RANDOM SAMPLES

edited by CONSTANCE HOLDEN

An MIT for Malaysia

A Malaysian foundation has hired the Massachusetts Institute of Technology (MIT) to help it create a world-class graduate research university from scratch.

The 5-year, $25 million agreement is part of a broader campaign by Malaysia to become an Asian high-tech powerhouse. It also furthers MIT's international aspirations. Within the past couple of years, the school has made agreements with universities in Thailand and Argentina to help build up their technical components.

"We aren't going to compete for their students or give them MIT degrees," says civil engineering professor Fred Moavenzadeh, director of the Malaysia project, which was announced earlier this month. But MIT faculty will be involved in teaching, training, curriculum development, scientific exchanges, and joint research.

The new institution, called the Malaysian University of Science and Technology (MUST), will offer master's degrees and training in six fields, including biochemistry, advanced manufacturing, materials, microelectronics, and water resources management. MIT officials are preparing a management plan for the government that forecasts 600 to 700 students within 5 years. The Malaysian government has cleared the way for the undertaking by adopting a new law that for the first time sanctions private universities, and by setting up the funding mechanism, the government- and industry-supported Ehsan Foundation. "MUST is modeled on the strong practical and intellectual traditions of MIT," says a foundation official.

The MUST campus will be built over the next 3 to 5 years on a 50-hectare plot in a forested area 30 kilometers north of Kuala Lumpur. Until it is finished, the university will occupy space in a national institute just outside the capital.

EVAN BALABAN/AP

Identity crisis? Chick given quail brain cells while in the egg now crows like a quail.

Singing Another's Song

Getting a fix on how mental circuitry affects behavior is notoriously difficult. Now a report in the 4 March *Proceedings of the National Academy of Sciences* describes how transplanting brain cells from a quail to a baby chicken provides glimpses into the brain regions that govern species-specific behaviors.

Although the two birds are close cousins, they sing different songs, accompanied by different behaviors. Chicks emit a constant crowing while scarcely moving their heads. Quail bob their heads and crow a three-note song.

Evan Balaban, an evolutionary biologist at the Neurosciences Institute in San Diego, wanted to know what parts of the brain were responsible for this difference. In past experiments, he has produced chicks that sound like quails by transplanting developing cells from the midbrain of quail into chick embryos. But the transformation wasn't complete: The chicks' heads didn't bob. So Balaban looked for other brain areas that differed between the two birds. After transplanting cells from many areas of quail brains, Balaban struck gold in the quail brainstem, which controls essential functions such as breathing. When he transplanted cells from that area, he produced a chick that bobbed as it crowed.

Just what is happening is not clear. The transplanted cells could either be directly controlling head-bobbing muscles or exerting their effect indirectly by influencing brain development elsewhere, Balaban says.

Uncertainties aside, other biologists are excited by the technique. George Pollak, a neurologist at the University of Texas, Austin, calls the research "remarkably profound." These studies, he says, help scientists understand what parts of the brain endow an organism with the essential nature characteristic of its species.

New European Space Chief

The Council of the European Space Agency (ESA) last week announced the appointment of Antonio Rodota, a key figure in Italy's corporate aerospace community, for a 4-year term as ESA director-general.

Rodota, 61, succeeds Jean-Marie Luton, who, during his 6-year tenure, has come under increasing criticism for weak leadership. Luton announced he would forgo a third term in December, after personnel at the European Space Research and Technology Center in Noordwijk, the Netherlands, passed a vote of no confidence in ESA top management.

Space scientists are relieved at the appointment of Rodota, director of the Space Division of Finmeccanica, a Milan-based aerospace firm. The new management, which includes new leaders in other top ESA posts, "I hope ... will bring some stability," says Pascal Gilles of ESA's European Space Research Institute in Frascati, Italy.

KEN REGAN

Chimp champ. Jane Goodall.

Tyler Award Honors Primatologists

Three lifelong field researchers, including world-famous chimp expert Jane Goodall, have won this year's Tyler Prize for Environmental Achievement. They will share the $150,000 award to be presented at a 2 May ceremony in Los Angeles.

Goodall, 63, is being honored for her pioneering research on chimpanzees in Africa, as well as her advocacy efforts for primates both in the wild and in captivity.

The other winners are anthropologist Birute Galdikas, affiliated with Simon Fraser University in Vancouver, Canada, and field biologist George Schaller, director of science for the Wildlife Conservation Society in New York City.

Galdikas, 50, has made the orangutan in Borneo her life's work. She also has provided the impetus for many education and conservation efforts in Indonesia. Schaller, the author of a 1963 classic, *The Mountain Gorilla*, has done fieldwork on the behavioral ecology and natural history of large mammals all over the world, including India, Africa, and Asia. His latest focus has been Tibet, where the Chinese have recently established a giant preserve the size of New Mexico—an arid upland area inhabited by few people but many yaks, Tibetan antelopes, asses, snow leopards, and wolves.

Schaller says it is noteworthy

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that the 14-year-old Tyler award, administered by the University of Southern California in Los Angeles, is formally recognizing "that field biology is a rigorous [and] essential science." Many people, he says, still view it as "sort of old-fashioned natural history."

Biofilms on Martian Meteorite?

The authors of the life-on-Mars paper that rocked the world last summer (*Science*, 16 August 1996, p. 924) reported last week at a Houston conference that further analysis of the famed meteorite, ALH84001, has turned up more potential evidence for their theory. But other scientists at the meeting were skeptical.

Geochemist Carlton Allen of Lockheed Martin Engineering and Sciences in Houston told a session at the annual Lunar and Planetary Science Conference that his team has identified the remains of possible "biofilms"—thin layers of carbon that might have been secreted by some tiny, long-gone martian bacteria. Biofilms are aggregates of bacteria attached to a surface and surrounded by a protective coat of mucus. Biofilms are commonplace on Earth—the best known, perhaps, being dental plaque.

Allen related that the team—headed by David McKay of NASA's Johnson Space Center in Houston—had further analyzed carbonate globules like those that yielded wormlike traces of putative past life. The scientists etched the globules' surfaces with acid to remove the overlying carbonate. Underneath they found layers of filmy, flaky material, sometimes honeycomb-like, that they surmise are the remains of biofilms. These did not occur just around the wormlike features; rather, said Allen, "we found biofilms all over the place" in the globules.

The analysis is still preliminary, and many observers are skeptical of these findings. The scientists "have no evidence that there are organisms in those features," says David Des Marais, a geochemist at NASA's Ames Research Center in Mountain View, California. The NASA team and others are continuing to analyze the meteorite to gather more clues and identify possible organic matter.

Wild Wings on the Internet

Although they don't know it, 10 migrating snow geese are being tracked by thousands of students in grade schools across the country. Earlier this month, the National Audubon Society launched a Web site called "Wild Wings, Heading North" (http://north.audubon.org), which posts the birds' progress biweekly as they travel 5000 kilometers from their wintering grounds in New Mexico's deserts to the Western Canadian Arctic and Wrangel Island off Siberia, where they spend the summer.

Last November, the Audubon Society broadcast a live TV documentary via satellite to 1000 schools in the United States and the United Kingdom. It featured John Takekawa, a wildlife biologist with the U.S. Geological Survey (USGS) as he fitted 10 snow geese in New Mexico with satellite radios as part of a 5-year research program on migration.

Now students are taking to the Internet to follow the geese. Every other day during the 5-month trip (February through June), the birds' radios send signals to National Oceanic and Atmospheric Administration weather satellites. These signals are bounced to stations in France and Maryland, which determine the birds' positions within a few tens of kilometers. The results are e-mailed to the USGS in Davis, California and posted on the Audubon Web site. The site also has a field journal, updated three times a week by Takekawa, which describes the birds' rest stops and meals, gives weather updates, and offers geographic and cultural information about the areas the birds fly over. "More of our geese are headed for Nebraska! It looks like TT and TP are joining TZ," wrote Takekawa on 11 March. "Peak migration in Montana is near the end of March, so we should see big movements in the next 2 weeks."

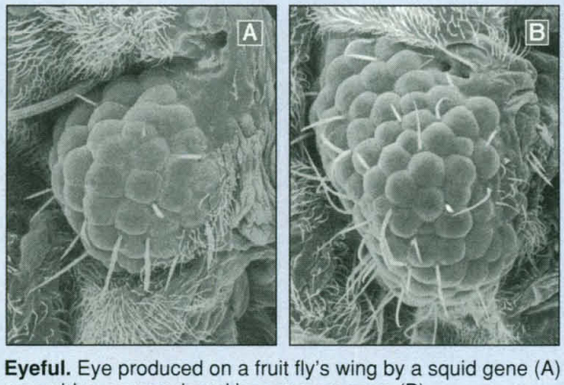
Northward ho. Flight plan of goose TZ. Numbers are Julian, with one assigned to each day of the year (1-365).

On the Path of the Primordial Eye

Human eyes, fly eyes, and horseshoe crab eyes, to name a few, differ so greatly that it would seem nature invented eyes dozens of times in the course of evolution. A blow to this argument came 2 years ago when a mouse eye gene spliced into fruit flies prompted them to form extra fly eyes on their bodies, suggesting that a single, ancient genetic program kicks off eye development throughout the animal kingdom.

Now this feat has been duplicated in fruit flies, using a gene from an animal even more evolutionarily remote from a fly than is a mouse: a squid. The finding, reported in the 18 March issue of the *Proceedings of the National Academy of Sciences*, is the strongest evidence yet that all animals with eyes inherited them from a common ancestor.

A group led by molecular biologists Stanislav Tomarev and Joram Piatigorsky of the National Eye Institute in Bethesda, Maryland, and developmental geneticist Walter Gehring of the University of Basel in Switzerland, found that both the mouse and the squid *Loligo opalescens* carry a gene called *Pax-6*. In squid embryos, they found, the gene is active in the brain, olfactory organs, and the iris and lens of the eye—just where it's active in mice. What's more, when the researchers engineered *Drosophila* fruit flies to express squid *Pax-6*, extraneous fly eyes sprouted in locations where the flies' wings, legs, and antennae normally grow. That's just what happens when the fly version of *Pax-6*, called *eyeless*, is activated in these areas.



TOMAREV *ET AL.*

Eyeful. Eye produced on a fruit fly's wing by a squid gene (A) resembles one produced by a mouse gene (B).

The results strengthen the idea that eyes evolved only once, and suggest that *Pax-6*/*eyeless* has acted as a key regulator of eye development since before vertebrates and invertebrates parted ways some 500 million to 600 million years ago, the researchers say.

"If [the gene] were active only in flies and mammals, then you could suggest there was independent recruitment of the same gene to make eyes" in different species, says Tomarev. "But when it happens many times in many organisms, that's harder to imagine."