to be common in the Jayagiri forest. They are included genus Spaghnum, Polytricum, Meteorium, Pogonatum, Dicranum, Jungermania, Metzgeria, Riccia, Duthiella, Dumortiera, Campylopus, Bryum, Rhodobryum, Disticophyllum, Marchantia, and Lophocolea. This results indicated that the Jayagiri forest remains having a good quality of environment. We together with local peoples must keep this forest to be one of the lungs of the Bandung city.

Poster Number – 2

Effect of edible coatings on banana fruit ripening

Fenny Dwivany, Institut Teknologi Bandung

Losses during post-harvest management are common problems faced in agricultural sector. One of problems is short shelf life, especially in climacteric fruits such as banana. An alternative method that can extend the shelf life of banana at a relatively low cost is edible coating. Edible coatings have received much attention because of its ability to prevent moisture loss, aroma loss, and inhibit the oxygen penetration to the plant tissue. Several groups have directed their attention to biopolymer films such as polysaccharides to diminish crop losses and maintain the quality of fresh fruit for a longer period as an economical, simple, and biodegradable. Therefore, the objective of our studies was to investigate the effect of chitosan nanoparticles and carrageenan as edible coatings on postharvest quality of banana. As one of countries with the greatest biodiversity, Indonesia has marine potential as a source of these biomaterials.

Keywords: Fruit ripening, banana, edible coating, chitosan nanoparticles, carrageenan

Poster Number – 3

Carcinoma nasopharynx studies to identify "high-risk" population in Yogyakarta Indonesia

Jajah Fachiroh, Universitas Gadjah Mada (UGM) Yogyakarta Indonesia

Jajah Fachiroh[1,2], Camelia Herdini[3], Dwi Hartati[i2], Sumartiningsih[2], Ery Kus Dwianingsih[4], Saihas Suhda[3], T Baning Rahayudjati[5]
[1]Dept. Histology and Cell Biology, [2]Molecular Biology Laboratory, [3]Dept Otorhinolaryngology, Head and Neck Surgery, [4]Dept. Anatomical Pathology, [5]Dept. Biostatistic, Epidemiology, and Population Health, Fac. Medicine UGM Yogyakarta Indonesia

Introduction. Nasopharyngeal carcinoma (NPC) is malignancy with unique geographical and racial distribution. Worldwide it is a rare cancer with incidence of <1/100,000 populations; however South-Asia has known as "hotspot" for this type of malignancy. NPC is characterized with late stage clinical presentation due to unspecific symptoms, requires complicates treatment, causing high morbidity and mortality. Multifactorial risks has linked to NPC, but the identification of NPC risk in Indonesia is minimal. Additionally, Epstein-Barr virus (EBV)-based biomarkers to NPC have developed in our group showing good performance.

Problem. (1). How do we form "high risk" population as target for EBV-based biomarkers aiming for screening; (2). How do we develop the algorithm for NPC screening?

Methods. Panel of NPC cases and its controls have been developed since 2012 by using hospital-based case control study to determine risk of NPC. Lifestyle questionnaire and peripheral blood samples were collected. IgA-EBV serology test were done among subjects with blood samples, genetic polymorphism to cytochrome 450 encoded gene (*CYP2E1*) was tested using Tetra ARMS PCR, vitamin D was tested using ELISA, while quantitative methylation PCR will be used to detect promoter hypermethylation among tumor suppressor and onco-genes.

Results. Around 1,000 subjects of cases and controls have recruited. IgA-EBV ELISA showed to be elevated among ~30% of controls, which requires further observation. Exposures of smokes and dust were the most prominent risk to NPC. Polymorphism at *CYP2E1* gene locus was correlated with NPC risk. While among subjects tested for vitamin D, all showed lower titer of vitamin D unrelated to disease status.

Further work. How do we gather all the information to Identify the approach used to determine population at risk.

Poster Number – 4

Ciplukan is Ashwaganda from Indonesia

Topik Hidayat, Universitas Pendidikan Indonesia (UPI)

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Withania somnifera (family Solanaceae), known commonly as Ashwaganda, is one of the important medicinal plants, and recent studies reported that Withanone, one of the chemical components in this plant, has ability to kill cancer cell. Because of endemic state of this plant to South Asia, exploring plant species under the same family which grow well in Indonesia has been of interest. The purpose of this study was to screen the Indonesian plant which has strong phylogenetic relationship with Ashwaganda. Thus, phylogenetic analysis using DNA sequences of internal transcribed spacer (ITS) region was conducted. Thus, 19 species of Solanaceae and two species of Convolvulaceae as outgroup were examined. Five ITS regions of Ashwaganda retrieved from GenBank were included in the phylogenetic analysis. Parsimony analysis showed that Indonesia *Solanaceae* comprises seven groups which is consistent with the global Solanaceae relationship as previously reported. Furthermore, our study revealed that two species, *Physalis angulata* and *Physalis peruviana,* are relative to *W. somnifera.* In Indonesia these two species is well known as Ciplukan. Morphologically, they share characters of flower and fruit. This result indicated that these two species are potential to have similar chemical properties as Ashwaganda, thus we can have new variants of Withanone originated from Indonesia with similar effect.

Keywords: Ashwaganda, Ciplukan, Indonesia solanaceous plant, molecular phylogenetic, the ITS region

Poster Number – 5

The new technology to manage and culture seaweed in Indonesia

Ma'ruf Kasim, Halu Oleo University

Kappaphycus alvarezii is one of seaweeds that widely cultivated by coastal community in Indonesia. This study aims to examine the utilization of new technology to cultivate *K. alvarezii* by using floating cages. The research was conducted during March to November 2015 in Lakeba seaweeds cultivation area, Baubau city, Southeast Sulawesi, Indonesia. Underwater observation was conducted to observe the effect of floating cages on herbivorous. To calculate the effectives of floating cages design, we were using three different design size of Floating cages. In terms to analyze the effect of floating cage on seaweeds production, we were compare the production of *K. alverazii* by using long line methods and floating cages methods. The results showed that the floating cages completely keep and eliminate herbivores on seaweed. Ideal size being used for the cultivation of seaweed are 100 x 400 x 60 cm. The size design, are highly mobile and easily moved to desired location. Total growth rates in average of *K. alvarezii* in floating cages and longline are 22,5 ± 1.40 kg, 5 kg and 38,8 ± 1,6 kg, from 5 kg in first weigh (Wo) in 40 days of cultivation, respectively. The growth rate of thallus of *K alvarezii* also performs in this experiment. During August, the increasing of growth rate from 50 g was 132,0 ± 8,0 g and 218.8 ± 8,6 g at longlines and floating cage, respectively. SGR of K. alvarezii was high during August, 3.69 %.d-1 and 2.43 %.d-1 cultivated on floating cage and longline, respectively. During August, thallus look more dense and healthy in floating cage and looks chipped and cut off due to grazed by fish for cultivate in longline.

Keyword: Floating cage, seaweeds, herbivorous, Kappaphicus alverazii.

Poster Number – 6

Potential of plasma medicine as therapeutic tools for non-communicable disease in Indonesia

Nasruddin, Muhammadiyah University of Magelang

Plasma is fourth state of matter after solid, liquid and gas. Plasma medicine or biomedical application of cold atmospheric plasmas have received great attention due to their remarkable abilities in biological and medical applications. A lot of groups, mostly from developed country, has successfully revealed the potentials of cold atmospheric plasma as a novel therapy for cancer, chronic wounds, etc., but the study of this scope is relatively lack of attention from Indonesian scientists and academics. This poster will review recent global status of plasma medicine research. And then potential and prospect of plasma medicine research to tackle non-communicable disease, like cancer and diabetic chronic wound, in Indonesia, will be studied. This will also show the progress report on plasma medicine research for experimental wound healing using atmospheric cold plasma jet in Muhammadiyah University of Magelang, Central Java, under National Incentive Research Project, the Ministry of Research, Technology and Higher Education of Republic of Indonesia (MRTHE) (Insinas Kemenristekdikti RI).

Poster Number – 7

Omics : Dissecting The Molecular Complexity in The Jungle of Big Data

Husna Nugrahapraja, Kristi Lenci Patty, Fenny Martha Dwivany
Institut Teknologi Bandung

Since the first kick-off for the next-generation sequencing (NGS) technologies in 2005, the life science fields were growing very fast. Now, researchers in life science are dealing with the analysis of complex datasets come from the experiment. In fact, the focus in life science slightly change from observation of biological phenomena and mechanisms into large scale of biological data in different levels of information so-called omics. Hence, the data analysis of big data biology (genomics, transcriptomics, proteomics, and metabolomics, etc.) become very important to be studied. Aim of this analysis to dissect the molecular complexity in living organisms using long non-coding RNAs (lncRNAs) derived from transcriptomics datasets. The emerging role of lncRNAs in the genome has revolutionized our understanding about molecular complex processes in many aspects. Particularly in plants, the function of lncRNAs in the genome-wide and their role in biological processes not yet defined. In mammals, lncRNAs are involved in biochemical pathways as genes expression regulators. We described the potentiality of lncRNAs as biomarkers in different biological processes: fruit ripening and plant-disease interaction. We performed data analysis from public databases and our experiments and identified specific lncRNAs that were expressed in different biological processes. This work will provide novel views to understand which lncRNAs are involved during fruit ripening and plant-disease interaction.

Poster Number – 8

Exploring the value of natural product for targeting metabolism in cancer therapy

Agustina Nurcahyanti, Atma Jaya Catholic University of Indonesia

Traditional medicinal plant has become a common inheritance healing method in several developing countries like Indonesia. However, the use of medicinal plants has depressed due to the lack of scientific proof and standardization. In current genomic and metabolomic era, those limitations can be diminished by comprehensive metabolic strategies to understand the chemical components including their pharmacological properties. Recent findings on plant-derived anticancer agent, canavanine analog arginine might become a novel combinatorial targeting strategy of metabolic-chemotherapy. Future development of this approach is for instance by using other mimetic protein amino acid and the modification of tumour metabolic pathway or environment will provide an alternative solution for chemotherapy. In addition, the shift of medical focus from treatment to preventive action, possibly leads to the use of natural product for cancer prevention based on WHO guidelines to produce safe, efficient, and control qualified herbal medicines. Moreover, the active substance as a key player on the pharmacological activity can be a target for a novel therapy through metabolomic modification, combinatorial chemistry, *in silico* pharmaceutical, etc. This effort indeed relates to the exploration of Indonesia's mega-biodiversity as a motherland source of natural products, producing standardized herbal products that improve social economies, as well as discover new lead compounds for novel therapy.

Poster Number – 9

Resistance of Banana and Chilli Peppers against Diverse Pathogen Attack

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Indonesia is known as the high biodiversity country. Production of many important commodities of horticulture plants such as banana (*Musa acuminata* AAA group) and chilli pepper (*Capsicum* spp.) reach the highest 6th production in the world. However, the quality of the products is still constantly low due to the preharvest problem. Consumable bananas and chilli peppers in the world are usually susceptible to diverse pathogens from fungus, viruses, to bacterias which can cause excessive losses, both in quality and quantity. The most devastating diseases in the banana are caused by an attack of the fungal pathogen, *Fusarium oxysporum* and bacterial pathogen, *Ralstonia solanacearum*. Both of the diseases can affect wilting in banana thus the banana will not be able to bear fruit. Our previous study is to characterize two candidate resistance genes which are antiapoptotic 5 (*API5*) and chitinase (*Chi1*) have been isolated and characterized. These genes can be later overexpressed in the variety of susceptible bananas to gain the resistance against pathogens attack. Meanwhile, the common soil fungus cause severe root rot disease in chilli is caused by the soil-borne fungus, *Phytophthora capsici*. Chemical fungicides are widely used by the farmers to prevent the diseases. However, fungicides residues have been found cause environmental pollution and can increase the selective pressure for the fungus, promoting resistant fungus. To address this issue, we have investigated the use of chitosan nanoparticles. Chitosan is an ecologically friendly biopesticide substance that boosts the innate ability of plants to defend themselves against fungal infections.

Keywords : *Musa acuminata, Capsicum* spp., pathogen attack, chitosan, resistance genes.

Poster Number – 10

Genetic Population Structure for Assisting Sustainable Management and Conservation of Sumatran orangutans (*Pongo abelii*)

Puji Rianti, Bogor Agricultural University

Sumatran orangutans, *Pongo abelii*, are assessed as Critically Endangered by the IUCN Red List of Threatened Species. It also listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as Appendix I. The population of Sumatran orangutans has reported increasing, but it does not mean the populations are not threatened by the habitat loss and extinction. Our study was designed to establish the Sumatran orangutans' population genetics database, using three genetic markers (autosomal loci, hypervariable region I mitochondrial DNA and Y-chromosome) with its demographic history, to acknowledge their unique populations, leading to the species' taxonomic classification and conservation units.We found the genetic diversity pattern over populations is clarifying the Sumatran orangutan population genetics, defining the four present population habitats in the wild (two evolutionary significant units (ESUs) and three distinct population segments (DPSs)). The private alleles of specific location habitats were observed using 28 autosomal loci to look up the allelic variation within and between populations as well as 52 diagnostics of single nucleotide polymorphisms (SNPs) were specified from 20 haplotypes using the evolutionary matrilineal genetic marker as Sumatran orangutan populations "DNA fingerprinting". The result provides valuable information on specific populations, to identify the origin of their individuals and to simplify the decision making on the re-introduction programs. As it addresses the requirements of the Conservation Strategy and Action Plan of Indonesian Orangutans, the Period 2007 –2017.

Poster Number – 11

Parasite genotypes in relation to invasion phenotypes from falciparum malaria individual in Timika, Papua

Leily Trianty, Eijkman Institute for Molecular Biology

Leily Trianty, Boni Sebayang, Hidayat Trimarsanto, Retno A.S. Utami, Andreas Kusuma, Daniel Lampah, Ferryanto Chalfein, Pak Prayoga, Jeanne Rini Poespoprodjo, Alida Harahap, Nicholas Anstey, Tony Triglia, Jutta Marfurt, Ric Price, Alan Cowman, Rintis Noviyanti

Plasmodium falciparum invasion is a complex process involving several parasite ligands and their receptors expressed on the red blood cell surface. We reported various receptors used by the parasite ligands during their invasion based on their sensitivity to neuraminidase (N), trypsin (T) or chymotrypsin (C). Sixty nine isolates were subjected to various enzyme treatments including 50 mU/ml neuraminidase, 1 mg/ml trypsin, or 1 mg/ml chymotrypsin. Eight invasion profiles were found in this study showing receptor sensitivity or resistance to those enzymes. Most field isolates in Timika invaded red blood cells through the receptor that was resistant to all enzyme treatments (NrTrCr; 28,99%) and also through the receptor that was sensitive to neuraminidase and trypsin, but resistant to chymotrypsin (NsTsCr; 21,74%). Consequently, Papuan isolates dominantly exhibited sialic acid (SA)-dependent invasion pathways. The quantitative QRT-RT-PCR employed to detect the expression protein which involved in falciparum invasion from each isolates. The dominant expression of PfEBA-175, PfEBA-140, and PfRh-1 were higher than the other invasion ligands.

Microsatellite genotyping demonstrated that both SA-dependent and SA-independent samples have low MoI (1.184 and 1.04 for SA-dependent and SA–independent pathways, respectively) and low proportion of samples with multiple infection (11% and 4% for SA-dependent and SA-independent, respectively). Expected heterozygosities (He) between the two populations were also similar (0.588± 0.272 and 0.589 ± 0.269 for SA-dependent and SA-independent, respectively with *p-value* = 1). FST for the two sample populations was 0. PCoA and MCA plots showed no defined cluster that might separate the two populations. The multiplicity of infection needs to be taken into consideration through analysis of clones able to invade the red cells more than the other. However, since both SA-dependent and –independent population exhibited low proportion of samples with multiple infection, the effects of the multiplicity of infection to expression invasion profiles were minimal. Furthermore, the microsatellite genotyping done in this current study indicated that both population had similar genetic background and could be considered as single population. Information on parasite genotype and invasion phenotype would be very useful for the selection of appropriate malaria vaccine candidate.

Keywords: ligand, receptor, PfDBL, PfRh, MoI, FST.

Poster Number – 12

Development of Kaffir Lime Leaves as A Traditional Medicine For Cancer

Woro Anindito Sri Tunjung, Universitas Gadjah Mada

Noncommunicable diseases (NCD) such as cancer, cardiovascular disease, and diabetes were responsible for 68% of all deaths globally in 2012. Available data demonstrate that nearly 80% of NCD deaths occur in low- and middle-income countries. In Indonesia it is common for traditional medicine to coexist with biomedical healthcare as part of a pluralistic medical system. In addition to economic reasons, traditional medicine has been widely used as alternative medication due to its low side effects. Some cancer cases are resistant to conventional chemotherapy. Therefore dietary phytochemicals with significant anti-proliferative and apoptosis inducing ability are considered as agents promising for cancer therapy. Kaffir lime (*Citrus hystrix* DC.) is a variety of citrus which native to Indonesia which mainly used as ingredient in Southeast Asian cuisine and aromatherapy oils. Our previous study indicated kaffir lime leaves extract reduce the viability of cervical cancer (HeLa), and neuroblastoma cells (UKF-NB3, IMR-5 and SK-N-AS). We further our research on breast cancer. Objective of this study was to examine effect of kaffir lime leaves extract to induce apoptosis on breast cancer cell line (T47D). Methods used for this research including extraction (maceration) of kaffir lime leaves dried powder, cytotoxic assay using MTT assay, apoptotic assay using mixture solution of ethidium bromide-acridine orange, detection of caspase-3,-8 mRNA expression by RT-PCR and analyze bioactive compounds in kaffir lime leaves by GCMS. Results showed that chloroform extract (IC_{50}= 128,89 µg/mL) have the highest cytotoxic activity on T47D cells compare to ethyl acetate extract (IC_{50}= 283,12 µg/mL), and ethanolic extract (IC_{50}= 444 µg/mL). One of the most effective cancer therapy methods is induction of apoptosis (programmed cell death). Apoptotic percentage of crude extract chloroform, ethyl acetate, and ethanol were 51,45%,31,47%, 36.24% respectively. Furthermore caspase-3,-8 mRNA, genes that regulating apoptosis in cell, were detected after treated with doxorubicin (a commercial drug for cancer) and kaffir lime leaves extract. This indicates that kaffir lime leaves have ability to activate caspase-3 and caspase-8 as well as doxorubicin treatment. On the other hand, analysis of bioactive compounds in ethyl acetat and chloroform extract by GCMS detected 52 and 32 bioactive compound, respectively. Among them, 21 and 13 bioactive compounds in ethyl acetate and chlorofom respectively were identified as anti-cancer agent. The results warrant the further investigation of kaffir lime leaves extracts as traditional medicine for cancer.

Poster Number – 13

Antifungal and antitermite activities of essential oil of *Toona sinensis* stem and its composition

Morina Adfa, University of Bengkulu

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Abstract

Toona sinensis hardwood timbers are generally used in the furniture and building material, due to their reputed durability, including resistance to termite and fungal attack. The aim of this study was to examine the antitermite and antifungal activities of stem essential oil and its main constituents. The stem essential oil of *Toona sinensis* was obtained by steam distillation for 6 h and its constituents was determined by GC-MS. Results from the antifungal tests demonstrated that the essential oil of stem had strong inhibitory effects. The antifungal indices of the stem essential oil at a dose 0.785 mg/cm^2 against four wood decay fungi, *Rhizopus oryzae*, *Schizopyllum commune, Fomitopsis palustris*, and *Trametes versicolor* were 67.76%, 67.32%, 65.93, 82.78% successively. Viridiflorol (10.49%), (–)-Globulol (10.18%), and (+)-Bycyclogermacrene (9.65%) are the major components in the essential oils of stem. The antitermite activity of *T. sinensis* stem oil will be discussed in this symposium.

Keywords: *Toona sinensis*, antitermite, wood decay fungi, essential oil

Poster Number – 14

Accumulation of bioactive compounds in elicited Phaseoleae seedlings

Siti Aisyah, Universitas Pendidikan Indonesia

The Leguminosae constitute a plant family that has been domesticated by human worldwide for many purposes, including food. In the last decade the consumption of legumes, such as soybeans, has been linked to several health-promoting effects, including reduced risk on various cancers, cardiovascular diseases and risks associated with hormone replacement therapy. The health benefits associated with legume consumption have been linked to the action of secondary metabolites, e.g. isoflavonoids. Nevertheless, the production of bioactive compounds in legumes is often inadequate, both from a qualitative and a quantitative point of view. It is known that the production of bioactive compounds in legume seeds can be increased during germination. It can be enhanced even further by performing the germination under stress. The latter process, the so-called induction process, results in accumulation of defense molecules, phytoalexins, many of which contain 5-carbon prenyl substituents. These prenylated molecules in particular appear to have potential as health-promoting compounds. This induction process has already been successfully implemented for soybean. In this research, we aim to extrapolate the induction process established for soybean to various other legume species, with respect to enhancing the content and molecular diversity of prenylated compounds. Seeds from seven species of tribe Phaseoleae, i.e., *Phaseolus*, *Vigna*, *Lablab* and *Psophocarpus*, were investigated for inducibility of isoflavonoids by germination with or without subsequent elicitation with *Rhizopus oryzae*. Germination alone poorly induced isoflavonoid production in Phaseoleae, whereas application of *Rhizopus* onto the seedlings increased the isoflavonoid content considerably. The inducibility of different subclasses of isoflavonoids in seedlings with *Rhizopus* varied per species. Isoflavones and isoflavanones were mainly found in elicited seedlings of *Phaseolus*, *Vigna* and *Lablab*, whereas pterocarpans were mainly observed in those of *Psophocarpus*. Isoflavones were mainly found as non-prenylated aglycones or glycosides, whereas isoflavanones and pterocarpans were primarily accumulated in their prenylated form. Thus, despite their phylogenetic relatedness, the seeds of various species within Phaseoleae appeared to respond differently towards elicitation by *Rhizopus* during germination. The kind of molecules induced followed the phylogenetic relationship of the various species, but their amounts induced during germination, alone or combined with elicitation, did not.

Based on: Siti Aisyah, Harry Gruppen, Silvia Andini, Monique Bettonvil, Edouard Severing, and Jean-Paul Vincken, Variation in accumulation of isoflavonoids in Phaseoleae seedlings elicited by *Rhizopus*, Food Chemistry, **2016**, 196, 694-701.

Poster Number – 15

Cancer Carbohydrate Nanotechnology: Understanding and Targeting Cell Surface Glycosylation in Disease Therapy and Diagnosis

Adam B. Braunschweig, University of Miami

Every eukaryotic cell is coated with a layer of carbohydrates – termed the glycocalyx – whose glycosylation pattern is cell specific. Because of their rapid division, cancer cells promote immature glycans to the cell surface, and as such display distinct glycosylation patterns that could be exploited for diagnosis or drug delivery. Currently, however, cell-surface carbohydrates are considered "undruggable targets" – attractive and validated cancer targets that remain outside of the reach of pharmacological regulation – because of (1) the difficulty associated with selectively binding in water saccharides with subtle structural differences, and (2) the primitive understanding of how surface effects contribute to molecular recognition at biological interfaces. This poster will present recent efforts from the Braunschweig group to develop selective molecular receptors for binding non-glucosidic saccharides in water[1], and developing new printing methods – including a platform for 4D organic nanolithography – for creating complex cell-surface models.[2-4] These examples demonstrate how emerging tools from supramolecular chemistry and nanoscience can be leveraged to develop new strategies for addressing cancer and understanding how information is communicated within molecular systems and biological networks.[5]

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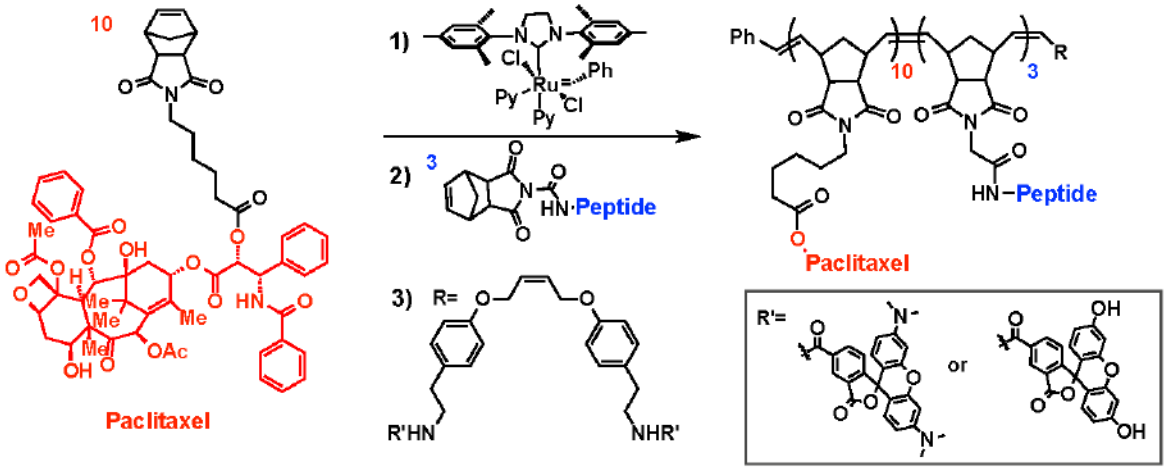
[5] Xu, *et al. Current Opinion in Biotechnology,* **2015**, *34*, 41 –47.

Poster Number – 16

Responsive Nanomaterials from In Situ TEM to In Vivo Delivery

Nathan Gianneschi, University of California, San Diego

Nanoparticle targeting strategies have largely relied on the use of surface conjugated ligands designed to bind overexpressed cell- membrane receptors associated with a given cell-type. We envisioned a targeting strategy that would lead to an active accumulation of nanoparticles by virtue of a supramolecular assembly event specific to tumor tissue, occurring in response to a specific signal. For this purpose, we utilize enzymes as stimuli, rather than other recognition events, because they are uniquely capable of propagating a signal via catalytic amplification. We will describe the preparation of highly functionalized polymer scaffolds utilizing ring opening metathesis polymerization, their development as *in vivo* probes and their utility as a multimodal imaging platform and as drug carriers capable of targeting tissue. Furthermore, we will describe new methods and approaches for characterizing this kind of dynamic material at the nanoscale, including by liquid cell transmission electron microscopy and combined isotopic and optical nanoscopy.



Poster Number – 17

Bioleaching using Local Bacteria and Fungi as Innovative and Sustainable Technology for Lithium Extraction from Lithium Ion Batteries (LIB) Waste

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Abstract: Lithium Ion Battery (LIB) is the most widely used battery as a power source because of its large energy density. Unfortunately, the increase in its consumption resulting in increased waste of LIB in environment which still contains hazardous chemical compounds such as lithium and cobalt metal scraps. It is therefore unsurprising if the extraction technology to reuse metal contained in spent-LIB is growing rapidly, morever since the conventional extraction method results in negatively significant effect to the environment. Bioleaching extraction method by using microorganisms as the leaching agent has several advantages over conventional processes such as more effective for low metal content, for example on waste batteries, more eco-friendly, and requires lower operating cost.

This study aims to isolate the local fungi strains were able to extract lithium from LIB waste and to determine the optimum conditions of bioleaching process with fungi. Strains of fungi isolated from lava tour area of Merapi and tannery wastewater in Piyungan, Bantul. After completed the process of incubation fungi metabolic acid respectively and then mixed with the waste powder LIB. Li percent recovery was calculated by analyzing the filtrate mixture after centrifugation using ICP quantometer.

The results show that the maximum percent recovery of lithium by bacteria obtained was 55.32% by strain isolated from soil of Merapi for pulp density of 2 mg/mL, initial pH value of 7, temperature of 30^{o}C for 15 days operation while the fungi that resulted in optimum Li percent recovery obtained was 48% by mud of Merapi sample with operating conditions: pulp density of 2 mg/mL, initial pH value of 5.7, 30^{o}C temperature for 15 days operation. Adaptation by LiCl can increase leaching selectivity og fungi and bacteria towards Li. Based on these results, sample of bacteria isolated from soil of Merapi and fungi isolated from mud of Merapi were the most potential for further study as an bioleaching agent.

Keywords : batteries waste, bioleaching, eco-friendly, recovery

Poster Number – 18

Biodegradation of Persistent Organic Pollutants (POPs) by White-rot Fungus *Pleurotus ostreatus*

Adi Setyo Purnomo, Institut Teknologi Sepuluh Nopember

Environmental pollution is an inseparable part of human life in relation to nature. Among the various kinds of environmental pollutions, persistent organic pollutants (POPs) have become a serious environmental problem. POPs are toxic chemicals that adversely affect human health and the environment around the world. Because of the negative effects of POPs, research should be carried to determine their persistence in the environment, and to develop effective methods of remediation. Bioremediation is environment-friendly method (green chemistry) which reducing and removing pollutants by using microorganism. *Pleurotus ostreatus* (oyster mushroom) is one of white-rot fungus, which has great ability to degrade some POPs such as DDT, heptachlor, heptachlor epoxide, aldrin and dieldrin. This fungus has been applied in contaminated-soil, which has good ability to degrade DDT, heptachlor and heptachlor epoxide. The degradation pathway of each POPs was also proposed. In my best knowledge, *P. ostreatus* is the best fungus, which degraded heptachlor and heptachlor epoxide as well as aldrin and dieldrin. This fungus can be used as environment-friendly degrader for POPs especially in soil.

Poster Number – 20

Towards a Mechanistic Understanding of Land-Atmosphere Exchange of Reactive Nitrogen

Jonathan D. Raff, Indiana University

Global soils are known to be a major source of oxides of nitrogen to the atmosphere. While these emissions have traditionally be been associated with nitric oxide (NO) and nitrous oxide (N_2O), recent laboratory measurements and satellite-global model comparisons suggest that nitrous acid (HONO) and nitrogen dioxide (NO_2) may also be an important constituent of the N-budget. Unfortunately, the processes controlling these emissions are not understood due to challenges in elucidating details of the relevant abiotic and biogenic processes occurring within the terrestrial environment. This is especially true for soil microbial emissions of reactive nitrogen (e.g., NO, NO_2, and HONO)—gases that directly and indirectly affect climate by controlling the oxidative capacity of the atmosphere, lifetime of greenhouse gases, and formation rate of aerosols. In this presentation, I will discuss recent progress made in understanding the abiotic and biogenic processes that determine the fate of HONO in soil. We carried out kinetics studies using a coated wall flow reactor and surface composition studies using nano-DESI and nanoSIMS [at the Environmental Molecular Sciences Laboratory (EMSL)] to investigate the role that minerals and organic matter play in storing and releasing HONO in soil. In addition, mesocosm experiments were conducted to characterize the biogenic mechanisms of reactive nitrogen release from agricultural and urban soil. Flux chamber experiments on agricultural and urban soil samples were carried out to identify soil that emitted reactive nitrogen. The biological nature of these emissions was probed in a series of amendment (NH_4^+ and/or nitrapyrin) studies; 16S rRNA genes and expressed rRNA from the samples were sequenced to provide information on the microbial community composition and activity. Finally, I will describe a newly developed soil flux chamber array that will be used to measure reactive nitrogen fluxes in a northern hardwood forest during a one-month field campaign at the University of Michigan Biological Station in July 2016. This will provide us with the opportunity to field test hypotheses formulated in the laboratory; the results will be used in parameterizations of soil reactive nitrogen flux in future chemical transport models.

Poster Number – 21

A Novel Green Isolation Method of Naturally Occurring GLI-associated oncogene Inhibitors

Yusnita Rifai, Hasanuddin University

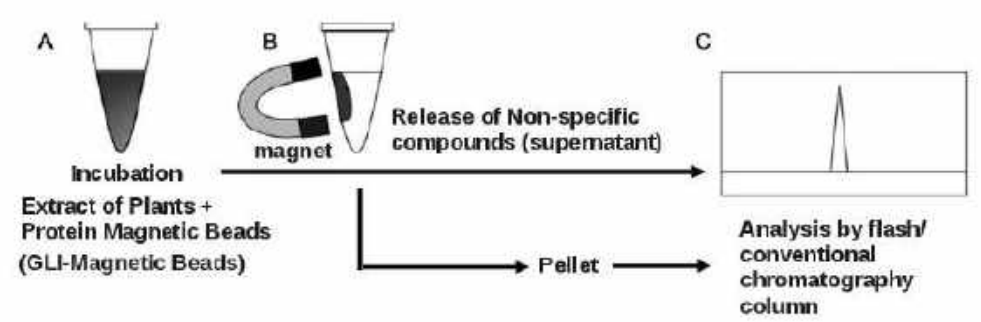
Results have been presented in: 3rd International Symposium on Green Chemistry, (2015), La Rochelle, FRANCE (Title : Green Isolation of Naturally Occurring GLI-associated Oncogene Inhibitor) **The most relevant peer-reviewed publications :**

Rifai, Y. A New Method for Fast Isolation of GLI Inhibitory Compounds, International Journal of Pharma Research & Review, 2012, 1 (8), 28-30.

Rifai, Y.; Aswad, M.; Subehan. A New Lignan from *Piper nigrum* Fruits, International Journal of Chemical and Analytical Science, 2012, 3(10), 1585-1586.

Abstract

Bioassay-guided isolation (BGS) of bioactive natural products from complex plant extracts is usually a very long process. The cost, toxicity and waste produced by volatile organic solvents (VOCs) in the isolation process are big concerns for environment. To provide a substantial reduction in price, time, labor and environmental pollution in BGS, we have established a new method for a quick isolation of compounds-bound to a specific target protein that was immobilized on magnetic beads. GLI-GST were cultured, immobilized on carboxylic acid magnetic dynabeads, and mixed with extract of plants. Hit Plants were selected if mixed suspension of GLI-magnetic beads and the plant extracts formed pellet. Supernatant, which consisted of non-specific compounds, was removed whereas pellet was extracted with switchable liquid ionics and separated by Ultra flash chromatography column. This system minimized chromatographic fractions that usually consisted larger amount of VOCs. Greener solvent and nanoparticle-magnetic-bead used in the system thus encouraged very fast and efficient strategies for the isolation and purification of naturally occurring GLI-associated cancer inhibitors. Results are presented here for a model plant, *Ocimum basilicum* (Lamiaceae). Using this novel approach, two known flavones were quickly identified as 5,6,7,3',4',5'-hexamethoxy-flavone and 5,6,7,8,3',4',5'-heptamethoxy-flavone. The structure elucidation was on the basis of spectral data of 1D NMR compared to literatures



Greener Screening Assay based on Specific Protein

Poster Number – 22

The Utilization of Semiconductor Photocatalys Materials for Advance Oxidation Process of Organic Pollutant Degradation

Hendri Widiyandari, Diponegoro University

The degradation of environmental quality due to the massive usage of fossil fuels has alerted peoples to do something to save the world live. Global warming is a “scary” word which we listen every day. For the sustainable development of the human society, the development of both alternative clean energy supplies and environmental friendly technology is an urgent task. The using of AOPs involving hydroxyl radical which can quickly remove or sterilize a broad range of organic pollutant has been considerable interest. AOP include semiconductor photocatalyst systems, which are becoming a one of the most promising technology due to the easy way to utilize the either natural sunlight or artificial indoor illumination, and is thus abundantly available everywhere in the world more specifically in our country (Indonesia). Among the semiconductor materials, Titanium dioxide (TiO_2) is widely used as an efficient photocatalyst for removing organic pollutant in water, which has a wide energy band gap, meaning that is can exited by UV (ultraviolet) light. UV light accounts for about 5% of solar energy. This ability opens the application of TiO_2 for outdoor pollutant treatment using sunlight and indoor using the domestic lamp. In addition, to improve the photocatalytic activity need a materials with large surface area. In this research, the semiconductor photocatalyst material have been fabricated using the flame spray pyrolysis method and polymer complex sol-gel method. This method offers a controlled characteristic to produce nanoparticles and nanocomposites.

Keywords: Titania, photocatalyst, organic pollutant, flame spray pyrolysis, polymer complex sol-gel.

Poster Number – 23

Highly Selective Bio-Oil Conversion Over Cu-modified H-β-zeolite catalyst

Wahyu Bambang Widayatno, Indonesian Institute of Sciences

Upgrading of bio-oil from biomass pyrolysis over Cu-modified β-zeolite catalyst in a down-draft fixed-bed reactor, in which the pyrolysis and upgrading processes are integrated, is investigated in details. It is found that high silica β-zeolite has high selectivity to the hydrocarbon during the upgrading process. When it is modified by a small amount of Cu, the selectivity can be obviously promoted. Especially, when0.50 wt% of Cu is loaded on it, almost only hydrocarbons can be detected in the light oil of upgraded bio-oil and its activity can be remained for several reuses even without regeneration treatment. However, if more Cu is loaded, the selectivity decreases to some extent. Interestingly, low Cu loading on β-zeolite results in the increase of surface area as well as the formation of more micropores. The surface area reaches the maximum in the case of 0.50 wt% of Cu doping. Based on XRD analysis, when the loading amount is over1.00 wt%, Cu species aggregate on the surface of zeolite, resulting the blockage of zeolite pores and the decrease of surface area. Doping of Cu decreases the coke deposit on spent catalyst but overloading of Cu results in the increase of coking and the decrease of activity and selectivity. These results indicate that the synergetic effect between the doped metal sites and the protonic sites on the zeolite structure should be benefit for the promising catalytic performance and thus, a proper loading amount is very important for this kind of catalyst.

Poster Number – 24

The importance of species characteristics to understanding disease dynamics among diverse coral communities

Marilyn Brandt, University of the Virgin Islands

White plague coral disease is an important driver of coral community structure change in the Caribbean region. This disease is known to affect more than thirty species of corals, and it occurs across a wide array of habitat types. White plague may represent a single pathology that manifests variably across space and time, or it may be the result of multiple etiologies with similar gross signs. Differential susceptibility and differing life history characteristics as well as variability in the distribution of organisms among species may play a large role in the dynamics and impact of a disease, including white plague disease in coral species. Therefore, while differing disease signs associated with the Caribbean white plague "types" may represent multiple etiologies, they may also be reflective of different properties of the multiple species the disease or diseases affect. Eco-epidemiology is the study of disease patterns among different populations of organisms and their habitats. By taking an eco-epidemiological approach, key processes involved in disease incidence and spread may be identified. This study investigates the importance of species characteristics such as size structure, spatial distribution, and physiology to determining the dynamics and impact of white plague disease types across US Virgin Island reef habitats. Results suggest that one dominant type of white plague prevails in the US Virgin Islands, but that the dynamics of this disease are closely related to specific characteristics that vary among the affected reef communities.

Poster Number – 25

Using modern environments to interpret the history of life in the geologic record

William Gilhooly, Indiana University

Oxygen makes up about 20% of the atmosphere, but it this gas critical to animal life was not always abundant throughout Earth's history. Since the formation of the Earth 4.6 billion years ago, photosynthesis generated trace levels of oxygen at a protracted pace until atmospheric oxygen levels reached modern concentrations. Anaerobic microbial pathways critical to the biogeochemical cycling of carbon, nitrogen, sulfur, and oxygen were likely more widespread and prevalent in the early biosphere. These 'ancient' organisms are still present today, confined to oxygen free (anoxic) regions of water columns and sediments. The modern tools of geological sciences have stepped beyond interpreting rock type and fossil content to now include genetic techniques, high-resolution imaging, advance mathematical modeling, and state of the art geochemical methods. These new methodologies are revealing incredible new insights into the timing and pace of oxygenation as well as the ways in which organisms have evolved and adapted through time. These new revelations also provide tremendous context into understanding the occurrence and effects of anoxia in modern environments. The current warming of the climate is conducive to expanding low oxygen conditions in our coastal oceans, which can have many negative impacts such as loss of fisheries and coastal habitats. Low oxygen is a known environmental stressor in small fresh water lakes, the Great Lakes, the Gulf of Mexico, and coastal ocean margins around the world. The goal of my research group is to explore the history of oxygen production, the biological responses to the development of an oxic atmosphere, and the possible repercussions of expanding the conditions of anoxia. I will present results from a number of anoxic lakes that record signs of microbial life. The biological signatures recorded in molecular, elemental and isotopic data are in turn useful for interpreting the rock record and the changing patterns of biological activity.

Poster Number – 26

Land-use planning in complex landscapes

Elizabeth Law, The University of Queensland, Australia

Land-use planning in complex landscapes is challenging. Often there are multiple stakeholders competing for the same areas of land. How can we make sure all stakeholder groups are happy? In Law et al. (2016), we have developed a new method to help land managers manage expectations: using Marxan with Zones to construct production possibility frontiers.

We demonstrate the benefits of this approach using a case study from the Ex-Mega Rice Project, a high-priority region for forest protection, restoration, and rural development in Central Kalimantan, Indonesia. The Ex-Mega Rice Project exemplifies the challenges of competing demands for conserving biodiversity, sustaining ecosystem services and accommodating production systems such as forestry and agriculture.

In this study we analysed the potential outcomes under ten alternative policy scenarios, including land-sharing, land-sparing, and mixed strategies, when land allocations are optimized (Law et al. 2016). We considered biodiversity, carbon, and production benefits of four land-use types: smallholder agriculture, oil palm plantation, timber reserves, and conservation (protection or restoration). By optimising land-use allocation for multiple objectives, we can evaluate the full potential of these alternative strategies, even in complex, multifunctional landscapes.

We found that, while mixed policy and land-sparing strategies offered the most flexibility, all scenarios tested, including land-sharing, could satisfy all stakeholder objectives, when land use is optimized. However in order to do this, at minimum 29-37% of the landscape would require forest protection. Most of this includes the remaining forest patches, with some restoration of particularly threatened ecosystems.

This approach provides practical options for landscape planning in complex, multifunctional landscapes, and can inform the design of land-use policies that maximize stakeholder satisfaction and minimize conflict. When using targets sought by multiple stakeholders within an ecosystem services framework, production possibility frontiers can characterize biophysical, socio-economic, and institutional dimensions of policy trade-offs in heterogeneous landscapes. For the Ex-Mega Rice Project, this analysis has provided evidence that this landscape can fulfil diverse stakeholder needs and desires, and shows the complementarity of development and biodiversity protection in achieving these goals.

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Poster Number – 27

Ocean anoxia and the biological pump during the end-Permian mass extinction

Katja Meyer, Willamette University

Marine anoxia and biogeochemical perturbations have long been associated with the end---Permian mass extinction and subsequent delayed biotic recovery. Climate warming resulting from the release of greenhouse gases associated with Siberian Trap volcanism likely forced changes in marine biogeochemical cycling and led to extinction. However, the feedbacks between climate, the carbon cycle, and the oxygen content of the ocean remain incompletely understood. Here I use carbon isotopes and Earth system modeling to examine the relationships between ocean biogeochemistry, the biological pump, and marine anoxia during the end---Permian mass extinction and Early Triassic recovery. In the model, warming and increased delivery of weathering---derived nutrients alter the strength and remineralization depth of the biological pump, enhancing oxygen depletion on the shelves. This model result, along with carbon isotope evidence for elevated primary productivity, supports the hypothesis that changes in the biological pump influenced the extent and distribution of anoxia and exerted an important control on marine animal ecosystems during the largest extinction of Earth history.

Poster Number – 28

Can differences in pollinator communities and consequent crop pollination deficits be detected?

Akhmad Rizali, University of Brawijaya

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ABSTRACT

Habitat conversion in urban area, mainly from remaining natural habitat as well as agricultural land to housing area cause declining ecosystem services such as pollination services for crop plants in agricultural landscapes. In addition, monoculture system and agricultural intensification with high intensity of pesticide application are the most important factors for pollinator decline. In this research, we investigated the pollination pattern in agricultural landscape to get evidence about pollination decline in the tropic. Ecological observation was conducted in agricultural area of Bogor, Indonesia which was classified into two different groups i.e. agricultural area near (less than 200m) and far (more than 1000m) from natural habitat. Pollinator insects were observed in cucumber field during flowering season. We found that the density of pollinators significantly higher in agricultural area that located far from natural habitat. Crop fields near natural habitat, have similar pollinator diversity than far from natural habitat. Our findings suggest that tropical landscape with a lot of patchy natural habitat obscure the density and diversity of pollinators. It will need to more investigation to get information about pollinator decline with considering the quantity of natural habitat in agricultural landscape.

Keywords: Cucumber, insect pollinator, Bogor-Indonesia

Poster Number – 29

Coral reef conservation through insights in physiology and photosynthesis

Melissa S. Roth, University of California, Berkeley

Coral reefs have tremendous biological, economical, and societal significance. Reef-building corals create the habitat for one of the most diverse and productive ecosystems in the world. The survival and success of reef-building corals depends on the relationship with dinoflagellate unicellular algae called *Symbiodinium*, which provides photosynthetic products to fuel rapid coral growth and calcification. Global change is the greatest threat to the future of coral reefs. Increases in the frequency and severity of temperature anomalies associated with global change are causing large-scale coral bleaching events at an unprecedented rate. Coral bleaching, the breakdown of the corals-algal symbiosis, causes reduced growth, reproduction, and even mortality. My research investigates changes in physiology of the coral-algal symbiosis during temperature stress using biochemical, organismal, and 'omics approaches and develops coral fluorescence as a noninvasive early indicator of coral health. Ultimately, for coral reefs to survive in current and future environmental conditions, the global climate must stabilize through reduction in greenhouse gas emissions and increases in climate mitigation. Thus, my research explores alternative energy sources and regulation of photosynthesis. This research focuses on the commercially valuable unicellular green alga, *Chromochloris zofingiensis*, which is a promising biofuel feedstock as well as produces a high value carotenoid. My research involves sequencing and assembling the genome and transcriptome of this alga and understanding regulation of photosynthesis and metabolism through molecular genetics and physiological experiments. Additionally, insights in green algal photosynthesis may help elucidate *Symbiodinium* photosynthesis, which is thought to be the determining factor in coral bleaching. A fundamental understanding of coral-algal symbiosis biology during temperature anomalies and progress towards stabilizing global emissions are critical considering the extraordinary challenges confronting coral reefs today.

Poster Number – 30

Exploration of Marine Biota Bacterial Symbiont for Bioactive Compounds in Ecologically-Friendly Fashion

Venny Santosa, Satya Wacana Christian University

Indonesia is a tropical maritime country possessing great marine biodiversity and bio- resources wealth located in The Coral Triangle. The advanced biotechnological techniques and researches in Red Biotechnology and the Indonesian government campaign of 'The Maritime Axis', put the tapping of marine bio-resources in ecologically friendly fashion on the spotlight. Previously, there have been many studies conducted outside of Indonesia to tap the bio-resources wealth of marine ecosystem, leaving Indonesian ecosystem as the mostly untouched resources for novel bioactive compounds. To date, such studies resulted in many bioactive compounds with unique and superior properties, such as potent anti-cancer, anti-Alzheimer, anti-microbial, enzymes and natural pigments, currently used in medical and commercial industries. Our study aims to discover and characterize novel bioactive compounds from Indonesian marine ecosystem in ecologically-friendly and sustainable way. At the same time, we hope to raise the awareness concerning the preservation of marine biota and marine environment, either to the communities living around marine ecosystems, general public or policy makers. The target areas are the seas around Karimunjawa Islands and Nusa Tenggara Timur. In our study, we selected two approaches to tap Indonesian marine bio-resources. The first approach is screening and utilization of bacterial symbiont of marine biota. Direct harvest and utilization of slow-growing marine bio-resources are not possible due to the low concentration of bioactive compounds and dire environmental cost. Therefore, we opted to utilize bacterial symbiont of marine biota. Bacterial symbiont had been known to produce similar bioactive compounds as its host. The next approach is the exercise and development of marine metagenomic technology. The metagenomic approach is used to isolate the total genetic data in an ecosystem, considering that most of the microorganism cannot be cultured in standard procedure. Thus far, we have collected a variety of marine biota (n=43) from the sea of Karimunjawa, Jepara Regency, Central Java, Indonesia. Bacterial symbiont of each samples were isolated and purified using Zobell medium according to standard microbiological procedure. Afterwards, the selected symbionts were grown and their respective bioactive compounds were harvested, separated and isolated using organic solvents. Species identification was done by DNA sequencing and the compounds were identified by high pressure liquid chromatography. To date, the study had identified several microorganisms and their compounds.

Poster Number – 31

Imaging Technique for Fish Identification

Esa Prakasa, Indonesian Institute of Sciences (LIPI)

Indonesia is a country that largely covered by ocean with ratio two-thirds of total country area. Thousands of fish species can be found in Indonesian sea. Fish population in certain area need to be periodically surveyed. This survey aims to monitor existing ecology condition and find new species. In the current procedure, to conduct a survey, a marine researcher with diving skill should dive and acquire fish data directly. The fish data includes species name, size, and its behavior. Fish image or video are also recorded during the survey in undersea environment. The researcher has to collect as much as possible data with a limited duration. Therefore, by applying computing algorithm, fish data in form of image or video can be analysed after survey completion. The research proposes an algorithm based on image processing techniques to perform fish identification. The algorithm will process fish video collected during the survey. Several physical parameters will be extracted from the observed fish. The parameters such as size, colour, skin texture, and fin shape. These parameters are then recognised to identify fish species. Machine learning algorithm will be used in this recognition stage. Output of the proposed algorithm will be validated by several experts on ichthyology (the branch of zoology that deals with fishes). There are three benefits that can be obtained from this research. Firstly, it can help marine surveyors to concentrate in data collection during the fish survey. Fish analysis and identification can be conducted afterward by applying the fish identification algorithm. The algorithm will processes a large data size of fish images and videos. Secondly, fish identification can be performed based on measured and objective parameters. Therefore, subjectivity identification based on manual observation can be minimised. Lastly, in future, the algorithm have a potency to be expanded to analyse another undersea objects, such as coral reef, underwater infrastructures, and sunken treasures. This research is a collaborative work between Research Center for Informatics, LIPI and Research Center for Oceanography, LIPI.

Poster Number – 32

Application of High Performance Computing for Data Reconstruction and Compression at the ALICE-CERN TPC

Rifki Sadikin, Indonesian Institute of Sciences

TPC (Time Projection Chamber) is an important detector at ALICE (A Large Ion Collider Experiment) - CERN collaboration. The TPC is the main tracking detector at ALICE for particle identification. In future experiment, the number of collision will increase drastically. This causes some distortions called space charge distortions that affects the quality of physics analysis and produce big data. We develop accelerator-based on GPU (Graphical Processing Unit) for correcting the TPC data due to space charge distortions and compressing TPC data. Our solutions are based on the number of numerical methods: parallel multigrid poisson solvers, numerical finite differences and integration, and numerical interpolation. Meanwhile to reduce the size of data, we represent the helix path of particle trajectory at TPC data into helix parameters by using technique from computer visions.

Poster Number – 33

Predicting Hospital Length of Stay of Dengue Patients using Decision Tree C4.5 Algorithm

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Dengue virus is causing frequent epidemics problem throughout tropical area. Hospitals are required to be able to handle patient flow fluctuation when dengue epidemic re-emerge. There are huge amount of healthcare data, including dengue patients treatment data available in hospitals. This research has developed a model to predict the Length of Stay (LOS) for hospitalized dengue fever and dengue hemorrhagic fever patients using admission data from a local hospital. This model can be very useful for effective decision making and enables better clinical and resource management in hospitals. A data mining technique, Decision Tree C4.5, is used to discover hidden information of a total of 370 dengue patient records. A thorough data preprocessing is conducted to handle noisy data and select features that will be used as predictors. A subset of data is trained to classify patients LOS into three groups of short, medium, and long stays, while another subset is used to test the accuracy of the model. Performance of the model is evaluated using a number of statistical measurements. This research provides insight into the factors influencing dengue inpatients length of stay. Furthermore, a prototype for hospital use of the prediction model is built based on classification rules developed using the data mining technique.

Keywords: Dengue, Healthcare, Length of Stay, Prediction, Classification, Data Mining, Decision Tree

Poster Number – 33A

Green RF-Transmitter with Cartesian Delta Sigma (ΔΣ) Upconverters

Sirmayanti Sirmayanti, The State Polytechnic of Ujung Pandang

Abstract

The development of a new frequency tuning method for reducing noise enhancement is introduced. A mathematical derivation has been developed to predict the size and position of the unwanted images. The signal image can be removed by pre-distorting the input signal. The above improvements will enhance the use of all-digital ΣΔ based transmitters in future wireless communication system.

The management of distortion and noise is a key design challenge as is the requirement for tunability. ΣΔ techniques can shape the noise away from the carrier band for subsequent removal in a band-pass filter, but tunability remains a problem. The proposed scheme needs to have two distortion function units: pre-distortion for image cancellation (it is put at the input to the ΣΔ) and post-distortion for noise cancellation.

Poster Number – 34

Smart Environment Monitoring and Analytics in Real-time System (SEMAR)

Sritrusta Sukaridhoto, Politeknik Elektronika Negeri Surabaya

Being the largest archipelagic country in the world where two-thirds of its territory is water, Indonesia depends heavily on maritime and also has many problems related on water environment such as, there are many waste from household or industries, flood because of water culvert or pump didn't working well. Those problems happen because of lack of monitoring system. We proposed a Smart Environment Monitoring and Analytics in Real-time System (SEMAR) for water environment to provide monitoring system and give analytics related with water environment problems. This system consists of 1) Big Data analytics that provide massive storage for data from sensors, analyse and visualize to give information to the users, 2) ROV with water quality sensors, a robotics submarine monitor areas that can't be reach by human, 3) Buoy Wireless Mesh Access Point, provides an extension for wireless communication in the water surface for whole sensor nodes, 4) Low cost portable water quality system, a tool that help user to monitor water environment and directly send the data to Big Data server, 5) Coral reef monitoring system, utilized underwater camera to capture coral condition and send images to Big Data server and analyse by using image processing, and 6) Early warning disaster system, a tool that able to detect water level for flood detection and provide the data to Big Data server and give warning to the people.

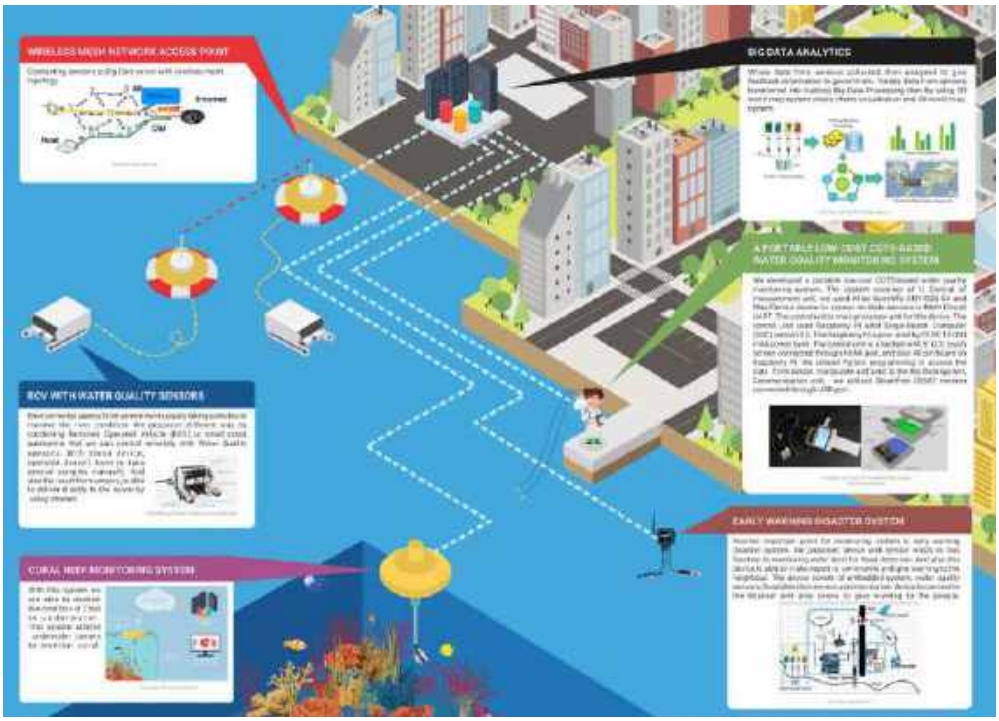

Figure 1. Smart Environment Monitoring and Analytics in Real-time System (SEMAR).

Poster Number – 35

The Role of the Neuropeptide Oxytocin in Cognitive, Social, and Affective Aging

Natalie C. Ebner, University of Florida

The oxytocin system is involved in social cognition and affective responding. In particular, oxytocin has been examined in the context of social memory, emotion perception, and trust, and—though evidence is somewhat mixed—oxytocin appears to benefit social and affective functioning. Currently, oxytocin's role in cognition is largely unknown. Also, previous research has focused on young adults and extant data on aging and oxytocin stems from animal research. Thus, it is unknown whether change in the oxytocin system in human aging contributes to change in cognitive, social, and affective capacities with age. Embedded in our *Age-Related Genetic, Neurobiological, Sociobehavioral Model of Oxytocin* (*AGeNeS-OT model*), I will present hormonal, neural, and behavioral data supporting a role of oxytocin in cognitive, social, and affective aging. The broader translational potential of this line of research in depression, social stress, anxiety, and cognitive decline—all of which have high relevance in aging—will be briefly discussed.

Poster Number – 36

Cross-cultural dynamics of Indonesian and U.S. students' career decision making

Dian Ratna Sawitri, Diponegoro University, Indonesia

Using the social cognitive career theory, the relationships between perceived career congruence with parents, career decision-making self-efficacy, career exploration, and life satisfaction of 367 Indonesian (*M* age = 20.07; *SD* = 1.08; 77.7% female) and 224 U.S. (*M* age = 19.77; *SD* = 1.74; 71% female) undergraduate students were examined. In the Indonesian sample, perceived congruence was associated with life satisfaction directly and indirectly via both self-efficacy and exploration, and via exploration alone. The model also demonstrated a partial mediation effect for perceived congruence to exploration via self-efficacy, and a full mediation effect for self-efficacy to life satisfaction via exploration. In the U.S. sample, self-efficacy partially mediated the path from perceived congruence to life satisfaction, and fully mediated the link from perceived congruence and exploration. The findings reveal important roles for perceived congruence with parents regarding career matters in young people's self-efficacy, exploration, and life satisfaction in cross-cultural contexts. Implications for practice and recommendations for future research are discussed.

Keywords: perceived congruence, self-efficacy, career exploration, life satisfaction, cross-cultural, social cognitive career theory, well-being

Poster Number – 37

Brain Plasticity after long term loss of central vision

Kristina Visscher, University of Alabama, Birmingham

Macular degeneration (MD) results in reduced central vision and can be debilitating, impairing tasks of daily living such as reading, driving and recognizing faces. However, most patients with MD develop the ability to use peripheral vision for many tasks of daily living. We are interested in understanding how the brain regions involved in early visual processing are remodeled through this process. Here, we address this question by examining the cortical structure and function of brain regions that process the parts of vision that are impaired vs. spared in macular degeneration. We find changes especially in the parts of cortex that represent peripheral vision that are used for tasks of daily living. These changes are consistent with brain remodeling following long-term changes in visual experience. This project represents a model for brain plasticity following long-term change in experience.

Poster Number – 38

The role of attitudes and norms on individual decisions: Case study of students' car purchase intentions

Prawira Belgiawan, Kyoto University

Understanding motivations to buy a car for the first time is an important problem as car ownership is increasing in many developing countries and finding ways to control such developments appear difficult. Car ownership levels are increasing rapidly in many developing countries. Contrary to this is the discussion on "peak car" in developed countries. To propose sustainable transport policies, it is necessary to understand factors influencing car purchase decisions.

The main focus is university students where it is expected that their current habits could influence their commuting behaviour not only presently but also after they graduate and obtain a job. We aim to understand the role of attitudes and social norms on students' car purchase decision. Attitudes is a person's subjective evaluation of a given behaviour or object. While norms can be explained as expectations of others regarding the behaviour in question.

Our sample comes from undergraduate students from seven countries (China, Indonesia, Japan, Lebanon, Netherlands, Taiwan, and United States of America). A web survey asked students about their attitudes towards car, social norms, their socio- demographic situations, and the intention to own a car after graduation. In order to explicitly model unobserved heterogeneity and estimate the model efficiently, we construct a series of ordered hybrid choice models (OHCM), focusing on exploring the role of attitudes and norms. In conclusion, we find strong evidence that attitudes and norms significantly influence car purchase intentions.

Keywords: purchase intention (cars), attitudes, norms, ordered hybrid choice model

Poster Number – 39

Enhancing Public Engagement in Environmental Sustainability: Insights from Behavioural Sciences

Navjot Bhullar, University of New England, Australia

Behaviour change is considered the “holy grail” for sustainable development actions. In this poster, I will present a case study in which behavioural-science informed strategies (e.g., normative feedback, community-based social marketing, risk communication) are used for reducing domestic wood smoke emissions. Finally, I will show how audience segmentation is a useful tool in identifying psychographic profiles, providing important insights into which types of adoption practice interventions work best for which (community) audience segments.

Poster Number – 40

Trouble In Paradise:
How Women's Intra-Household Bargaining Power Affects Marital Stability

Miryana Vinka Dayanti, Faculty of Economics and Business, Universitas Indonesia

Household is a collection of individuals with differing preferences which often results in cooperation at one end and conflict at the other end. Considering the promising trend of greater participation of women into the labor force and the narrowing trend of gender discrepancy in education between men and women, further investigation needs to be done regarding higher women's relative intra-household bargaining power and its impact to family as a primary economic unit. This study seeks to examine whether greater women's relative intra-household bargaining power affects the occurrence of conflict or instability within family. The hypotheses from this research are tested using a survey from 752 married women regarding who decides over the use of household expenditure and other decisions within family and the occurrence of conflict. Both game theoretical model and econometric estimations are applied to analyze the relationship between women's intra-household bargaining power and conflict. According to Nash Equilibrium derived from mixed strategy, the relationship of women's relative intra-household bargaining power can be both positive and negative depending on the level women's bargaining power index. This study confirms the U-shaped curve relationship between women's intra-household bargaining power and conflict. Another important finding is that conflict tends to be lower in household that is married through taaruf (Islamic-based marriage arrangement) compared to those whose marriages are based on personal choice, *ceteris paribus*. The differences in ethnicity and religion between spouses are confirmed to suffer from higher intra-family conflict. The findings of this research are expected to give deeper understanding regarding the relations of bargaining power between men and women as it considered as household behavior.

Keywords: Women, Intra-household bargaining power, marriage instability, conflict.

Poster Number – 41

Big data, trust and collaboration: Exploring the socio-technical enabling conditions for big data in the grains industry.

Aysha Fleming, Commonwealth Scientific and Industrial Research Organization

Big data is potentially revolutionary for agriculture. It will allow new insight**s** into decision points on-farm and across all aspects of pre-and post-production and all along the supply chain. It also offers the potential to integrate large and complex data sources to improve decision-making. But how this can be best achieved and who will benefit the most are still uncertain.

To explore the enabling conditions for big data we interviewed 26 grains industry stakeholders in the Victorian Mallee region of Australia and across the supply chain including: growers, input providers, handlers, advisors, trader, researchers, agri-business, and industry, government and association representatives.
We asked them what big data meant to them, what opportunities and risks it might bring and where the benefits and costs might lie.

Big data applications were considered to be one of the most important developments in agriculture, intersecting with precision and prescription farming, structural changes in agriculture, changing demography, increasing digitisation and consumer demands for greater transparency and specialised products.

Farming enterprises are likely to respond to digital disruption in varied ways due to their structure and information networks. Those farming enterprises that have greater levels of value chain integration and higher quality information may benefit more. Conversely, businesses with less dense advice networks that are less integrated into the value chain may be more exposed to risk.

Concerns were widely held that the benefits and risks of big data will be unevenly distributed throughout the supply chain, with benefit accruing to businesses either up- or downstream of the farm gate.

Our recommendations are:

- Invest in the capability of growers and farm businesses to be both informed consumers and producers of data, by involving growers and their networks in development and trialling.
- Conduct and communicate case studies of successful outcomes.
- Facilitate education and training, and access to simple information.
- Encourage public/private collaboration and participatory approaches.

Poster Number – 42

Who Gets Paid Better: A Study On Inter-Industry Wage Differentials In Indonesian Manufacturing Sector

Putri Faradina Iskandar, Universitas Indonesia, pf.iskandar@gmail.com

A perfectly competitive market suggests that workers with similar abilities and productivity working in similar jobs will have similar earnings in spite of different industries. However, many studies have found that various industries pay substantially higher wages than others for employees with observable identical characteristics doing apparently similar jobs—in other words, industry affiliation may also determine the level of wage that workers receive. Utilizing the combined data of the National Labor Force Survey (Sakernas) and Industry Statistics year 2013, this study attempts to find empirical evidence on the existence of wage differentials between labor-intensive and capital-intensive industries with Blinder-Oaxaca decomposition In Indonesian manufacturing sector. Our findings show that workers in capital-intensive industries are generally rewarded higher in the labor market than those who work in labor-intensive industries. Moreover, the decomposition result suggests that around 27% of the wage gap between capital-intensive and labor-intensive industries are not attributed to workers' qualification and remains unexplained. The evidence on how industry characteristic plays a crucial role in wage determination suggests that the labor market in Indonesian manufacturing sector does not function very efficiently that it may lead to lower growth and welfare.

Keywords: Wage differentials, manufacturing, capital intensity, Blinder-Oaxaca decomposition

Poster Number – 43

QEERI's Science Majlis

Anto Mohsin, Northwestern University in Qatar

The Science Majlis is a public outreach program organized by the Qatar Environment and Energy Research Institute (QEERI). It is an event that is held monthly and open to the public. This poster presentation shows the structure of the Science Majlis and the themes that have been addressed to raise awareness of some of Qatar's energy and the environmental issues. Through an analysis of the questions raised by the participants who attended this event, this presentation shows how public understanding and engagement of science is facilitated through this event.

Poster Number – 44

Development of Greenpreneurship Schooling for College Student as the Strategy to Build High Global Competitiveness of Indonesia

Ai Nurlaelasari Rusmana, Topik Hidayat, Suhara*
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Asean Economic Community (AEC) requires Indonesia to prepare outstanding human resources who creates high global competitiveness of Indonesia. World Economic Forum (WEF) claimed that the Global Competitiveness Index (GCI) of Indonesia for 2015-2016 dropped three places. According to Prof. Dr. Ir. Djoko Susanto M.Sc as DITJEN DIKTI 2010-2014, education is main thing to create high global competitiveness. In this case, enterpreneurship education is exactly important. Edy Putra Irawadi as Deputi Menko Perekonomian 2010-2014 said that enterpreneurship development for university student is really important to make Indonesia become more independent country. The concrete application of enterpreneurship education that has been applied is existence of enterpreneurship course in university. Nowadays, Indonesia still has many problems in several sector, include environment sector. Greenpreneurship is an enterpreneurship concept which integrate economy and environment. It can be comprehensive solution to solve both problem. Unfortunately, in Indonesia, not many people know about greenpreneurship. It is proved by writer investigation to selected Program Mahasiswa Wirausaha (PMW) 2015 of three universities in Indonesia. The result showed that greenpreneurship idea of selected PMW is still under 10% in each universities. Therefore, we proposes greenpreneurship schooling as education enterpreneurship based on environment for the university student. The aims of greenpreneurship schooling is to create young greenpreneur who can compete with another conventional enterpreneur in global competitiveness. The design of greenpreneurship schooling consists of three parts, pre-implementation, implementation and evaluation. Pre-implementation consists of identify environmental issues in Indonesia, arrange greenpreneurship schooling curriculum, make greenpreneurship database, recruit the volunteer of greenpreneurship schooling, and do socialization about greenpreneurship schooling. Coordination is implemented as long as program. After program finished, evaluation is implemented by three forms, concept test, product and project assessment. Based on description above, we really suggest this program can be implemented at universities in Indonesia.

Keywords : Competitiveness, Enterpreneurship education, Greenpreneurship, University student

2016 Indonesian-American
Kavli Frontiers of Science Symposium

Indonesian Academy of Sciences - U.S. National Academy of Sciences

Malang, Indonesia – August 1-4, 2016

Attendee Roster

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Research: Natural Product Chemistry; bio-pesticides; pharmacology

Within the scope of our research group ongoing program aimed at the systematic chemical study of Indonesia plants with a biologically interesting profile, we investigating the chemical constituents of some Indonesian plants and their antileukemic activity, antioxidant, antibacterial, anti-wood rooting fungi and antitermite activities. In this symposium I would like to present and share my research with the title Antifungal and antitermite activities of essential oil of Toona sinensis stem and its composition

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Research: Natural product, Food Chemistry

The demand for food products with health-promoting activities, the so-called functional food, is increasing. As legume species have the potential to produce an array of secondary metabolites that offer such activities, it seems attractive to employ these species for this purpose. The research will be focus on the creation of legumes-based functional foods that are enriched with phytoalexins. These phytoalexins-enriched functional foods would benefit consumer by offering the healthy food choices.

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Research: Energy and Environmental system, Social-Economic Energy, Environmental Sciences

Social Evaluation of economic structure development of Kupang City, NTT Province to meet national emission policy target. This assessment becomes a pilot model for cities in Indonesia. The study also tries to integrate energy structure transformation policies in the perspective of behavioral economics aspects. Taking into account needs of the PNK and local government in the field as mentioned above, therefore all my research focused under that themes.

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Research: Travel Behavior Analysis

My research interest is travel behavior, specifically about changing one's attitudes (perceptions) toward more sustainable transport modes. I have found during my master and PhD studies through various advanced regression models that there is strong evidence that attitudes and social norms significantly influence one's intentions to buy a car. If we can alter one's attitudes and the prevailing norms in a society, we might be able to create movements to more sustainable modes.

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Research: Genetics

I am an NHMRC Career Development Fellow at the Centre for Neurogenetics and Statistical Genomics, the University of Queensland (UQ). My expertise is on statistical genomic applied to large-scale omics data to dissect the genetic causes of human complex traits/diseases. My current research: 1) System genomic analyses of neuro-psychiatric diseases; 2) Mendelian randomization analysis to infer the causal effect of biochemical markers on diseases; 3) Trans-ethnic genomic analysis using samples from Asia (China and Indonesia).

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Research: Social Decision Making/Behavioural Economics

I am a behavioural scientist primarily focusing on psychological principles of behaviour change within a range of environmental & consumer decision-making contexts. My research uses behavioural science-informed strategies (e.g., community-based social marketing campaigns, normative feedback, heuristics, social proofing) in decision choices and risk communication. I am currently working on projects focusing on improving air quality, public acceptance of recycled water use & household water conservation practices, and farmer engagement in sustainable practices.

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Research: Biochemistry, Optical and Imaging Spectroscopy, Photosynthesis, Light Harvesting Bio-Materials, Remote Sensing Chemistry

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Research: Coral Reef Ecology, Marine Diseases
My research focuses on understanding how species- and habitat-specific characteristics affect the dynamics and impact of disease in Caribbean coral reefs. The activities of my laboratory include ecological experiments in the field and in seawater tables, and these experiments build off of my work with long-term local and regional coral reef and environmental monitoring programs. My laboratory benefits greatly from immediate access to the coral reef environments of the US Virgin Islands.

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Research: nanoscience, carbohydrate chemistry
The Braunschweig group pursues three main research directions: (1) Synthesizing small molecules that bind cell-surface glycans, (2) Studying self-assembled donor-acceptor superstructures for solar energy harvesting,and (3) Developing 4D printing technologies.

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Research: biochemistry and spectroscopy
I am interested in the study of structure, assembly, modification and function of pigments and pigment-protein complexes in plants, algae, cyanobacteria and photosynthetic bacteria. I am interested to connect these studies in area of biodiversity, sustainability and agriculture, functional food, and optoelectronics. I use methods in biochemistry, chromatography, mass spectrometry as well multispectral imaging spectroscopy.

Steve Chang

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Research: Neuroscience
My laboratory investigates the neurobiology of social behavior. My primary research goal is to understand the basic neural mechanisms underlying social cognition in rhesus macaques and to learn about how such mechanisms may go awry in disorders marked by social dysfunctions. We apply single-neuron and local field potential recording techniques as well as brain region-specific pharmacological manipulations to achieve these goals.

Teguh Dartanto

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Research: Development Economics
I am now initiating research on "digital divide and divide of society".

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Research: Plant molecular Biology

She earned her PhD in Biology from The University of Melbourne, Australia in 2004 and founder of "Banana Group" (www.thebananagroup.org). Researches of this group are focused on:
1) Big data using multi-omics approach that correlate with biodiversity, disease and fruit ripening,
2) Advanced nanomaterial as bio-fungicide and edible coating to delay fruit ripening
3) Space biology project to study fruit ripening process

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Research: Aging, Social and Affective Neuroscience, Decision Making, Oxytocin

Natalie Ebner is Assistant Professor in Psychology and affiliate of the Institute on Aging and McKnight Brain Institute at University of Florida. She completed post-doctoral fellowships at the Max Planck Institute and Yale University. Her laboratory focuses on cognitive, motivational, and socio-affective experimental aging research integrating self-report, cognitive-behavioral, eye tracking, neuroimaging, and neuroendocrine techniques. Her recent work is interventional towards improvement of cognition and socio-affective functioning in advanced age via oxytocin administration and neurofeedback training.

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Research: cancer biomarker, (genetic) epidemiology, nasopharyngeal carcinoma, EBV

I developed EBV-based biomarkers for diagnosis and screening of nasopharyngeal carcinoma (NPC). Further implementation of these biomarkers for clinical/ population-based screening is being developed by identification of "high-risk" population. in the same time, we are developing biobank to support longterm research by ensuring good quality data and biosamples.

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Research: Theoretical Physics

The Wilkinson Microwave Anisotropy Probe (WMAP) and Planck satellite missions have collected data that allow us to construct an image that shows the universe 13.8 billion years ago. I use this data to extract clues about the very early universe and to test and refine the theories that describe it. In addition, I am interested in both formal aspects and applications of quantum field theories.

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Research: Social science

I have recently completed a project on big data in agriculture, looking at the social science of barriers and enablers for big data. I am hoping to extend this work into further case studies. I am also currently working on the role of digital technologies to enhance lifelong participation in an ageing society. Additional projects have a marine focus in terms of sustainability and developing social indicators. I also supervise students on marine conservation issues.

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Research: Chemistry

A set of strategies are being developed in our laboratories to incorporate peptides and nucleic acids into novel polymeric synthetic materials. We aim to develop bioresponsive, and bioactive chemical systems through innovations in the synthesis and the characterization of dynamic systems at multiple length and time scales.

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Research: Geobiology

My lab focuses on the biogeochemistry of modern and ancient environments. We are currently studying the ways in which microbial activity is recorded in minerals deposited in anoxic lakes. The biotic signals can then be used as clues to interpret the history of living organisms in ancient sedimentary rocks.

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Research: Coral Reef Ecology

I am interested on the underlying mechanisms of spatial and temporal patterns of communities in coral reef systems. This includes general interests on system dynamics, landscape and macro-ecology. I lead the shallow reef research of the XL Catlin Seaview Survey, a project aimed at understanding spatial and temporal patterns of coral reefs worldwide using emerging technologies in underwater photography and machine learning.

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Research: Enterprise Information Systems Design and Implementation

Having Informatics and Industrial Engineering education background, my current research areas are quite broad, including: the design and implementation of information systems (IS) to support manufacturing or industrial systems, the implementation of e-business systems (ERP/enterprise resource planning, e-commerce, supply chain management), and the adoption and implementation of IT in healthcare. At this moment, together with several PhD and master students, we are working a lot on IT diffusion in healthcare and ERP post-implementation management.

Firdaus Hamid

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Research: infectious diseases, allergy, immunology, microbiome

I am having a great interest in Immunology particularly in epidemiological based of immunologic diseases. For the past 5 years, I am doing my research about 'The relationship between helminth infection and allergy diseases in Indonesia'. In addition, I will do a study about the profile of gut microbiome, the blood microbiome and the inflammatory pathways engaged in communities where lifestyle and environmental exposures are different.

Anggoro Budi Hartopo

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Research: Cardiovascular Disease

Cardiovascular disease continuum (CDC) forms a progressive processes in molecular and cellular levels that manifest as clinical diseases. We investigate the pathophysiology underlying acute coronary thrombosis and consequent myocardial infarction as part of CDC. We currently investigate the role of microparticle in the developing myocardial infarction. Other research activity is to investigate the biomarker for remodeling after acute myocardial infarction. We investigate the stress biomarker during acute phase to predict long term remodeling process.

Leonie Heilbronn

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Research: Obesity, Diabetes, Aging

A/Professor Leonie Heilbronn is an ARC Future Fellow at the University of Adelaide and the South Australian Health and Medical Research Institute (SAHMRI). Dr Heilbronn completed her PhD in 2001, and went on to research positions in the United States and Sydney, before returning to Adelaide. Her research goal is to reduce chronic disease risk through a greater understanding of nutrition, and metabolism in muscle and adipose tissue. She has published >75 peer reviewed papers, and is an associate editor for Obesity Research and Clinical Practice.

Topik Hidayat

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Research: Plant Molecular Systematics

My research interests is ranging from plant taxonomy and biosystematics to molecular phylogenetics. Molecular approach has been applied to address taxonomic and phylogenetic problem of various plant groups, such as Orchidaceae (Subtribe Aeridinae), Anacardiaceae (Mangifera), Euphorbiaceae (Phyllanthus), Bromeliaceae (Ananas), and Solanaceae. The main current projects include molecular phylogenetic screening of Indonesian medicinal plant and its barcode. Biodiversity literacy and citizen science are also coming to my interest recently.

Gregory Holland

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Research: Chemistry

The Holland Lab explores the molecular structure and dynamics of complex biological and technologically relevant materials. We are interested in scientific problems that lie at the interface of chemistry, biology and materials science including biologically inspired materials and nanostructured systems. The primary focus is on developing nuclear magnetic resonance (NMR) methods to elucidate the molecular mechanisms of biopolymer assembly. A continuing theme is connecting the role of molecular structure and dynamical features to material properties.

Yunita Idris

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Research: structural engineering, earthquake resistant structures

I have just finished my PhD in Structural Engineering which focused on the composite structural member using fiber - concrete and steel. I am currently looking for further observation on waste material for construction including recycled concrete and metal. I also interest in the impact of disaster on building construction and climate change for the idea of sustainable development. The aim of my research is for the possibility to reduce enormous impact of disasters.

Stan Karanasios

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Research: Information Systems

My main area of research is the social impact of advances in Information Systems and technology on society. I am currently working on projects in the area of systems interoperability in disaster management, information practices amongst farmers in Africa and cyber security in international business. My work has been published in leading international journals and I have been invited by international agencies, private firms and academia to present my research.

Ma'ruf Kasim

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Research: Development and cultivation of seaweed

I am currently designing a seaweed cultivation technology that could be useful to increase the production of seaweed. This study is based on the various problems faced by the community. Thank you to the 2016 Indonesian-American Kavli Frontiers of Science committee for inviting me to this symposium. It will be very useful for sharing information and knowledge related various update sciences. It will be useful for my research career in future.

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Research: Robotics

Robots have the potential to revolutionize nearly every aspect of our lives. Going beyond their traditional niche of "dirty, dull, and dangerous" jobs, robots will work side-by-side with humans, using their complementary skill sets to enhance our productivity both at home and at work. My research focuses on algorithms and techniques that give robots the dexterity, creativity, and social intelligence to solve complex problems, like furniture assembly and food preparation, for and with humans.

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Research: Environmental science, Applied economics

I pioneer novel, interdisciplinary methods that comprehensively evaluate the environmental, economic, and social trade-offs evident in environmental policies. I focus on agricultural production landscapes, which face increasing pressure to deliver on multiple outcomes, including production, biodiversity conservation, and climate change mitigation. My research aims to explore how production landscapes can be sustainably managed, to both capitalise on and enhance their multifunctional capacity, and to provide outcomes that are effective, efficient, and equitable for all stakeholders.

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Research: Weight loss, food intake, mobile health, health promotion

My research interests include the study of food intake and the application of novel technology to monitor and modify people's behavior through mobile health (mHealth) interventions while they reside in their natural environment. With colleagues, I have developed smartphone apps to assess food intake based on images of meals, as well as weight management apps that help people remotely manage their weight without the burden of visiting clinics to receive treatment.

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Research: Geology/Earth System Science

My research aims to better understand the dynamic co-evolution of life and the Earth system through integrative geochemical, geochronologic, and paleontological studies generally focused on the sedimentary rock archive. I am particularly interested to understanding how plate tectonic processes influence climate, ocean–atmosphere chemistry, and biospheric evolution. My active research projects investigate mountain building processes and their potential influences on long-term carbon cycling, seawater chemistry, and mass extinctions.

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Research: marine biology

I am an organismal biology interested in the ecology and evolution of marine invertebrates, primarily cnidarians and molluscs. Part of my research deals with the use of genomic approaches to study life history of corals and how they are coping with climate change. My lab also studies the evolution of biomineralization in animals as an theoretical model to understand the challenges with character homology over large evolutionary scales.

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Research: geobiology, stable isotope geochemistry, Earth system modeling

I am a geobiologist interested in the record of ocean euxinia, the role of the biological pump in ocean deoxygenation, and the impact of euxinia on the evolution of marine animal ecosystems. I use numerical modeling and isotope geochemistry to explore the links between euxinia and mass extinction, using the end-Permian mass extinction as a case study. My current work focuses on the use of sulfur isotopes to examine the Early Triassic sulfur cycle.

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Research: Science and Technology Studies, Public Understanding of Science

I have been studying QEERI's Science Majlis as a form of a public outreach program in the hope of understanding how a scientific culture is cultivated among the public.

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Research: health informatics

Dr. Montague is an Assistant Professor in the Feinberg School of Medicine and Division of General Internal Medicine at Northwestern University. She directs the Wellness and Health Enhancement Engineering Laboratory (WHEEL), the Usability in Health IT program and the Human Factors and Usability Research program of the Chicago Health Information Technology Regional Exchange Center (CHITREC). Dr. Montague specializes in human factors and ergonomics, human computer interaction and health systems engineering. She received her Master's and Doctoral degrees from Virginia Tech primarily in Industrial and Systems Engineering.

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Research: climate change

Global scale analysis of human impact on nature and their feedback.

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Research: Plasma medicine

Generally, my research is in plasma medicine. Plasma is fourth state of matter after solid, liquid and gas. Plasma medicine is an innovative and emerging field combining plasma physics, life sciences and clinical medicine to use physical plasma for therapeutic applications, like for wound, cancer, etc. My research interest is more focus on plasma medicine for experimental wound healing.

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Research: Genomics, Transcriptomics, Non-coding genome

I am keen to begin a career in plant sciences. My PhD work has focused on analyzing transcriptomic data from Maize's specific organs on different genotypes. The aims are to extract the biological information from RNA Seq data using particular specific mutant maize to describe pollen-pistil mechanism and to discover the major factor behind crossing incompatibility in maize. My current and/or research interests are to explore genomics, transcriptomics, and non-coding genome in living organisms.

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Research: Molecular pharmacology of natural product as anticancer and antioxidant

Emerging interest on novel compounds for cancer therapy and modification of tumor metabolic environment, fashion a novel combinatorial metabolic-chemotherapy targeting strategy, which also include overcoming MDR issues. Shifting of medical focus from healing/treatment to preventive action, possibly leads to the use of natural product for cancer prevention. The current and future research relates to the exploration of Indonesia's mega-biodiversity, aiming to develop standardized herbal products, as well as discover new lead compounds for cancer therapy.

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Research: Microbiology

Indonesia is an archipelago country that consisting of various ethnic cultures. Each ethnic has uniqueness in terms of their traditional food. The traditional foods have not been studied about the microbial content and its impact on health. Therefore, I am interested to analyze the microbial content of the entire Indonesian traditional food and its effects on human health.

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Research: Law and Economics, Applied Game Theory and Experimental Economics

Since 2010 I have conducted several studies using experimental approach for policy formulation purposes. I think this is the avenue that need to be extended as most studies using experimental method tend to prove economic theory, however limited attempt has been made to use experimental method for policy formulation. This is the real challenge to conduct the experiment since the participants may come from various education and income backgrounds.

Esa Prakasa

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Research: 3D medical imaging, computer vision, visual inspection, and pattern recognition

I am currently conducting some researches related with computer vision such as visual inspection on sensor chips and corn seeds. My research on fish identification using imaging technique is recently started in 2016. The results will help marine researchers to deal with fish identification problems. Research Center for Oceanography, LIPI is involved in this research to provide real data and to validate the results.

Ary Prihatmanto

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Research: Information & Communication Technology

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Research: Biodegradation of Persistent Organic Pollutants (POPs)

I interested on green chemistry especially for degrading POPs by using microorganism. Recently, I investigated P. ostreatus as the best source, for degrading some of POPs such as DDT, heptachlor and heptachlor epoxide in contaminated soils. However, optimization of this method is still needed. Now, I am investigating the effect of addition of bacteria on fungi culture to enhance POPs degradation result. The relationship of bacteria and fungi to degrade POPs will be also investigated.

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Research: Nanotechnology, Energy

My research group has conducted a lot of activities related to the development of methods and processes to produce nanomaterials and its application in energy. The application is focused in solar cell and lithium battery. For solar cell application, we developed FTO thin film with high performance using very simple spray method. Using LiFePO4 nanoparticles, a 18650 type battery were constructed. The cell capacity of 1000 mAh can be produced using this material.

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Research: Metabolomics, Microbiology

My research interests and current activities are the application of metabolomics, a field that is focused on the large scale quantification of metabolites in a biological system, and its application for various applications. I am interested particularly in the application area of microbial-based chemical production and biofuel research, food quality improvement, effect of food for human health as well as basic microbiology, cell biology and plant biology.

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Research: Environmental Chemistry

I am an environmental scientist interested in gaining molecular-level insights into the fundamental processes that drive air pollution and human-induced climate change. My laboratory uses a multidisciplinary approach that combines field and laboratory studies; we employ state-of-the-science techniques to measure trace gases in addition to methods employed in fields of aquatic and soil chemistry, and molecular biology. Our work provides data necessary to inform pollution control policy that has direct benefits to improving human/environmental health.

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Research: Maternal and Infant Nutrition

Dr. Leanne M. Redman an experienced clinical researcher with a particular focus on the physiology of body weight regulation in humans. She has more than 10 years of experience in designing and conducting controlled studies in humans where diet and physical activity are manipulated to alter body energy stores (fat and muscle), and therefore body weight. Dr. Redman is a native Australian and has spent the past 13 years in the United States with majority of this time at Pennington Biomedical Research Center where she is an Associate Professor and directs a research program in Reproductive Endocrinology and Maternal/Infant Health. The current focus of research in her laboratory is dedicated to understanding the role of maternal factors on the genesis of obesity and factors influencing obesity development in children beginning early in life. These in-depth studies implement innovative SmartPhone technologies that were invented by Dr. Redman and her colleagues to deliver health and weight management interventions. Dr. Redman has published more than 100 research papers around obesity, energy metabolism, insulin sensitivity, calorie restriction and exercise.

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Research: Animal of Biosystematics and Ecology
Currently, I am working on the evolutionary history of primates including human. My focus is in their evolutionary genetic structure for its biosystematics and conservation management units. It includes the understanding of the human roles in preserving the natural biodiversity, ecology, as well as their existence on earth.

Yusnita Rifai

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Faculty of Pharmacy
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Research: Green Chemistry (Natural Product Chemistry)
My research interests lie in the area of drug discovery, including exploring naturally occurring Glioma inhibitors and their synthetics. The isolation process of compounds using volatile organic solvents (voc) usually generate significant quantities of chemical waste, forcing us to develop new methods with reduced environmental footprint.We developed a new method for a quick isolation of compounds-bound to GLI, a specific target protein for cancer, that was immobilized on magnetic beads.

Akhmad Rizali

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Research: Entomology, Agroecology, Biogeography, Landscape Ecology
Akhmad Rizali is a faculty member at Department of Plant Pests and Diseases, University of Brawijaya. His main interests include entomology, agroecology, biogeography and landscape ecology. For the past few years, he has been active with Bogor Agricultural University and FAO-UN, conducting research on detecting pollination deficits in Indonesia. Recently, he has a research plan about economical valuation of natural habitat in palm oil plantation with perspective on its support to beneficial insects.

Melissa Roth

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Research: marine biology, conservation, coral reefs, physiology, photosynthesis, microalgae
I am interested in how the environment shapes physiology and ecology of marine and photosynthetic organisms. My research focuses on the coral-algal symbiosis and commercially valuable microalgae, and the underlying physiological mechanisms that govern tolerances, responses, and adaptation to environmental variability and change. I use a variety of approaches from molecular genetics to laboratory experiments to fieldwork to investigate human impacts on marine ecosystems, monitor ecosystem health, and provide solutions to mitigate problems.

Rifki Sadikin

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Research: computational sciences, high performance computation

My current research activities are most of them on the issue of parallelization of a computation problem in science. My group is now developing High Performance Computation of two problems at one of detectors at ALICE-CERN collaboration. My planned activities are High Performance Computation solutions for problems in computational sciences and big data analytics. These include mathematical modeling and simulation, proper numerical methods, and parallel algorithm development for computer cluster and/or accelerator implementation.

Asep Saepuloh

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Research: Remote Sensing Volcanology

My research is directed towards the use of microwave remote sensing for geological and volcanological applications with specific aim of use back-scattering Synthetic Aperture Radar (SAR) approaches to integrate space borne and field data into models.

Venny Santosa

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Research: Marine biology

My research interest is in the molecular biology field, especially related to microbiology. My current research deals with the exploration of marine biota for novel biological compounds in ecologically-friendly fashion, by the use of marine biota bacterial symbiont. Our current focus is on the lipid-soluble pigments produced by bacterial symbiont. To date, we have characterized several marine biota, their bacterial symbionts and pigments from the sea around Karimunjawa Island, Indonesia.

Dipanwita Sarkar

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Research: Behavioural Economics, Applied Econometrics

As a behavioural economics researcher, I study individual decision-making by conducting economic experiments in the field and laboratory. I have played a leading role in several projects that involve collaboration with national and international partners, including government agencies. My primary focus has been in the areas of economic development, education, and health, but I would like to expand my research with an inter-disciplinary focus as well as wider applications in the context of developing economies.

Ari Winasti Satyagraha
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Research: RBC Membrane Disorders, G6PD Deficiency, Neonatal Jaundice, UGT 1A1, Methylation, X-chromosome inactivation

My research interests include G6PD deficiency, RBC inherited disorders, neonatal jaundice, UGT 1A1 mutations, malaria, X-chromosome inactivation and methylation pattern, and epigenetics. My lab currently is active in G6PD research in relation to malaria therapy. However, we are expanding to epigenetics study with G6PD as model.

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Research: Adolescent and adult career development; cross-cultural psychology

My research areas include adolescent and adult career development, and cross-cultural psychology. I have a project with an Australian partner regarding the career development of Indonesian academics. I propose a cross-cultural research regarding career progress of Indonesian and Australian undergraduate students, and now I am still preparing a proposal regarding the consequences of career identity in Indonesian and U.S undergraduate students. I look forward to having more collaborations with Australian, and U.S. partners.

Sirmayanti Sirmayanti
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Research: Telecommunication Engineering

My current scientific interest is to develop a low power digital transmitter structure suitable for the next future generation of cellular system. The developed structure will allow all-digital tunability eliminating the need for analog components and programmable to different wireless standards. This work is addressing green communication concept for the energy efficiency of the telecommunications sector. Its goal covers any products that can transmit or receive the information in a digital form.

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Research: e-Government, Knowledge Management, Information Security, IT Governance, Business Intelligence

My research interest is on how Internet-based technologies and policies can contribute to Digital Economy's growth. Internet-based technologies need IT resources which are applications, infrastructure, information and people. However, effective implementation of technology will need policies, including policy on privacy, information security and data sovereignty. Recent development shows that while most developing countries are drafting policies on Digital Economy, establishment of regional agreement such as TPP and RCEP will also have impact to national policy.

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Research: computer networks, embedded system, multimedia and Internet of Things

Smart Environment Monitoring and Analytics in Real-time System (SEMAR),

We developed environment monitoring systems that consist of:

1. Big Data analytics
2. ROV with water quality sensors
3. Buoy Wireless Mesh Access Point
4. Low-cost portable handheld water quality monitoring system
5. Coral reef monitoring system
6. Early warning disaster system

For future works, renewable energy to support our system is needed, and also integration with smart city.

Leily Trianty
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Research: Molecular and pathogenesis of malaria infection

My research at the Eijkman Institute initially involved analysis of red blood cell polymorphisms such as Southeast Asian Ovalocytosis (SAO), Duffy-blood type antigens, polymorphism of glycophorin C (GYPC) and also in cyp2c19 gene involved in drug metabolisms under the population genetic. My current research involved analysis of pathogenesis of malaria invasion in human erythrocyte. My planned research, I will analyze antibodies response against the protein antigens that are involved in the invasion process as well.

Teguh Triono
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Research: biodiversity, Ecology, Evolution, Systematic

I am a plant taxonomist with research interest on biodiversity, ecology, evolution and systematics. I am currently working as Program Director of The Indonesian Biodiversity foundation (KEHATI) in coordinating programs on biodiversity conservation and biodiversity sustainable use in 130 sites (some are Citizen Science project on Terrestrial and Marine) throughout Indonesia. I am also work as Lecturer in Gunadarma University, in biodiversity informatics with aim to establish an open access database for Flora Indonesia.

Woro Anindito Sri Tunjung
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Research: Biochemistry, Molecular Biology, Traditional medicine

Indonesia is one country in the world which is famous for traditional medicine. My research focused on developing Indonesia native natural product which function as traditional medicine especially for noncommunicable diseases. The research include getting scientific information about the action efficacy, Analysing bioactive compounds in natural product , producing standardized raw materials for traditional medicine and increase efficacy of drug delivery of traditional medicine which directly to targeting cell.

Kristina Visscher

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Research: Neuroimaging/neuroscience
How is it that we can process the same information in different ways at different times? Humans have a remarkable ability to process inputs from the environment flexibly. Our lab is interested in understanding what brain mechanisms underlie this ability and how those mechanism change with age and experience. We study human behavior and brain activity using precise behavioral measurements (including psychophysics and tracking of eye movement), functional magnetic resonance imaging (fMRI) and electroencephalography (EEG).

Felix Warneken

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Research: Psychology
I am a developmental and comparative psychologist studying the behaviors of humans and chimpanzees. My main interested is in exploring the origins of human cooperation: What motivates us to care about the needs of others? How do we decide what's fair? How do biological and societal factors interact to bring about cooperative behavior? I address these questions by comparing behaviors of human children with those of chimpanzees, and explore similarities and differences across human cultures.

Wahyu Bambang Widayatno

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Research: Material Science & Engineering
Porous materials plays important role on many applications, including catalysis. I focuses on the modification and characterization of porous materials properties, particularly zeolite, in correlation with their catalytic performance. In my previous works, I demonstrated that the balance of Bronsted and Lewis acidity in commercially metal-modified H-Beta-zeolite could provide good synergy for catalytic deoxygenation of bio-oil. In the future, I plan to elaborate the properties improvement strategy of natural zeolites for various applications.

Hendri Widiyandari

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Research: Material Physics and nanotechnology
My research group has conducted a lot of activities related to the development of methods and processes to produce functionalized materials since 2009. The application of material is such as for organic substance decomposition using light irradiation, battery for energy storage, solar cells as energy converter as well. These research has been supported by Indonesia government (UNDIP, Kemenristek, Kemenristek Dikti, Kementan) and international agencies (TORAY-Japan; TWAS-Italy; Loreal-Unesco).

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Research: Mechanical Behavior of Engineering Materials
Each engineering material has its properties such as threshold size, critical crack length, and crack propagation rate, and the data is available in many publications as well as references and handbooks. Current research works are focused on how to prevent fatigue failure from material point of view, e.g. by inventing new alloys or composites or even new materials with minimum defects or cracks and with certain grain structure and orientation that will block any propagation. Research is also conducted on the contact mechanism of mechanical surfaces of engineering materials, to observe and study the deformation and/or damage caused by the contact. This information is quite useful for predicting the lifetime and/or reliability of the engineering materials as well as of the constructions and equipment.

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Research: Forest Meteorologist and Senior Scientist at the Center for International Forestry Research (CIFOR). Professor at the Department of Geophysics and Meteorology, IPB, who has published a large number of articles in peer reviewed journals and book chapters. He played an extensive role in the Nobel Peace Prize-winning IPCC as Convening Lead Author. Served the Government of Indonesia as Deputy Minister of Environment (2000-2002). Since 2002 he is a member of the Indonesian Academy of Sciences.

Budhi M. Suyitno
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Research: Graduated aviation engineer of the Institute Technology Bandung (ITB) and the aeronautics and space specialist of l'ENSAE (Ecole Nationale Superieure d'Aerotechnique) Poitiers, France. A number of articles were published in the Ageing Aircrafts and Journals. As a government engineer he was in charged for the type certification process of the Indonesian CN-235-110 and N-250 aircrafts (1993-1995) and the implementation of ICAO Indonesia Declaration on Aviation Safety and Security (2007-2008). He was also responsible as the government representative in the establishment of the Aviation Law (2008-2009).

USAID Student Observers

Nurlaelasari Rusmana Ai

Indonesian University of Education
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Research: Science Education
As a biology education student, I am interested to conduct research about science education includes learning media and reasoning science student to scientific issues. I have ever conducted research about productive questions model card in improving student's ability to ask productive questions. Recently, I am also preparing a research proposal related with reasoning in STEM Education, exactly engineering design process. In the future, I am eager to be professional educational researcher.

Dwi Surya Artie

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Research: Diversity of Bryophytes in Jayagiri Forest
Bio conservation of medicinal plant in Indonesia. I'm interested in biodiversity plant conservation and environmental sciences. Indonesia is a country with a high rate of diversity of plants. The biological natural resources in Indonesia is very abundant and varied as well, thousands species of plants has been known and utilized as a traditional biomedicine. One of my planned research activities is about develop the utilizing of medicinal plant in Indonesia.

Miryana Dayanti

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Research: Public finance, public policy analysis, and family economics
Recently, I just finished my research concerning family economics and planned to conduct a research with relevant topic. Having interests in public policy analysis and public finance, I am planning to pursue researches in the related fields.

Anisa Nazera Fauzia

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Research: Genetic plant transformation
I currently doing my thesis research. I am working on genetic transformation of OsRKD4 gene to induce somatic embryogenesis in Indonesian black rice. Black rice contains high level of anthocyanin that is good for our body. But the productivity of black rice in Indonesia is low due to long harvest time. So I try to produce large number of black rice seedling through genetic transformation. I also interest in the nutritional content of black rice.

Putri Iskandar

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Research: Economics
Recently, I just finished a research on inter-industry wage differentials in Indonesian manufacturing sector, an issue that is believed by many researchers to have a significant contribution to income inequality. Hence, I am interested in continuing further research on both wage differentials and inequality issues in Indonesia.

Ravi Mahesta

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Research: Computational Chemistry
My research is about molecular dynamic simulation of gas separation using inorganic membrane. Membrane used in this research is MgO membrane that have both good mechanics and chemicals strength. The purpose are to know the stability and performance of MgO membrane and get useful data for the synthesis of the membrane in laboratories. Work in molecular dynamics simulation are so fun because we can know something that no one ever did before in real life.

Afifah Makhirliana

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Research: Molecular Pharmacology/Pharmaceutical Technology
During my study at Faculty of Pharmacy, i realized that pharmacy is a field of science that was very unique and very important for the health of many people. The subject i concerned at Pharmacy is Molecular Pharmacology. I got a lot of interest with a natural compound/extract from endemic plant which can be used as Cemotherapy Agent. Now, my research is about the Anticancer activity of natural compound at H1299 Cell Lung Cancer.

Wisnu Murti

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Research: Bioengineering
I have been involved on bioleaching project in my department since 2 years ago. For previous research we tried to recover lithium metal from spent battery of electronic devises using ecofriendly process called bioleaching. This method now has been trying to be applied on nickel laterite mining process through my second research. My concern and interest is always bio-engineering.

Aksarani Pratiwi

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Research: Biotechnology
My research activities are about fruit quality improvement using biotechnology as the tool. For example, finding resistance genes candidate as to enhance the fruit defense system against pathogen's infection and using a modified environment to extend the fruit shelf life. I am interested in big data analysis such as omics data analysis.

Siti Yaumi Salamah

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Research: Information and Decision Support System

My current research focuses on improving decision support system in a local hospital by applying data mining technique to gain insight useful for healthcare decision support. I implemented data mining methods to find a new pattern in dengue fever patient medical records that could predict inpatient length of stay at the hospital. Based on the result, I plan to conduct further research on how to apply this prediction ability to better manage healthcare resources.

Mardiana Sekararamadhani

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Research: Red Blood Cell Disorder

My current research activity is on red blood cell disorder, specifically in G6PD enzyme deficiency. As an intern student in Eijkman, Jakarta, I have been helping Dr. Ari Satyagraha in her current research in determining the genotype of women with intermediate to normal G6PD activity. My interest is in forensic DNA research. In the long run I'd like to analyse DNA from biological signature to help law enforcement in determining the identity of the victim.

Guests, Media and Staff

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Research: International Cooperation

Ali's interests focus on international science and technology cooperation between the United States and emerging economies. Prior to joining the National Academies of Sciences, Engineering and Medicine, he served as Science & Technology Advisor at USAID/Indonesia as well as the Office of S&T at USAID/Washington. Ali is an Executive Committee member of the Global Young Academy, a term member of the Council on Foreign Relations and has a PhD in Biomedical Physics from UCLA.

TJ Higgins

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Biology
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Research: Plant Biotechnology

I am working in the food security area using gene technology to protect food legumes from major insect pests. The work is aimed at food crops in Africa and Asia.

Dalal Najib
U.S. National Academy of Sciences
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Research: Space engineering, International S&T Collaboration, Science Diplomacy

Dr. Najib is currently working on international development and science diplomacy programs. She is the program director for the Arab-American Frontiers program of Science, Engineering and Medicine at NAS and she currently manages a USAID-funded grant to build the institutional capacity of the Indonesian Science Fund (DIPI) in grants management. She also works on the Partnership for Enhanced engagement in Research (PEER) program. She holds a PhD in space engineering from University of Michigan.

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Research: scientific program management

scientific program management; science diplomacy

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING POSTER SEMINAR INTERNASIONAL*

Judul Artikel	:	Green RF-Transmitter with Cartesian Delta Sigma Upconverters		
Jumlah Penulis	:	1 (satu) orang		
Status Pengusul	:	**penulis pertama**/~~Penulis kedua/penulis korespondensi~~ **		
Identitas Artikel	:	a. Nama Seminar	:	2016th International Indonesian-American Kavli Frontiers & Science Symposium
		b. Nomor ISSN	:	HARD BOOK Prosiding dan POSTER
		c. Waktu Penyelenggaraan	:	1-4 Agustus 2016
		d. Penerbit/Penyelenggara	:	USAID Indonesia, National Academy of Science, Indonesiaa Academy of Science
		e. DOI artikel (jika ada)	:	http://www.nasonline.org/programs/kavli-frontiers-of-science/past-symposia/2016-idafos.html
		f. Alamat web jurnal	:	
		g. Terindeks di Scimagojr/Thomson Reuter atau di Scopus dan IEEE EXplorer**		

Kategori Publikasi Karya Ilmiah : ☑ Seminar Ilmiah Internasional/Internasional bereputasi.**
(beri √ pada kategori yang tepat) ☐ Seminar Ilmiah Nasional Terakreditasi
☐ Seminar Ilmiah Nasional/Nasional terindeks di DOAJ, CABI, COPERNICUS**

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Artikel			Nilai Akhir Yang Diperoleh
	Internasional/ Internasional bereputasi** ☑	Nasional Terakreditasi ☐	Nasional *** ☐	
a. Kelengkapan unsur isi artikel (10%)	10			10
b. Ruang lingkup dan kedalaman pembahasan (30%)	27			30
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	20			30
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	25			30
Total = (100%)	83.			100
Nilai Pengusul = 100 x 100 % = 100				

Catatan Reviewer :

Prosiding Ada, Sertifikat lengkap.

Makassar, 2 Ags 2021
Reviewer 2,

Dr. Ir. Satriani Said Akhmad, M.T.
NIP. 19670904 199303 2 001
Unit kerja : Jurusan Teknik Elektro PNUP

**Dinilai oleh dua Reviewer secara terpisah*
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