

University of the Philippines in the Visayas
Miagao, Iloilo



National Institute of Molecular
Biology and Biotechnology
(UPV-NIMBB)

April 27, 2006

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Vision

A powerhouse of experts and products in aquatic and marine biotechnology.

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Mission

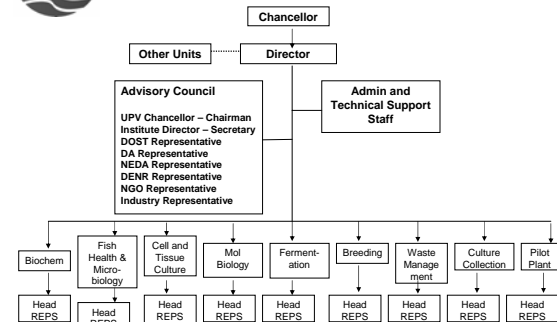
- To serve as the driving force in the promotion and the strengthening of biotechnology research and development in aquaculture and marine sciences
- To lead in the protection, conservation and utilization of aquatic resources
- To strengthen existing research capabilities in marine/aquatic biotechnology through networking/linkages with other national and international institutions.

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Original Proposed
Organizational Structure

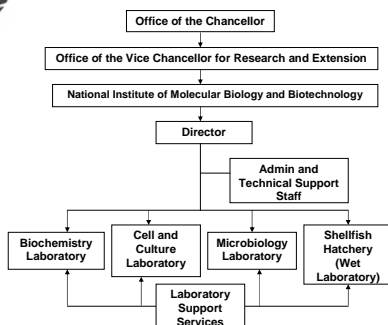


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Present Organizational Structure



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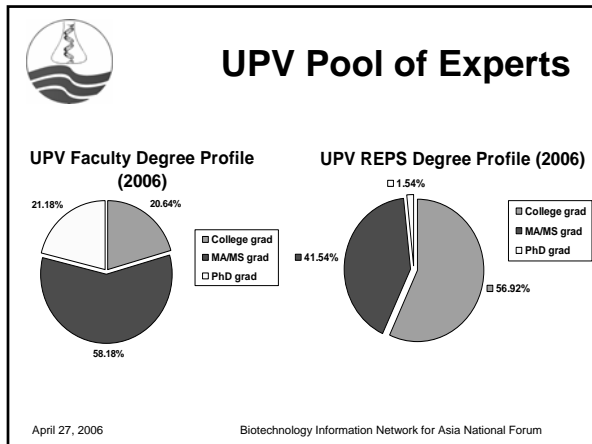


Research personnel

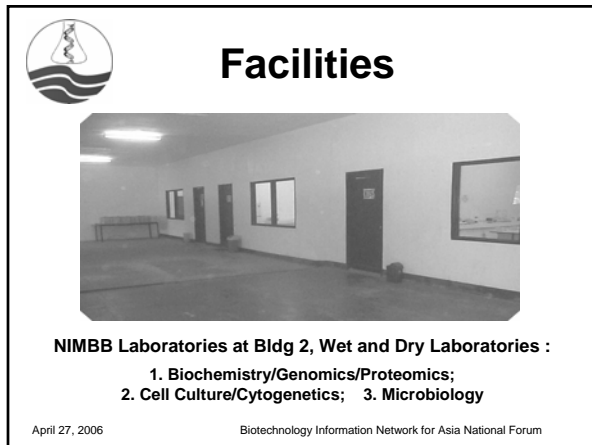
- University Research Associate
- Affiliate Researchers drawn from faculty and staff of existing units which has approved research proposed through NIMBB or research funded through NIMBB and/or using the facilities of NIMBB.

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- Facilities**
- **Laboratories**
 - **Dry laboratories (3):**
 - Biochemistry/Genomics/Proteomics
 - Cell culture/Cytogenetics
 - Microbiology
 - **Mice (for antibody production) breeding room**
 - **Wet laboratory (1) – indoor hatchery**
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- Program Thrusts**
- Program areas**
- Marine/Aquatic Biotechnology
 - Proteomics / Genomics
 - Natural Products
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- Program areas**
- Marine/Aquatic Biotechnology**
- Culture of aquatic organisms
 - Fish health management
 - fish diseases, diagnostics, biocontrol agents, vaccines
 - Processing/ post harvest
 - Environmental studies
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Program areas

Proteomics / Genomics

- Molecular systematics / Population genetics
- Genetic variation
- Genetic markers

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Program areas

Natural Products

- Microbial
 - **biocontrol agents; antimicrobial compounds**
- Genetic resources
 - **Novel genes and gene products**
 - **Nutriceuticals; pharmacological compounds**

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Aquatic/Marine Biotechnology

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Completed (Aquatic/Marine Biotechnology)

- Improvement of Crab Hatchery Technology (Dr. Jesse Ronquillo/ UPV-In House funding)
- Early Developmental Stages of Donkey Ear Abalone, *Haliotes Assinina* Linne (Dr. Jesse Ronquillo and Irwan Effendy/ UPV In-House)

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Completed (Aquatic/Marine Biotechnology)

- Effect of Common Table Salt in Improving Culture Medium for Growth and Survival of Mudcrab, *Scylla oceanica* Dana, 1852 from larval to Juvenile Stages (Frank Santos/ UPV In-House)
- Use of saponin as growth enhancer in tilapia (Dr. Augusto E. Serrano, Jr./ UPV In-House)

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Completed (Aquatic/Marine Biotechnology)

- Micropropagation of *Kappaphycus alvarezii* (Doty) (Dr. Augusto E. Serrano Jr./ UPV In-House)
- Investigation of the role of endogenous enzymes in the digestive physiology of grouper, *Epinephelus coioides* (Dr. Augusto E. Serrano, Jr./ UP President Creative and Research Grant)

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Completed (Aquatic/Marine Biotechnology)

- Use of Green Water Technology as Biocontrol Agent in Prawn Species Grow Out (Prof. Valeriano Corre/ DA-BAR-AFMA)
- Use of Biocontrol Agents in Controlling Hatchery Diseases in Aquaculture (Prof. Nieves Toledo/ DA-BAR-AFMA)

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Completed (Aquatic/Marine Biotechnology)

- Development of Immunostimulant Formulation and Simple Qualitative Pathogen Detection Kit for Shrimp Farming (Dr. Augusto E. Serrano, Jr./ DA-BAR-AFMA)
- Isolation and Characterization of Local Probiotics for Shrimp Aquaculture (Mr. Rex Ferdinand Traifalgar/ UPV NIMBB In-house)

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Completed (Aquatic/Marine Biotechnology)

- Development of Low-Pollution Diet for Nile Tilapia (Dr. Augusto E. Serrano, Jr./ UPV NIMBB In-house)
- Evaluation of different oils for Low pollution diet and its effects on the quality of lipid deposited in tilapia (Dr. Erlinda Panggat/ UPV In-House)

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Ongoing (Aquatic/Marine Biotechnology)

- Evaluation of natural sources of immunostimulants in grouper, *Epinephelus coioides* (Dr. Mary Jane S. Apines-Amar/ UPV In-House)
- Development of Molecular Diagnostics for the rapid detection of bacterial and Viral Pathogen in Shrimp Aquaculture in the Philippines (Dr. Christopher Marlowe Caipang/ UPV In-House)

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Ongoing (Aquatic/Marine Biotechnology)

- Comparison of closed bioaugmented and conventional open intensive shrimp culture systems (Prof. Valeriano Corre/ UPV In-House)
- Biochemical Properties of Traditionally processed Fish Sauce Made From Anchovies (Ms. Rose T. Mueda/ UPV In-House)

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Plans (Aquatic/Marine Biotechnology)

- Local probiotics
- Processing aids for abalone
- Continuation of the study on molecular diagnostics
- Immunostimulants
- Qualitative pathogen detection kit
- Microalgae (antagonistic and nutritional properties)
- Biosensors (biological indicators)

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Proteomics / Genomics

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Completed (Genetics / Genomics)

- Cloning and Sequencing of Catfish IGF 1 gene (Dr. Augusto E. Serrano, Jr./ UPV In-house)
- Development of triploidy hybrid catfish (*Clarias macrocephalus* Gunther x *Clarias gariepinus* Butchell) and comparative karyotype analysis of *Clarias macrocephalus* Gunther, *C. gariepinus* Butchell and their hybrid (Prof. Theresa Leaño-Minerva/ UPV In-house)

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Completed (Genetics / Genomics)

- Biological Characterization of *Vibrio harveyi*, a fish pathogen associated with luminous bacterial infection in penaeid shrimps (Dr. Minerva S.D. Olympia/ DOST)
- Mitochondrial DNA Analysis for Identification of Tuna Species Used Processing (Ms. Carmelita M. B. Benitez/ DA-BAR-AFMA)

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Plans (Genetics / Genomics)

- Population genetic study of commercially important fish species
 - A study of microsatellite DNA in Engraulidae family (dilis / lobo-lobo / marugbas)
 - Endemic fish species i.e. curacha, kuday, coconut crab, freshwater shrimp, freshwater/marine catfish

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Natural Products

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Completed (Natural Products)

- Endogenous enzyme Activity and fatty acid profiles of the epigeic African night crawler, *Eudrilus euginae* and the native endogeic earthworm in UPV Miagao Campus (Prof. Marilou Ang-Lopez/ UPV In-House)
- Production and Characterization of Crude Carrageenase from Native *Haliotes assinina* (Mr. Rex Ferdinand Traifalgar/ UPV NIMBB In-house)

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Completed (Natural Products)

- Optimization of Agar production and Development of Agarose Extraction Method for *Gracilaria tenuispitata* (Mr. Rex Ferdinand Traifalgar/ UPV NIMBB In-house)
- Biological characterization of lab-lab complex” (Prof. Ida Pahila/ UPV In-House)

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Ongoing (Natural Products)

- Exogenous and endogenous enzymes of mud crab larvae (Dr. Augusto E. Serrano, Jr. / DA-BAR-AFMA)
- Effect of prolonged fermentation on the natural antioxidants in Shrimp paste (Ernestina Peralta/ UPV In-house)

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Ongoing (Natural Products)

- Medicinal wine production research (Prof. Monita Pama / UPV In-House)

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Plans (Natural Products)

- Natural marine / aquatic products
 - i.e. bioactive compounds / probiotics

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UPV-NIMBB Plans

- **Improvement of Organizational Set-up**
 - Request for additional personnel
 - Creation of a core group

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UPV-NIMBB Plans

- **Conduct seminar-workshops with Fisheries Industries**
- **Increase research budget allocation for UPV-NIMBB**
 - UPV In House
 - Outside funding agencies

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UPV-NIMBB Plans

▪ **Improvement of NIMBB Structure**

- Walls / tiling of floors
- Redesign biohazard room
- Upgrade/renovate shellfish hatchery structure
i.e. seawater system

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UPV-NIMBB Plans

▪ **Improvement of research facilities**

- Procurement of additional basic MBB equipment

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Publications (International)

- Identification of pathogenic and non-pathogenic vibrio strains from shrimp and shrimp farms in the Philippines. Monsalud, R., Magbanua, F., Tapay, L. Hedreyda, C., Olympia, M., Migo, V., Kurahashi, M. and Yokota, A. 2003. *J. Gen. Appl. Microbiol.* 49, 309-314.

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Publications (International)

- Isolation and culture of protoplasts of Philippine cultivars of *Kappaphycus alvarezii* (Doty) Doty (Solieriaceae, Rhodophyta). Salvador, R. and Serrano, A., Jr. A. 2004. *J. Appl. Phycol.* 30, 1-8.

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Publications (Local)

- Selected properties of α -amylase of the tropical marine rotifer, *Brachionus rotundiformis*. Traifalgar, RF., Nuñal, S., and Serrano, A., Jr. 1999. *UPV J. Nat. Sci.* 4(2), 10-119.

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Publications (Local)

- Genetic manipulation of tropical aquaculture species: A mini-review. Serrano, A., Jr. 1999. *UPV. J. Nat. Sci.* 4, 47-49.

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Awards/ Recognition

- Ronquillo, J.D., Para, Z.V., and Traifalgar, R.F.M. 1999. "Seedling production and pond culture of hatchery-produced juveniles of the mud crab, *Scylla oceanica* Dana" *Crustaceana*
 - Elvira O. Tan memorial Award
Best Published Paper in Aquaculture
 - The UP President's 1999 International Publication Award

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Awards/ Recognition

- Olympia, M., Quilantang, M., and Flores, G. "Biological characteristics of *Vibrio harveyi*, a fish pathogen associated with Luminous Bacterial Infection in Penaeid shrimp"
 - First Place, Best Research Paper Award
Visayan Zonal Center for Aquatic Resources
 - First Place, Best Paper Award
National Aquatic Resources Research and Development System (NARRDS) Award

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Awards/ Recognition

- Monsalud, R., Magbanua, F., Tapay, L., Hedreyda, C., Olympia, M., Migo, V., Kurahashi, M. and Yokota, A. 2003. "Identification of pathogenic and non-pathogenic vibrio strains from shrimp and shrimp farms in the Philippines" *J. Gen. Appl. Microbiol.* 49, 309-314.
 - The UP President's 2003 International Publication Award

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Awards/ Recognition

- Salvador, R. C. and Serrano, A. E., Jr. 2004. "Isolation of protoplasts from tissue fragments of Philippine cultivars of *Kappaphycus alvarezii* (Solieriaceae, Rhodophyta)"
 - AFMA R&D Paper Award
 - 16th National Research Symposium

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Thank you.

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