

## In this issue

### Kallar Elephant Corridor

#### *Bottlenecks and blocks*

When you travel from Mettupalayam to Ooty by NH 67, enjoying the picturesque landscape of the ghats, you may not realise that you are bisecting an elephant corridor. The Kallar elephant corridor connects populations of 6300 elephants from the Brahmagiri–Nilgiris–Eastern Ghats to around 1000 from Nilambur–Silent Valley–Coimbatore. During their seasonal movements to access foraging grounds, the elephants have to cross this corridor. Passage across the highway is possible only at the start of the ascent and between the two hairpin bends due to undulating terrain. So, to ease elephant movements, a flyover from the Kallar bridge to the second hairpin bend had been proposed. The proposal remains on paper.

The seven-kilometres-long corridor narrows to a width of less than half a kilometre in some parts. In the last 15 years, besides the increasing traffic on the highway, land use has changed in the area. This has created bottlenecks forcing elephants to stray into private forest and agricultural lands, increasing chances of conflict with humans. Thus, many elephants have died of electrocution and many more people have lost their lives.

Before the conflict between elephants and people turns into a conflict between people and authorities as well as between people and people, a flyover that allows unimpeded movement of elephants needs to be created. In a General Article on **page 2211** in this issue, researchers from the World Wild Life Fund-India provide convincing data to make an impassioned plea for strategic action, on behalf of the people, the elephants and ecology.

### Multi-drug Resistant Bacteria

#### *Roadmap to new antibiotics*

Inappropriate prescribing and overuse of antibiotics in the last few decades have created an impasse in treating many infectious diseases. In 2017, the WHO released the first list of antibiotic resistant pathogens that need tackling on priority basis.

Most antibiotics in current use are from a small set of molecules, a majority of them derived from soil-dwelling actinobacteria, often accidentally discovered. The diversity of antibiotics in the market today is primarily due to minor synthetic modifications. Researchers from the Vivekananda Institute of Tropical Mycology, Chennai and the Royal Botanic Gardens, Kew suggest research strategies to find new antibiotics in a General Article on **page 2201** in this issue.

They point out that there are more than a lakh of known species of fungi. The estimated number of species goes into millions. We need to start searching among the less-studied fungi such as endophytic fungi, fungi from marine and mangrove ecosystems, fungi associated with insects, rumens, tropical peat, corals, resins, bryophytes and lichens and plant pathogenic fungi for potential antibiotics. Often, we may need to challenge these fungi to produce antibiotics since many genes are switched off in the cosy environments of culture media.

Another approach is to identify new target sites in pathogenic bacteria by functional and structural genomics, to design novel antibiotics through a culture-independent approach. Awareness building for more rational use of existing antibiotics may also need to be undertaken.

The urgency for bio-prospecting, genomic mining and epigenetic induction for finding novel antibiotics will, perhaps, help facilitate easier exchange of living materials between scientists in different countries, hope the authors.

### Malaria and MicroRNA

#### *Paralysing Plasmodium parasite*

Move over, DNA. RNAs are gaining importance in the eyes of researchers.

Though DNA may be the code of genetics, how that code will be expressed depends on RNA. Besides mRNA, that carries the code to produce proteins in cytoplasm, and tRNA, found in the protein producing machinery of the ribosomes, there are microRNAs – RNAs that interfere with

the transcribing and translating machineries of the cell.

Many pathogens are known to hijack cell machinery using RNAi to survive and reproduce. Researchers from the ICMR-National Institute for Research in Tribal Health, Jabalpur examine the case of *Plasmodium*, the malarial parasite. In a Review Article in this issue, they bring together current research to showcase the role of microRNAs in the hepatic stage of malaria, in red blood cells and in cerebral pathology caused by *Plasmodium falciparum*.

*Plasmodium* alters the miRNA profile of the host in such a way that it dampens the host immune response necessary to eliminate parasites, say the authors. Perhaps the Achilles' heel of the parasite might be the non-coding regions of its DNA, earlier thought to be 'junk' DNA. Read on from **page 2219**.

### Tourism and Trash

#### *Animals in dump sites*

Nainital is a tourist destination. And many villages in the district bear the brunt of trash from tourism. Researchers from the Jawaharlal Nehru University and the Asian Adventures, New Delhi and the Nature Science Initiative, Dehradun, collaborated to find the impact of human trash on animals.

They selected a village near the edge of a forest. There was a large enough garbage dump where people disposed of un-segregated trash, quite often in plastic bags. Using observations throughout daytime and a camera trap at night, they collected data on animal visitations, the duration of visits, contacts with different types of trash, etc.

To compare, they did the same at a nearby compost pit where segregated biodegradable waste was disposed of. In a Research Communication on **page 2322** in this issue, the researchers report their findings along with recommendations to reduce the ingestion of plastic by animals.

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