In this issue

Kala-azar in Varanasi

Kala-azar or leishmaniasis is a disease still prevalent in parts of India, with Bihar being a focal point. Epidemiological surveys fulfill the crucial task of identifying disease pockets and help in firmly establishing the extent of spread of infection. Quite often, clinical reports from far-flung districts are not collated and despite the best of intentions, many statistics of disease prevalence are based on rather limited epidemiological data. The logistics of any comprehensive survey can be formidable, a fact often not appreciated widely. Diagnosis is a key element in collecting disease statistics. In the case of visceral leishmaniasis, there are a few options; microscopic detection of parasites in lymph node smear, bone marrow or splenic aspiration, culturing of parasites from patient material or serological tests for anti-parasite antibodies. Polymerase chain raction (PCR)-based diagnostics are available but are of limited field utility. Of the many methods, serological tests of blood samples are the easiest and one such procedure is the direct agglutination test (DAT).

Gupta *et al.* (**page 456**) use DAT to carry out a survey of the Varanasi district, following reports of sporadic cases of kala-azar in several areas of eastern UP. Their results, if substantiated are a cause for concern. In the limited population samples tested, a prevalence rate of 27% is estimated by the authors. As in many other diseases a positive serological response is no indication that disease progression will follow. Nevertheless, exposure to the infectious agent is widespread. Interestingly the DAT test yielded a positive response in ten asymptomatic subjects, who, on follow up a few months later, showed the development of full blown disease. Women appeared more susceptible in this study although as in many such surveys statistical significance remains a matter of concern. Indian public health authorities would be wise to ponder on the results reported by Gupta *et al.* Maybe the eradication of leishmaniasis is an achievable goal for the future.

Phosphatases and signalling

Signalling and communication at a molecular level are key elements in biology. Cells communicate with one another via chemical transmitters; hormones being the most widely appreciated example. Recognition of chemical signals is most often achieved by specific molecular recognition processes involving cell surface receptors, which are usually large proteins imbedded in the surface membrane that defines the cell boundary. The process by which binding of an effector molecule to a surface receptor results in an alteration in biochemical activity of a cell is a subject of intense scientific study. Signal transduction is one of the glamorous areas of cell and molecular biology today. The most common chemical step in transmitting information from the cell exterior to the interior appears to be the act of phosphorylation, an enzymatic process in which a 'kinase' transfers a phosphoryl group to a suitable acceptor amino acid residue on a target protein. Among the best studied are protein tyrosine kinases. If the process of phosphorylation is to act as a switch then there must be a process of dephosphorylation. Sure enough, the enzymes, tyrosine phosphatases, have been found. The kinases and phosphatases acting in tandem then control cellular events which depend on the phosphorylation state of specific targets.

Radha and Swarup (**page 418**) review a currently active field – the role of nuclear protein tyrosine phosphatases in control of cell proliferation.

The kinases and phosphatases are important not only in modulating responses of cells to changes in the external milieu, they are also critical in regulating important nuclear events like cell division and transcription factor activity. Protein tyrosine phosphatases appear important in understanding cancer, stimulating a burst of activity in this area.

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