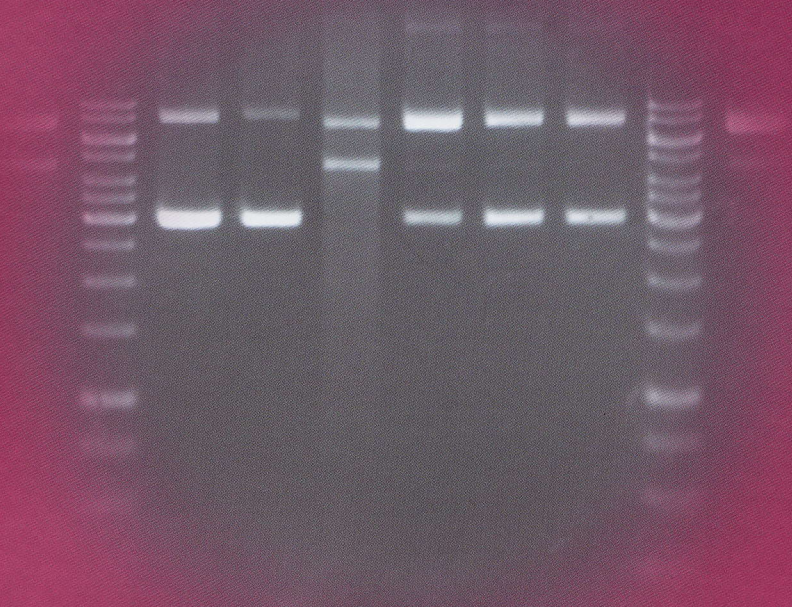


19th Intervarsity Biochemistry Seminar

2008

*“Science
Empowers
Change”*



22 March 2008

**PB Block,
Petaling Jaya Campus**

Universiti Tunku Abdul Rahman

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19th INTERVARSITY BIOCHEMISTRY SEMINAR

"SCIENCE EMPOWERS CHANGE"

22nd March 2008

Faculty of Engineering & Science,
Universiti Tunku Abdul Rahman

in collaboration with

The Malaysian Society for Biochemistry &
Molecular Biology

Venue:

Universiti Tunku Abdul Rahman
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PHYLOGENETICS OF SEA CUCUMBERS IN MALAYSIA BASED ON MITOCHONDRIAL DNA

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Diverse species of sea cucumbers were observed to date in Malaysia. In fact, many researches on morphology of sea cucumbers had been carried out in Malaysia but the systematics information of this marine-dwelling organism is still problematic and limited. Accordingly, this study was done to verify the species presence and distribution of sea cucumbers (Echinodermata: Holothuroidea) in several populations of Malaysia and subsequently to study the genetic relationships between the selected local species using non-protein coding region represented by 16S ribosomal mitochondrial DNA (mtDNA) gene and two protein coding regions namely cytochrome c oxidase I (COI) and cytochrome *b* (*cyt-b*) mtDNA genes. Five genera were selected namely *Holothuria*, *Stichopus*, *Bohadschia* and *Actinopyga* from order Aspidochirotida; and genus *Molpadia* from order Molpadiida. Base frequencies and genetic distances based on Kimura-2 parameter model were calculated prior to phylogenetic tree reconstruction in order to test the genetic variation between and among partial sequences of the selected mtDNA genes including the corresponding sequences and outgroups from the GenBank. Basically, the results showed that the phylogenetic inferences based on the COI gene and 16S ribosomal mtDNA genes were unclear and incompletely resolved. While COI gene has had successfully resolved the classification of sea cucumbers at species level with an uncertainty at genus level, high bootstrap values and the consistent clustering of 16S ribosomal mtDNA gene sequences caused *Molpadia*, *Stichopus*, *Bohadschia* and *Actinopyga* monophyletic. Apart from that, the relationship of *Actinopyga* with the other genera was unclarified and *Stichopus* was positioned as sister taxon to *Molpadia*. However, further molecular studies based on *cyt-b* mtDNA gene need to be done as the current findings produced negative results. Therefore, further molecular approaches as well as advanced studies on morphology are needed in the future to gain better view on the systematics and phylogenetics of sea cucumbers in Malaysia.

KEYWORDS: Sea cucumbers, mtDNA, cytochrome *b*, 16S ribosomal mtDNA, cytochrome c oxidase I.

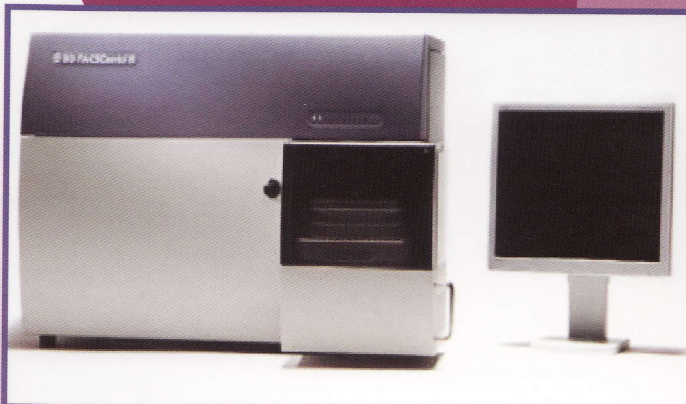


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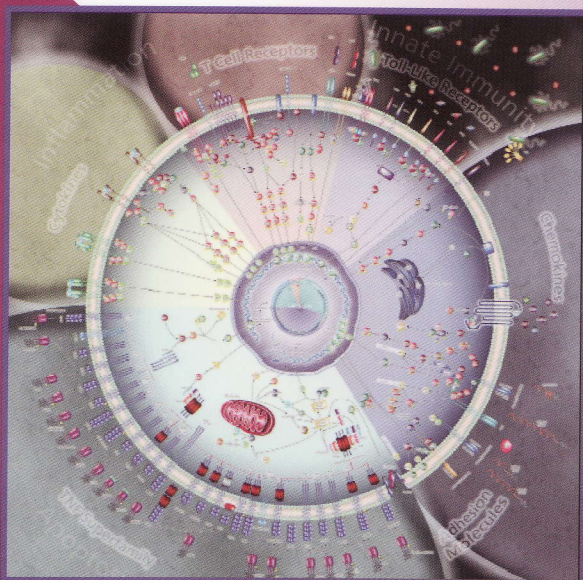
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