# In this issue

## Antiatherogenic peptides

Atherosclerosis is a major cause of mortality in the developed world and is a steadily rising cause of death in India. Cholesterol, a largely water insoluble cellular component, has acquired notoriety as the causative agent of the disease; its deposition on the arterial wall signals onset of the disease. Cholesterol levels in the plasma are often used as a warning indicator, but can be misleading since atherosclerosis can occur despite normal levels of cholesterol. The problem, inevitably, lies in the complex biochemistry that determines the development of atherosclerosis. The plasma lipoproteins, classified on the basis of their densities as very low density lipoprotein (VLDL), low density lipoprotein (LDL) and high density lipoprotein (HDL) play a key role; increased levels of HDL are protective, while high levels of VLDL and LDL are risk factors. These proteins have the ability to solubilize lipid components which are normally insoluble in plasma. On **page 53** G. M. Anantharamaiah *et al.* provide an overview of studies aimed at designing peptide mimics of the antiatherogenic apolipoproteins A-1 and E. The focus of these studies is to develop low molecular weight peptides which can imitate the effects of the intact protein and lead to the development of a new class of antiatherogenic agents.

The key to the design strategy is the construction of amphipathic helical sequences, peptide chains which when folded into a helical structure display polar sidechains on one face and hydrophobic residues on the other. The Janus faced molecules are then capable of efficiently associating with lipids, forming complex soluble structures. Using an 18-residue apo-A1 fragment, extensive studies by Anantharamaiah and his colleagues demonstrate that peptides of appropriate design can 'inhibit lesion formation in atherosclerosis sensitive mice'. In a parallel approach they have also developed peptides derived from apolipoprotein E which possess antiatherogenic properties; operating by a complex mechanism that enhances the cellular uptake of apo-B containing lipoproteins. Interestingly, these studies have been extended to the construction of dual domain peptides, which 'dramatically lower the plasma cholesterol in dyslipidemic mice.

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## On the yield of the Pokhran blast

The nuclear tests by India and Pakistan in May 1998 were conducted at a time when the US Congress had begun debates about ratifying the Comprehensive Test Ban Treaty (CTBT), which India had opposed, in the UN. Unlike the nuclear tests conducted by major nuclear powers in the past, both the Indian and Pakistani tests were followed by official press releases on the yield of the explosion. Many scientists involved in monitoring nuclear explosions found this as an unusual opportunity to compare these estimates with those obtained from global seismic data. While the Indian scientists at BARC estimated the yield of 11 May event as 60 kt, Wallace (*Seism. Res. Lett.*, 1998) estimated it to be 10–15 kt and Barker *et al.* (*Science*, 1998) obtained 9–16 kt. Why are these estimates so different? While the exact explosive yield cannot be precisely determined, its magnitude estimates allow some bounds to be placed on the range of possible yields. These estimates are based on certain standard relationships between magnitude and yield, involving also some regional constants. There are half a dozen papers discussing the yield of the 1998 Pokhran blast and now we have a paper by Douglas *et al.* **(page 72)** reviewing some of the situations that could result in a range of values. Their paper arrives at a yield of about 20 kt, which is closer to other non-Indian estimates. Perhaps the scientific community may never arrive at an agreement on the yield estimate because of the diverse techniques and data used in these studies. Sharing the data recorded on the Indian stations with other groups and a reevaluation of the yield estimates using more data and alternate techniques may be a good academic exercise. Although there are large variations in the yield estimates, the authors of this paper have little doubt about the success of the International Monitoring System (IMS) in detecting these explosions, at their lowest estimated range of yield. In that sense, the Indian nuclear explosion proved to be a reality test of the capability of IMS and its ability to verify the Test Ban Treaty.

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