

In this issue

Fungal biodiversity in the Western Ghats

Compared to the studies on the flora and fauna in the Western Ghats, which is considered to be a hot spot of biodiversity, the diversity of microorganisms is not intensively studied. Fungi which form an important component of the forest ecosystem, have been largely neglected in any biodiversity studies in a given area. Natarajan *et al.* (page 1890) present a broad picture of the biodiversity of members of Agaricales, a particular group of fungi in the class Basidiomycetes, in the Nilgiri Biosphere Region (NBR) of Western Ghats. These studies indicate that a large number of fungi (225 species belonging to 61 genera) of this group occurs in the NBR region, of Tami Nadu and Kerala. Surprisingly there is very little work in the Karnataka region. There are a large number of undescribed species present in this region. There is relatively small number of ectomycorrhizal species found in the NBR region and this list indicates that the generic composition present in the NBR is more or less similar to the genera which occur in the Western Himalayas.



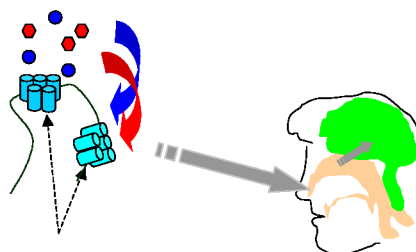
Natarajan *et al.* (page 1893) highlight the diversity in ectomycorrhizal fungi of a dipterocarp forest in Western Ghats. The species diversity of potential ectomycorrhizal fungi associated with trees belonging to the Dipterocarpaceae such as *Dipterocarpus indicus*, *Vateria indica* and *Hopea parviflora* in the Uppangala forest of Western Ghats in Karnataka was found to be rich. Species belonging to the genera *Russula* and *Amanita* were dominant. A comparison of species of fungi associated with dipterocarps in other parts of the world revealed that the Uppangala flora is distinct at the species level.

IT-based agricultural information dissemination system

Indian farming community is facing a multitude of problems to maximize crop productivity. One of the reasons is that expert/scientific advice regarding crop cultivation is not reaching farming community in a timely manner. A wide information gap exists between the research level and practice. Krishna Reddy and Ankaiah (page 1905) propose a framework of IT-based cost-effective and scalable agricultural expert advice dissemination system to provide fresh expert agricultural advice to the farmers, both in a timely and personalized manner. In the proposed system, the agricultural experts generate the expert advice based on the information about the crop situation received in the form of both text and digital photographs. Some of the crucial benefits of the proposed system are as follows. It is a scalable system and enables the farmer to cultivate a crop with the expertise, as that of an agricultural expert. With the proposed system, the lag period between research effort to practice can be reduced significantly. Finally, the proposed system assumes great importance due to the trend of globalization, as it aims to provide expert advice which is crucial for the Indian farmer to harvest different kinds of crop varieties based on the demand in the world market.

Smell of molecules

The smell is the most important sense for survival by identifying suitable food and avoiding putrid or unfit foodstuff. It has industrial significance in multi-billion



dollar perfumery, food and beverage industries as well as in defence (developing sensors for drug or narcotics). The molecular detail of the olfaction process is of tremendous current interest. The Nobel Prize in Physiology and Medicine

in 2004 was awarded to Linda Buck and Richard Axel for their discoveries of odorant receptors and olfactory systems. Odorant molecules are recognized by the G-protein coupled olfactory receptors. These receptors can surprisingly recognize the subtle differences between the molecules such as their chirality. It is a puzzle how the receptors discriminate such small differences. Nandi (page 1929) presents a model in which interactions between peptide motifs (mimics of the segments of the helical receptor) and enantiomeric odorant molecules (carvone and camphor) are calculated theoretically. The model shows that the enantiomers of carvone have distinctly different interaction profile while the enantiomers of camphor have no such difference. The study provides a molecular basis for the recognition of chemical structure of the odorant molecules by the receptors.

Ancestral YAP lineage

Human Y-chromosome is a highly suitable marker for tracing the patrilineal lineages of a population. Suraksha Agrawal *et al.* (page 1977) have attempted to trace back the human evolutionary history of north Indian populations by studying the YAP+ve lineage (one I/D and four SNPs) among nine north Indian populations – Bhargavas, Chaturvedis, Brahmins, Kayastha, Mathurs, Rastogis, Vaishyas and two Muslim sub-sects – Sunni and Shiya. YAP+ve lineage is present in two lineages worldwide: (1) M145/M203/M174 (Haplogroup D) is specific to Japan and other Southeast Asian populations, while (2) M145/M203/SRY4064 (Haplogroup E) is confined to Sub-Saharan African and Middle-Eastern populations. Shiya Muslims revealed presence of YAP lineage belonging to the African, Middle-East Asian lineage (M145/M203/SRY4064) in a frequency of 11%. Interestingly, Sunni Muslims, like other caste populations, exhibited a complete lack of YAP+ve lineage, despite having same origin like that of Shiya Muslims, i.e. from Middle East. The authors document the presence of YAP element in the contemporary north Indian populations. They hypothesize that Shiya Muslims due to less number and less admixture with other caste groups of India, still carry the ancestral YAP +ve lineage, which in all probabilities, is one of the founder haplogroups.