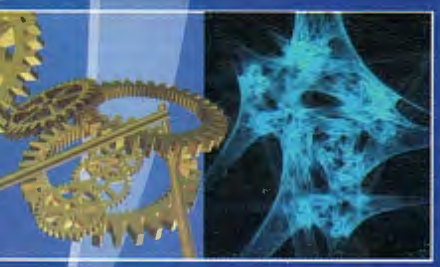

Annual Report 2008

Basic Research for National Development

NRCP 75

MISSION

Commitment to promote and support basic and problem-oriented researches, particularly those which are multidisciplinary, in the sciences as well as in the humanities, to identify and provide solutions to national issues and problems, and to generate new knowledge in preparation for the future.

VISION

A collegial body of highly-trained scientists and researchers, cohesively addressing the growing demand for knowledge, skills, and innovations; sharing expertise with all sectors of the society; and effectively and efficiently contributing to the country's development and to the improvement of the quality of life of the Filipino people.

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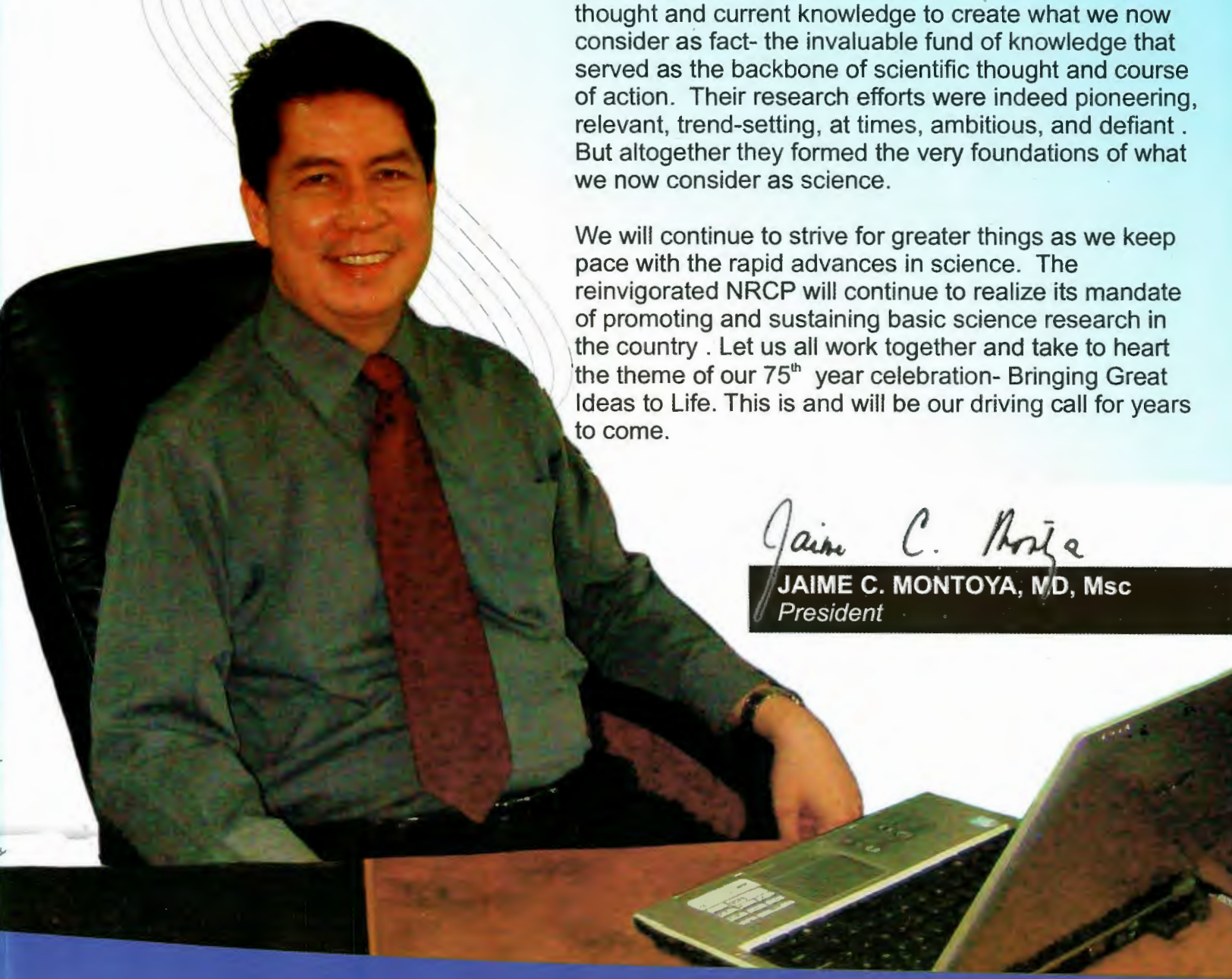
MESSAGE

This year marks a momentous point in our history as we celebrate the Diamond Jubilee of the largest and most influential organization of basic scientists in the country- the National Research Council of the Philippines.

Seventy five years of existence is not only a reason for celebration, but it is also an opportunity for us to reminisce with both pride and gratitude, the countless men and women across the country ,who have contributed to the nation's wealth and breadth of scientific knowledge. These are the people who have done scientific discoveries, questioned the status quo, treaded the course of the unknown , examined inner thought and current knowledge to create what we now consider as fact- the invaluable fund of knowledge that served as the backbone of scientific thought and course of action. Their research efforts were indeed pioneering, relevant, trend-setting, at times, ambitious, and defiant . But altogether they formed the very foundations of what we now consider as science.

We will continue to strive for greater things as we keep pace with the rapid advances in science. The reinvigorated NRCP will continue to realize its mandate of promoting and sustaining basic science research in the country . Let us all work together and take to heart the theme of our 75th year celebration- Bringing Great Ideas to Life. This is and will be our driving call for years to come.



Jaime C. Montoya

JAIME C. MONTOYA, MD, Msc
President

MESSAGE

The year 2008 witnessed numerous remarkable achievements of the National Research Council of the Philippines. Such accomplishments would not have been made possible without the support of the Governing Board. Dr. Jaime C. Montoya, who is in his first year of his term of office as NRCP President, has given his full support to the Council and to me as Executive Director.

I take pride of the year that has just passed as being truly remarkable and fruitful as it entered the annals of the NRCP history. It is indeed worth mentioning that 63 new associate members representing all Divisions of NRCP, who are in their prime to do research were taken in to the NRCP roster of experts and scholars.

One of the Council's most important outputs for 2008 was the conduct of the series of consultations, which was initiated by the Governing Board, and out of which was formulated the National Integrated Basic Research Agenda (NIBRA) defining the priority areas in the basic research development program of NRCP for 2008 to 2010. This activity led to the Dr. Julian A. Banzon Centennial Memorial Lecture and Roundtable Discussions on Basic Research for National Development on 11 September 2008 at Traders Hotel, Pasay City. It was participated in by various stakeholders from the academe, research institutes, local government units, and representatives from the different organizations from Luzon, Visayas and Mindanao. Formulated during the roundtable discussions by the four scientific clusters of NRCP were resolutions on the development of meritorious proposals on basic and fundamental research.

For a very long time, the field of the social sciences has been relegated to the background. And I am proud to say that through the effort of NRCP, the role played by the social sciences in nation building has become central to national development initiatives as evident in the NIBRA where it has been given equal weight and concern like the hard sciences.

To further enhance the topics for basic research agenda, we also organized the *Consultative Forum for National Integrated Basic Research Agenda* (NIBRA) on 7 November 2008 at the same venue. The results of the forum served as the blueprint of NRCP for basic research agenda which was submitted to Executive Secretary Eduardo R. Ermita's representative during the 75th NRCP Diamond Foundation Anniversary Celebration on 8 December 2008 at the historic Manila Hotel. We are more than satisfied for this very important contribution of the Council to achieving our national development goals.

Another significant accomplishment in 2008 was the strengthening of our scientific collaboration with international organizations. Prof. Mohd. Nordin Hassan, Director of the International Council for Science (ICSU) Regional Office for Asia and the Pacific, visited NRCP and met with the Governing Board on 19 September 2008. In that meeting, Dr. Jaime C. Montoya was invited to be a candidate for a seat in the ICSU Regional Committee for Asia and the Pacific. As approved by the ICSU Executive Board on 25 October 2008, Dr. Montoya, as Committee member, will attend the meetings of the Committee for 3 years starting January 2009 until December 2011; convening at least twice a year in various locations in Asia and the Pacific. One of the requirements for membership in this Committee is a strong background in scientific research and development. Dr. Montoya will play an active role in the development and implementation of the programs, projects, and activities of the ICSU Regional Office for Asia and the Pacific. This involvement in an international committee will surely add luster to the already brilliant record of NRCP.

Attendance and participation in international conferences is one of the programs covered by our international scientific collaboration. As NRCP Executive Director, I participated in the 29th ICSU General Assembly on 17-25 October 2008 in Maputo, Mozambique. And through the invitation of the Korea Research Foundation (KRF), I took part in a capacity building workshop on *Strengthening Peer Review System to Facilitate International Collaboration* on 3-5 November 2008 in Seoul, Korea where I presented a paper entitled *NRCP's Peer Review in Basic Research*. Mr. Salvador G. Tan, Research and Development Management Division Chief, was with me in this event. KRF shouldered our hotel accommodation and airfare while NRCP took care of the incidental expenses.

Looking forward, I would like to share that in 2010 NRCP will host the Science Council of Asia's 10th International Conference on the theme *Responding to Health Challenges in Asia Pacific Region: An Integrated and Multidisciplinary Approach in Science and Technology*.

The Conference will convene leading scientists from Japan, China, India, Indonesia, Korea, Malaysia, Mongolia, Philippines, Singapore, Thailand and Vietnam, including engineers, policymakers, and students from Asia. It will be another international conference to be hosted by NRCP; the first was the 5th Pacific Science Association Inter-Congress on 3-7 February 1985 in Manila.

As an advisory body, the NRCP has maintained its competent role in the review of and providing advice to legislative agenda such as Senate and House Bills that relate to science and technology concerns.

In terms of our scientific publications output, I can say that we have improved greatly as evidenced by the NRCP Research Journal featuring technical articles derived from major completed research projects benefiting the Filipino people. This achievement has, all the more, strengthened our S&T information dissemination. To date, a number of students, faculty members, and researchers from secondary and college levels regularly visit the NRCP library in search for the latest breakthroughs in basic research. For such inquiries, we have made readily available various information materials such as the NRCP brochures, in-house publications of results of completed research projects, among others which are given for free to our library clientele. As part of our revitalized information dissemination activities that help strengthen the visibility of the Council, we have conducted outreach projects by way of seminars on research capacity building and roundtable discussions on sustainable development in different parts of the country.

We are also proud that we have not only maintained but also improved funding of basic research projects as our primary mandate. For 2008, 26 ongoing research projects got the biggest slice from the NRCP GIA budget distributed among the following divisions: Governmental, Educational, and International Policies 3, Mathematical Sciences 1, Medical Sciences 1, Pharmaceutical Sciences 5, Biological Sciences 2, Agriculture and Forestry 4, Engineering and Industrial Research 2, Social Sciences 3, Physics 3, Chemical Sciences 1, Earth and Space Sciences 1. Likewise, 7 research projects comprised those completed from the following divisions: Biological Sciences 2, Engineering and Industrial Research 1, Social Sciences 2, Chemical Sciences 2. And in pursuing our mandate, we were able to receive financial grants from the Department of Science and Technology in support of the basic research proposals and other scientific activities.

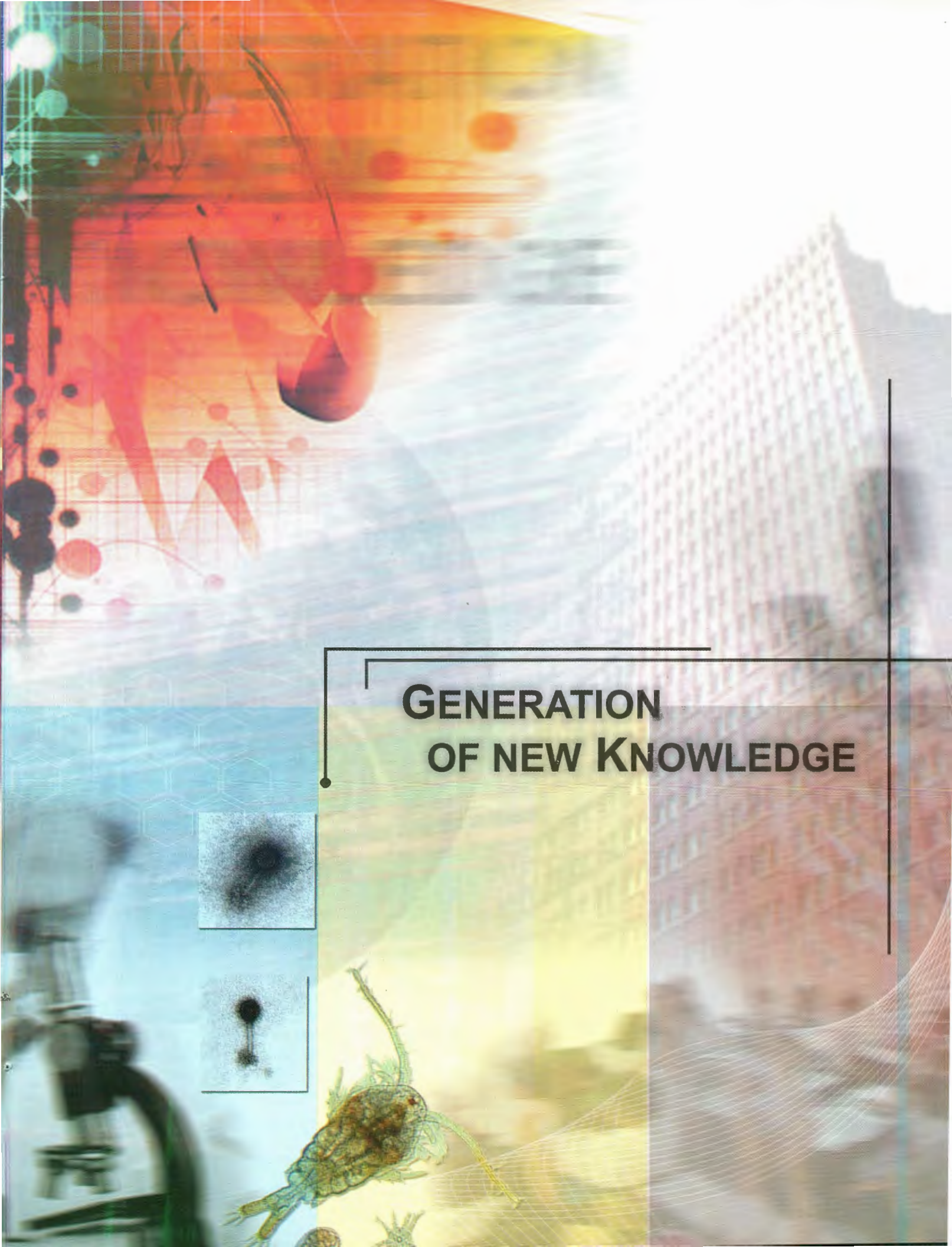
Development of research capability building among the young and budding researchers in the different regions of the country is an important annual funding concern of NRCP through our Master's thesis and doctoral dissertation grants. In 2008, there were 20 MS thesis grants classified under the following research priority areas: Biotechnology 4, Health Products and Technologies 1, Environmental Sciences 1, Agricultural Sciences 4, Biological Sciences 4, Social Sciences 6, Similarly, there were 15 Ph.D. dissertation grants classified under the following research priority areas: Health Products and Technologies 1, Environmental Sciences 2, Agricultural Sciences 7, Engineering and Technology 1, Social Sciences 4.

Let me say, that the past year may have been very diverse in terms of projects that were implemented and concerns that were addressed. But the year proved to be a challenge as we were able to transcend the boundaries of our 75th year. In the years ahead, I hope that the NRCP, a government body that represents a wide range of scientific disciplines, will aim higher as it continues to contribute solutions to global problems through basic research.

NAPOLEON P. HERNANDEZ, DPA
Executive Director

HIGHLIGHTS OF ACCOMPLISHMENTS

- NRCP provided grants for 33 R&D projects, 7 of which have been were completed and 26 are on-going. These projects falling under the 12 Divisions of the Council: Governmental, Educational and International Policies 3; Mathematical Sciences 1; Medical Sciences 1; Pharmaceutical Sciences 5; Biological Sciences 4; Agriculture and Forestry 4; Engineering and Industrial Research 3; Social Sciences 5; Physics 3; Chemical Sciences 3; Earth and Space Sciences
- The Council also provided funding assistance to 20 master and 15 doctoral students from different universities and colleges distributed in the following sectors Master's theses: Biotechnology 4; Health Products and Technologies 1; Environmental Sciences 1; Agricultural Sciences 4; Biological Sciences 4; Social Sciences 6; Doctoral dissertation Health Products and Technologies 1; Environmental Sciences 2; Agricultural Sciences 7; Engineering and Technology 1; Social Sciences 4.
- NRCP sponsored/co-sponsored 27 scientific cluster meetings, seminar-workshops, conferences and fora on different topics and disciplines; conducted 8 outreach symposia under the Outreach Program in collaboration with state and private colleges/universities.
- The Council, under its policy advisory services, submitted 16 bills, resolutions, and laws, of which 10 were adopted by stakeholders, maintained its membership in 6 international bodies (with or without annual dues) and was placed under Observer Category by 8 international organizations; it participated in 19 international/national conferences.
- The NRCP conferred Achievement Awards to 11 distinguished NRCP members, mounted 3 exhibits, namely: 8th ASEAN Science and Technology Week July 2008; UNESCO National Commission of the Philippines October 27, 2008, and 75th NRCP Founding Anniversary December 8, 2008. Fabrication of the 8th ASTW exhibit was funded by the Department of Science and Technology (DOST) through the sponsorship of the Technology Application and Promotion Institute (TAPI).
- The 75th NRCP General Membership Assembly Meeting focusing on the theme *Basic Research for National Development* held at the Manila Hotel on March 12, 2008 was highlighted by the keynote address of Honorable Senator Edgardo J. Angara, Chairman, Senate Committee on Science and Technology. Four papers were presented during the scientific sessions: *S&T Human Resource Capacity Building Efforts for Basic Research* by Dr. Ester B. Ogena, *Atmosphere, Climate and Environment* by Dr. Roland V. Sarmago, *An Integrated Approach to Drug Discovery and* Development by Dr. Irene M. Villaseñor, and *It's Not Just Another New Gene Sequence* by Dr. Cynthia T. Hedreyda.
- In line with the NRCP 75th Anniversary Celebration, the following activities were held: unveiling of the 75th NRCP Commemorative Stamps and Signing of the First Issue March 12, 2008, Manila Hotel; Opening/Viewing of the 75th Foundation Anniversary Exhibit and launching of the NRCP Research Journal Foundation Anniversary Issue December 8, 2008, Manila Hotel; Fellowship Night in celebration of NRCP 75th Founding Anniversary December 17, 2008, Traders Hotel, Manila.
- On Human Resource Development, a total of 19 training courses, seminars, workshops were attended by the staff members.



GENERATION OF NEW KNOWLEDGE

Completed Projects

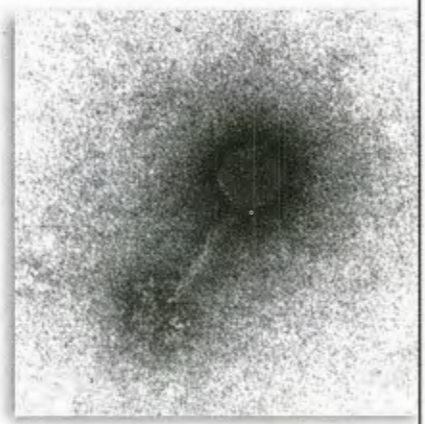
BIOLOGICAL SCIENCES

Isolation and Preliminary Characterization of Marine Bacteriophages Potentially Useful for Disease Control in Aquaculture

Dr. Arturo O. Luisma
Marine Science Institute
UP, Diliman, Quezon City

Occurrence of disease outbreaks in aquaculture systems remains a big problem in aquaculture industry. The general goal of this research project is to search for bioactive compounds that can be developed as disease control agents in aquaculture systems. The specific objective was to investigate the possibility of isolating bacteriophages and evaluating their utility in disease control. The approach used in this study involved collection of water and biological samples from various aquaculture facilities/sites and running of various assays to isolate phages from the samples. To isolate phages that are specific to known pathogens in aquaculture, the assays used *Vibrio harveyi* strains (obtained from SEAFDEC-AQD, Iloilo) that are pathogenic to *Peneaus monodon* as the screen; shrimp homogenates and marine and shrimp farm water samples were tested for the presence of bacteriophages against this screen.

After numerous attempts, using samples from various aquaculture sites, no bacteriophages were isolated from the samples. To determine whether the *Vibrio* strains were resistant against phage infection because of lysogens, experiments were conducted to investigate the potential presence of lysogens. Three methods for prophage induction UV irradiation, heat shock treatment, and mitomycin C treatment -- were tested. Of the three methods, only mitomycin C treatment resulted in the lysis of the *Vibrio harveyi* strains. Using transmission electron microscopy (TEM), phage head-like particles were detected in lysed cells of *Vibrio harveyi* # 204 after exposure to mytomycin C. The lysates from the *Vibrio* -induced cultures were also capable of inducing lysis of cultures of other pathogenic *Vibrio* strains and non-marine bacteria. Subsequent experiments revealed, however, that the lysis observed was not due to the bacteriophage or prophage activity but due to the residual mitomycin C in the culture supernatants. Dose-response curves were also determined for the *Vibrio* isolates; the responses to mitomycin C treatment were observed to vary among these isolates.



Although the primary objective of the Project was not completely achieved (i.e. isolation of phages) because of time constraints, the Project was able to generate important basic information that should be useful in designing further efforts to isolate pathogen-specific phages from marine samples.

Marine Bacteriophages

Subcellular Localization, Isolation, and Partial Purification of Mercury-Binding Phytochelatins in *Chromolaena odorata* (L.*f.*) R.M. King et H. Robinson

Dr. Gilda C. Rivero
Chancellor
University of the Philippines Mindanao

Chromolaena odorata (L.*f.*) R.M. King *et* H. Robinson plants were grown in Hoagland's solution modified with 1.00 ppm $Hg(NO_3)_2$. The results of the CV-AAS analyses for Hg^{2+} contents established the presence of Hg^{2+} in 3 out of 4 of the subcellular components obtained from the leaves of the Hg-treated *C. odorata* plants. ICP-AES analyses of the isolated protoplasts and vacuoles revealed that the ultimate localization of Hg^{2+} was in the vacuoles.

The Hg-binding, SH-containing biomolecules which were initially detected through DTNB assay manifested as a predominant peak in the RP-HPLC chromatographs of both the control and Hg-treated plants, with their retention times falling within the ranges of GSH, MT, and cysteine standards. However, the concentrations of the GSH- and/or MT-like, Cys-containing biomolecules detected in the leaves of Hg-treated *C. odorata* plants were a ten-fold higher than those detected in the control.

The findings of this study provided evidence that the enhanced production of Hg-binding biomolecules and the localization of Hg^{2+} ions are ultimately in the vacuoles of the leaves and that these are the mechanisms which bring about Hg^{2+} tolerance and homeostasis in *C. odorata* plants exposed to mercury. These results indicate that *C. odorata* is a hyperaccumulator and hence, a potentially effective phytoremediator for Hg^{2+} ions.

Chromolaena odorata

ENGINEERING AND INDUSTRIAL RESEARCH

Technical Viability Analysis of Coconut Methyl Ester (CME) Jatropha Oil Extract as an Alternative for 2-T Oil in an Unmodified 2-Stroke Gasoline Engine

Engr. Lot B. Ramirez
Mechanical Eng'g. Dept.
Integrated Research & Training Center
Technological University of the Philippines
Ayala Boulevard, Manila

The expected outcome of the research is to establish a technical viability analysis of using three Bio-2T formulations: a 15%-85% CME-SN 500 Blend, a 15%-85% JME-SN 500 Blend and a 20%-80% JME-SN 500 Blend as alternative lubricants in Two Stroke Engines.

From the very detailed data gathering and rigorous presentations utilizing both primary and secondary sources, and further complemented with a comprehensive analysis of all findings, the research team can rightly claim that a technical viability analysis of using three Bio-2T formulations: a 15%-85% CME-SN 500 Blend, a 15%-85% JME-SN 500 Blend and a 20%-80% 500 Blend as alternative lubricants in Two Stroke Engines has been established in this research.

Jatropha Oil Extract

In effect the research investigation found evidence that lent support to a positive response to two major questions: 1) *Do the Bio-2T Oil formulations have Physico-Chemical Characteristics that meet the Philippine Standards for lubricants appropriate for use in 2-stroke engines?* 2)*Can the Bio-2T Oils perform the lubrication functions of reduction of frictional effects (biz lubricity), contaminant containment (viz detergency) and heat removal?* All these "probe-analyze-find meaning" efforts and activities lead to a shaping of the technical viability analysis.

Methyl Ester (CME)

The technical viability analysis of using three Bio2T Oils as alternative lubricants in two stroke engines can be summed up into five generalized observations:

1. That the three Bio-2T formulations: a 15%-85% CME-2t Oil Blend, a 15%-85% JME-2t Oil Blend and a 20%-80% JME-2t Oil Blend have the potentials to be used as candidate lubricants in two stroke engines since they possess three important physico-chemical characteristics, which are kinetic viscosity, flash point and sulfur ash content that meet PNS standards for lubricants. This means these plant-based oils have the initial entry characteristics to start with to qualify as a candidate lubricant.

2. That the Lubricity Index of the three Bio2T formulations, 60 for 15%-85% CME-SN 500 Blend; 89 for a 15%-85% JME-SN 500 Blend and 91 for a 20%-80% JME-SN 500 Blend are less than 100 the Lubricity Index of that of a Jatre Reference Oil. This means that the lubricity function of the three Bio-2T Oils is inferior to that of a Jatre reference oil benchmark.

3. That of the three Bio2T Oils, the Jatropha-Based Oils, the 15%-85% JME-SN 500 and the 20%-80% JME-SN 500 had better lubricity function at 89 and 91 than that of a 15%-85% CME-SN 500 which is at 60. The JME-Based 2T Oils met (or almost met) the FA Grade Classification of Lubricants for 2-Stroke Engines which is 90.

4. That the three Bio2T Oils, a 15%-85% CME-SN 500, A 15%-85% JME-SN 500 and a 20%-80% JME-SN 500 have manifested very good performance in their detergency function in comparison with the performance of Jatre reference oil used as the benchmark lubricating oil. This was based on the piston ring sticking tendencies (deposits on piston ring, groove and lands) and inside engine cleanliness of piston and cylinder at the end of one hour operation and three hour operation. This means that these plant-based oils had better contaminant containment property compared to the Jatre reference oil as the benchmark.

5. That from among the three Bio2T Oils that Jatropha Based Oils, a 15%-85% JME-SN 500 and a 20%-80% JME-SN 500 did better in maintaining cleanliness of the piston cylinder inside parts than that of the 15%-85% CME-SN 500.

The above general observations will be very significant baseline data to further improve the Bio-2T formulations. Many other parameters can be considered: temperature, CME/JME concentration and mix design with 2T oil, use of plant based additives, and fuel-oil ratio. But one thing is sure for now, that plant based oils, Coconut Methyl Ester and Jatropha Methyl Ester are viable alternatives to petroleum based lubricants in two stroke engines

SOCIAL SCIENCES

Conflict Resolution: Philippine Style

Dr. Jasmin Acuna
College of Business Administration
UP Diliman, Quezon City

A thorough review of the literature about conflict resolution brought the researcher to take cognizance of the peace pact (bodong) practices in the Cordilleras. The Ifugao, Kalinga, Talaandig, Itneg, Tiruray, Maranao, and Mamanua practices were discussed and commonalities were identified. The formal peace pact puts special emphasis on the importance of the mediators of the peace process. And the peace process itself has been codified into five stages. The first stage is the peace overture, the sipat or warang. The second stage is the exchange of tokens or the allasiw. The third stage is the peace talks or the sildip, sunglip, singlip, hurchip or simsim. The fourth stage is the formalization and celebration. The terms of the bodong are formally laid down into a Pagta. Finally there is the Dolbat or Renewal and Galigad or Transfer.

Corporate Social Responsibility is a common concern of corporations that hold themselves accountable citizens of their community. The example of Phinma that started their Comrel project in the latter part of the Marcos years (1980s) where they created a zone of friendship around their company in Norsagaray proved to be a success. The company is proactively securing the safety of their plant, the community in creating learning opportunities for the families and their children, for the company executives and their families who learned to share the benefits of civilized life with their lowliest employee, bringing hope and faith to a troubled community.

There was one long lonely highway going to the cement plant at Norsagaray, but there was not a single holdup or ambush along this lonely road which the zone of friendship protected.

During the year that the research was on-going the farmers at Hacienda Luisita were again on strike. So I interviewed hacenderos in Bacolod in their implementation of the stock option provision of the CARP. They were not so troubled as the farmer beneficiaries in the North. From interviews I found out that the stock options at Hacienda Luisita were sold to the farmers which of course they could not pay because they were poor and living from hand to mouth. In Bacolod the owners gave the stocks to the farmer beneficiaries. They owned stocks in the corporation that was in one case still run by the owner and in another case run by a cooperative of farmers. Because the farmers did not own their stocks at Hacienda Luisita when the hacienda was commercialized the owners did not share the sale of the lots with their farmer beneficiaries. At Hacienda Luisita farmers lost their jobs through mechanization of the farm and therefore lost also their option to purchase stocks. The compassion of the owners in Bacolod is matched by the gratitude of the farmers. Peaceful relations are maintained to date. Justice has to be solved first before peace can be achieved. In this case the agreement when the land was bought through government loans was for the land to be sold at a reasonable price to the farmers after 10 years. That was in the 60s, 50 years ago. The farmers still do not have their land.

Towards July an MOA on the Ancestral Domain was reached by the peace panel a day before the SONA of President Arroyo. The local government officials were up in arms against the agreement while the MILF started their violent protest against the protests. The very constitutionality of the agreement was questioned. Finally the government chose to distance itself from the agreement. Trust in the negotiating body was not established. Hidden agenda was suspected. Consultation was not done for the agreement to be acceptable, and finally Malacanang had to distance itself from the agreement.

The Peace Values of Muslim Brothers and Sisters in Cagayan de Oro and Iligan Cities: A Comparative Study

Dr. Ma. Concepcion Q. Abaya
26 D. Lantana St
Cubao, Quezon City

The study is a descriptive, evaluative case study of how Muslims residing in Cagayan de Oro City and Iligan City and neighboring places perceive peace. Its specific objectives include: 1) To determine the various perspectives on peace as seen by Muslim respondents along seven aspects; 2) To identify the factors which help sustain or hinder peace mainly in Cagayan de Oro City and Iligan City. The conceptual framework of the study presents a wheel with seven spokes representing the aspects as means for achieving a vision to bring about peace and unity based on the Focolare, spirituality of unity.

Methodology used: Survey Questionnaire administered to 315 Muslim Maranao migrants in CDO and Opol; 355 Muslim residents in Iligan and Lanao del Norte. In-Depth Interviews of early settlers, Scholarly Researches on Respondents' history and culture and Participant Observation on special events like Eid'l Fitr 2007,2008 in Kauswagan, Lanao del Norte.

Findings showed the Muslim respondents in Cagayan de Oro and Iligan are attuned to the peace paradigm of the seven aspects in varying degrees accordingly to age, gender, educational status and working status and length of years in the community. There had been advantages for Muslim residents in CDO because of the absence of Muslim-Christian-conflict and its political, and socio-economic, integration in a rapidly urbanizing city in contrast to Iligan where Muslim residents had to contend with deep seated biases and prejudices between two cultures, ignited by unresolved issues of ancestral domain, military intervention and, above all, the historical traces of the Ilaga-Barracuda conflict.

CHEMICAL SCIENCES

Screening for New and Antimicrobial Compounds from Plants of the Family Compositae

Dr. Consolacion Y. Ragasa
Chemistry Department
De La Salle University, Manila

Blumea lacera

The first year of the project resulted in a publication in the *Journal of Natural Medicines*, an ISI listed journal published by Springer. *Blumea lacera* afforded three compounds that were reported for the first time from the plant.

The dichloromethane extract of the air-dried leaves of *Blumea lacera* (Asteraceae) afforded α-pinene-7β-O-β-D-2,6-diacetylglucopyranoside (**1**), 5,4'-dihydroxy-6,7,3'-trimethoxyflavone (**2**), and 3,5,4'-trihydroxy-6,7,3'-trimethoxyflavone (**3**). Compounds **1-3** showed moderate activity against *Candida albicans*, low activity against *Trichophyton mentagrophytes*, and *inactive against Aspergillus niger*. Compounds **1** and **3** indicated low activity against *Escherichia coli*, *Pseudomonas aeruginosa*, and *Staphylococcus aureus* and inactive against *Bacillus subtilis*, while **2** was inactive against the four bacteria tested.

A second paper was written on *Taraxacum officinale*. The dichloromethane extract of the leaves of *Taraxacum officinale* afforded a mixture of taraxasteryl acetate and lupeol acetate (**1-2**), another mixture of taraxinic acid and 11,13-dihydrotaraxinic acid (**3-4**), phytyl fatty ester and squalene. Compounds **1**, **2**, phytyl fatty ester and squalene were identified by comparison of their NMR spectral data with those found in the literature, while the structures of **3** and **4** were elucidated by extensive 1D and 2D NMR spectroscopy. The mixture of **1** and **2** indicated low activities against the bacteria: *E. coli*, *S. aureus*, *P. aeruginosa* and fungi: *C. albicans* and *T. mentagrophytes*. It was inactive against *B. subtilis* and *A. niger*.

The second year of the project resulted into another publication in the *Journal of Natural Medicines* on *Artemisia vulgaris* which afforded a new compound.

The dichloromethane extract of the air-dried leaves of *Artemisia vulgaris* afforded a new sesquiterpene 1, caryophyllene oxide, phytyl fatty esters, squalene, stigmasterol and sitosterol. The structure of 1 was elucidated by extensive one- and two-dimensional nuclear magnetic resonance spectroscopy.

Ragasa CY, de Jesus J, Apuada MJ, Rideout JA. (2008). A New Sesquiterpene from *Artemisia vulgaris*. *Journal of Natural Medicines*. 62, 461-463.

A fourth manuscript entitled, **"New Carvotanacetone Derivatives from *Sphaeranthus africanus*"** was written and will soon be submitted for publication after antimicrobial test results are obtained.

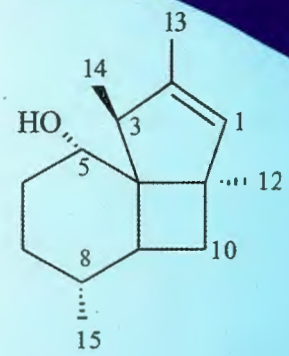
The dichloromethane extract of the air-dried leaves of *Sphaeranthus africanus* afforded four new carvotanacetone derivatives (**1-3b**). Their structures were elucidated by extensive 1D and 2D NMR spectroscopy.

A fifth paper is being written on *Elephantopus mollis* which afforded six compounds.

Elephantopus mollis afforded six compounds as follows. Three sesquiterpene lactones, namely, molephantin (**1**), molephantinin (**2**), and 2-deoxy-2-hydroxyphantomolin (**3**); two triterpenes, lupeol fatty acid ester and *a*-amyrin fatty acid ester; and a sterol, stigmasterol have been identified by extensive 1D and 2D NMR spectroscopy. Compounds **1**, **2**, and **3** exhibited moderate antifungal activity against *C. albicans,* low antibacterial activity against *E. coli* and *P. aeruginosa* and low antifungal activity against *T. mentagrophytes.* They are inactive against *A. niger.* Compound **1** has low antibacterial activity against *S. aureus* and was inactive against *B. subtilis.* Compound **2** has low activity against *B. subtilis,* and *S. aureus*, while **3** has low activity against *B. subtilis* and inactive against *S. Aureus.*

A sixth paper is being written on *Erigeron sumatrensis* which afforded four compounds. The dichloromethane extract of the air-dried leaves of *E. sumatrensis* afforded farnesene 1, nephytadiene 2, spinasterol 3 and spathulenol 4. Compound 1 indicated moderate antifungal activity against *C. albicans* and low activity against *E. coli, P. aeruginosa,* and *T. mentagrophytes.* It was inactive against *S. aureus, B. subtilis*, and *A. niger. Compound* 2 exhibited moderate antifungal activity against *C. albicans* and *A. niger*, and low activity against *T. mentagrophytes.* It gave low antibacterial activity against *E. coli* and *P. aeruginosa* and was found inactive against *S. aureus* and *B.subtilis.* Compounds 3 and 4 exhibited low activity against *E. coli, P. aeruginosa, S. aureus, C. albicans, and T. mentagrophytes.* They were inactive against *B. subtilis* and *A. niger.*

The dichloromethane extract of the air-dried leaves of *Chromolaena odorata* afforded 5,6,7,4'-tetramethoxyflavone (**1**) and 4'-hydroxy-5,6,7-trimethoxyflavanone (**2**). Antimicrobial tests on **1** indicated low antimicrobial activity against *E. coli, P. aeruginosa, S. aureus, C. albicans, and T. mentagrophytes.* It was inactive against *B. subtilis* and *A. niger. Gynura procumbens* afforded lutein, squalene, phytyl fatty ester, chlorophyllide a, stigmasterol and sitosterol.



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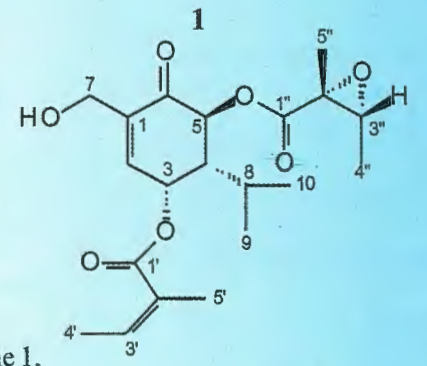

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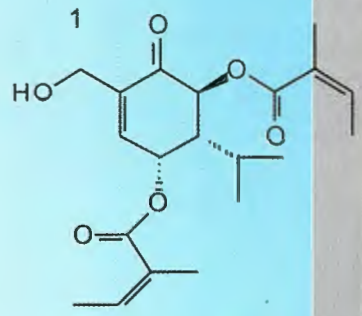

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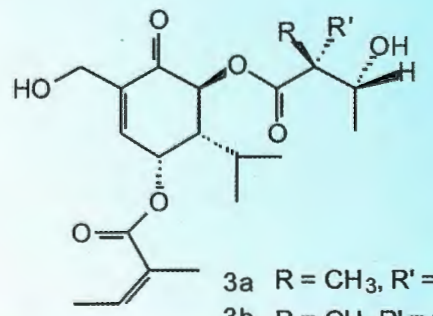


3a R = CH_3, R' = OH

3b R = OH, R' = CH_3

Structure Elucidation of an Antimutagenic and Anti-Inflammatory Constituents from *Casia alata* Linn. Leaves

Dr. Irene Villaseñor
Inst. of Chemistry
UP, Diliman, Quezon City

Kaempferol was isolated as an anti-inflammatory constituent from the leaves of *Cassia alata* Linn. Results of carrageenan-induced paw edema assay showed that the isolated kaempferol, when orally administered as a triturate mixture, exhibited 70.97% anti-inflammatory activity at a dosage of 50 mg / kg mouse. Kruskal Wallis Analysis of Variance by Ranks showed that, at $\alpha = 0.024$, the variances of indomethacin and kaempferol differed significantly from the solvent control. This was also tested using One Way Analysis of Variance and their variances are significantly different at $\alpha = 0.002$.

Casia alata

GENERATION OF NEW KNOWLEDGE AND TECHNOLOGIES

On-going projects:

GOVERNMENTAL, EDUCATIONAL AND INTERNATIONAL POLICIES

Development and Validation of an English Vocabulary Program for Basic Education

Dr. Remedios Ralleta Navarro
University of Northern Philippines
Vigan, Ilocos Sur

This study endeavored to look into the vocabulary levels of grade six pupils of the University of Northern Philippines Laboratory School, Vigan, Ilocos Sur for the school year 2007-2008. It involved the 43 grade six pupils, 28 boys and 15 girls. The Research & Development (R&D) method was used.

The result of the English Vocabulary Level Test (Pretest) showed that the 43 grade six pupils got FAIR in the 2,000 Word Level, FAIR in the 3,000 Word Level, and POOR in the 5,000 Word Level. This means that the grade six pupils need help in all the word levels. Hence, the researchers developed a research-based English vocabulary program. In the vocabulary program, there are four lessons. Lesson 1-3 have 50 words each 25 words from the General Service List and 25 words from the Meriam-Webster's Concise Dictionary of English Usage. Lesson 4 contains 50 affixes commonly occurring in basic education texts.

The vocabulary program and the achievement test were evaluated by 12 teachers of English and two school principals who are also specialists in the English language. Both the English vocabulary program and the English vocabulary achievement test were rated Very Valid.

The structure/content of the English Vocabulary Program for Basic Education is made up of : type of vocabulary, title/word level, objective, content, learning strategy, time frame, evaluation technique, and success indicator.

The Encouragement of Critical Thinking in Sibika at Kultura Among Grades I and 2 Pupils

Dr. Dolores G. Garcia
31 Road 8, GSIS Hills
Talipapa, Novaliches

One of the aims of education prescribed in the 1987 Constitution of the Philippines is for all schools in the country to encourage critical thinking among all students. This is echoed in the Governance of Basic Education Act of 2001 which states that one of "the goals of basic education is to develop the Filipino learners by providing them basic competencies...in critical thinking".

Although the innate gift of cognition allows humans to tirelessly explore life's problems and to passionately seek solutions to life's difficulties, the world presents a kaleidoscope of perplexing challenges through a depository of knowledge which doubles every five years and is projected to double every 73 days by the year 2020. This is compounded by the finding that human thinking suffers from many limitations. These include the failure to consider relevant information, dependence on stereotypes and personal experience, hasty conclusions, resistance to conflicting facts, and difficulty in reasoning according to the rules of logic (Leahey and Jackson, 1997 p. 224 citing a study by Kahneman and Tversky, 1973).

Confronted with these twin realities, how are our young pupils being prepared for living through the encouragement of critical thinking among them? The study seeks answers to how, how much and why, and will recommend what can possibly be done.

For a period of three days each, 18 Grades 1 classes and 18 Grade 2 classes in Civics and Culture were observed in six schools of three school divisions in Metro Manila for a total of 36 classes in 18 schools. The notes from these class observations together with the grades 1 and 2 books in Makabayan are being analyzed employing an equivalency table between the cognitive processes in the information-processing approach and Anderson's (2001) categories and cognitive processes in the cognitive process dimension. This table was developed by the present investigator.

Preliminary results show a predominance of emphasis on recognizing and recalling at the elementary cognitive level followed by understanding which falls under memory strategies, also at the elementary cognitive level.

Policy Study on the Age of Retirement of Government Employees

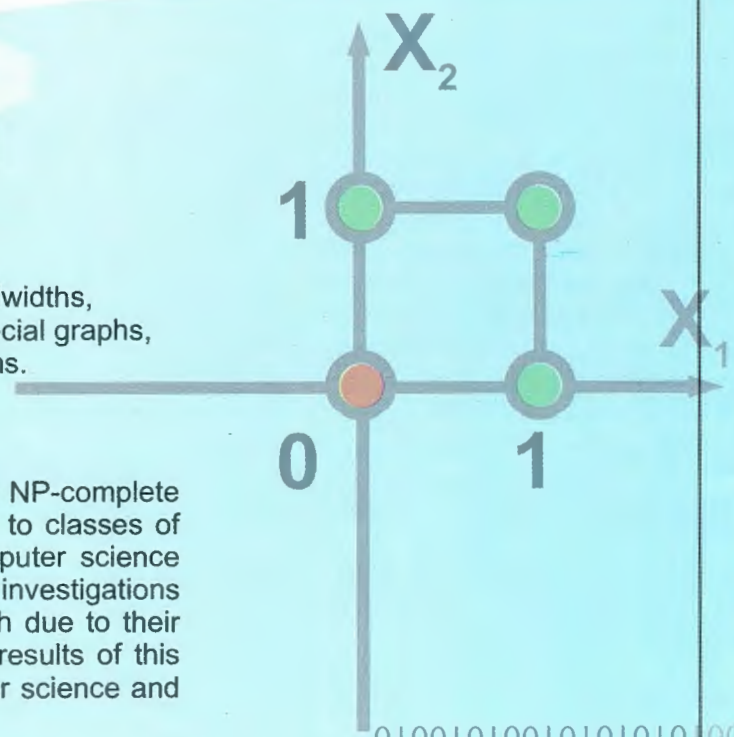
Dr. Marites G. Yee
Inst. of Human Nutrition and Food
UPLB, College, Laguna

Touch-base with the different cooperating agencies regarding this project. Also, literature searching in the internet and in the different libraries was conducted. Formulation of questionnaire and pre-testing of the formulated questionnaire were conducted. Data gathering is still being undertaken.

MATHEMATICAL SCIENCES

A Study on the Self-Amalgamation of Certain Graphs: Focus on Bandwidth, Stability Number, Self-Amalgamation Number, and Other Graph Properties

Dr. Thelma C.M. Galliguez
Dept. of Mathematics
Northern Mindanao State University of Science and Technology (NORMISIST)
Ampayaon, Butuan City



Objectives:

To study n-amalgamation of graphs with a focus on bandwidths, stability numbers and self-amalgamation numbers of special graphs, as well as other properties of self-amalgamation of graphs.

Significance:

Computing the bandwidths of graphs in general is an NP-complete problem. Thus, most research in this area is restricted to classes of graphs. Applications of bandwidth have arisen in computer science involving scheduling and simulation problems. In general, investigations in graph theory and combinatorials are gaining strength due to their implications to algorithms and computer science. The results of this research will be useful to other researchers in computer science and other applied fields.

Accomplishments:

- A survey of published articles and results, including both undergraduate and graduate theses results that are relevant to the research study was made.
- Established results on amalgamation of paths, cycles and fans were presented in a research colloquium held at the Dept. of Mathematics, NORMISIST, Butuan City in October 2008.
- Research direction to date is towards the investigation of the amalgamation numbers $a(W_m, F_n)$ when wheels Wm are amalgamated with fans F_n, where $m \geq 3$ and $n \geq 2$. Using the notation $W_m = K_1 + C_m$ and $F_n = K_1 + P_m$ wherein the following results on $a(W_m, F_n)$ were obtained:

a. established $a(W_m, F_n)$ for $3 \leq m \leq 8$ and any $n \geq 2$
b. if $m \geq 5$ and $n \geq m + 2$, then $a(W_m, F_n) = m + 1$.
c. If $n \geq 2m + 1$, then $a(W_m, F_n) \leq m + 1$.
Result (c) is motivated by results on $a(W_m, F_n)$ when $m + 3,4$.

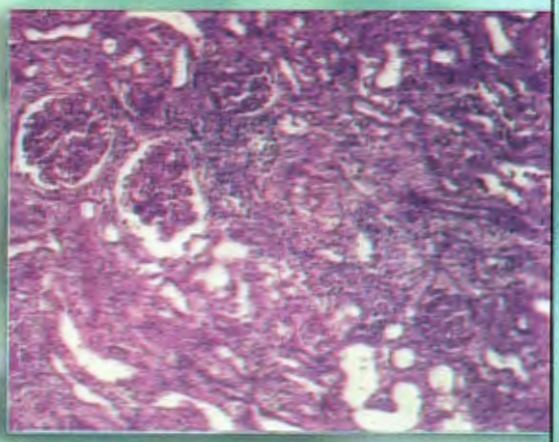
MEDICAL SCIENCES

Correlation of Pre-Transplant and Post Transplants HLA Allosensitization with Graft Rejection in Renal Transplants

Dr. Florecita R. Padua
National Kidney Institute
Quezon City

Nine (9) patients were recruited for the study. Initial PRA (Panel Reactive Antibody) assay was done for each patient, which will be subsequently performed every month up to six months. With the data at hand no correlation data can be derived yet. Overall, 22.7% of the targeted number of subjects were collected by the proponent.

As of the second quarter of the study ten new subjects were recruited. Monthly PRA monitoring were completed in 5 of the recruits who joined the study in the first month of the first quarter. The researchers proceeded with the monthly monitoring of the rest of the recruits as they went on and recruited additional subjects. Three of the patients went into graft rejection. Only one, however, is biopsy proven. There was no observed correlation with HLA antibody levels so far.



Renal Tissue

Kidney Transplantation Chronic Graft Rejection (Bristol Biomedical)

PHARMACEUTICAL SCIENCES

Study on the Antibiotic Potential of Extracted Bioactive Substances from *Caesalpinia sappan* Linn

Dr. Claro M. Santiago
Industrial Technology Development Institute
Bicutan, Taguig, Taguig City

For the 1st quarter, barks and leaves of *Caesalpinia sappan* were gathered from Bantay, Ilocos Sur. The materials were dried, powdered and extracted separately. Three grams each of the powdered bark and leaves were defatted with hexane. The residue was then extracted with three solvent systems following the protocol in "A Guidebook to Plant Screening: Phytochemical and Biological". The possible plant constituents in Solution A, with a mixture of chloroform and acetic acid as extracting solvents, are: anthraquinones, phenols, flavonoids, steroids, coumarins, in Solution B, with chloroform, methanol and acetic acid as extracting solvents, are: flavonoid glycosides, cardenolides, anthraquinones glycosides, tannins, saponins, coumarins, indoles, and in Solution C, with methanol and water as extracting solvents, are: flavonoid glycosides, anthraquinones glycosides, cardenolides, saponins indoles, sugars, and higher alcohols. The six different extracts from bark and leaves were spotted on TLC plates to determine the presence of anthraquinones, phenols, flavonoids, steroids, and coumarins. Leaves extracted with mixture of chloroform and acetic acid showed one spot using toluene-chloroform and two spots using toluene-acetone-chloroform. Constituents of the powdered bark were not extracted using the mixture of chloroform and acetic acid.

Caesalpinia sappan Linn

For the 2nd quarter, further extraction of the freshly dried bark and leaves of *Caesalpinia sappan* was done. From the extract, solutions A, B and C were obtained and were subjected to thin layer chromatography using chloroform/methanol (5:1) as developing solvent. Spots were visualized by exposing to iodine vapor. Solution A of the leaves showed one spot with Rf value of 0.679, while Solutions B & C of the bark showed Rf values of 0.61 and 0.57 respectively. Antimicrobial assay of the extracts were also done against *Bacillus subtilis*, *Bacillus cereus*, *Escherichia coli*, *Staphylococcus aureus*, *Fusarium moniliforme* and *Aspergillus oryzae*. Positive results were exhibited by both extracts from leaves and bark. Further confirmatory tests will be done.

For the 3rd quarter, further extraction of fresh sample was done to get adequate extracts for the different tests to be conducted, Antimicrobial tests of the extracts against *B. subtilis, B. cereus, E. coli S. Aureus, F. monoliforme and A. oryzae* were also done to confirm the positive activity.

For the last quarter, the extracts from the bark and leaves were subjected to thin layer chromatography (TLC). Three different solvent mixtures were employed as developing solvents, and visualization of spots was done using iodine vapors. The TLC results did not yield a significant resolution factor in the study. Microbiological assay was done on the extracts using Gram-positive organism, *Bacillus cereus* and *Bacillus subtilis*. Both extracts have smaller zones of inhibition which can be attributed to a lower concentration of the sample. Visual inspection showed that the extract from the leaves have a slightly bigger zone of inhibition. *Staphyllococcus aureus* was more sensitive to the leaves extract than the bark. The clearing zone exhibited against *E. coli* and the fungal species were quite small. It showed that the bioactive component of the bark and leaves has antimicrobial properties against all the test organisms.

Screening of Indigenous Herbal Plant Extracts for Antibacterial Activity

Ms. Betty Bantiyan
Ifugao State College of Agriculture and Forestry
Nayon, Lamut, Ifugao

Extraction of fourteen (14) herbal plants were done. The extracts were brought to St. Louis University Natural Science Research Unit, Baguio City for bioassay. The agar cup method was used. Of the fourteen (14) extracts, six (6) showed positive results, as follows: betadine, wild haguyopyop or wild plant, lanuy, balangbang, hagimit, and biganai.

For the 2nd quarter, the proponent worked on another set of plants (thirteen plants). She's currently working on their scientific names, the family to where the plant belongs, their local names and their morphological description. She's also looking at the characteristics of the test organism, *E. coli*. She is likewise researching for additional literature needed by the project. She's planning to bring more plant extracts at the Benguet State University for bioassay.

In the 3rd quarter, extracts of various plants were screened for antibacterial activity against *E. Coli*. Six plants showed positive results, namely: *Medenilla magnifolia*, *Antidesma bunius*, Hagimit, *Lactuca indica*, Betadine and *Desmodium heterocarpum*. The other extracts did not show positive results.

Indigenous Herbal Plant

Validation and In vitro Conservation of Selected Medicinal Plants in the Philippines

Dr. Lourdes B. Cardenas
Inst. of Biological Sciences
UPLB, College, Laguna

Ten previously documented potential medicinal plants in Mount Pulag, Benguet, were collected for the detection and extraction of their active constituents. These plants are the local representatives of established medicinal plants in some developed countries. Almost all of these local plant species are not used as traditional medicine in our country. The established medicinal plants, thus, served as leads in targeting the active constituents in the local plant species. Thin layer chromatography and solvent extraction of targeted constituents were performed to validate the medicinal potential of these plants.

Berberis barandana yielded the alkaloid berberine in substantial amount. The three ecotypes of *Hypericum pulogense*, on the other hand, did not contain the anti-depressant hypericin. *Solidago virgaurea* exhibited a richness of flavonoids, in particular rutin, and it is comparable to its European counterpart. Both *Plantago major* and *Euphrasia borneensis* proved rich in iridoid glycosides which is the valued therapeutic group of constituents in these genera. *Equisetum ramosissimum*, commercially sold in Baguio as a diuretic, showed a flavonoid profile different from the *E. arvense* of commerce. One of the two *Gaulteria* species encountered, *G cumingiana*, contained essential oil components similar to *G. procumbens* which was the source of oil of wintergreen. *Lobelia*, *Gentiana* and *Taxus* required greater amount of biomass than what was available for their analyses and will still be studied. Initial attempts on *in vitro* conservation of selected species is being pursued.

Resource Survey, Inventory and Phytochemical Screening of *Taxus sumatrana* (Mlq.) de Laub

Dr. Eustaquio G. Aragones, Jr.
FPRDI, College, Laguna

The study aims to: conduct resource survey, inventory and phytochemical screening of *Taxus sumatrana* (Miq.) de Laub.. The specific objectives of the study are to: discover specific areas, region and provinces where the species occur; determine the species density and aggregate volume that can be source of specimens; and conduct phytochemical screening of alkaloids, saponins, flavonoids, tannins, and anthraquinones from the different plant parts, viz., leaf, root, bark, twig, fruit of *Taxus sumatrana* (Miq.) de Laub..

Taxus sumatrana is important to be surveyed and inventoried to determine availability and volume of its present stand that will sustain further chemical investigations. At present, isolation and characterization of its active principles including study on the chemical analysis of various plant parts, viz., leaf (needles), bark, twigs, fruit, etc., will pave the way to formulation of drugs or cures for cancer in a similar way the Americans and Canadians did.

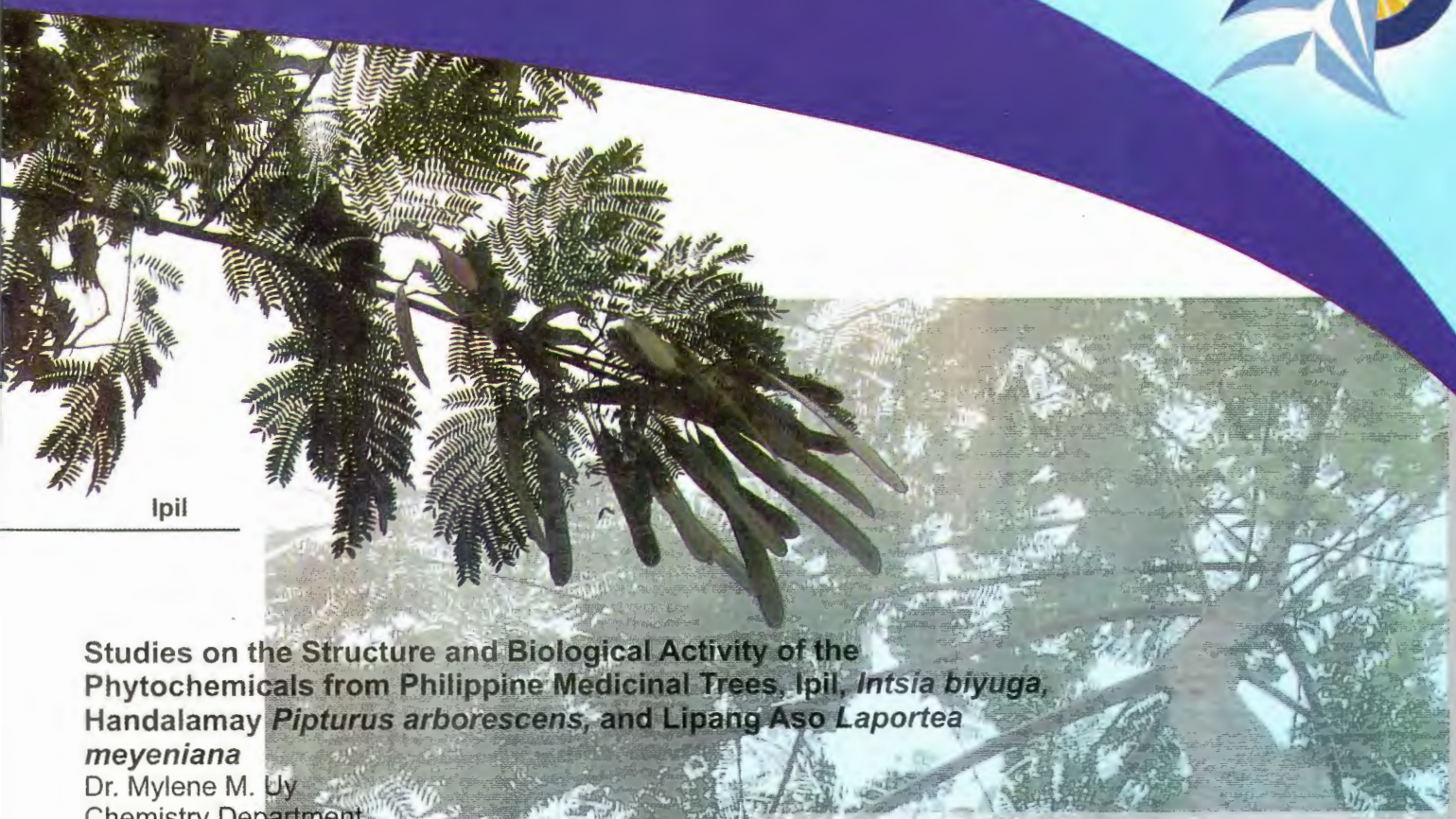
Knowledge of the species ecology by way of field study of the trees in its natural habitat will give added information on flowering and fruiting including seedling development and natural regeneration that can lead to possible introduction to forest plantation.

The study is expected to come up with an inventory of the plant's occurrence in other places other than its natural places of occurrence and a knowledge on its chemical composition, that will pave the way to the formulation of drugs or cures for cancer.

For the 1st quarter, resource survey and inventory activity had been successfully undertaken at Dolores, Quezon side of Mt. Banahaw. Species density (number) and tree volume had been tallied based on five (5) sample plots each measuring a hectare (100mX100m inventory plot). Collection of samples for phytochemical screening has not yet been done since permit to do so has yet to be released. With the expected release of the permit in the second quarter, target activities will be done as scheduled. Accomplishment for the 1st quarter is 15% of the 25% target set.

In the second quarter, resource survey and inventory of the subject species was carried out at Lucban, Quezon side of Mt. Banahaw where the species grows naturally in mossy forests and high altitudes of the given mountain (above 1000 m elevation above the sea level). Five (5) sample plots measuring 1 hectare each were tallied accounting for density (number of individuals), tree volume of and relative size (height and diameter) of *Taxus sumatrana* occurring on each plot.

Bark and leafy twig samples for chemical screening have not yet been collected. PAMB-DENR to this time has not permitted the research team to gather the needed samples. The research leader is still negotiating with PAMB authorities for collection of bark specimens which hopefully will be granted in the third quarter of the project implementation.



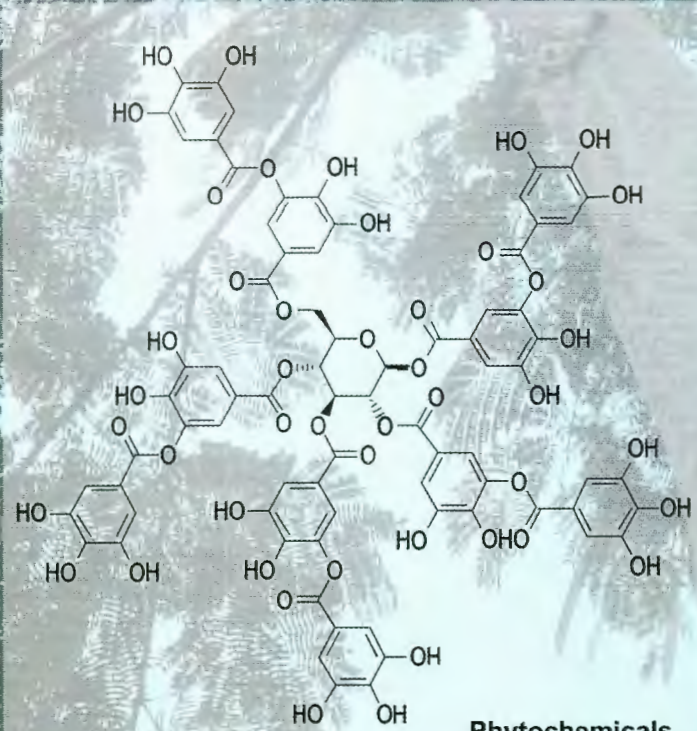
Ipil

Studies on the Structure and Biological Activity of the Phytochemicals from Philippine Medicinal Trees, Ipil, *Intsia biyuga*, Handalamay *Pipturus arborescens*, and Lipang Aso *Laportea meyeniana*

Dr. Mylene M. Uy
Chemistry Department
MSU-IT, Iligan City

The study aims to: isolate and purify the phytochemical components from the chloroform extracts of the various medicinal trees; subject the purified components to cytotoxicity and antimicrobial assays; and elucidate the structure of the purified components.

Results of the study will benefit the common people most especially those living in the remote, rural areas where access to medicine is difficult or hampered. This will eventually contribute to the rational and sustained exploration and conservation of the gene pool of the particular medicinal trees for the benefit of the people. Once this is realized, the people with the support of the local government units will be given the impetus to commercially market these medicinal plants as herbal medicines for their economic benefit.



Phytochemicals

Lipang Aso

The project is expected to validate the traditional uses of these medicinal plants.

For the 1st quarter, samples of the medicinal trees were collected, prepared and extracted. Initial bioactivity tests (cytotoxicity and antimicrobial) have been conducted. Results showed that both "Handalamay" and "Ipil" have a decreasing degree of toxicity when the original ethanolic extract were sequentially partitioned with chloroform, hexane and methanol. "Lipang Aso" had a very high bioactivity, even at a lower dose. When the crude ethanolic extracts of "Lipang Aso" was further partitioned into different extracts namely: hexane extract, chloroform extract and aqueous extract, the chloroform extract showed the highest bioactivity at 1000 and 500 ppm doses followed by hexane and aqueous extracts. But at lower dosage, 100 and 20 ppm, the most active was the hexane extract, with chloroform and aqueous extracts exhibiting almost similar degree of activities. As for the antimicrobial activity, the crude ethanolic extract of "Lipang Aso" showed the highest activity, followed by "Handalamay" and "Ipil". But with the chloroform extract, "Ipil" showed the highest, followed by "Handalamay" and "Lipang Aso".

Handalamay

Based on the initial bioassay and antimicrobial results conducted during the first quarter, the chloroform extracts of "Handalamay", "Lipang Aso" and "Ipil" were subjected to initial fractionation.

A. Initial Fractionation of the Crude Chloroform Extract of *Pipturus arborescens* ("Handalamay")

The crude chloroform extract (denoted as **PAC**, 1.18 g) was fractionated by silica gravity column chromatography employing 0-100% hexane-dichloromethane and 0-100% dichloromethane-methanol mixtures as solvent systems. The resulting eluates were monitored by silica thin-layer chromatography, visualized under ultraviolet lamp and placed under iodine vapors. Eluates which showed similar tlc profiles were pooled together, concentrated under *vacuo* and weighed.

The weights and tlc profiles of the different fractions obtained are shown in Table 1.

Table 1. Weights and Tlc Profiles of "Handalamay" Chloroform Extract fractions **PAC1-PAC7**

Fraction	Weight, mg	TLC profile (No, of spots)
PAC 1	135.7	5
PAC 2	319.3	3
PAC 3	69.7	6
PAC 4	382.1	5
PAC 5	56.7	2
PAC 6	70.6	4
PAC 7	27.2	4

Based on their considerable weights and tlc profiles, four fractions (**PAC1, PAC2**, **PAC4** and **PAC5**) are presently being tested for cytotoxicity against brine shrimp in order to determine the fraction(s) to undergo purification. Also, the number of components present in the selected fractions will be checked by normal- and reversed-phase high performance liquid chromatography.

B. Initial Fractionation of the Crude Chloroform Extract of *Laportea meyeniana* ("Lipang Aso")

The initial fractionation of the crude chloroform extract (denoted as LAC) was done by gravity column chromatography with silica gel as adsorbent. The solvent systems used were gradient mixtures of hexane-dichloromethane (0-100%) and dichloromethane-methanol (0-100%). Thin-layer chromatography was employed to monitor the eluates. Eluates with similar tlc profiles were pooled together, concentrated under *vacuo* and weighed.

Table 2 shows the weights and tlc profiles of the fractions obtained.

Table 2. Weights and Tlc Profiles of "Lipang Aso" Chloroform Extract fractions **LMC1 - LMC16**

Fraction	Weight, mg	TLC profile (No, of spots)
LMC 1	22.7	1
LMC 2	10.3	1
LMC 3	14.3	1
LMC 4	42.3	4
LMC 5	9.2	4
LMC 6	106.5	6
LMC 7	20.1	4
LMC 8	24.5	4
LMC 9	335.6	6
LMC 10	255.4	2
LMC 11	260.7	4
LMC 12	43.8	2
LMC 13	35.4	3
LMC 14	50.8	3
LMC 15	25.8	2
LMC 16	18.4	3

Fractions **LMC1- LMC3**, each possessing only one tlc spot, will be subjected to normal- and reversed phase high-performance column chromatography to determine their purity. Fractions **LM6** and **LMC9-11**, which have considerable weights and number of tlc spots, are currently subjected to cytotoxicity tests against brine shrimp to determine which fractions will undergo further purification. Their tlc profiles will also be checked by high performance liquid chromatography.

C. Crude Chloroform Extract of *Intsia bijuga* ("Ipil")

Initial fractionation of the chloroform extract (denoted as **IBC**) was carried out by gravity column chromatography using silica gel as adsorbent. The solvent systems employed were gradient mixtures of hexane-chloroform (0-100%) and chloroform-methanol (0-100%). The eluates which were monitored by thin-layer chromatography on silica pre-coated plates, are currently being

BIOLOGICAL SCIENCES

Biodiversity of Soil Arthropods in Selected Pre-and Post-Land Conversion Ecosystems and Their Role in Maintaining Soil Fertility

Dr. Ireneo L. Lit
Museum of Natural History
UPLB, College, Laguna

- Information on the impact of LAND CONVERSION to SOIL ARTHROPOD BIODIVERSITY and its effect on maintaining SOIL FERTILITY (ecological balance).

- Identified groups of soil litter arthropods as BIOLOGICAL INDICATORS for ENVIRONMENTAL MONITORING ACTIVITIES in connection with and conversion projects.

Reproductive Biology of the Turrid Gemmula speciosa (Reeve. 1843): Reproductive Anatomy and Gonadal Development

Dr. Suzanne Mingoa Licuanan
Marine Science Institute
UP, Diliman, Quezon City

The research study aims to conduct studies on the reproductive biology of *Gemmula speciosa*. The information generated shall serve as baseline data for culture studies in the future. By cultivating turrids, specimens may be made available for research purposes, especially in the field of pharmacology, where specimens are often sacrificed to study specific bioactive compounds. Access to cultured specimens may accelerate the generation of such knowledge with minimal negative impact on the natural resource.

AGRICULTURE AND FORESTRY

Propagation Techniques in Endangered Sablot *Litsae glutinosa* Lour. Rob

Dr. Alfredo R. Rabena
University of Northern Philippines
Vigan City, Ilocos Sur

Sablot, scientifically known as *Litsae glutinosa* has been reportedly decreasing in the province of Ilocos Sur despite its significant role in the conservation and preservation of old houses in Vigan City. Parts of the tree are used as firewood. The increasing demand in the use of the tree requires an increase in the number of standing trees available, thus preventing it from becoming endangered, or at extreme, extinct. Moreover, producing more sablot trees will be a good starting point to bring back the use of the plastering substance in building houses, roads, and pavements making them last longer.

The research focused on the ways and means to propagate seedlings of sablot since it is already considered an endangered species in the locality. Techniques used were seed propagation, stem cutting (young and matured), transplanting from natural regenerants, and marcotting. These are some of the techniques used and at the end, it is important to select a propagation method that is appropriate for the propagation of sablot.

Litsae glutinosa

Sorption Characteristics of Bamboo Rattan and Vines in the Philippines

Dr. Marina G. Alipon
FPRDI, College, Laguna

Ratan

Sorption of water vapor by wood is one of the most important physical properties as it also affects other materials (when used in combination) especially in most processing treatments. Understanding the sorption characteristics of bamboo, rattan, and vines found in the Philippines could aid the wood workers in dealing with moisture and shrinkage.

Vines

Fabrication of sorption set-up has been completed. Collection and preparation of samples including monitoring of sample's weight from 5 bamboo species: kauayan tinik, giant bamboo, bolo, buho, and kauayan killing; rattan: palasan, and 3 species of vines: (*Cayratia japotica, Ficus sp. and Thumbergia sp.)* at green condition, room condition and 12% moisture content have been done.

Bamboo

Propagation and Nursery Management of Selected Flowering Trees Suitable for Urban Landscapes

Dr. Fernando Sanchez
Dept. of Horticulture
College of Agriculture, UPLB

The response of the seeds of flowering tree species namely African tulip. Palawan cherry, Native and Dwarf banaba and Golden shower to pre-sowing treatments was determined. Seeds of African tulip were more responsive to pre-sowing treatments than the other flowering tree species having the most number of germinated seed in all the treatments tested.

More seeds were germinated in Golden Shower, native Banaba and African Tulip when pre-soaked in distilled water for 24 hours prior to sowing. Clipping the seeds of Palawan Cherry due to its hard seed coat and subjecting the seeds of Dwarf Banaba to cold treatment seemed favorable for germination.

The response of flowering tree species tip cuttings to various concentrations of indolebutyric acid (IBA) was determined. Rooting of African tulip, Palosanto and Yellow Antosoan tip cutting is enhanced with IBA treatment. Treatment of IBA at 200ppm is more effective in promoting rooting of African Tulip and Palosanto cuttings while Yellow Antsoan, rooting is promoted at 100ppm IBA. These three species also produce longer roots with 100ppm IBA.

Development of Information System on Lesser-Known Indigenous Plant Species Used in Organic Farming, Sustainable Farming Systems, Community Health Care and Food Supplements in the Cordillera, Northern Luzon

Dr. Damasa M. Macandog
Institute of Biological Sciences
UPLB, College, Laguna

Information system can be used in the organization and management of information on indigenous knowledge of upland communities in the Cordilleras of Northern Luzon. It will focus on the structuring of data and knowledge to support data analysis and decision-making in their sustainable farming systems, organic farming system, health care, and nutrition. This information system will also be very useful to other upland communities in the country in which lessons can be learned and knowledge developed by the communities in the Cordilleras.

The documentation activity of the project included a two-stage process: 1) literature survey and 2) key informant (K1) interview. The project documented indigenous plants in seven (7) key areas: (1) organic farming system; (2) sustainable indigenous farming system; (3) community health care system; (4) food and food supplements; (5) cultural practices; (6) construction and livelihood; and (7) ornamental, landscaping and gardening. The project homepage was developed to promote and disseminate information and project outputs to researchers, students, and agriculture workers among others. The website served as the venue for integration and publishing the project database system.

A collaborative work on the project was formally established with Benguet State University (BSU) and Kalinga Apayao State College (KASC) in the case study sites to facilitate access to literature and information from the past and existing, particularly those that were already published.

Out of the 449 total plant species recorded in the DIS, about 67.04% or 301 were identified as indigenous plant species in the Cordillera. The 301 indigenous plant species identified were used for various purposes: organic farming system (1.34%); sustainable indigenous farming system (3.34%); community health care (28.09%); food and food supplements (30.77%); cultural practices (10.03%); construction and livelihood activities. The top 31 indigenous plant species with 3 or more uses were food and food supplements. The growth habit of about 40% of the indigenous plant species is tree, while 25% and 22% are shrub and herb, respectively. The remaining species are palms, vines, grasses and ferns.

ENGINEERING AND INDUSTRIAL RESEARCH

Optimization of Ethanol and *Jatropha* Fuel Cycles

Dr. Raymond Girard R. Tan
CESDR-De La Salle University
2401 Taft Avenue, Manila

This report summarizes the key outputs in the year 2008 from the NRCP research grant G-61 entitled "Optimization of ethanol and *Jatropha* fuel cycles." The objective of the project was to develop a modeling framework to optimize the performance of biofuel supply chains taking into account the relevant environmental considerations; and subsequently to apply this modeling framework to the analysis of ethanol and *Jatropha* biodiesel systems in the graduate students, Ms. Jo-anne B. Ballacillo and Ms. Kathleen B. Aviso as research assistants. The highlights of the project are as follows:

- A fuzzy linear programming modeling framework has been developed using the "triple footprint" concept to account for land use, water consumption and carbon footprints of bioenergy systems. The model is linear and thus presents no major computational difficulties for conventional optimization software. The model is sufficiently generic in form to comply with NRCP mandate of contributing to knowledge generation through basic research.

- In keeping with NRCP's mandate on basic research, the outcomes of the research have been submitted for review and potential publication in the ISI-indexed journal *Chemical Engineering_Research and Design* (formerly also known as *Transactions of the Institution of Chemical Engineers Part A*). The full paper, entitled "A Fuzzy Multiple Objective Approach To The Optimization Of Bioenergy System Footprints," was submitted in October 2008. Full acknowledgment of the NRCP grant is given at the end of the paper. Comments from the referees are still pending but the authors will keep NRCP apprised of the progress of the review process.

Updating of the Philippine Science Encyclopedia (Volume of Engineering and Industrial Research)

Dr. Ibarra E. Cruz

10 Geneva Avenue, Capitol Homes
Diliman, Quezon City

Objectives:

- To update the information and data of the volume of engineering and industrial research of the Philippine Science Encyclopedia
- To add new information and data (current emerging technologies) related to the developments in engineering and industrial research, and
- To come up with an electronic version in CD of the Philippine Science Encyclopedia

Significance:

Update of the current information and data of PSE-volume of engineering and industrial research will provide information of the current emerging technologies, developments in the field of engineering and prominent scientists/researchers (not included in the said PSE) for easy access of the engineering and industry as well as the academe people.

Accomplishments:

Every page of the hardcopy of the old version of the Philippine Science Encyclopedia (Volume of Engineering and Industrial Research) was scanned and converted into MS word application and arranged accordingly except for the photos. The converted copy of PSE was burned and placed into CD for distribution to the contributors, of which several copies were already distributed. A meeting with the committee was held on 12 March 2008.

SOCIAL SCIENCES

Status and Prospects of Sea Urchin Fisheries in Ilocos Sur

Ms. Alma Segismundo
University of Northern Philippines
Vigan City, Ilocos Sur

Preparation and printing of questionnaires and survey of the different coastal municipalities of Ilocos Sur to assess who among the fisher folks are engaged in sea cage culture of sea urchin. The preliminary survey covered the second district of Ilocos Sur, after which the data collector assigned to Sta. Maria, Ilocos Sur started floating the questionnaires. Follow up with interview was done by the Project Leader to validate their answers. Fifty-five fisher folks have been interviewed.

Retrieval of all the questionnaires in Nalvo, Sta. Maria, and Ilocos Sur was undertaken with a total number of 67 sea urchin fishermen respondents. It was found out that sea urchin farming increase their monthly income. Also, it was observed that financial as well as material inputs were provided by the local officials, and that no technical assistance was provided because it is the academe (University of Northern Philippines) and the Bureau of Fisheries and Aquatic Resources (BFAR), which extend technical assistance.

Sea Urchin

Lack of technical assistance in terms of proper stocking density and manner of feeding came out as the main contributing factors to the different problems encountered by the sea urchin fishermen in the locality.

Most of the fishermen's aspirations include the following: the establishment of a sea urchin fishermen's organization and have it registered at the SEC; putting up a laboratory to have a continuous supply of spawn; and extension of assistance in terms of marketing aspect.

In Santiago, Ilocos Sur there were 300 plus individuals engaged in sea urchin, the highest so far for the whole province of Ilocos Sur because in every household there are more than two members of he family who are into the activity.

Majority of the fishermen have been engaged in sea cage culture of sea urchin for 3-4 years and own only one cage each. The fishermen claimed that sea urchin farming only effected a little increase in their montly income and that it has not improved much the quality of their lives. Local officials provide very little assistance to the fishermen in terms of financial, material inputs and technical aspects.

In the coastal town of San Esteban, Ilocos Sur particularly barangays Apatot, San Pablo and Villa Quirino, there are only 47 fishermen engaged in sea urchin cage culture. Data collation and analysis is-on-going.

Impact of Clean and Green Program of DILG in Ormoc City for the Last Five Years

Sr. Ma. Julia C. Yap, OSB
St. Peter's College of Ormoc, Ormoc City

The local government of Ormoc has been a recipient of the Bioreactor from the Department of Science and Technology. This bioreactor is a technology solution to the city's concern on closing the old landfill and opening the new one in one of the remote areas (Green Valley) in the city. Therefore, this project will provide the impact of such biotechnology and the rest of innovations extended by the DOST and the other agencies that provide science and technology services applicable to the needs of the city.

The possible finding of the project will qualify the awareness and commitment of the different sectors (residences, barangay, schools, commercial districts and local government units) to the general welfare of all the city's constituents.

Possible factors (information drive, absence of technology, monitoring, etc.) which will likely impede the sustainability of the program was checked. Data gathering about the Clean and Green Program and related awards/achievements/activities of Ormoc City was conducted. This was done through scanning the records of the city relative to the program, surfing the web, and consulting with concerned officials and staff. Both the documents and data gathered in the process are used as one of the references in the assessment of the impact of the program in the different sectors of the city. The instrument is being reproduced and prepared for distribution to the target areas of the study.

NRCP@75: Bringing Great Ideas to Life (DOST Funded project)

Dr. Elena E. Pernia
College of Mass Communication
UP, Diliman, Quezon City

The book project seeks "to raise public awareness about the critical importance of S & T for RP's development" by being a medium for Filipinos-students, in particular-"to appreciate the value of advances in scientific knowledge and technology generated by the pioneers, present, and future names in Philippine science." NRCP@75 is to be a resource or reference book for students to become aware of "the vision, mission, mandate of the NRCP as well as the lives and works of NRCP Lifetime Achievement Awardees.

The book will feature all NRCP Research Achievement Awardees (in line with the 75th anniversary of NRCP) as Stars, Heroes, and Celebrities whose lives are worthy of praise and emulation. The contents are: Chapter 1 - Introduction to and history of NRCP; Chapter 1-13 Write ups of Outstanding Scientists in each of the Twelve Scientific Divisions of NRCP.

The book will also be useful for resource-generation for NRCP projects through sales of book, especially if endorsements are secured from DepEd and CHED that the book is recommended reading material for all levels.

PHYSICS

Frequency Dependence of the Solid-Liquid Phase Transition for Granular Polystyrene Beads

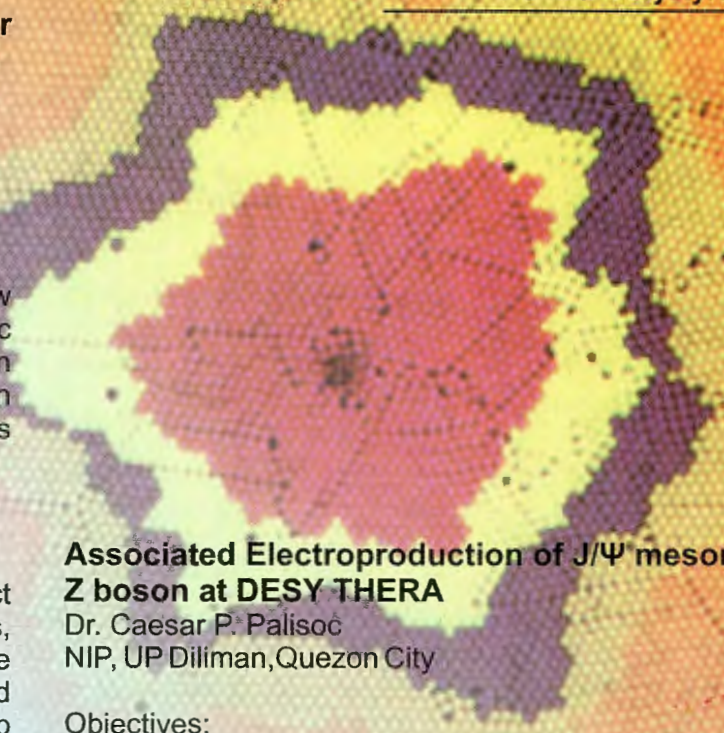
Dr. Marisciel L. Palima/Mr. George Allan Esleta
National Institute of Physics
UP Diliman, Quezon City

Objectives:

To answer the fundamental question on how materials behave when undergoing a drastic change in its properties, i.e. a phase transition and to study how the critical values change when an external periodic forcing on the system is present.

Significance:

Findings in this investigation may have direct impact on other studies such as in landslides, lahar mudflows and garbage management. The results of this investigation may not add significantly to the national income, but it can help alleviate the costs of disaster mitigation that comes with a scientific understanding of just how materials behave near a phase transition.



Granular Polystyrene

Associated Electroproduction of J/Ψ meson and Z boson at DESY THERA

Dr. Caesar P. Palisoc
NIP, UP Diliman,Quezon City

Objectives:

To analyze the production of J/ψ meson in association with a Z boson through the color-octet process in Deep and Elastic Scattering (DIS) and the color-singlet one in elastic scattering via electromagnetic interaction within the framework of Non-relativistic Quantum Chromo Dynamics (NRQCD). The project will determine the existence of color-octet processes.

Accomplishments:

Fifty per cent of the work plan objectives have been met which includes the development of Mathematical program codes allowing the proponent to determine analytically the needed partonic cross sections. These cross sections were likewise validated. The remaining work to be accomplished is the development and implementation of a Fortran code that numerically calculates the cross section distributions appropriate under THERA experimental condition, which is the final objective completing the project.

General Theory of Self-Organized Criticality: Applications to Ecology, Social Science and Economy

Dr. Dranreb Earl O. Juanico
NIP, UP Diliman, Quezon City

This study is significant and different from other models of complex systems since it does not require conservation energy, a usual limiting condition in physical systems. A developed theory on self-organized criticality could be applied to several real-world systems. Research work on behavior of complex systems can be applied to opinion dynamics such as those found in social surveys, policy formulation and population control.

The proponent was able to contribute significantly in providing mathematical analysis for and in writing the scientific manuscript entitled "Earning potential in multilevel marketing enterprises", which was published in the journal *Physica A* (Elsevier, Amsterdam), vol. 387, pp. 4889-4895 which is available online on April 7, 2008. The manuscript is in accordance with the project's focus on economic phenomenon.

Government regulators and other concerned citizens warily view multilevel marketing enterprises (MLM) because of their close operational resemblance to exploitative pyramid schemes. We analyze two types of MLM network architectures the unilevel and binary, in terms of growth behavior and earning potential among members. We showed that network growth decelerates after reaching a size threshold, contrary to claims of unrestricted growth by MLM recruiters. We have also found that the earning potential in binary MLM's obey the Pareto "80-20" rule, implying an earning opportunity that is strongly biased against the most recent members. On the other hand, unilevel MLM's did not exhibit the Pareto earning distribution and earning potential is independent of member position in the network. Our analytical results agree well with field data taken from real-world MLM's in the Philippines. Our analysis is generally valid and can be applied to other MLM architectures.

CHEMICAL SCIENCES

Diversity, Reproduction and Polyunsaturated Fatty Acid Screening of Copepods from Northern Mindanao Coastal Waters

Dr. Ephrime B. Metillo
MSU-IIT, Iligan City

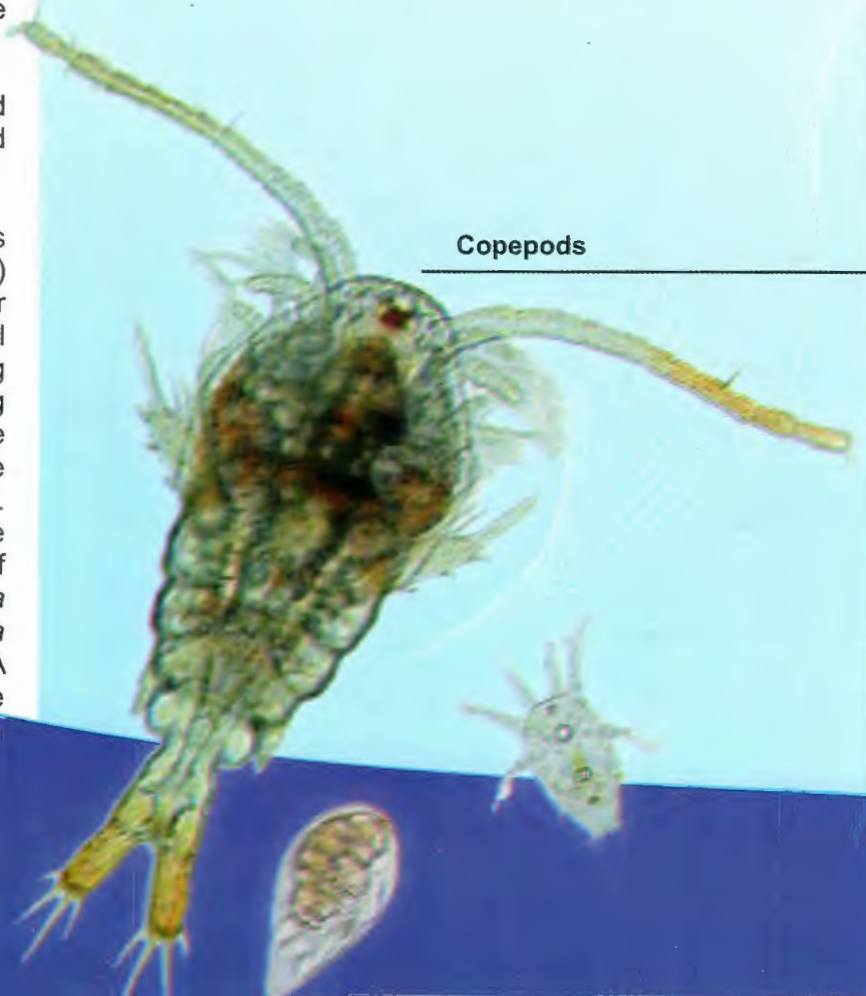
The study aims to: collect and identify copepod species from selected sites of Mindanao; study the egg production and egg hatching rate of collected dominant copepod species; and screen as many copepod species for omega 3fatty acids in order to identify potential species that can be used as live food in aquaculture.

Since the estuarine and marine copepods in the Philippine waters are poorly and scarcely studied, their diversity in form and function awaits an in-depth study. Until thoroughly studied, the biology of this group of organisms and their role in the Philippine marine ecosystems and in the aquaculture and fisheries sector remain unknown. Results of the study will contribute to the development of the aquaculture and other related industries in the country.

The study is expected to come up with a reliable and cost-effective culture systems of both live food and aquaculture fish species.

For the 1st quarter, .a total of 41 copepod species have been collected and identified, twenty eight (28) belong to the Order Calanoida, ten (10) to the Order Cyclopoida, three (3) to the Order Harpacticoida. All 41 species have not been reared before but culturing them would be easy since many studies on rearing copepods have been done, particularly those belonging to the Order *Acartia* congeners. The culture facility is still being set-up at MSU-IIT. Culture vessels, microalgal species, and culture chemicals are still being purchased. Wild samples of the three common species namely, *Acartia erythraea*, *Cosmocalanus darwini*, *Euchaeta marina*, have been sorted and deep frozen for PUFA screening. Egg production rates of some of the collected species have been determined but the data are still being analyzed.

To date, collections from the coastal waters of Dipolog, Panguil Bay, and Iligan Bay have yielded 43 common species that have been catalogued including: (1) *Acartia negligens*, (2) *Acartia erythraea*, (3) *Anomalocera patersoni*, (4) *Calanopia elliptica*, (5) *Calocalanus pavo*, (6) *Candacia catula*, (7) *Candacia curta*, (8) *Candacia discaudata*, (9) *Canthocalanus pauper*, (10) *Paracandacia truncata*, (11) *Centropages calaninus*, (12) *Centropages furcatus*, (13) *Centropages gracilis*, (14) *Copilia* sp., (15) *Corycaeus typicus*, (16) *Corycaeus limbatus*, (17) *Corycaeus speciosus*, (18) *Corycaeus longistylis*, (19) *Cosmocalanus darwini*, (20) *Euchaeta marina*, (21) *Euchaeta media*, (22) *Euterpina acutifrons*, (23) *Labidocera acuta*, (24) *Labidocera pavo*, (25) *Labidocera minuta*, (26) *Labidocera detruncata*, (27) *Macrosetella gracilis*, (28) *Microsetella disseta*, (29) *Oithona similis*, (30) *Oithona plumifera*, (31) *Oithona rigida*, (32) *Oncaea venusta*, (33) *Paracalanus aculeatus*, (34) *Parvocalanus crassirostris*, (35) *Pontella surrecta*, (36) *Pseudodiaptomus philippinensis*, (37) *Sapphirina* sp., (38) *Subeucalanus crassus*, (39)*Temora turbinata*, (40)*Temora discaudata*, (41) *Undinula vulgaris*, (42) *Calanopia thompsoni*, and (43) *Tortanus discaudatus*. In the long term, an electronic database comprising images, taxonomic and ecological information, and genetic barcodes will be built up from this preliminary catalogue.



Copepods

Preliminary PUFA analysis of a very common species, *Acartia erythraea*, revealed relatively large amounts of the three PUFA of interests. The concentrations of ARA, EPA, and DHA are 0.9%, 1.4%, and 13.4%, respectively. These values are significantly higher than those in the decapod crustacean zooplankton *Lucifer* sp., which had ARA, EPA, DHA values of 1.3%, 0%, and 7.2%, respectively. The PUFA profiles of the other species are now in the process of being analyzed.

A small scale laboratory experiment involving *Acartia erythraea*, *Canthocalanus pauper*, *Subeucalanus* sp., and *Paracalanus* sp. fed singly or a combination of microalgal species (*Isochrysis galbana* and *Chaetocerus calcitrans*) showed very promising egg and naupliar or larval production results. *Canthocalanus pauper* had the highest average egg and naupliar production of 4 eggs/female/day and 82 nauplii/female/day. The optimization of the culture conditions for the other species is still on-going.

EARTH AND SPACE SCIENCES

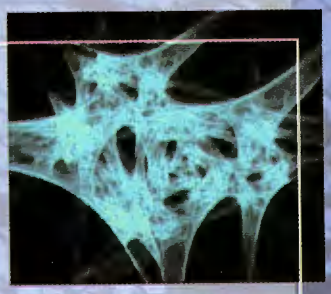
A Geochemical Approach on the Provenance Signatures of the Klondyke and Zigzag Formations and Its Implication on the Oceanic to an Island-Arc Setting Evolution of the Baguio Mineral District, Philippines

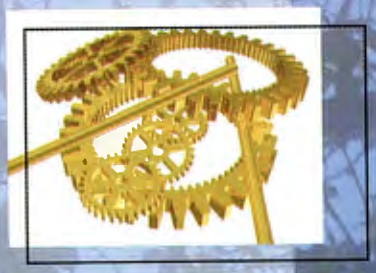
Dr. Carla B. Dimalanta
NIGS, UP Diliman,Quezon City

Accomplishments

1. Geochemical analyses of samples collected from the Baguio Mineral District and vicinity were carried out using X-Ray Fluorescence (XRF) and Inductively Coupled Plasma Mass Spectrometry (ICP-MS) for the determination of major element (i.e. SiO_2, TiO_2, Al_2O_3, Fe_2O_3, MnO, MgO,CaO, Na2O, K2O, P2O5) and trace element compositions (e.g. V, Cr, Co, Ni, Cu, Zn, Ga, Rb, Sr, Y, Zr, Nb, Cs, Ba, La, Ce, Pr, etc.) respectively. The results of the geochemical analyses were shown in tables.

2. The geochemical data are plotted on various discrimination and ratio diagrams and interpreted in terms of the sediment provenance, tectonic setting and source weathering of the collected samples.





BASIC NETWORK SERVICES

BASIC NETWORK SERVICES

THESIS GRANTS

Biotechnology

Resolving the Phylogenetic Position and Paraphyly of Villaria Rolfe (*Rubiaceae)* Inferred from ITS (nrDNA) and trnL-R-trnL(cpDNA) Sequence Data
Ms. Cecilia I. Banag
1303B Sulu, Sta. Cruz, Manila

Evaluation of Gram-Type Specific Broad Range PCR and Culture of Buffy Coat in Comparison to the Use of Whole Blood for Detection of Bacteremeia
Mr. Demetrio L. Valle, Jr.
205 Carnation St., Greenland Subdivision
Cainta, Rizal

Molecular Phylogeny and Ultrastructural Studies of *Euglenoid flagellae* Isolated from Freshwater Sample
Ms. Joy Ann G. Petronio
Bar Tanghas, Tolosa, Leyte

Molecular Characterization of Human *Trichomonas* spp. Isolates in the Philippines
Mr. Macario Ireneo Queza
43 F. Acuna Apartment, V. Luzon St.
GSIS Village, Proj. 8, Q.C.

Health Products and Technologies

Antioxidant Activity, Total Phenolic and Flavanoid Contents of Some Underutilized Philippine Vegetables
Ms. Rufielyn S. Gravador
Institute of Chemistry,
UPLB, College, Laguna

Environmental Sciences

Development of an Environment Evaluation Performance (EPE) protocol for a Medium-Scale Wood-based Furniture Manufacturing Firm in Pampanga, Philippines
Ms. Sarahme Corazon L. Bondoc
3307 Aguila St., Rhoda Subd. Brgy. Anos
Los Banos, Laguna

Agricultural Sciences

Production Performance of Growing Bulgarian Murrah Buffalo Calves Fed with Varying Levels of Napier Grass (*Pennisetum purpureum*) and Rensonii (*Dasmodium rensonii*) with and without yeast in the Concentrate
Mr. Niel L. Ningal
Papaya St., Dadiangas West
Gen. Santos City

Mechanical Properties and Durability of Thermally Modified Malapapaya (*Polyscias nodasa {Blume] Seem.*)
Mr. Juanito P. Jimenez, Jr.
4122 Apart 3 (Interior)
Canossa Road St., Dominic St., Bar, Halang
Calamba, Laguna

Force Analysis and Optimization of Decortization of Coconut Husk
M. Lerjun M. Penaflor
V. Toledo St. Travesia
Guinobatan, Albay

Growing and Laying Responses of Quail Fed at Varying Levels of *Trichanthera gigantea* Leaf Meal
Ms. Clarita E. Bitancor, Graduate

Bulgarian Murrah Buffalo

Biological Sciences

Comparative Study of the Susceptibility of Three Taxa of Erythrina Gall Wasp (*Quadrastichus erythrinae* K.)
Ms. Josephine E. Tondo
University of Regina Carmelli
Malolos, Bulacan

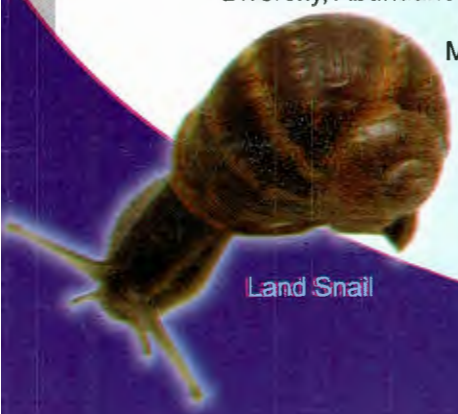
Erythrina Gall Wasp

Polymorphisms of the IL4, MS4A2, and CD14 and the Risk of Allergic Disorders in a Selected Filipino Population
Mr. Roldan M. de Guia
Faculty of Pharmacy
UST, Espana, Manila

Toxicity and Teratogenic Bioassay of Laphacol Crude Extract from Gold Tree (*Tabebuia donnelo smithii Rose*) to Rice Black Bug (*Scotinopora coarctata Fabr.*)
Ms. Japhia Medillo
Sunrise Residence, Musuan, Bukidnon

Rice Black Bug

Diversity, Abundance, and Spatial Distribution of Land Snails of Mt. Makiling, Philippines
Mr. Emmanuel Ryan C. de Chavez
Animal Biology Division
UPLB, College, Laguna



Land Snail

Social Sciences

Level of Job Satisfaction Among the Administrative Staff of the Negros Oriental State University
Mrs. Gerosa T. Castor
Negros Oriental State University
Dumaguete City

Psychological Hardiness, Academic Performance, and Purpose in Life of New PNPA Cadets: Basis for an Achievement Motivation Program
Ms. Liwanag M. Tolentino-Duque
4 Liberty Ave., Cubao, Q.C.

Sexual Misconceptions and Superstitions Among Selected High School Students
Ms. Jay Mathias A. Arellano
1025 Ilang-Ilang St., La Calina Subd.
Antipolo City, Rizal

Information and Communications Technology (ICT) Integration in Teacher Education Institutions
Ms. Shelanee Theresa P. Peralta
Purok Santan, Carbide Village
Iligan City

Parent-Child Relationship Histories, Attachment Styles, and Marital Attitudes Among Young Adults
Mr. Apryl Mae C. Parcon
313 Diamond St., Perpetual Village IV
Bacoor, Cavite

Strategy Variability in Arithmetic in Relation to Age, Problem Size and Demand
Ms. Joyce Kathleen R. Lagdameo
8 Esteban St., Highway Hills
Mandaluyong City

BASIC NETWORK SERVICES

Doctoral Dissertation Grants

Health Products and Technologies

Institutional Capability of Selected Government Units (LGUs) in Implementing the Iron Supplementation Program for Anemia Reduction Among Pregnant Women
Ms. Jocelyn A. Juguan
L-2, B-9, Mercedes Homes V

San Vicente, San Pedro, Laguna

Environmental Sciences

Organic Matter Turn-Over of *Rhizophora* Species Litterfall and its Socio-Economic Impacts on the Local Coastal Dwellers at Moro Gulf, Western Mindanao, Philippines
Mr. Jerry B. Superales
J.H. Cerilles, State College, Mati
San Miguel, Zamboanga del Sur

Taxonomic and Phylogenetic Studies of *Kappaphycus doty* and Related Species
Mr. Humberto R. Montes, Jr.
LSU, Visca

Kappaphycus Doty

Engineering and Technology

Design Mix of Asphalt Pavement Utilizing Crumb Rubber and Coal Combustion By-Products
Mr. Manuel M. Muhi
Dean, College of Engineering
Polytechnic University of the Philippines
Sta. Mesa, Manila

Social Sciences

Teaching Competencies and Performance of Student Teachers in Selected State Colleges and Universities in Region VIII
Mr. Manuelito V. Managbanag
Dept. of Agriculture, Fishery & Forestry
NIT-BNAC, Biliran

People's Organization Intervention: Impact on Coastal Resources and Community Development
Mr. Stephen Cornelius A. Alba, Sr.
Graduate School
University of Nueva Cacerez
Naga City

Contribution of Agriculture Education in the Quality of Life of the Tawi-Tawi Regional Agriculture College Graduates in the Province of Tawi-Tawi, ARMM
Mr. Edwin M. Puhagan
Administrative Officer
Philippine Coast Guard Auxilliary PCGA 309th Squadron, 8th Division
Tawi-Tawi

Micro-Financing Program of the City Social Welfare and Development Office of Butuan City: Its Impact on the Lives of Beneficiaries
Mrs. Emiliana L. Lozano
Purok 3A, Villa Paraiso, Ampayon, Butuan City

Agricultural Sciences

Water Management System for Honeydew Melon (*Cucumis melo L.)* Production Grown in a Hydroponic System Under Tropical Greenhouse Condition
Mr. Chito F. Sace
Cottage 125, CLSU
Munoz, Nueva Ecija

Ecological and Physiological Responses of *Pseudodiaptomus annandale* Under Pond and Laboratory Conditions
Ms. Teresita C. Jocson
College of Fisheries
Leyte State University, Talosa

Pathogenic Relationship of Bugtok and Moko Strains of *Ralstonia solanacearum* (E.F. Smith) Yabuuchi et al. in Cardaba and Cavendish Bananas (*Musa sp.*)
Ms. Carolina D. Amper
Dept. of Plant Pathology
College of Agriculture,
Central Mindanao University
Musuan, Bukidnon

Root Growth Potential and Early Field Performance of *Gmelina arborea* Intercropped with Zea *mays*
Mr. Onofre S. Corpuz

Defense Response Induced by Silicon Application in Rice Infected with Sheath (*Rhizotonia solani* Khun)
Mr. Guia G. Saludares
College of Agriculture
Mindanao State University
Musuan, Bukidnon

Systematics of Palawan Cultivated Rice *(Oryza sativa L.)* and its Relatives
Mr.Romeo Leron
Western Philippine University
Aborlan, Palawan

Child Labor Incidence in the Agricultural Sector of the Cordillera
Mr. Emerito A. Narag
San Carlos Heights, Irisan
Baguio City

POLICY SERVICES IN SUPPORT OF MEMBERSHIP

POLICY SERVICES IN SUPPORT OF MEMBERSHIP

Sponsored/Co-sponsored scientific cluster meetings, seminar-workshops, conferences and fora

10th Eurasia Conference on Chemical Sciences
7-11 January 2008
Philippine International Convention Center
Manila

Scientific Paper Presentation on Global and Philippine Initiatives on Tobacco Control
2 February 2008
Audio Visual Room
College of Social Sciences and Philosophy
UP Diliman, Quezon City

Scientific Lecture on New Directions for Basic Research in the Philippines
11 February 2008
Dept. of Physiology
College of Medicine, P. Gil Street
Ermita, Manila

Scientific Paper Presentation on 2007 Global Status of Commercialized Biotech Crops and Its Implications to Agriculture
2 February 2008
Room 100, ASH Lecture Hall, CA-UPLB
College, Laguna

Scientific Lecture on the result of NRCP-supported R&D project entitled Analysis and Prediction of Rainfall Associated with the Monsoon Surge
2 February 2008
The Vargas Museum
UP Diliman, Quezon City

Scientific Session on the Peculiarities of Medicinal Plant Research in the Philippines: From Field to Laboratory
15 February 2008
NRCP Patrocinio Valenzuela Hall
Bicutan, Taguig City

Seminar on Molecular Modeling and Simulation
01 March 2008
College of Science, University of Santo Tomas
Espana, Manila

Basic Research for National Development, 75th NRCP General Assembly
12 March 2008
Polkabal-Rigodon Halls
Manila Hotel, Manila

6th National Social Sciences Congress
7-9 May 2008
Philippine Social Science Council
UP Diliman, Quezon City

Scientific Paper Presentation on Urban Astronomy in the Philippines: Visual Observations of 130 Deep Sky Objects, Part II
7 May 2008
Amihan Conference Room
PAGASA Science Complex Garden
Agham Road, Diliman, Quezon City

Scientific Paper Presentation on New Diagnostic Tests for Tuberculosis
20 May 2008
College of Medicine, UP Manila
P. Gil Street, Manila

Scientific Paper Presentation on Culture of the Giant Freshwater Prawn (*Macrobracchium rosenbergii*)
16 June 2008
NRCP Auditorium, Patrocinio Valenzuela Hall
Bicutan, Taguig City

Scientific Lecture on the result of NRCP-supported R&D project entitled Impact Evaluation of NRCP Funded Researches: 1980-2000
18 June 2008
Emilio Aguinaldo College
San Marcelino, Ermita, Manila

Scientific Lecture on Mangrove-Friendly Agroforestry: A Sustainable Livelihood System in the Coastal Wetlands of Puerto Galera, Oriental Mindoro
24 June 2008
ERDB-DENR, College, Laguna

SEAGA 2008 International Conference
04 July 2008
SEAMEO, Innotech
Diliman, Quezon City

2008 Nutrition Month Celebration Seminar Series
22-25 July 2008
Philippine Women's University, Manila Campus

Centennial Memorial Lecture and Roundtable Discussion on Basic Research for National Development
11 September 2008
Traders Hotel, Pasay City

General Membership Meeting Cum Scientific Session on Pandans: New Materials for Pharmaceuticals, Division of Chemical Sciences
11 October 2008
UST, Manila

26th Samahang Pisika ng Pilipinas: "Taking physics to the summit"
22-24 October 2008
University of the Philippines Baguio
Baguio City

General Membership Meeting Cum Scientific Session on Alternative Environmental Technologies for Solid Waste Management, Division of Engineering and Industrial Research
05 November 2008
FEATI, Manila

Consultative Forum for National Integrated Basic Research Agenda (NIBRA)
07 November 2008
Traders Hotel, Pasay City

General Membership Meeting Cum Scientific Session on Limb Saving Surgery in Extremity Bone and Soft Tissue Cancers, Division of Medical Sciences
08 November 2008
National Institute of Health, Manila

General Membership Meeting Cum Scientific Session on Newborn Screening, Division of Medical Sciences
15 November 2008
UP College of Medicine, Manila

General Membership Meeting Cum Scientific Session on An Innovating Organization Approach for the Prevention, Control and Eradication of Animal Disease in the Philippines
24 November 2008
Div. Agriculture in Natural Resources
UPLB, Laguna

10th Annual Convention of the Natural Products Society of the Philippines (NPSP)
03 December 2008
National Institute of Science and Mathematics Education Development Auditorium UP Diliman, Quezon City

4th National Malacological Convention
06 December 2008
Pavilion 4, Institute of Biology
University of the Philippines
Diliman, Quezon City

10th Philippine Linguistics Congress
10-12 December 2008
UP Balay Kalinaw
Diliman, Quezon City

POLICY SERVICES IN SUPPORT OF MEMBERSHIP

Outreach Programs

Outreach Seminar on Food Safety: Issues and Concerns and Challenges
6 May 2008
Aklan State University
Banga, Aklan

In addition to food security or availability of basic sources of nutrition, food safety is an equally major concern in any community. It is not only important to have food but it is even more important to ensure that we have safe food. Food safety is equated with food free of disease-causing biological materials, harmful physical elements, anti-nutrients, or unidentified components that may be potentially harmful. In addition to these, food safety is also a major concern in food products from new food sources or products of relatively new and modern technology.

A total of 43 participants attended the seminar. The following scientific papers were presented: *Food Safety: What is at Stake for the Philippines*? By Dr. Priscilla C. Sanchez, Chair, Division of Biological Sciences, NRCP; *Natural Toxins and Allergens in Our Food* by Dr. Antonio C. Laurena, Research Professor, IPB, UPLB; *Foodborne and Waterborne Pathogens of Man and Animals*: a video presentation produced by PSM, Inc. and Script by Dr. Cynthia T. Hedreyda; *Food Safety of Milk and Milk Products* by Prof. Lourdes E. Resubal, Retired Professor, Dairy Training and Research Institute, UPLB; *Common Bacterial Pathogens in Seafood and Streetfood* by Kellysye Paula L. Fabian, Research Associate, NIMBB, UP Diliman; *And What About Food Viruses and Parasites* by Fabini Delmo Orata, Research Associate, NIMBB, UP Diliman and *Food Safety Concerns of Products of New Technology (GM Food, Biofortified Food, Products of Animal Cloning)* by Dr. Cynthia T. Hedreyda, Director, NIMBB, UP Diliman.

5th General Membership Assembly, NRCP Visayas Regional Cluster
16 May 2008
Cebu Business Hotel, Cebu City

Dr. Minda Formacion, Visayas Regional Cluster President gave the welcome address. She emphasized the need for the members to attend at least two consecutive meetings to be considered an active member. The opening remarks was delivered by Dr. Napoleon P. Hernandez, NRCP Executive Director. His inspiring message emphasized the need for Basic Research for National Development and encouraged those who were present to continue their enthusiasm in research especially because funds have now been increased from 1.7 million pesos to 7 million pesos. The message from Engr. Burt Llanto, Regional Director for Region VII was presented by Engr. Edelberto Bardela who informed the audience of the five basic researches that have influenced the production of many equipment and devices used today such as cell phone, satellite communication system, computer chips, etc. Dr. Bonifacio Villanueva, President of Cebu State College of Science and Technology was represented by Dr.Bontia. He noted the four functions of Higher Education Institutions (HEIs), namely, Instruction, Community Extension, Research, and Income Generation as very important means to achieve quality graduates. Dr. Jaime C. Montoya, President of NRCP, in his keynote address stressed on the need for basic research so that applied studies can be done. He lamented on the lack of communicators who can translate technical jargons of scientists and researchers to simple language understandable to common people,

entrepreneurs and businessmen. He also encouraged the researchers and scientists in institutes, colleges and universities to collaborate with the business sector so that research findings can eventually generate income, jobs and financial rewards. The following papers were presented during the plenary sessions: Basic Research in Chemistry for National Development by Dr. Edgardo E. Tulin and Dr. Ma. Theresa P. Loreto, Visayas State University, Visca, Baybay City, Leyte; Nutrition and Feed Development for Marine Food Fish in the Philippines by Dr. Relicardo N. Coloso, Seafdec-ACD, Tigbauan, Iloilo, Educational Research for National Development by Dr. Manuel Espina, Leyte Normal University, Tacloban City, and The Philippine Population: A Focus on Age Structure and Its Implications on Poverty and Development by Dr. Socorro A. Gultiano, University of San Carlos, Cebu City.

Seminar on Phytochemicals for Health and Wellness
22-23 May 2008
Immaculate Heart of Mary Abbey
Vigan City, Ilocos Sur

The seminar was intended to enhance the level of knowledge, skills, and attitudes of the participants in the promotion, utilization and conservation of the different plant resources around us. This seminar was attended by a total of 72 participants. The topics for the scientific sessions were: *Changing Face of Herbal Medicine* by Prof. Lourdes E. Resubal former Division IV Chair; *Plant Kingdom: Nature's Medicine Cabinet* by Dr. Lourdes B. Cardenas, Associate Professor, Institute of Biological Sciences, UPLB; *Health* Promoting *Food Phytochemicals*: *Eat a Rainbow of Colors* by Dr. Evelyn B. Rodriguez, Institute of Chemistry, College of Arts and Sciences, UPLB and *How to Make and Use Herbal Preparations* by Dr. Zenaida G. Sadiwa, NRCP Division IV Chair.

NRCP Cluster 2 Roundtable Discussion on Sustainable Environment

31 July 2008,
Madrigal Amphitheater
Ateneo de Naga University, Naga City

There is an identifiable need to provide focused support for capacity-building in sustainable development. The understanding of the common problems that have affected the local environment in Bicol has brought about a fragmented approach to problem-solving. The impact of the anthropogenic activities such as manufacturing and power generation is tremendous and is putting a lot of pressure on our natural environment including atmospheric, water and soil. It is, therefore, important that the understanding of the problem and the provision of an integrated approach to sustainable environment be addressed. The Cluster 2 (Divisions of Mathematical Sciences, Engineering and Industrial Research, Physics and, Earth and Space Sciences) pools together its expertise to address this gap and provide the following:

- To promote interaction among Bicol-based scientists and researchers;
- To identify current local environmental problems which require technical solutions;
- To demonstrate the importance of a sound, multi-disciplinary approach in solving real-life problems;
- To enhance the knowledge and understanding of scientific solutions for solving environmental problems; and
- To generate research proposals for NRCP funding with Cluster 2 support.

The activity commenced with an invocation delivered by Fr. David John M. de los Reyes, S.J. followed by an address by the ADNU President, Rev. Fr. Joel E. Tabora, S.J. To welcome the resource persons, guests and participants of the roundtable discussion. Dr. Alvin B. Culaba, NRCP Vice President delivered the opening remarks citing the NRCP and its mandates as well as its 12 scientific divisions. The Honorable Mayor Jesse M. Robredo of Naga City and Mr. Tomas B. Briñas, OIC, DOST Region V also gave their messages.

A total of 40 participants from ADNU, DOST Region 5, CSSAC, NCF, CSPC, Divine Word College of Legaspi, DEBESONSCAT-Masbate, PSU, CNSC, Aquinas University of Legaspi, USI, SSS-Sorsogon City and the provincial government of Albay attended the activity. The following scientific papers were presented Global Warming /Climate Change in the Philippine Context by Dr. Carina G. Lao, PAGASA; Manufacturing and the Environment by Dr. Alvin B. Culaba, CESDR-DLSU Manila; Atmospheric Energy Balance by Dr. Roland V. Sarmago, NIP-UP Diliman; An Overview of Mathematical Modeling by Dr. Jose Maria P. Balmaceda.

Seminar-Workshop on Enhancing Biology Teaching: The Use of Teaching Models in Genetics

4-5 August 2008
Leyte Normal University Library Auditorium
Tacloban City

The two-day seminar-workshop provided valuable amount of information on Genetics and Molecular Biology because UPLB brought their experts to LNU and to Region 8. The resource speakers were Dr. Rita P. Laude, the Vice-Chancellor for Instruction of the University of the Philippines-Los Baños College (UPLB), Dr. Joel C. Mendoza, Prof. Ivan Marcelo A. Duka, Prof. Mia Desiree C. Azañes all from UPLB and the former NRCP Executive Director, Dr. Paciente A. Cordero, Jr. A total of 46 participants attended the seminar-workshop. The topics were well-chosen and very enriching though difficult and challenging particularly gene mapping and population genetics that needed brushing up of one's knowledge in statistics and required higher level of thought processes. It also provided the participants an opportunity to concretize abstract concepts in DNA replication, transcription of DNA, translation of mRNA to Proteins and Population Genetics by the use of teaching models and simulation activities.

NRCP Cluster 2 Roundtable Discussion on Sustainable Environment

4-5 September 2008
Training Rms. 1 and 2, Graduate and Continuing Education Bldg.
UPV, Iloilo City

The National Research Council of the Philippines (NRCP) Cluster II (Divisions of Mathematical Sciences, Engineering and Industrial Research, Physics, and Earth and Space Sciences) in cooperation with the University of the Philippines Visayas and the Department of Science and Technology-Region VI conducted a Roundtable Discussion on "Sustainable Environment" held at Training Rms. 1 & 2, Graduate and Continuing Education Bldg., UPV, Iloilo City on September 4-5, 2008.

The UPV Chancellor, Dr. Glenn D. Aguilar delivered the address to welcome the guests, resource speakers and participants and wished for a fruitful activity. Dr. Carina G. Lao, NRCP Corporate Secretary gave the opening remarks stating the NRCP mandates and its 12 scientific divisions. Ms. Remy Sunio, Administrative Officer, spoke in behalf of Dir. Rowena Gelonga, Executive Director of DOST Region 6, who is out of the country. She acknowledged the NRCP and UPV for providing this activity and opportunity to share perspectives and experience on enhancing sustainable environment in the region. She added that this activity is an ideal venue to foster a robust, collective and cooperative regional response in understanding the common problems that affect the local environment in the Western Visayas. She stated that if we are to improve the performance and impact of our development efforts for a sustainable environment, regional cooperation and partnerships are a must, not an option.

A total of 48 participants from EMB-DENR,DOST-Reg 6, CHMSC, Talisay Cuty, Neg. Occ., Central Phil. Univ., UPV (Office of Continuing Education & Pahinungod, College of Mgt., School of Technology, CAS, College of Fisheries & Ocean Sciences), Phil. Coast Guard-Reg 6, Polytechnic State College of Antique, West Visayas State Univ., SIPC-West Visayas College of Science and Technology, SEAFDEC, St. Paul's Univ.-Iloilo, Univ. of San Agustin and University of Iloilo attended the activity.

Dr. Carina G. Lao, Asst. Weather Services Chief, PAGASA-DOST and Chair, NRCP Division XII talked on PAGASA's projects and services and some of the weather associated hazards occurring in the Philippines such as drought, floods, strong winds, storm surges, tsunamis, etc.

Dr. Roland V. Sarmago, Professor of the National Institute of Physics, UP Diliman and Chair, NRCP Division IX presented Dr. Culaba's paper on "Manufacturing and the Environment". Dr. Sarmago discussed that an increase in global population means increasing desire for more products thus, also increasing production resulting in pollution of the environment. He said that we have to be preventive rather than curative in our approach to sustainability of the environment rather than curative. He also talked on the "Atmospheric Energy Balance". He explained the energy cycle and the heat absorbed by the greenhouse gases which keep the earth warm enough to allow life to exist. However, due to anthropogenic activities there is an increase in the amount of greenhouse gases produced causing more energy to be trapped resulting in global warming and eventually leading to climate change.

The presentation of Dr. Jose Maria P. Balmaceda, Director, Institute of Mathematics, UP Diliman and Chair, NRCP Division II on "Mathematical Modeling" was comprehensive. He focused his discussion on mathematical modeling activities like simulation, control, estimation and visualization. He provided examples on the different mathematical models which are used to assist in solving real life problems.

Seminar on Research Capability Building in the Social Sciences
24 October 2008
4th floor, Freedom Hall, Sotero H. Laurel Bldg.
Lyceum of the Philippines University-Batangas
Capitol Site, Batangas City

A total of 300 participants composed of students, faculty, deans, and university officials attended this one-day seminar. It was intended to enhance their research capabilities and was meant to help instill and develop the culture of research among the participants, strengthen and update their knowledge on the research methodologies in the social sciences, increase the participants' appreciation of the value of research to enrich and improve instruction in higher institutions of learning and applied researches of organizations outside the academe, and assist participants to formulate and propose research projects that will be appropriate and implementable. Dr. Flora Javier, Vice-President for Administrative and Planning, represented President Peter Laurel of Lyceum Batangas and welcomed all the participants. Dr. Fe Medina, Vice-President for Institutional Affairs gave an inspirational talk, Dr. Tigno gave a brief orientation on the importance of conducting basic research and the role played by research in policy-making and in technology and introduced the Council to the body. Dr. Leon Ramos welcomed the participants and speakers. Dr. Francisco Magno (DLSU) was the first resource person who gave an overview of the research process and the components of a research proposal. Speaking on the importance of historical analysis, Dr. Milagros Guerrero talked about the value of historical research. The third speaker was Dr. Nestor Castro (UP) who spoke about the importance of doing research in anthropology and ethnographic research which is the study of customs, culture, behaviors, beliefs, and attitudes. The fourth speaker is from the philosophy department of UP, Dr. Zosimo Lee talked about the value of philosophical analysis. The fifth and final speaker from NRCP was Prof. Clarinda Berja (UP) who talked about different quantitative methods in research.

Seminar on Research Dissemination
18 November 2008
Saint Louis College
San Fernando City, La Union

The objectives of the seminar are:1) to promote and help instill a basic appreciation among the participating academics and researchers of the need to disseminate and publish their research outputs; 2) inform the participants of the many ways by which their research outputs might be disseminated; and 3) provide basic information to the participants on what book and journal editors look for in research manuscripts. A total of 70 participants composed of faculty, deans, and university officials participated in this one-day seminar. Fr. Gilbert B. Sales, President of St. Louis College welcomed the participants. Dr. Napoleon P. Hernandez, Executive Director of NRCP gave a very informative message that mentioned the requirements and the processes a research proposal would undergo to obtain research support from the Council and possibly get published in refereed journals. Prof. Marcia Ruth Gabriela Fernandez reiterated the real importance of intellectual property rights, that if IPR laws and rules are observed, researchers have the right to demand recognition in fair use of the work. Dr. Milagros Guerrero delved on the topic *Selecting Researches for Dissemination and Publication*. She reiterated that the initiatives to conduct research and publish should emanate from individual researches themselves. Dr. Paragas dealt on the research as a whole.

Meanwhile, Dr. Peter Sy advanced his insightful ideas on research dissemination online for several reasons: it allows immediate feedback, and develop social responsibility. It is also a trend and a way for other people to syndicate a research outputs. And finally, Dr. Ma. Ela Atienza clearly explained what refereed journals are and admitted that there is a dearth of Philippine journals included in the first Journal List.

POLICY ADVISORY SERVICES

POLICY ADVISORY SERVICES

Submitted comments on the TECHNICOM Format of the Confidentiality Agreement

Submitted comments/Inputs on the DOST Planning Conference held at Stotsenberg Hotel, Clark Freeport, Pampanga from January 24-25, 2008

Forwarded to the DOST Secretary for endorsement to Congress for the enacment of the Animal Health Code of the Philippines the Resolution endorsing Animal Health Code approved by the Governing Board 07 December 2007 at Traders Royal Hotel

Inputs to the proposed project entitled "Capacity Building in Technology Foresight (TF) in the S&T Community

Submitted comments and recommendations for the renewal for accreditation of the UP Engineering Research and Development Foundation, Inc. (UPERDF, Inc.)

Proposed Bill Calling for the Establishment of a Local Management Information System (MIS) in all Local Government Units

Submitted comments on SB Nos. 76,82,641 and 843 on the Institutionalization of a National Land Use Policy, Providing the Implementing Mechanisms Therefore and for Other Purposes, that shall be known and cited as the National Land Use Act of the Philippines

Formulated a Resolution on the Role of Basic Research in Enhancing Education Towards Development used as guidelines by different stakeholders in the integration of research areas in Cluster I of the planned revision of National Basic Research Program

Formulated a Resolution on Basic Research on Sustainable Development in the Areas of Environment Energy and Disaster Management used as guidelines by different stakeholders in the integration of research areas in Cluster II of the planned revision of National Basic Research Program

Formulated a Resolution on Food Safety Issues and the Role of Research used as guidelines by different stakeholders in the integration of research areas in Cluster III of the planned revision of National Basic Research Program

Formulated a Resolution on Basic Research for National Development in the Fields of Biology, Agriculture and Forestry used as guidelines by different stakeholders in the integration of research areas in Cluster IV of the planned revision of National Basic Research Program

Submitted comments/recommendation on the financial assistance of DOST-JSPS-PRF Research Forum on Environment and Health

Comments on the Report on the Proposed Project by STII entitled Publication and Documentation of DOST-GIA-funded Projects

Formulated the National Integrated Basic Research Agenda (NIBRA) based on the output of the Consultative Forum for National Integrated Basic Research Agenda (NIBRA), November 7, 2008, Traders Hotel, Pasay City

Submitted comments/recommendation on template for travel under the DOST-GIA Project 14 November 2008

Recommended the accreditation of the Safety Kids Worldwide Foundation, Inc. December 2, 2008

Adopted by Stakeholders:

Submitted comments on the TECHNICOM Format of the Confidentiality Agreement

Forwarded to the DOST Secretary for endorsement to Congress for the enactment of the Animal Health Code of the Philippines the Resolution endorsing Animal Health Code approved by the Governing Board 07 December 2007 at Traders Royal Hotel

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Formulated a Resolution on Basic Research for National Development in the Fields of Biology, Agriculture and Forestry used as guidelines by different stakeholders in the integration of research areas in Cluster IV of the planned revision of National Basic Research Program *

Submitted comments/recommendation on the financial assistance of DOST-JSPS-PRF Research Forum on Environment and Health *

Formulated the National Integrated Basic Research Agenda (NIBRA) based on the output of the Consultative Forum for National Integrated Basic Research Agenda (NIBRA), November 7, 2008, Traders Hotel, Pasay City

Recommended the accreditation of the Safety Kids Worldwide Foundation, Inc. December 2, 2008

POPULARIZING BASIC RESEARCH OUTPUTS

The NRCP Information Section remains steadfast in informing the public particularly the students from the primary, secondary, and tertiary levels, including policy makers and entrepreneurs, of basic research discoveries via popularization activity through the annual DOST Science and Technology Fair.

Through this activity, detailed scientific explanation and information on the basic nature of the certain phenomena studied or investigated by NRCP member researchers, scientists, and technologists to get through the confines of laboratories to the general public with the aim of promoting the vast new knowledge and technologies generated from basic research -- in areas of Environment Protection, Hazard Mitigation, Health, Medicine/Cure, Agriculture, and Alternative Energy for the benefit of the society, the economy, and well being of the entire Filipino citizenry.

Aside from the "NRCP History-in-Capsule" and NRCP Basic Research Breakthroughs (1933 present), the 2008 NRCP Exhibit for the 8th ASEAN Science and Technology Week and the 2008 National Science and Technology Week, featured the following basic researches:

ENVIRONMENT PROTECTION

- Subcellular Localization, Isolation, and Partial Purification of Mercury-Binding Phytochelatins in *Chromolaena odorata* (L.*f*)

Dr. Gilda C. Rivero
Dr. Juliana Janet M. Puzon
Ms. Hannah Joy P. Alcantara
Institute of BiologyUniversity of the Philippines Diliman

This study elucidated the biomolecules involved when C. odorata was exposed to mercury, results herein, may help provide an understanding of the efficacy by which the said plant accumulates high levels of mercury, making it a potentially effective PHYTOREMEDIATOR.

- Biodiversity of Soil Arthropods: Pre- and Post Land Conversion Ecosystems and Their Role in Maintaining Soil Fertility

Dr. Ireneo L. Lit, Jr.
Institute of Biological Sciences
University of the Philippines Los Baños

This study aims to cull and deliver Information on the impact of Land Conversion to Soil Arthropod Biodiversity and its effect on maintaining Soil Fertility (ecological balance). Likewise, this study will identify groups of soil litter arthropods which will serve as Biological Indicators for Environmental Monitoring Activities in connection with conversion project.

HAZARD MITIGATION

- Analysis and Prediction of Rainfall Associated with Southwest Monsoon Surge

  Dr. Nathaniel T. Servando
  DOST Philippine Atmospheric Geophysical
  Astronomical Services Administration

  MESOSCALE MODEL (MMS5)is used to forecast rainfall disturbances brought about by the SOUTHWEST MONSOON SURGE. MMS5 has the potential use in forecasting the characteristics of mesoscale rainfall distribution associated with the SOUTHWEST MONSOON SURGE in the Philippines. Thus, re-occurrences of disasters could be mitigated.

HEALTH, MEDICINE, AND CURE

- Correlation of Pre- and Post Transplant HLA Allosensitization with Graft Rejection in Renal Transplant

  Dr. Florecita R. Padua
  Department of Immunology
  National Kidney and Transplant Institute Quezon City

  The results of this study may serve as GUIDE to transplant physicians in their choice of IMMUNOSUPPRESSION REGIMENS adapted to a particular patient anti-HLA antibody profile, both before and after transplantation.

- Structure Elucidation of Antimutagenic and Anti-inflammatory Constituents from Cassia alata Linn.

  Dr. Irene M. Villaseñor
  Institute of Chemistry
  University of the Philippines Diliman

  Cassia alata may provide an alternative to imported medicines. Locally accessible raw materials would result in more affordable drugs, which would be readily available to the public. Standardization of this traditional medicine would ensure its safety and efficacy. Likewise, since the extraction of large quantities of the leaves' bioactive constituents is not viable, DRUG SYNTHESIS is recommended. This could be achieved through STRUCTURE ELUCIDATION. With this approach, synthesis of bioactive constituents and chemical modifications would be done leading to the production of more potent drugs.

- Screening for New and Antimicrobial Compounds of Family Compositae

Dr. Consolacion Y. Ragasa
Department of Chemistry
De La Salle University Manila

Results of this research project will contribute to the PHYTOCHEMISTRY of plants of Family Asteraceae/Compositae. The new compounds found from the plants will be added to the growing list of NATURAL PRODUCTS with potential ANTITUMOR/ANTIBACTERIAL ACTIVITIES.

ALTERNATIVE ENERGY

- Optimization of Ethanol and Jatropha Oil Life Cycles

Dr. Raymond R. Tan
College of Engineering
De La Salle University Manila

The application of mathematical models/systematic planning models can serve to optimize the environmental gains from the use of alternative vehicle fuels in view of supply and demand constraints.

AGRICULTURE

- Isolation of Anti-Bacterial Agents Potentially Useful for Disease Control in Aquaculture

Dr. Arturo O. Lluisma
Marine Science Institute
University of the Philippines Diliman

The result of this research will build the theoretical and technical basis for the development of Bacteriophage/bacteriocin-based biotechnology products that will be useful for disease control in aquaculture industry.

This 2008 NRCP Exhibit was the Council's entry to the 8th ASEAN Science and Technology Fair and the 2008 DOST Science and Technology Week Celebration which were simultaneously held at the World Trade Center, Pasay City, 17-21 July 2008.

Aside from this, the 2008 NRCP Exhibit also participated in other trade events, namely:

- 4th Northern Luzon Cluster Science and Technology Fair

  Cagayan Colleges Tuguegarao
  Balzain, Tuguegarao City
  Cagayan
  6-10 October 2008

- 4th Visayas Science and Technology Fair

  Island City Mall
  Tagbilaran City
  Bohol
  22-26 October 2008

- 2008 DOST South Luzon Cluster Science and Technology Fair

  Olongapo City Convention Center
  Olongapo City
  11 -14 November 2008

The fabrication of the exhibit was funded by the Department of Science and Technology through the sponsorship of the Technology Application and Promotion Institute.

INTERNATIONAL LINKAGES

The NRCP maintains active scientific collaboration and membership with the following international organizations by paying annual dues

1. **International Council for Science (ICSU)** a scientific non-governmental organization representing a global membership based in Paris, France. It coordinates interdisciplinary research to address major issues of relevance to both science and society. In addition, it actively upholds freedom in the conduct of scientific research, promotes equitable access to scientific data and information, and facilitates science education and capacity building. The Council acts as a focus for the exchange of ideas, the communication of scientific information and the development of scientific standards. As NRCP is an active member organization of ICSU. Dr. Napoleon P. Hernandez, Executive Director, participated in the *29th ICSU General Assembly* held on 17-25 October 2008 in Maputo, Mozambique.

2. **International Foundation for Science (IFS)** based in Stockholm, Sweden. It invites promising researchers from developing countries like the Philippines to submit research proposals in different areas, such as, agriculture, animal health and production, forestry, aquatic resources, biological, chemical, socio-cultural or economic research topics that are important for the conservation, production or renewable utilization of biological or water resources. IFS grant covers equipment, expendable supplies, literature, and field activities.

3. **International Mathematical Union (IMU)** based in Berlin, Germany. Its principal objective is to promote and facilitate international cooperation for the advancement of mathematics in developing countries. The Philippines is one of IMU's country members, with NRCP as adhering organization. NRCP designated the Mathematical Society of the Philippines (MSP) based at the UP Department of Mathematics as the Committee for mathematics which acts as liaison between NRCP and IMU. Both NRCP and MSP provide equal share in the payment of annual dues to IMU.

The NRCP likewise maintains scientific and collaborative agreements with the following international organizations which at present do not require payment of annual membership dues:

1. **Korea Research Foundation (KRF)** based in Seoul, Korea. It aims to strengthen research infrastructure in Korea and promote responsibility, transparency, and efficiency in government. It has target programs on regional university researches, human resources development, women scientists, college curriculum development, inter-Korean exchange, and academic achievement outreach activities. International exchange program covers international joint research works, international researches, and visit of foreign professors. Its scientific agreement with NRCP includes exchange visits and training courses, exchange of experts, and technical workshops/seminars, among others. Through the invitation of KRF, Dr. Napoleon P. Hernandez and Mr. Salvador G. Tan, Chief, NRCP Research Assistance Division, participated in the KRF capacity building workshop on *Strengthening Peer Review System to Facilitate International Collaboration* held on 3-5 November 2008 at Ramada Seoul Hotel, Seoul, Korea, with hotel accommodation and airfare shouldered by KRF. At this workshop, Dr. Hernandez presented a paper on *NRCP's Peer Review in Basic Research.*

2. **German Research Society (*Deutsche Forchungsgemeinschaft*)** based in Bonn, Germany. Its collaborative agreement include study visits and fellowships, attendance and participation in international conferences, and joint projects.

3. **Science Council of Asia (SCA)** based in Tokyo, Japan, is an international organization which brings together scientists and scientific organizations from all academic fields, including the cultural and social sciences as well as the natural sciences and technology. It is composed of 3 eligible organizations from each member country. In case of the Philippines, the following professional organizations have been admitted into SCA: National Research Council of the Philippines (NRCP), Philippine Social Science Council (PSSC), and Philippine Association of Marine Science (PAMS). The **10th SCA International Conference** on the theme *Responding to Health Challenges in Asia Pacific Region: An Integrated and Multidisciplinary Approach in Science and Technology* will be held in 2010 in the Philippines, to be hosted by NRCP.

In view of financial constraints, the NRCP, since the last decade, has been placed in observer category by the following international organizations:

1. Committee on Science and Technology in Developing Countries and International Biosciences Networks (COSTED-IBN)
2. International Geographical Union (IGU)
3. Scientific Committee on Problems of the Environment (SCOPE)
4. Pacific Science Association (PSA)
5. International Union of Biological Sciences (IUBS)
6. International Federation of Social Science Organizations (IFSSO)
7. Regional Energy Resources Information Center (RERIC)
8. Council for International Organization for Medical Sciences (CIOMS)

PARTICIPATION IN INTERNATIONAL/NATIONAL CONFERENCES

Attendance at the Elseviers' Directors' Forum
NRCP Executive Director Dr. Napoleon P. Hernandez
Nanyang Executive Center (NEC), Singapore
06 May 2008

Attendance at the 8th Science Council of Asia Conference
NRCP President Jaime C. Montoya
Qingdao, China
27-30 May 2008

The conference was attended by ten SCA member countries: China, Indonesia, Japan, Republic of Korea, Malaysia, Mongolia, the Philippines, Singapore, Thailand and Viet Nam. In the Opening Ceremony on May 28 which was held in cooperation with the International Forum on Marine Science and Technology and Economic Development (IFMSTED) 2008, Prof.Masahide Kaeriyama, Hokkaido University delivered a keynote speech.

At the General Assembly I on May 28, three new SCA Joint Projects were proposed and approved: *Open Data and Knowledge Environment for Innovative Research on Poverty Free and Ecosystem Protection in Asian; Sustainable Water Resources Management in Asia; and Action Plans for Natural Disaster Mitigation.*

Nominated Dr. Jose Perico Esguerra as the NRCP Official Representative
to the Asia Pacific Center for Theoretical Physics (APCTP)

Deliberated and approved the invitation of Prof. Mohammad H.A. Hassan, Executive Director of the Academy of Sciences for the Developing World for NRCP to become a member organization of the newly created Consortium on Science, Technology, and Innovation for the South (COSTIS) of the Third World Academy of Science and Technology (TWAS)

Nominated Dr. Nathaniel Bantayan to the ICSU Planning Group on Ecosystem
26 May 2008

Circulated Application Form for the ICSU-TWAS-UNESCO-UNU-IAS Visiting Scientists programmed for 2008

Circulated International Mathematical Union (IMU) AO Circular Letter regarding Nominations for IMU prizes 2010
April 2008

Attendance at the opening ceremony of the 8th ASEAN S&T Week and the ASEAN Youth Science Summit
NRCP President Jaime C. Montoya
Sofitel Hotel and World Trade Center, Pasay City
01 July 2008

Vice President Alvin B. Culaba met with the Asia Pacific Representatives of ELSEVIER on the search for Science Award with their published articles and citation data banks
De La Salle University, Manila
26 June 2008

Attendance at and participation in the Scientific Career Council (SCC) Meeting
NRCP President Jaime C. Montoya
Civil Service Commission Office
Constitution Hills, Batasang Pambansa Complex
Diliman, Quezon City
23 July 2008

Nominated Dr. Alvin B. Culaba, NRCP Vice President, as NRCP official nominee to the IFS Board of Trustees
08 July 2008

Continuous communication with Science Council of Asia (SCA) re: hosting of the 10th SCA Conference by NRCP in 2010

Promulgated protocol in processing nomination for national/international positions, awards and membership to other agencies
25 July 2008

Appointed Dr. Alvin B. Culaba, NRCP Vice President, as Chairperson of the External Relations Committee, which will take charge of establishing linkages with foreign organizations
25 July 2008

Created the Working Committees for the 10th Science Council of Asia (SCA) Conference to be held in the Philippines in 2010
29 August 2008

Attendance and participation of Dr. Napoleon P. Hernandez, NRCP Executive Director, to the 29th International Council for Science (ICSU) General Assembly
Maputo, Mozambique
18-27 October 2008

Founded in 1931, ICSU is a non-governmental organization with a global membership of national scientific bodies (113 members representing 133 countries and international scientific unions (29 members). ICSU's activities focus on three areas: planning and coordinating research; science for policy; and strengthening the Universality of Science. In the 29th General Assembly held 18-27 October 2008, the following resolutions were adopted:

NRCP officials met with Prof. Mohd. Nordin Hassan, Director, ICSU Regional Office for Asia and the Pacific re possible S&T collaboration
19 September 2008.

1. The 29th General Assembly recommends that the Executive Board of ICSU be mandated to explore and identify the most appropriate mechanisms to mobilize the National Members, Scientific Unions, Interdisciplinary Bodies and Scientific associates of ICSU to work with the scientific community and its institutions in Mozambique in support of the Government of Mozambique to implement its science and technology strategy and action plan.
2. In the context of the discussion about the International Polar Year (IPY) and the report of the Strategic Committee on Information and Data (SCID), ICSU shall take a leadership role in developing basic principles for forward planning at all stages of research projects and programmes, for data identification, sharing, availability and long term preservation, noting that data management should be an intrinsic element of programme reviews.
3. Recognizing that modern information and communications technologies are revolutionizing the conduct of scientific research and education, all efforts must be made within the international scientific community to improve internet capabilities in scientific, technical and educational institutions in Africa and around the world.

Attendance and participation of Dr. Napoleon P. Hernandez, NRCP Executive Director, and Mr. Salvador G. Tan, Chief, NRCP Research Assistance Division in the Korea Research Foundation capacity building workshop on Strengthening Peer Review System to Facilitate International Collaboration Ramada Seoul Hotel, Seoul, Korea 3-5 November 2008

Dr. Hernandez presented a paper on *Peer Review in Basic Research*. He explained the process for research project proposals and presented the flowchart for publication grants. The criteria and equivalent weights were also presented. Also included in the paper are a Flowchart for Research Project Proposals and a Flowchart for Publications.

The workshop was attended by professionals of the research funding agencies from various countries in the world who exchanged information on peer review systems and had a good opportunity to form their international networks for more efficient and fair evaluation of peers.

Thirty (30) participants from international funding agencies from twenty (20) countries shared information on peer review systems which were developed by coping with various surroundings and challenges.

The common problem encountered by some participating countries is the lack of funds and sometimes the lack of evaluators.

Attendance and participation of Dr. Napoleon P. Hernandez, NRCP Executive Director, as the NRCP official representative at the Science Council of Asia (SCA) Framework Committee of the Management Board Meeting November 2008.

2007 NRCP ACHIEVEMENT AWARDEES

Dr. Ester Ogena	Governmental, Educational and International Policies
Dr. Noli N. Reyes	Mathematical Sciences
Dr. Edward H.M. Wang	Medical Sciences
Dr. Cynthia T. Hedreyda	Biological Sciences
Dr. Orville L. Bondoc	Agriculture and Forestry
Dr. Raymond Girard R. Tan	Engineering and Industrial Research
Dr. Elizabeth R. Ventura	Social Sciences
Dr. Arnel A. Salvador	Physics
Dr. Gisela P. Concepcion	Chemical Sciences
Dr. Florentino H. Hornedo	Humanities
Dr. Bernardo M. Soriano, Jr.	Earth and Space Sciences

Division IV Pharmaceutical Sciences no awardee

HIGHLIGHTS OF THE 75th NRCP GENERAL MEMBERSHIP ASSEMBLY MEETING

Welcome Remarks

Today, the NRCP focuses on research and development. We in the Council believe that we have a serious role to play in the development of scientific knowledge in this country. This is the reason why we emphasize basic research. Basic research tends to be forgotten but it is through this that we have generated a lot of inventions, a lot of ideas for economic development. Having focused again on this theme, we have encouraged cross-disciplinary and interdisciplinary researches. In the process of acquiring our master's/doctorate degrees we tend to focus on very narrow specialized areas. But as we live in society we soon discover that what we know is intertwined and interrelated with other disciplines.

Dr. Olivia C. Caoili
President, National Research Council of the Philippines

Message

Indeed, rapid advances in S&T have empowered individuals and societies in varied and previously unknown ways. Such advances have continued to lift millions out of the claws of poverty, revolutionize learning schemes, enhance people's mobility, expand trade, tear down physical barriers to occupational opportunities, transform lifestyle and entertainment systems, shatter intricate biases, add more years to life, and - it seems even postpone death. In many creative ways S&T bends and extends possibilities by harnessing unique intellectual capital to unlock the vast riches hidden in nature.

Dr. Estrella F. Alabastro
Secretary, Department of Science and technology

Keynote Address

Basic research has several virtues, apart from the new knowledge it generates. And one of these is that it cultivates a culture of creativity and boldness. It is a culture where commitment, discipline, perseverance, and intellectual maturity prevail. In this environment, short-term gains are given up for long-term benefits as discoveries rarely happen instantaneously; openness and exchanges are crucial as collaboration is imperative, and critical thinking is indispensable as it pursues the answers to the truly significant questions why, what, how, and when.

Honorable Senator Edgardo J. Angara
Chairman, Senate Committee on Science and Technology

Technical Paper Presentors

Dr. Ester B. Ogena
Director
Science Education Institute
Department of Science and Technology

There is a need to work hard and put in more people, particularly younger ones, in R&D institutes, government, academe, and NRCP.

The National Centers of Excellence are found mostly in the UP System, state colleges and universities, DOST research institutes and in RDIs, and science parks, in government and private sectors.

Dr. Roland V. Sarmago
Professor
National Institute of Physics
University of the Philippines
Diliman, Quezon City

When we look at the environment we also look at the over-all picture of factors that affect the environment. It is better to incorporate them as a whole. It is good when people come together and work as a whole to address the problem of sustainability and the problem of deteriorating environment.

Dr. Irene M. Villaseñor
Director and Professor
Institute of Chemistry
University of the Philippines
Diliman, Quezon City

Drug discovery and development starts with data mining, then to agriculture for the supply chain and conservation, then to documentation and sample collection screening for biological activity either in vitro or in vivo which will end up with a bioactive crude extract.

Dr. Cynthia T. Hedreyda
Director and Professor
National Institute of Molecular Biology and Biotechnology
University of the Philippines
Diliman, Quezon City

Initially, the main objective of the real work of the author in the molecular microbiology lab is to obtain gene sequences that may be targetted for specific detection of vibriosis and variant 2-Philippine *vibrio* isolates.

NRCP 75th ANNIVERSARY CELEBRATION

Unveiling of the 75th NRCP Commemorative Stamps and Signing of the First Issue

Mr. Hector R. R. Villanueva, Postmaster General and CEO of PhilPost, led the unveiling of the 75th NRCP commemorative stamps, participated in by other PhilPost executives and officials of the NRCP Governing Board. The first issue of the set of commemorative stamps was signed by Mr. Villanueva and Dr. Caoli, witnessed by Secretary Alabastro, Senator Angara, NRCP President, Dr Jaime C. Montoya and NRCP Executive Director, Dr. Napoleon P. Hernandez.

THE NIBRA LAUNCHING

(National Integrated Basic Research Agenda)
08 December 2008
Manila Hotel

DOST Secretary Estrella F. Alabastro and NRCP President Dr. Jaime C. Montoya assisted by Dr. Napoleon P. Hernandez present NIBRA, NRCP Research Journal Foundation Anniversary Issue, and NRCP Cluster Resolutions to Atty. Pilita Venturanza representing Executive Secretary Eduardo R. Ermita.

Hon. Estrella F. Alabastro was assisted in the ribbon cutting by Dr. Jaime C. Montoya, NRCP president, members of the governing board and Dr. Napoleon P. Hernandez, NRCP executive director during the celebration of the 75th NRCP Founding Anniversary on December 8, 2008 at the Maynila Ballroom, Manila Hotel.

Opening/Viewing of Exhibits

NRCP's 75th Founding Anniversary

FELLOWSHIP NIGHT

17 December 2008, Traders Hotel, Pasay City

The NRCP Fellowship Night was held to recognize the contributions of the Council's past presidents since 1997 to 2007, as well as the important administrative machinery of NRCP, the members of the NRCP Secretariat who have remained dedicated and efficient in the performance of their official duties and responsibilities through the years. Plaques were given to the past presidents while certificates of recognition and gold pins were given to NRCP staff. The five Presidents who were cited included **Dr. Henry P. Samonte (1997-2000)** for enhancing NRCP's international linkages and participation in international scientific conferences such as the International Foundation for Science (IFS), Third World Network of Scientific Organizations (TWNSO) and Deutche Forschungsgemeinschaft (DFG) and advocacy for basic research, capacity building; **Dr. Amelia C. Ancog (2000-2001)** for bringing NRCP to the prestigious Science Council of Asia (SCA) as one of the founders and framers of its Statutes and By-Laws; for the creation of the NRCP Regional Science Clusters and ensuring gender dimensions in NRCP Reporting Systems; **Dr. Reynaldo M. Lesaca, Sr. (2001-2002)** a multi-degree holder and lifetime member of the prestigious MENSA International, and Chairman of the Board of Examiners for Sanitary Engineers, who brought fame and prestige to NRCP; and intensified its Outreach Program and pushed NRCP towards an S&T-oriented environment; **Prof. Fortunato T. de la Peña (2002-2007)** for further enhancing the NRCP Mindanao and Visayas Clusters; for giving University-Industry-Government Collaboration more intensity and relevance, lobbying for increase in the dearth of R&D funds for basic research, exploring collaborative arrangements with the Science Councils of Japan and Taiwan, advocating multi-disciplinary approach to problems and concerns; directing the formulation of a National Basic Research Program (NBRP) and during his watch, Executive Order No. 604 Creating the Presidential Council on R&D chaired by the President of the Philippines with NRCP as a member was realized; **Dr. Olivia C. Caoili (2007-2008)** for her intensified participation in local and international linkages in such bodies as Home Mortgage Development Corporation (PAG-IBIG Fund), Asian Consortium for Political Research (ACPR), the Korean Research Foundation in which a Memorandum of Understanding on research collaboration and exchange was forged and masterminded the publication of a book entitled *NRCP@75:*

Bringing Great Ideas to Life.

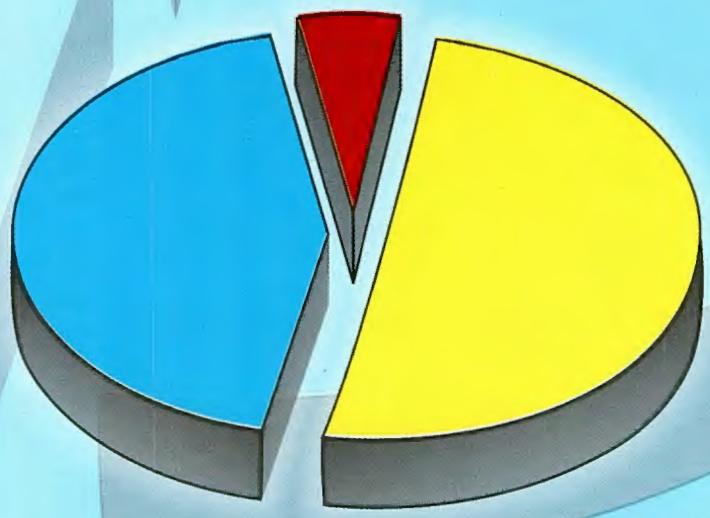
NRCP HUMAN RESOURCES MANAGEMENT

Orientation/Demonstration on the Reach Out and Read Program	DOST Executive Lounge	January 31	Edna B. Bongon
Energy Summit	SMX Convention Center Mall of Asia, Pasay City	February 5	Salvador G. Tan Ruby B. Villavicencio Jesus S. Piquero Randy R. Tugawin
NIH 10th Anniversary and the 6th University Science and Technology Week Celebration	Century Park Hotel, Manila	February 12	Melinda L. Perez
Life and Death – Why our Proteins have to die so we shall live	Pres. Diosdado Macapagal Auditorium UP School of Economics Diliman, Quezon City	April 8	Salvador G. Tan Allan L. Aquino Randy R. Tugawin Lolita J. Moreno
NAST Talent Search for Young Scientists	Traders Hotel, Roxas Blvd. Pasay City	April 17	Salvador G. Tan Allan L. Aquino Randy R. Tugawin
Command Communication: Oral Communication Skills Development	DOST Executive Lounge	May 7-9	Jaime M. Ragos
DOST Webmasters Consortium Web development Training	Lagada Inn and Restaurant Bohol	May 26-30	Alejandro R. Salamat
Resilience Through Governance: Efficiency, Gains and Opportunities	Grand Meng Seng Hotel Davao City	May 28-31	Nymia O. Carvajal
NRCP Management Staff Strategic Planning Workshop	Alviar's Lake Resort Brgy. Tadlac, Calamba, Laguna	May 29-30	NRCP Personnel
Science and Technology Innovations for the Base of Pyramid in Southeast Asia	Mini-Amphitheater Ateneo Professional School Rockwell Center, Makati City	June 11	Salvador G. Tan Elena C. Palafox Melinda L. Perez
Elsevier Connect Seminar 2008	CSB Hotel De La Salle-College of St. Benilde	June 27	Alicia C. Mercado Lanie P. Manalo
Internal Auditors Amidst Government Rationalization and Quality Management System	Hotel Rembrandt, Tomas Morato Avenue, Quezon City	July 4	Adelaida E. Jasareno
National Workshop on Technology Management for Publicly Funded Universities and Research and Development Institutions	CSB Hotel DLS-CSB AKIC Campus Arellano Avenue cor Estrada St. Malate Manila	July 15-18	Salvador G. Tan Allan L. Aquino
Seminar-Writeshop on Modules Development: Gender Sensitivity, Analysis and Responsive Planning of Technologies Relevant to Women Enterprises	Rockpoint Hotel and Conference Center, Pansol, Calamba City	July 16-18	Mary Rose M. Martin
Leadership Training for Officials of DOST and Its Agencies	ITDI, Metrology Conference Room	September 5	Luz A. Aramil
4th Northern Luzon Cluster Fair	Cagayan Colleges of Tuguegarao Gymnasium, CCT Campus New Site Balzain, Tuguegarao City Cagayan	October 6-10	Manuel F. Velasco Victorino M. Tagalicud
4th Visayas Cluster Science and Technology Fair	Island City Mall, Tagbilaran City Bohol	October 22-26	Manuel F. Velasco Victorino M. Tagalicud
2008 South Luzon Cluster Fair	Olongapo Convention Center Olongapo City	November 11-14	Manuel F. Velasco Victorino M. Tagalicud
Seminar on Bridges for Peace Program	Kuala Lumpur, Malaysia	December 17-19	Salvador G. Tan

Financial Resources Management

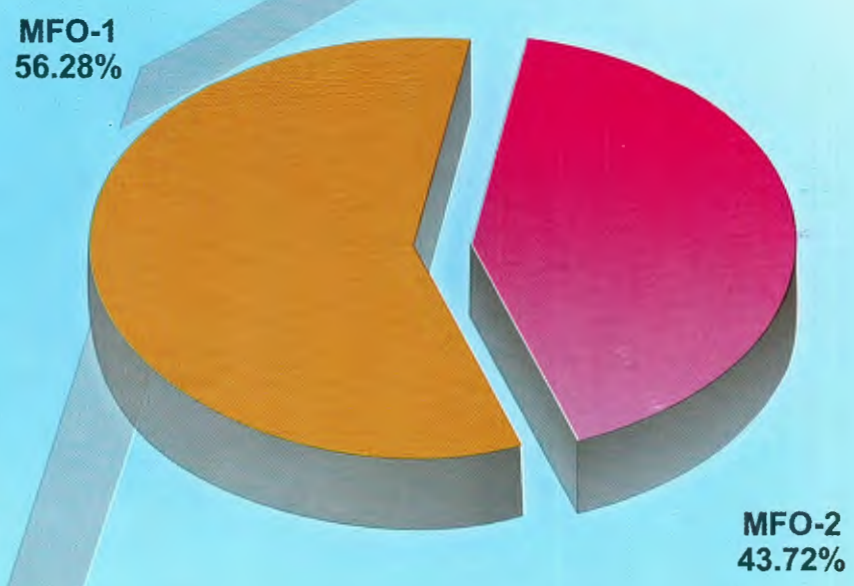
Distribution of Expenditures by Expense Class

PS	P 16,791	50.27%
MOOE	15,712	47.04%
CO	897	2.69%
TOTAL	P 33,400	100%



Distribution of Expenditures by MFO

MF01 - R&D Network Services	P 18,797	56.28%
MF01 - Policy Advisory Services	14,603	43.72%
Total	P 33,400	100%



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Corporate Secretary

DR. ZENAIDA G. SADIWA
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National Academy of Science and Technology

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Professor Emeritus and Former Dean
College of Veterinary Medicine
University of the Philippines Los Baños

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DR. GRACIANO P. YUMUL, JR.
Undersecretary for Research and Development
Department of Science and Technology

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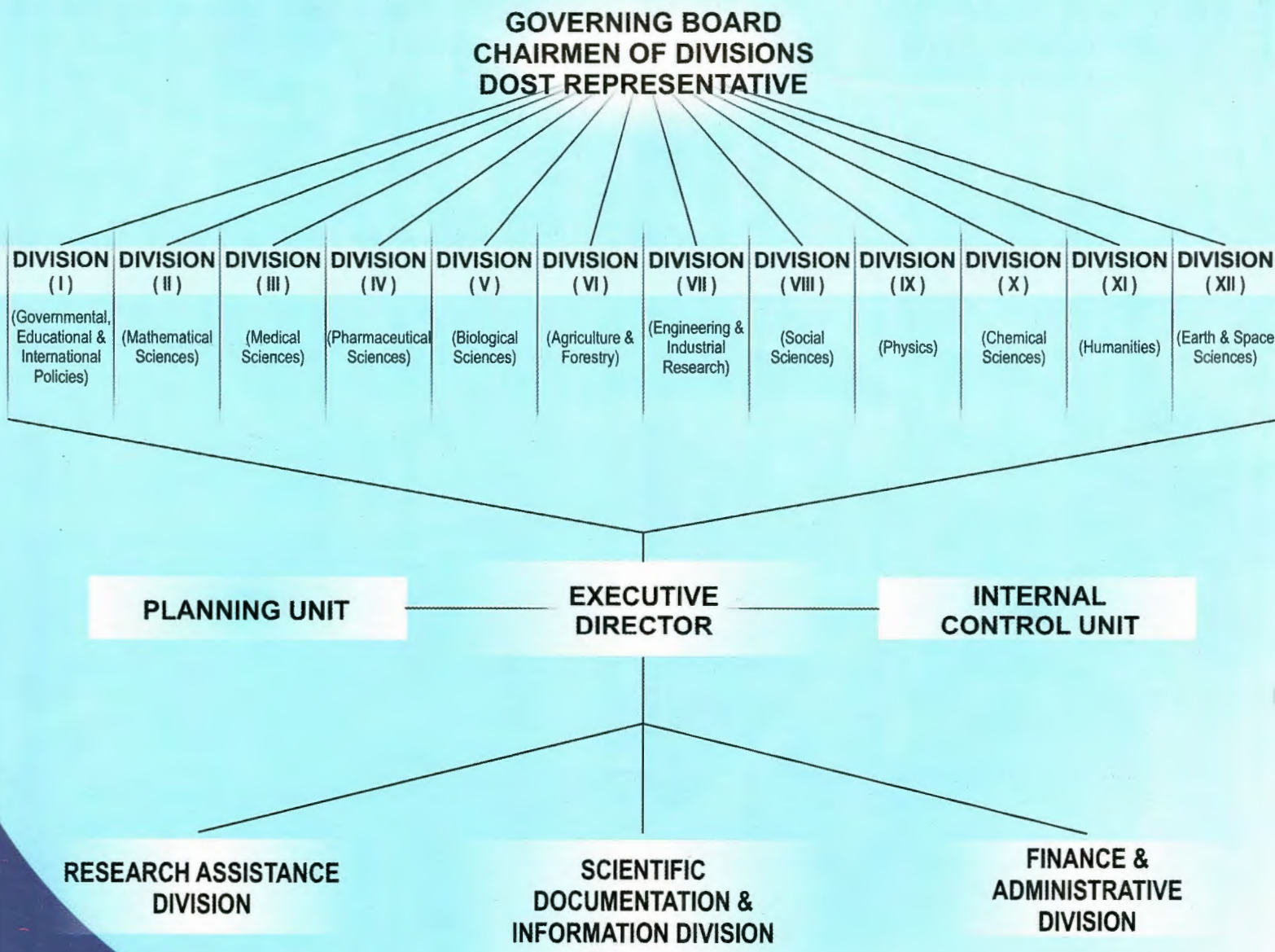
MRS. LUZ A. ARAMIL
Officer-in-Charge
Finance and Administrative Division

NATIONAL RESEARCH COUNCIL OF THE PHILIPPINES ORGANIZATIONAL CHART



NRCP

NATING MAHAL

Itaguyod ang NRCP
Itambuli ang kanyang layon
Sa ating bayan at bukas
Tayo'y maging tanglaw.

Sukatin natin ang mga panaginip
Sa tayog ng ating mga pithaya
Sa lalim ng ating pananalig
Ialay sa lahi ang ating biyaya.

Bawat dahon, katas at ugat
Bawat hayop, kulisap, at ibon
Bawat bundok, lawa at lambak
Ay duyan ng ating nasa't layon.

Ang agham ng lipunan't politika
Ang himaymay ng titik at atom
Diwa't himig ang arte't matimatika
Balangaw ng lahi sa pagsulong.

Magkawil bisig, taliba ng dunong
Manalig tayo sa bukal ng lupa
Sa daigdig ay aahon
Mag-alay sa samyo ng diwa.

Dunong ay lakas ng bayan
Landas sa kinabukasan
Ibandila ang NRCP
NRCP ay mabuhay.

75TH ANNIVERSARY SONG

Lyrics: Victor Emmanuel Nadera
Music: Felipe Mendoza de Leon

Within us stirs a deep sense of wonder
The gifts of the ages we ponder
Devoted we work on the tasks at hand
In the name of our Lord and land

Refrain
Ever the child in us is awake
Probing earth's secrets and codes people make
Like owls who never sleep on a perch
All that's worthy and noble we search

Our heart's desire is naught but to share
The fruits of our learning because we care
We unite to forge a common vision
And strive for the good of our nation

Refrain
We are one and the same in believing
Without wisdom knowledge is wanting
Honing our skills is the way we live
To search for truth with the finest sieve

Bringing Great Ideas to Life