In this issue

Japanese encephalitis

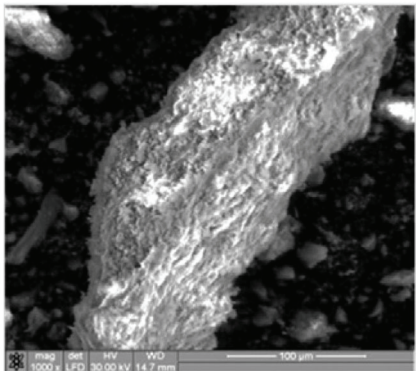
Japanese encephalitis (JE) is the most prevalent form of viral encephalitis endemic to many parts of Asia, where periodic outbreaks take hundreds of lives. Sengupta and Basu (**page 815**) briefly discuss the prevalence of this disease in the Indian subcontinent and the potential risk of its spread to other parts of the world, thereby making it an emerging global threat. As Japanese encephalitis virus (JEV) infects mostly children who are in a dynamic state of brain development, the authors focus on the effect of JEV infection on brain development and repair. They highlight the depletion of neural progenitor cells (NPCs) occurring during the viral infection which, in the process, suppresses the cycling ability of these cells, preventing their proliferation. They also discuss the mechanism by which the JEV infection and the ensuing inflammation modulate the fate of NSPCs resulting in the impairment of neurogenesis possibly leading to long-term neurological sequelae in JE survivors. They also focus on the need for new therapies for the cure of this neurodegenerative disorder and propose the use of the drug Minocycline in imparting protection against the disease, which can be a major breakthrough in the treatment of JE.

Forest fragmentation in India

Forest fragmentation is one of the most important drivers of forest degradation as well as biodiversity loss as it disrupts the structure and functioning of the ecosystem. Forest fragmentation has resulted in isolation of the genetic pool which may lead to local extinction of the important endemic species. Forest fragmentation during the last century, mainly due to the global demand for timber, forest produce and land uses associated with infrastructural development such road network has resulted in irreversible changes in our ecosystem. An assessment of the forest fragmentation and its spatial pattern are the key requirements for undertaking any eco-restoration work in the affected areas. Remote Sensing and Geographic Information System have provided us an opportunity to model the spatial variations in the forest fragmentation in India. Using a moving-window approach on high-resolution geospatial data on vegetation, fragmentation index computed across the Indian landscape has been categorized into high, moderate low and intact. It was observed that almost half of the forested land is intact in spite of tremendous population pressure, indicating effective protection in the remnant forests in the country. Indian forest landscape has around 20% of the total geographic area under forest cover, and around half of this area has low fragmentation mostly due to some level of institutional or sometimes social protection. Most of the biodiversity-rich forests such as evergreen, subtropical broadleaf and temperate broadleaf are relatively intact or have low fragmentation. But highly fragmented regions across the Indian landscape harbor a number of endemic medicinal and economically important species which needs conservation. Mrinalini *et al.* (**page 774**) present status of fragmentation of Indian forests due to socio-economic drivers, viz. shifting cultivation, forest villages, infrastructural development, mining and encroachment. Fragmentation provides critical inputs to prioritization and conservation of the forest and its associated biodiversity.

Chemical analysis of ancient mortar

The restoration and preservation of the monuments of the national importance is our duty. Historic masonries are made up of different materials such as bricks, stones, mortars, etc. all of which are strongly ejected by degradation processes. Increasing use of lime-based mortars for the restoration of historic buildings and structures justifies the research on these materials. During the 20th century, there has been a gradual replacement of lime mortars for masonry structures by cement-based mortars, also for restoration purposes, around the world. However, there is a general agreement that the use of highly hydraulic cement-based mortars for restoration purposes has resulted in extensive damage to cultural heritage, because of the incompatibility of these mortars with the ancient materials.



Determination of the chemical composition of the binder and aggregate in mortars is important because it provides useful information regarding the ingredients employed in mortar preparation. Panda *et al.* (**page 837**) demonstrate petrographic analysis of historic mortars and provide fundamental information on mortar technology and ingredients. A complete characterization has been carried out which includes traditional chemical analysis, trace elements with PIXE, mineralogical characterization using X-ray diffraction and thermal studies (simultaneous DTA and TG analysis). Further, morphological properties along with elemental composition have been observed using SEM-EDX.