

# Definitely a cracking good crab

WITH its primitive armour-like shell and spiny tail, this misunderstood marine creature strikes fear in the hearts of many.

But one of nature's gentlest creatures, the horseshoe crab could just be the nation's key to breakthrough research into an exclusive multi-million biomedical industry currently dominated by one country.

For the past few years, horseshoe crabs or "belangkas" have been the subject of intense but low-profile research at Universiti Malaysia Terengganu (UMT).

The eight-man team has been studying two out of three species of Asian horseshoe crabs found in our waters — *Tachypleus gigas* and *Carcinoscorpius rotundicauda* — in the hope of discovering a way to produce an endotoxin test kit.

If successful, Malaysia would be the second country in the world and the first in Asia to produce a test kit derived from the famous cyan-blue blood of horseshoe crabs.

More importantly, this test kit would be an alternative to the invaluable endotoxin test "Limulus Amebocyte Lysate" (LAL), which is produced only in the United States.

The prototype is expected to be ready by the end of this year, with the end product completed by 2010.

"We're on the brink of a great breakthrough. If we do produce this kit, then we won't have to pay so much any more (for LAL)," UMT Institute of Tropical Aquaculture senior researcher Dr Zaleha Kassim told the *New Straits Times*.

The LAL is the standard test used by laboratories and hospitals worldwide to detect harmful bacteria and endotoxins in all pharmaceutical products and medical devices.

Mysterious and unappreciated, horseshoe crabs are slowly revealing their secrets to a team of local scientists. EVANGELINE MAJAWAT discovers that their findings could just be the 'eureka' moment the nation has been holding her breath for



Zaleha Kassim says the research team is on the brink of a breakthrough

potentially make a lot of money if this test kit gets into the market," Zaleha said.

Fellow UMT Biological Science Department senior researcher Dr Noraznawati Ismail believes that the local test kit would cost only half the price of the imported ones.

"It generally costs more than RM1,000 for just a minute amount of LAL. We could produce local kits which would be sold for half that sum."

In December last year, UMT received a RM1.9 million research grant from the Science, Technology and Innovation Ministry (Mosti).

UMT was given two years to study and develop a scientific protocol for the extraction of the blood compounds and production of the endotoxin test kit.

The kit would be called either "Tachypleus Amebocyte Lysate" (TAL) or "Carcinoscorpius Amebocyte Lysate" (CAL), after the genus

## HORSESHOE CRABS DEBUNKING THE MYTHS...

The tails or 'telson' of all four species of the horseshoe crabs are not poisonous

Despite its name, horseshoe crabs are not related to crabs at all. As arachnids, they are closely related to spiders, scorpions and ticks!

There is no scientific proof that its meat has medicinal properties

Horseshoe crabs are notoriously difficult to rear. Most die within three months of captivity

Unlike amphibians, they cannot survive in two environments. Horseshoe crabs spend all their life in the water except during the mating season

## INTERESTING FACTS

- Horseshoe crabs have 10 eyes and they can see ultraviolet light
- Three out of the four species of horseshoe crabs are found in our waters; *Tachypleus gigas* and *Carcinoscorpius rotundicauda* are found in Peninsular Malaysia. But *Tachypleus tridentatus* is found only in Sabah waters
- The species *Tachypleus tridentatus* is the biggest of the lot and can grow up to 0.6m
- Their main diet consists mostly of molluscs
- Horseshoe crabs are an important source of food for migratory birds and also turtles
- Most horseshoe crabs which wash up on beaches are either dead or the remains from molting
- They are sensitive to the Earth's magnetic field



## LIFE CYCLE

- They mate according to the lunar cycle. Both male and female will come to shore during new and full moon and only during high tide
- The female comes to shore with up to four males riding on its back. The males fight among each other until one remains.
- Like turtles, the female horseshoe crab digs a hole or 'nest' in the sand before laying her eggs which will later be fertilised by the male
- Depending on the environment, a female horseshoe crab will dig up to four nests per landing
- Each nest contain 200-300 pea-sized eggs
- It takes only two weeks for the eggs to hatch and the young, called the trilobite larvae, will swim towards the sea
- It takes nine years for a horseshoe crab to mature during which it would have shed its shell more than 15 times
- Horseshoe crabs can live up to 20 years

NST Graphics  
By Irena

"We're in the midst of refurbishing the existing lab in UMT so we can concentrate on studying these animals," Noraznawati said.

The team is eager to extend the

species, the *Tachypleus tridentatus*, thrives.

Zaleha said a separate team of researchers were in the midst of conducting a stock assessment study with Mosti and the Agricul-

Ministry.

She said they hoped to start work in Sabah in the middle of this year.

"We're on the verge of discovering something very important