In this issue

Drosophila
Lifestyle and longevity

It is not fun to be Drosophila. You die of starvation. Of desiccation. Of heat or cold... You are usually at the mercy of natural forces. Unless you are in a lab and are well-fed and attended to, by students and researchers.

Scientists in the Banaras Hindu University collected free ranging *Drosophila ananassae* from Gwalior and gave them such luxury in the labs. They knew that male and female insects have different preferences of food sources. For example, the mosquitoes that bite you are all female while males are fond of plant sap. You may find more female flies near meat or milk, while male flies go to sugar syrup. But what are the epigenetic modifications that happen when drosophila populations are fed carbohydrate enriched food as opposed to protein enriched food?

Small populations of the tiny creatures with specified differences in their diets were taken out to expose them to discomforts – cold, heat, starvation, desiccation... They compared the differences in the responses between male and female, fed on protein rich or carbohydrate rich food. And the results are there for you to read in the research report of this issue. If you were drosophila, there is great advice for you in those pages. You may not even mind that a few of your brothers and sisters were dissected to examine the malpigian tubules.

What is intriguing, for us as human beings, is the question whether the conclusions drawn from the study of drosophila are applicable to human beings also. After all, people in the north, south, hills, valleys, sea shore etc. have adapted to diets based on food easily available to them. So do we also undergo epigenetic modifications because of our food habits that allow us to adapt to environmental stresses? If yes, then are the epigenetic transformations the same at cellular and molecular levels? This is the underlying question that scientists are really trying to solve, using *drosophila*. Turn to **page 1687**.

The eye in the sky
Synthetic apertures throw light on lakes buried under snow

Photographs of the earth from satellites have a limitation. When there is cloud cover, you don't see the earth underneath. But microwaves can penetrate the clouds. And if there is an array of microwave emitters that pulses a microwave beam in C Band and an array of detectors aboard a satellite, then cloud cover is not a deterrent to remote sensing of the earth's surface. Such a radar based imaging satellite, called RISAT-1, was put into orbit in April 2012 by India. Ever since, it has been useful in monitoring floods, soil moisture, etc. and has served data to the distress calls from other nations.

Cloud is not the only culprit that makes the surface opaque. Snow covers the surface of mountains and we cannot see what lies underneath. Microwaves go through snow too. And so, we can use this technology to see the topography of the mountains buried below glaciers.

In the Samudra Tapu and Gepanggath glaciers in the Chandra sub-basin, there are lakes that lie buried in snow in winter. Scientists from the Space Applications Centre, ISRO, examine the data from this region to uncover the lakes covered with snow – without lifting a spade. Look at the wonderful images presented by the Research Communication on **page 1728** of this issue. Compared to the images provided by the Advanced Wide Field Sensor cameras, the details of the lake under snow are startlingly clear.

RISAT 1C, the heaviest satellite that India has put into orbit, has beams that can be focused or widened. It can generate multiple modes of polarization. The imaging capabilities have been put to test many times in the last three years. It will continue to function for a few more years. The administrators and planners now need to take into account the proven capabilities, demand and use the data so generated wisely, when needed. Imagine the situation when you need to look into what is buried under an avalanche. A one meter resolution can come in handy!

P-P-P for People
Agricultural extension at crossroads

There was an era when India went through famines. Droughts occur even today. But the granaries are full and space to place the stocks are often scant. Attribute it to the Green Revolution. Better seeds, more scientific practices in agriculture... There is a well established agricultural extension system in India now.

But enter the information revolution. The *e-choupals*, the *bhuvan panchayats*,... The existing system of agricultural extension that evolved to meet the challenge of the Green Revolution was not prepared for this.

And then enter biotechnology, genetic modification and a host of other technologies related to agriculture that can transform the Indian agricultural system. The lab-to-land programme started in the seventies floundered: not enough manpower. And the existing manpower was not trained, oriented or motivated to meet the challenges.

The NGOs that partnered with such programmes faced the same problems, starved of adequate funds.

Enter private agricultural extension. Policies are conducive. And the farmers need the services. And goods: seeds, fertilisers, weedicides, insecticides.... Make hay while the sun shines. Who cares about the environment, health, well being and economic security of the agricultural communities, so far as there is money to be made.

A General Article in this issue examines the problem and suggests a convergence of the actors – public, private, NGOs. A Public–Private-Partnership to serve the people. A coordinated effort based on the strengths, mandates, capacities and expertise available.

The writing on the wall is clear. But who will bell the cat? The Government should, suggests the article on **page 1557**.

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