INTRODUCTION

The main objective of the **Laboratory of Marine Biotechnology** (MARSLAB) is to strengthen the research programs in marine and aquaculture biotechnology through enhancement of expertise, improvement of research facilities and innovation of novel marine-based products. The research focus of MARSLAB includes discovery of natural marine biomolecules and development of marine-based value-added products with commercial potential for food, nutraceutical, pharmaceutical and aquaculture industries. This niche area is in parallel with the objectives of the HICoE (Higher Institution Centre of Excellence) program which addresses the fish health issues using vaccine and immunotherapeutic technologies.

In addition to research, MARSLAB plays an active role in providing specialised training to staff, students and public on various topics related to marine science and aquaculture. In these training sessions, we share our fundamental discoveries, development of new technologies for commercial applications, and innovative solutions to practical problems related to various marine-based industries. We hope this effort will contribute towards enhancement of human capital and development of appropriate workforce necessary for the economic growth of the country. The training also emphasizes the importance of conservation and sustainable use of rich and diverse aquatic resources of the country. To strengthen our research and training, we developed intensive collaboration research and networking with many world famous research institutions such as Atmosphere and Ocean Research Institute (AORI), Smithsonian Tropical Research Institute (STRI), Russian Academy of Science, University of Stirling, Wageningen University, University of Moscow, Soka University and Ghent University. To drive all these efforts in research and academic excellence, research grants are obtained from various local and international agencies.

OBJECTIVES

To coordinate multidisciplinary research and development in the fields of aquatic biotechnology, aquatic biodiversity, marine ecology, environmental health and aquaculture

To provide analytical and consultancy services in aquatic environment and resource management

To provide training for postgraduate students and private entrepreneurs in aquatic-based activities

RESEARCH PROGRAMS

Aquatic Diagnostic and Health Management

Synopsis:

The current research niche of MARSLAB is on Aquatic Diagnostic and Health Management. Within this framework, MARSLAB researchers focus on marine bioactive resources with potential uses for aquatic animal and human health, therapeutics and prophylactics, and platform research technologies in marine biotechnology and aquaculture. Bioprospecting and utilization of aquatic biomedicinal resources for biotherapeutics and prophylactics development as well as health sustenance will be emphasized.Thus, to ensure sustainable supply of marine resources and enhanced productivity of the aquatic animals and plants, the research also addresses the control and maintenance of ecosystem health. In addition to focusing on the bioactive molecules, the program includes establishment of diagnostics with quality control through effective isolation and rapid characterization of pathogens. The study entails utilization of molecular tools in complement with rapid conventional methods for fast and reliable detection of pathogens in animal tissues for improvement of diagnostic tools.

Head of the Program
Prof. Dr. Fatimah Md. Yusoff

HIGHLIGHT OF RESEARCH ACTIVITIES

- Aquatic Animal Health Surveillance and Diagnostics
- Growth Enhancement and Disease Resistance Selection of marine species
- Sustainable Biomedical Compound Production from Marine Resources
- Host pathogen interactions Genomics, Proteomics, Transcriptomics, Immunology and Bioinformatics
- Development of Aquatic Component-Based Vaccines and Therapeutics
- Development of bioremediation products from aquatic organisms/resources
- Ecosystem health management - Bioremediation for pollution management and control
- Improvement of animal health through bioremediation

EQUIPMENT AND FACILITIES

- Molecular Suite – PCR, Q-PCR, Imager, Biophotometer and Genomics appliance
- Proteomic Suite – 2D-electrophoresis, Western Blot and Densitometer imager
- Total Organic Carbon (TOC) analyzer
- Ion chromatography analyzer
- Freeze dryer
- ELISA Reader - Multiscan go without cuvette
- Autoclave
- Marine Hatchery - Recirculating aquaculture systems (RAS)
- Photobioreactors
- GCMS (Gas chromatography mass spectrometry)
- Phylogenetic study appliance -DGGE (Denaturing gradient gel electrophoresis)
- Research microscope – Microscope 3D digital, compound and stereo
- Double beam spectrophotometer
- Microalga harvester

SERVICES

Analytical services

- Hydrocarbon
- Heavy metals
- Total organic carbon
- Chlorophyll a
- Nutrients in marine and freshwater ecosystems
- Water quality parameters
- Microalgal identification and enumeration
- Seaweed/seagrass identification
- Zooplankton identification and enumeration
- Benthos identification and enumeration
- Environmental modeling
- Freeze drying

Consultancy services

- Aquaculture pond selection and construction
- Aquaculture system management
- Fish/shrimp breeding/hatchery management
- Pollution remediation and mitigation
- Environmental impact assessment
- Integrated catchment area management
- Coastal zone management
- Environmental Impact Assessment of marine related projects
- Training on marine and pollution management

FOR FURTHER INFORMATION, KINDLY CONTACT:
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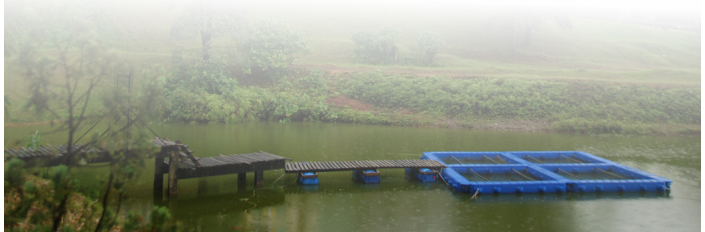

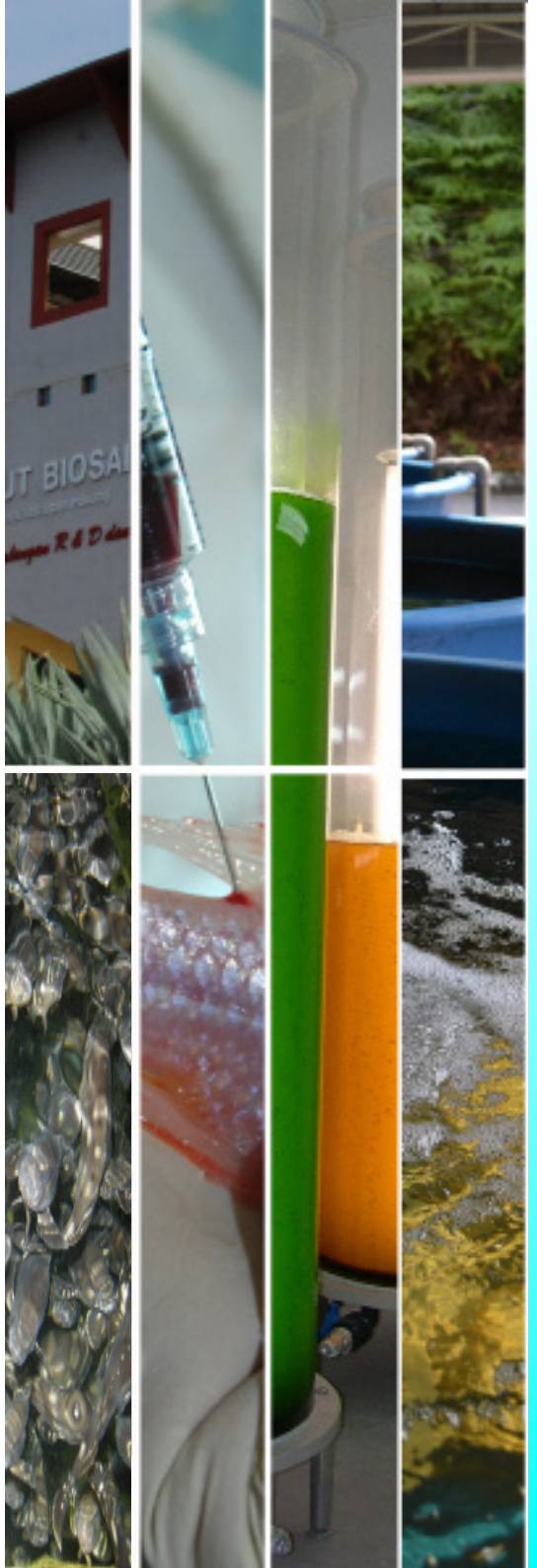

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