

# Hunting down the agents of illness

Mary Jane Cardoso is a detective of a different sort — she hunts down minute agents of illness. She tells THERESA MANAVALAN of her work to dissect the mysterious disease that claimed the lives of 31 children in Sarawak last year.

PROFESSOR Mary Jane Cardoso has been virus-hunting. She has a whole lot of suspicious evidence and a prime suspect which may take the mystery out of last year's viral infection outbreak which killed 31 children in Sarawak.

If her research team at Unimas identifies a previously unknown adenovirus as the killer, Cardoso and her comrades will be a gigantic reservoir of local expertise.

Already, the team is collecting accolades.

Last Tuesday, after Cardoso presented her findings to peers at a Scientific Meeting of the Malaysian Society of Molecular Biology and Biotechnology in Kuala Lumpur, there was not enough time for tributes.

Overseas, the scientific community is abuzz with the work being done at Kota Samarahan and in March she became the first Malaysian to be profiled by *Science*, a journal circulated worldwide.

Cardosa herself is calm, clearly focused on tracking down a microbial fugitive.

However, she acknowledges paediatricians at the Sibul Hospital whom she says were quick to observe that something serious was going on.

"They were sharp and fast," says Cardoso, "to pick up the clues and to alert everybody."

Most Malaysians will remember with some consternation the outbreak in Sarawak's timber town of Sibul.

One toddler after another seemed to be dying, some as quickly as 24 hours after they became ill with rashes and high fever.

Initially, the finger was pointed at the Coxsackie B virus but some of its symptoms were not similar or never found in the victims of the latest outbreak. Epidemiologists from the Centres for Disease Control in Atlanta were called in.

In March this year, Malaysian health officials said the agent might be EV71, a well-known personality in the pantheon of viruses; but it was not conclusive if this virus actually caused those deaths. The CDC is still studying the outbreak.

Cardosa was not convinced. By August last year, her hunch that there might be another character in the cast of culprits paid off after combing through reports and specimens from the outbreak.

Cardosa's team found an adenovirus which they cloned and compared with others known to that family. There was nothing like it. They asked other Malaysian scientists and searched related research all over the world.

Among the things they found was an item documented last year: two American researchers reported that adenoviruses are linked to viral myocarditis. That information brought Cardoso's team closer to the heart of the problem.

Myocarditis, or inflammation of the heart, was what brought about death in those children. The Coxsackie B virus is a known agent but in the Sarawak outbreak, the deaths came faster than within the typical Coxsackie scenario.

"Scientists look for the unusual, the less obvious things, sort of like a detective," says Cardoso of her work, supported with grants totalling RM750,000 from the Sarawak Government.

"When lab evidence doesn't match the clinical diagnosis, the scientist has to work harder than ever."

Kuala Lumpur-born Cardoso grew up in Kelantan and Penang where her parents were posted as teachers.

She studied biology at Princeton University, did a year of graduate work at Columbia University and in the late 1970s continued at Universiti Sains Malaysia in Penang. Later, she studied virology at Oxford University's department of tropical medicine and returned to teach at USM for a decade.

Cardosa's professors at Oxford are on record describing her as a "first-rate virologist" who "developed a first-rate lab in Borneo". One former Oxford course adviser described her "one of the best students" there.

Cardosa left Penang to start the Unimas Institute of Health and Community Medicine in 1995 moving "to an empty floor" and quickly setting up worthy laboratories and a research team for Sarawak's then brand-new university.

Ongoing research projects include dengue, malaria, Japanese encephalitis and nasopharyngeal cancer. Last year's viral villain — besides bringing about a testing by fire for a new research outfit located so near the site of the outbreak — is now on the institute's hot list of pursuits.

Watching many viruses at once constantly reminds 45-year-old Cardoso to think of the larger picture.

One recurring thought is of how the Sibul area was subject to four outbreaks of infection last year: Japanese encephalitis (January to April), hand-foot-mouth disease (February to August), the mysterious infant deaths (April to July) and dengue fever and dengue haemorrhagic fever (June to August).

"There were several viruses lurking around," says Cardoso, who was collecting specimens for her Japanese encephalitis study in January 1997.

"These specimens came under greater scrutiny as we searched for something more. My colleagues and I were sure there was another virus."

These days, Cardoso's team is working on the virus's sequence and specific studies to establish that it was the killer. "There are so many more challenges, like devising a warning system and a vaccine," says Cardoso of the new fields of research which will inevitably open.

As she tracks down the microbial fugitive, Cardoso's clipboard of questions of the big picture is growing. Among them: Did this adenovirus work alone or in concert with other seasonal viruses? Was the children's lack of immunity linked to their breast-feeding history?

"It's going to be a long haul," she says, "but I'm a scientist, I want to know. You know, we owe it to the children."



CARDOSA ... we owe it to the children