

IMAGE
UNAVAILABLE
FOR COPYRIGHT
REASONS

The valley of ghosts

While other Asian tigers are roaring ahead in biotechnology, Malaysia's BioValley is going nowhere fast. **David Cyranoski** asks what went wrong.

Asking Malaysian researchers what happened to their country's flagship science project, known as the BioValley, is a confusing experience. Some claim it is still under development. Others say it never existed. Many are simply unwilling to talk about it.

But this was always a difficult project to pin down. Launched in May 2003, the BioValley was one of the final initiatives of Malaysia's strongman prime minister, Mahathir bin Mohamad, who stepped down from power a few months later. Incorporating three new research institutes and costing some US\$160 million, the BioValley was meant to attract biotech companies to a centralized hub that would offer cheap rent, good telecommunications infrastructure and access to the country's lush biodiversity — a potential source of new drugs and other useful products.

But even after its launch, it was hard to obtain concrete details about the BioValley. Aside from the plans drawn up by famed Japanese architect Kisho Kurokawa, the project was shrouded in mystery. By now, the 80-hectare campus in Dengkil, south of Kuala Lumpur, should have been nearing completion. Instead, the site lies empty. And official documents reveal that, earlier this year, the BioValley quietly morphed into the BioNexus, a much less ambitious scheme comprising just one new institute in Dengkil, and two other 'centres of excellence' built around existing labs elsewhere.

All this is in marked contrast to developments in neighbouring Singapore, the city-state that nestles at the tip of peninsular Malaysia. There, a formidable biomedical research hub, the Biopolis, positively bustles with activity.

Problematic past

On the face of it, the disparity is puzzling. Singapore and Malaysia have much in common — their populations have a similar ethnic mix, both have governments with an authoritarian streak, and both see biotechnology as a springboard for future economic growth. Malaysia, in particular, wants to decrease its heavy reliance on the electronics industry and the production of palm oil.

But while Singapore has recognized that scientific success means aggressively recruiting top talent regardless of nationality, race or creed, Malaysia's biotech push has been hampered by a legacy of ethnic strife, its hands tied by an educational policy designed to favour its ethnic Malay majority.

The BioValley is just the most conspicuous feature in a landscape of failed effort. Elsewhere, flashy new labs remain largely unused, some of them led by people without proper scientific credentials. And in a culture in which criticism of authority is taboo, these problems don't look remotely near resolution. One senior political figure (who, like most of the people interviewed for this article, did not want his name mentioned) complains that the

BioValley "was all about fancy buildings and real-estate development".

Mahathir and his acolytes seemed to assume that researchers would come pouring into shiny new centres bearing the label 'biotechnology'. It was a naive view, suggest foreign observers familiar with the Malaysian scientific scene. "With no history in biotechnology, and little industrial presence, the risk is very high," says Keiichi Kiyota, president of the Tokyo-based Nimura Genetics Solutions, one of very few foreign companies with research activities in Malaysia. "The greatest problem is the lack of manpower," he adds.

Given this dearth of talent, Malaysian science can ill afford the brain drain that sees many young scientists, particularly those from the nation's Chinese and Indian minorities, leave the country. It's easy to see why, given that the dice are loaded against them. "The 'Malays first' policy holds them back," says biochemist Barry Halliwell, who heads the National University of Singapore's graduate school. "It does Singapore a good favour, as many come here." Last year, for instance, 128 students with straight A grades were denied access to medical school in Malaysia, while less qualified candidates were accepted. The excluded students were all non-Malay.

The 'Malays first' policy has its origins in the race riots of 1969, which were sparked by the Malay majority's resentment of the Malaysian Chinese community's economic successes. Given the bitter memories of this conflict,

some researchers back the policy of granting privileged opportunities to Malays. "Otherwise people would become second-class citizens in their own country and you'd have a time bomb on your hands," says Salleh Mohammed Nor, former director of the Forest Research Institute of Malaysia in Kepong, near Kuala Lumpur, and now president of the Malaysian Nature Society.

In the early 1970s, the government made a concerted effort to promote the interests of the Malay majority. In 1975, for example, the Malay language — Bahasa Malaysia — replaced English as the standard language of education. But critics say that this policy has damaged Malaysia's education system by failing to reward merit. "All vice-chancellors are appointed by the government without any kind of search committee," says one former University of Malaya researcher. "It's all favouritism."

Empty labs

Even when new labs have been built, they've failed to make much impact. The Technology Park Malaysia near Kuala Lumpur, for instance, hosts a government-sponsored institute that was supposed to act as a magnet for biotech companies. When *Nature* visited the two-year-old facility in late June, its high-performance liquid chromatography and mass spectrometry instruments lay idle — and only two research staff were present, huddled by a computer. Malaysia has unemployed graduates, but many don't have the requisite skills, including English ability, says an administrator at the park. "Good people go overseas," he adds.

This failure to embrace the international language of science is symptomatic of a general detachment of Malaysia's research system from the world scene. For most Malaysian researchers, publications in international peer-reviewed journals do not seem to be a priority. "People here don't seem to publish much, apart from in workshop and conference proceedings," says one visiting ecologist.

The country has also attracted few foreign researchers. Pay is low and there are few post-doctoral students to work with unless you bring your own. "There is nobody here who really understands what I am doing apart from my students," says a foreign researcher who is in Malaysia for family reasons. "People in my department are perpetually putting obstacles in my way."

Again, the contrast with Singapore is stark. Researchers there have high pay and high status, and the government has cast its net wide to bring in top scientific talent. Of the 35 principal investigators at the Institute of Molecular and Cell Biology, the country's premier research centre, only one is Singaporean. "If people have brains, I'll borrow them," declares Philip Yeo, who chairs A*STAR, the country's main science funding agency.

In theory, Malaysia's leaders recognize the need to emulate Singapore's hiring policies. In 1995, for instance, Mahathir initiated a five-



IMAGE
UNAVAILABLE
FOR COPYRIGHT
REASONS

year plan to recruit 5,000 foreign researchers a year. But the scheme attracted just 94 scientists, and 24 of them were returning Malaysians. By 2004, only one of these researchers remained in the country.

This pattern of setting and then failing to meet grandiose targets was common in the Mahathir era. So it should perhaps come as no surprise that the BioValley never made it off the drawing board. Its humbler successor — the BioNexus — is based around existing labs specializing in agricultural biotechnology, genomics and molecular biology. The single new centre will focus on pharmaceuticals and nutraceuticals.

The BioNexus is part of the national biotechnology policy that was unveiled in April this year, which is supposed to remedy previous failings. A new organization, the Malaysian Biotechnology Corporation, is chaired by Prime Minister Abdullah Ahmad Badawi and will provide tax breaks and matching grants to biotechnology companies. Its stated goal is to promote projects that can gain "international recognition".

This toned-down and yet outward-looking approach seems to be part of a more realistic

framework of education and science policies now being introduced. In Penang, for instance, the local government is establishing a research base that would include contract research activities in animal toxicology — which may be of interest to foreign companies. "Tests are cheaper here and the animal-rights issues are not as prominent," says Penang's mayor, Koh Tsu Khoon, who recognizes that investment in people will be essential. "We are building on brains rather than buildings," he says.

Rewarding merit

The central government is also taking steps to introduce more fundamental reforms. In 2003, English became the language of school instruction in maths and the sciences. Private universities have also been allowed — and are now providing opportunities for ethnic Chinese and Indian students who feel discriminated against by the state system. These include the Malaysian branch of Monash University, based near Melbourne in Australia. And officially, the rigid quotas used to enforce the 'Malays first' policy in higher education have given way to a merit-based system for allocating state university places.

But without standardized state university entrance exams, some critics remain sceptical about the likelihood of real progress. Unless Malaysia is able to shed its legacy of ethnic favouritism, they are dubious about the nation's chances of competing with its neighbours in biotechnology. "Frankly, while the government funds mostly Malays, it won't happen," says one foreign scientist based in Malaysia. "The government is putting a lot of money into biotech but I doubt that anything will come of it. I see a lot of white elephants." ■

David Cyranoski is Nature's Asian-Pacific correspondent.

Next week's NatureJobs will include a feature on Malaysia's private universities.



IMAGE
UNAVAILABLE
FOR COPYRIGHT
REASONS

Marvels in the mist: Malaysia's biodiversity is a big draw for researchers — practically the only one.