In this issue

Glaciers in Satluj Basin

Water sources under threat

There are about two thousand glaciers, big and small, in the Satluj basin that feed the Bhakra reservoir during summer. In fact, more than half of the water from the Beas and the Satluj is derived from snow and ice melt. How will the performance of the Bhakra reservoir change in response to climate warming?

Scientists from the Divecha Centre for Climate Change and the Centre for Atmospheric and Oceanic Sciences of the Indian Institute of Science, Bengaluru as well as scientists from the British Antarctic Survey, Cambridge, took up the challenge of finding out. They used a high emission representative concentration pathway scenario for the area, and the fifth version of the climate model by the French National Centre for Research on Meteorology (CNRM-CM5) and the third version of the climate model by the Geophysical Fluid Dynamics Laboratory (GDFL-CM3) for comparison.

They estimate that the glaciers feeding Satluj basin are estimated to have a total volume of about 70 cubic kilometres. By 2090, what could be the scenario? Glaciers in the basin are estimated to lose about 50% and 80% of ice mass, if climate change follows the high emission scenario of the French and the American model, respectively. Both models, however, agree on one point: the water input into the Bhakra reservoir will increase till 2050 and then start decreasing rapidly. People living in the area and national decision makers may like to read the Research Article on **page 1721** for more details.

Low Birth Weight Babies

Region specific issues

Babies that have low weight at birth are at risk of childhood illnesses. To understand the correlations with socio-economic factors and to take steps to reduce the causative factors, we need data. The third National Family Health Survey conducted in 2005–06 had collected detailed data related to maternal and child health. Though mothers had to report the birth weight of babies born up to five years preceding the survey, from memory, the survey results provide reasonably credible results.

Dharmendra Kumar Dubey from the Symbiosis International (Deemed) University and Dilip C. Nath from the Assam University dug into the data to examine regional patterns in low birth weight babies and the socioeconomic factors that influence the reporting. They are concerned about the phenomenon of birth weight 'heaping' in reporting. When birth weights of babies of three or less kilograms are reported in multiples of half kilograms, the data is not too useful to make informed decisions.

The Research Article on **page 1674** in this issue provides enough food for thought for those involved in neonatal care as well as for national data collection on weight of newborns.

Identifying the Master Switches

To turn off cancer

If you put the DNA in all the 23 pairs of your chromosomes end to end, it will be about two metres long. But, in the cell, it is tightly packaged into a few microns in the nucleus, using histone proteins. To read the genetic programme, however, each type of cell has to unpack a specific part of the chromosome into chromatin and then remodel the chromatin to allow the process of translation into the RNA language of the cell.

Four families of these chromatin remodelers have been discovered so far and 'SWItch/Sucrose Non-Fermentable' or SWI/SNF, is the most studied of these remodellers. In a Review Article in this issue, researchers from the Centre for DNA Fingerprinting and Diagnostics and the Manipal Academy of Higher Education examine the role that the master switch SWI/SNF plays in eukaryotic cells.

The SWI/SNF chromatin remodeller has many subunits. These subunits show some amount of diversity and these add up to the wide variety of functions of this master switch. Malfunctions of this switch are known to create a wide variety of developmental and neurological disorders. But the focus of the review is the role that the switch plays in cancers of various types.

If we can get mastery over this multi-component master switch, controlling cancerous growth can perhaps become child's play. Read on from **page 1653**.

Avoiding Detection by Radar

Microserrations on wings

The barn owl swoops down on its prey. The prey does not hear the flapping wings. The structure of the barn owl's wing has evolved over millions of years to avoid any whooshing sound.

The structure of the barn owl's wings inspired Avijit Chatterjee at IIT Mumbai to design aircraft wings that radars cannot detect. A little more than two years ago, his team reported experiments using serrations on the trailing edge of wings to make aircraft less detectable (*Curr. Sci.*, 2017, **112**, 1020–1023).

Now, in this issue, Avijit's team reports the use of microserrations on the leading edge of the wings to make the aircraft even less observable by radars. What are the relationships between wing span, width and serrations such that radars that use different frequencies are fooled?

Unlike the wings of the barn owl, the wings of present day aircraft have evolved only over a hundred years or so. Read the Research Communication on **page 1731** in this issue to envision the future evolution of aircraft wings.

K. P. Madhu
Science Writing Consultant
scienceandmediaworkshops@gmail.com