In this issue

Search for Ashokan Edicts

Ecological Modelling in Archeology

Nearly 30 Ashokan edicts have been located so far in India, Pakistan and Afghanistan. Are there more? Where? Archaeologists, anthropologists and geographers in the US teamed up to tackle these questions in this issue.

Their tools for investigation come from other disciplines. They adapted species distribution modelling, used to map the population of a species based on ecological niche or habitat suitability – a technique that has been successful in finding even past and future niches. They factored in geology, since Ashokan edicts are typically found in elevated areas, outcrops with large enough rocks on which inscriptions can be carved. Since edicts imply populated areas, historical population data is taken into consideration. Given the availability of GIS data, historical population data and Google Earth, researchers came up with 121 places with maximum probability for discovering Ashokan edicts. Each is of one square kilometer. So it narrows down area of search.

The General Article on **page 1916** in this issue presents data that makes it easy to test predictions. And, in the process, unravel a more comprehensive collection of the emperor's dictums and diktats, inscribed on stone.

Research Collaborations

Triple helix model

GUI does not just stand for Graphic User Interface. In the General Article on **page 1904** in this issue, it means Government, University and Industry: the three strands that weave together the complexity and productivity of research and development efforts.

A collaborative research between the South Asia University and the Banaras Hindu University digs into the Web of Science to extract data on collaborative research done in India and to examine the data as GI, GU, and UI pairs and then as a GUI triplet.

The triple helix model used in the article has gained momentum in the last few years, as a general index of knowledge based economies. The model draws upon Shannon's mathematical formulations to analyse information flows among the three actors.

The data presented shows the progress in collaborative research in the last 10 years. The article identifies the main subject areas of such collaborations and compares their relative occurrence among the pairs and the triplet. The article also identifies the top actors in such collaborations.

Though the analysis might be taken as a description of what is happening, it also serves as a basis for prescription, say the authors.

Inflammation, Immunity

Lipids implicated in insulin sensitivity

Diabetes is easy to understand. No insulin from pancreas implies an accumulation of unused sugar in blood. It makes you prone to many different medical conditions, including stroke, blindness and wounds that won't heal. And the treatment is simple enough: administer insulin.

But Type 2 Diabetes? That is a different story. There is insulin in blood. And yet there is more sugar too. The cells just don't seem to recognize insulin! This type of diabetes is becoming almost an epidemic in human populations. Fingers have been pointed at modern lifestyle: too much fatty food, too little exercise… Finger pointing is easy. Understanding the phenomenon is not. There are people who eat lots of fats and yet do not seem to develop Type II diabetes. So, what exactly is happening at a molecular level?

A review article in this issue brings together recent discoveries to explain the epigenetic process that leads to the malfunction of adipose cells, making them larger and inefficient, the consequent inflammation and infiltration of the immune system, the increase in free fatty acids in blood and their role in reducing the sensitivity of insulin receptors. In the process, the article shifts the attention of diabetes researchers from PPARγ to FetA. Read on from **page 1922** in this issue.

Mangrove Ecology

Crabs in the garb of indicator

In the Kunhimangalam mangrove forest in Kerala, India, a tiny crab, only a few centimeters across, scuttles across the mud. It pauses near a fallen leaf, grabs it with its claws and drags the leaf, which is bigger than its body, into its burrow.

Unlike the earthworms that Darwin described, the crab does not plug the burrow. The leaves are dragged in. They are cut into small pieces, chewed and eaten. The crabs relish the leaves of trees that are shunned by even the most voracious herbivore on land.

The crab's droppings are like culture medium for bacteria and fungi. The last vestiges of the leaves disappear soon into the web of life.

The Sesarmid crab, *Neosarmatium malabaricum,* is an important node in the web of life in mangrove forests. Litter translocation by the crabs is important to the health of the mangrove ecosystem. It traps the organic matter in the ecosystem, which otherwise would be washed away by tides.

Scientists in Kerala took Sesarmid crabs from mangroves to their specially created labs. And fed them fallen leaves of different trees found in the local mangroves. What is their preferred diet? How much do they carry into their burrows? How much is left undigested? Can they really take into account all the fallen leaves in the mangroves? After allaying their curiosity, scientists took the crabs back to the mangroves and released them.

What emerges as results from these experiments, is most satisfying. Apparently, while the crabs prefer specific leaves, they would rather settle for a mixed diet. And they are potentially able to use many more leaves than the amount that falls on the muddy terrain.

The Research Article on **page 1969** has studied only one species of crab. There are more. The research article, in effect, has said Open Sesame to the treasures waiting for scientists in mangroves.

K. P. Madhu
kp.madhu2000@gmail.com