1. The title of your project

**Crown-of-thorns (COT)**

Crown-of-thorns (COT) starfish is an unusually large starfish and can grow to more than 1 m in diameter. It has up to 21 arms, with the entire upper surface of its body covered in long venomous spines. The starfish can move up to 20 m in an hour.

Crown of thorn (Acanthaster planci) outbreak is believed ti occurs annually in the Malaysia marine parks protected sanctuaries. Up-to-date the only recorded disaster management of the COT endemic was to collect and buried the invertebrate. (Culling of COTs-Collect and burial). This is also the rhetoric practice worldwide.

This effort can been assumed as inappropriate and lack of out of the box thinking as surely, there should be studies to identify the therapeutics usage of the endotoxin produced by COT that causes the dishearten outbreak.

2. Your name/address/email

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3. Who do you think could join you [from other schools --e.g. chemical engineer, computer expert etc] in your research?

**Mr Kamarruddin Ibrahim**
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4. What is the objective?

1. To understand the distribution of crown-of-thorns starfish in Malaysia marine, coastal and reef areas.

2. To achieve a national database that characterize better understanding of the biology of the starfish involving microscopical and molecular works especially COT that is identified within the Malaysian marine and coastal areas.

3. To elucidate and features the starfish inert chemical characterization of therapeutic potential.

4. To record the history and nature of the outbreaks and the pattern of recovery pertaining to Malaysian marine and coastal reefs.

5. Brief methodology/design

**Introduction**

Outbreaks of crown-of-thorns starfish *Acanthaster planci* have been a major issue on the Great Barrier Reef and other Indo-Pacific reefs for nearly 40 years. The outbreaks have generated great concern among the community and considerable debate among scientists. Outbreaks generally occur at regular intervals with coral cover returning to pre-outbreak levels in the intervening years. Although the issue is globally acknowledged and is purported to be affecting the marine coral areas of Malaysia there is lack of documentation and reports available. Action and guidelines show be established before outbreak as that was reported in 2003 that affects reefs between Cairns and the Whitsundays which costed tourism operators, and the Queensland and Commonwealth Governments about $3 million a year for control measures.

Many reports from around the world have suggested that there is a relationship between periods of high rainfall and the beginning of crown-of-thorns starfish outbreaks. Periods of high rainfall after drought or extended dry periods cause water with low salinity, high sediment and high nutrient loads to be washed into the waters of the Great Barrier Reef. High nutrient levels can cause an increase in microscopic algae in the water, providing food for the developing crown-of-thorns starfish larvae. This can increase the number of larvae that survive and lead to larger adult starfish populations. Low salinity also increases the survival of crown-of-thorns starfish larvae. Therefore, flood events could be a natural cause of outbreaks.

6. The outcome of the projects [i.e. the usefulness of the products]

1. Guideline and actionline (of control) of COT outbreak and preservation of marine park ecology.

2. Therapeutic nutriceuticals usefulness from COT