AGRICULTURAL SCIENCES

Flexible option

A step forward in finding an alternative to the rubber tree

AN INDIAN study has taken the global search for an alternative to the rubber tree a step closer to reality. A team of researchers from the Pondicherry University claims to have identified a set of key proteins that help guayule — a perennial shrub of Mexican origin — produce better quality natural rubber.

Guayule's rubber quality is even better than that of *Hevea brasiliensis* — a tree endemic to Brazil that has become the sole source of commercially-produced natural rubber. But guayule has not been commercialised because of its low rubber yield.

Now, research done by D Sundar and his colleagues at the School of Life Sciences at Pondicherry University could help increase the shrub's rubber yield. Guayule is one of almost 2,500 plant species that produce rubber-like polymers.

"Once these proteins and enzymes [which help the conversion of monomer isoprenoid units into the rubber polymer (*cis*-1,4-polyisoprene)] are completely characterised, we could even think of introducing them into new crop species for increased rubber production," says Sundar, who received the Young Scientist's Award for this work at the Indian Science Congress held in Hyderabad recently.

The scientists had earlier found that rubber formation in guayule is cyclic: it is produced during the cooler months (November-February) and is not a perennial process as in the case of *H brasiliensis*. This was because low night temperatures enhance the expression of genes that code for enzymes involved in rubber synthesis. ■

Another source of rubber

USDA

BYTES

CORROSIVE OCEANS: Increased carbon dioxide emissions are rapidly making the world's oceans more acidic. If this continues it could cause mass extinction of marine life similar to that which occurred 65 million years ago when dinosaurs disappeared, according to Ken Caldeira of the Carnegie Institution's Department of Global Ecology.

The new finding, based on computer models, offers a glimpse of what the future might hold for ocean life if humans do not drastically curb carbon dioxide emissions. Marine animals, such as corals that use calcium carbonate to make their shells, would be at the greatest risk.

QUICK VACCINE: Using cell-based methods, researchers have developed a commercially viable technique to mass produce effective vaccines against potential pandemic influenza strains in weeks instead of the months required for traditional egg-based vaccines.

According to Keyang Wang, a scientist at the Protein Sciences Corporation in the US who was involved with the study, the traditional method requires three to six months to develop the vaccine. With the cell-based method a matched vaccine can be mass produced within just four weeks as soon as the pandemic strain is identified.

COLOUR GENE: Zebrafish darting around an aquarium have led researchers to a gene that may play an important role in determining human skin colour, an attribute that has served as a basis for social discrimination through the ages.

Keith Cheng of the Pennsylvania State University College of Medicine in the US and colleagues searching for cancer genes in zebrafish noticed that pigment cells in a peculiar golden variety of the fish looked like pigment cells from light-skinned humans. This human-fish similarity motivated the researchers to track down the zebrafish gene responsible for the golden hue and lighter-than-usual stripes. The scientists then identified the human version of the gene.

HEALTH & MEDICINE

Ironed out

How the TB germ thrives

IN A discovery that might help save millions of lives, scientists from the National Institute of Immunology, Delhi, have located five key genes that enable *Mycobacterium tuberculosis*, the tuberculosis germ, to soak up iron from its environment and thrive.

The research team, led by Rajesh S Gokhale, said some of these genes occur across several related bacterial families, and are potential targets for drugs to treat not only tuberculosis but other diseases as well. The findings were published in the online version of the *Proceedings of the National Academy of Sciences* on January 30, 2006.

M tuberculosis takes up residence in the human body in immune cells called macrophages. The bacteria require iron for essential functions, such as protein synthesis. To capture iron, the bacteria produce long-chain chemical compounds called siderophores. The genes Gokhale's team has identified are crucial to producing siderophores that rob the macrophages of their iron. ■