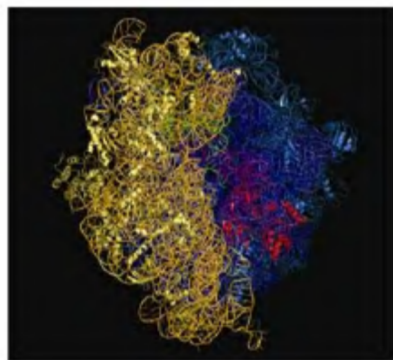


In this issue

Ribosome in the spotlight

Ada Yonath, Tom Steitz and Venki Ramakrishnan were awarded the 2009 Nobel Prize in Chemistry for unveiling the elegant architecture of the ribosome using X-ray crystallography. Ribosomes are complex molecular machines that convert genetic blueprints into proteins in all cells. Because of the enormous size and the asymmetry of the ribosome, solving its structure was a daunting task, but decades of heroic efforts of the groups of three Nobel laureates and several other X-ray crystallographers culminated in 2000, when the high-atomic resolution structures of the bacterial ribosomal subunits were finally published. The crystal structures of the ribosome provided the



essential structural basis required for the elucidation of the molecular mechanism of protein synthesis (translation), one of the most fundamental aspects of cellular function.

Cryo-electron microscopy (cryo-EM), another structural biology technique, has also contributed significantly to our understanding of ribosome's structure and functional dynamics. This technique's strength lies in its ability to yield 3D images of macromolecular complexes 'trapped' at different stages of their conformational changes and dynamic interactions in a native environment.

In a review article, Sengupta outlines (page 1584) the X-ray crystal-

lography and cryo-EM techniques and their contributions to ribosome structure determination, and also illustrates how the combination of X-ray structures with cryo-EM maps provides the molecular understanding of the underlying mechanisms of translation.

Electrical imaging of the Lakshdweep Islands

North-south extending Chagos-Laccadive Ridge (CLR) spanning about 2500 km long in the Indian Ocean basin on the western side of India is a spectacular tectonic feature. Its origin and evolution remain a subject of great interest. The Lakshdweep group of islands over northern part of CLR are only available conduit through which one can employ land-based survey techniques for subsurface investigations. Electromagnetic techniques such as magnetovariational (MV) and long-period magnetotelluric data (LMT) have been used owing to their sensitivity to map subsurface electrical conductivity distribution that facilitates constraining the deep structure and thermal state of the northern part of CLR.

Rao and Singh (page 1599) carried out geophysical work in the Lakshdweep Islands for explaining its structure in terms of tectonics and geodynamic evolution. To ascertain the nature of the crust beneath the northern part of the CLR by conductivity imaging, they have carried out LMT and MV survey at different Lakshdweep Islands. 2D modelling across the northern part of the CLR has revealed a prominent midcrustal conductivity anomaly. This anomaly could be delineated after eliminating the shielding effect due to sea water column using 3D thin sheet approximation. The mid crustal conductivity anomaly may be associated with the massive magmatic intrusions due to hotspot volcanism during the

northward drift of Indian plate over the Reunion mantle plume.

About 53 Ma old fossilized fruits from western India

Fossilized remains of fruits are relatively uncommon in the geological archives owing to their generally delicate nature and rather quick decomposition after their detachment from parent trees. Since well-preserved fossilized fruits have short transport to burial histories (their burial is quick and not far from the source plant), they have great potential to provide useful information about the character of forest which hosted their plant producers. Singh *et al.* describe (page 1625) a small collection of well-preserved fossilized fruits of dicotyledonous trees and shrubs recovered from the Early Eocene (~53 Ma) subsurface beds of the Cambay Shale Formation in an open-cast lignite mine near Surat, western India. Four distinct types of fruits closely similar to the fruits of modern taxa, viz. *Ziziphus xylopyros*, *Combretum decandrum*, *Terminalia chebula* and *Lagerstroemia flos-reginae*, have been identified. Their present day distribution indicates that all of them were deciduous types that grew under moist tropical conditions. The deposition of highly fossiliferous lignite beds containing a host of plant-debris, fruits of both trees and shrubs, mangrove palms and fossils of a large variety of vertebrate animals from diverse communities, e.g., coastal river bank, terrestrial and arboreal, suggest that a dense tropical forest with several stories of vegetation somewhat similar to the present day coastal deciduous forests of Karnataka may have contributed to the formation of the extensive Lower Eocene lignite deposits of western India. The high diversity of fauna and flora in the Vastan Mine has earlier been related to past global warming events.