Instead of installing a large, high and costly concrete or rock-fill gravity dam, a < 10 m tall nylon-reinforced rubber bladder (when utilized, filled by either air or water) securely anchored in a rock-locked steel-reinforced concrete base-plate will induce a shallow freshwater reservoir to quickly accumulate\textsuperscript{6–8}. Subsequently, ~100% of the river’s flow can be diverted (during appropriate times or season) directly to the pressure tunnel’s head-gate. Nearly abandoned, the steep deep-canyon stream’s bed may then be transformed into a topographically descending series of stepped runoff and erosion control sediment-trapping basins; its appearance then will resemble the 12 June–25 November 1969 dewatering of the Niagara River’s American Falls Channel – a period which encompassed the First Moon Landing – and its future anthropogeomorphological state may be as identicallyiffy as that which Shailer S. Philbrick (1908–1994) projected for an unrestored Niagara Falls landscape region\textsuperscript{9}. Water flow fluctuation means the pressure tunnel must be very well designed, dug and defended by a strong impermeable lining. An impoundment with a shallow pool depth ought not increase significantly the local seismicity and rock-slide hazard.

Imagine an integrated hydropower-generation and super-conducting electric power delivery grid netted throughout the Himalayas, serving the geopolitical and economic development interests of India, China and other inter-linked national ecosystems! The more vociferous Greens beg or bully India and China not to burn their affordable existing coal resources – to delay the onset, or to reduce the final overall impact of, a commonly alleged ‘enhanced global atmospheric warming’ – the more self-righteous India and China may become when they do jointly harvest the TAR’s hydropower for further separate industrialization; India and China are space-faring UNO members which remain bedeviled by down-to-earth widespread low human standard of living levels. Cooperation of these two major players as guides for Tibet’s future economic development may ensure their own 21st century peace and prosperity!

Tibetans ought to have an important role in this proposed flood-mitigation and developmental macroproject’s planning as well as its post-construction operation, especially if they can tolerate a small alteration in their sacred river’s altitude (i.e. its flowing level) or its temporary capture for industry’s use. In Tibet the major environmental impact should occur in the low-flow river within the valley north, east and south of Namjagbarwa Feng. However, the inflatable dam can be deflated, or removed forever, at any time! This macroproject might be undertaken during 2002, which was declared (on 10 November 1998) by the United Nations Organization to be the “International Year of the Mountains”\textsuperscript{10}. 

SCIENTIFIC CORRESPONDENCE

Temperature-dependent cell transformation in a calcium-binding protein from *Entamoeba histolytica*

Temperature is a principle state variable which governs the structural, physical and functional properties of proteins to a large extent. We have observed an unusual temperature-dependent structural transition while attempting to collect X-ray diffraction data at room temperature (20\textdegreeC) and at 4\textdegreeC. This temperature-dependent cell transformation was observed in a calcium-binding protein (CaBP) from *Entamoeba histolytica*\textsuperscript{1,2}. This CaBP is very similar to the structurally well-studied archetypal calmodulins (CAMs)\textsuperscript{3} with two calcium-binding domains separated by a central linker. It is, however, smaller than CAM (134 residues) and has a two-residue insertion in the linker region. As a control, similar studies have also been carried out on small proteins like ribonuclease and lysozyme. These studies suggest that this kind of cell transformation is not a general phenomenon.

Crystals of native CaBP were obtained in 63% MPD, 10 mM CaCl\textsubscript{2} and 100 mM sodium cacodylate buffer (pH 4.3) using protein at a concentration of 10 mg/ml (ref. 2). Typical crystal dimensions were 0.6 × 0.2 × 0.2 mm\textsuperscript{3}. The crystals belonged to the space group P6\textsubscript{1}2\textsubscript{1}2\textsubscript{1}. Diffraction data collection was carried out using a CuK\alpha X-ray source provided by a Rigaku RU200 rotating-anode generator equipped with a 0.2 mm focusing cup and operating at 40 kV, 56 mA. Data were collected on a MAR Research imaging plate system at a crystal to film distance of 150 mm. The oscillation angle was set to 1\textdegree. Constant temperature was maintained using an Oxford Cryosystem Cryocooler. Each frame was exposed for 15 min and a total of five frames were collected at each 10.0°C and 1.0°C, respectively.


Richard Brook Catheart is at GEOGRAPHOS, 1608 East Broadway, Suite #107, Glendale, California 91205-1324, USA.
Role of carboxylesterase in relation to pyrethroid resistance towards *Helicoverpa armigera* (Hubner) (Lepidoptera: Noctuidae) in Tamil Nadu

*Helicoverpa armigera* is a serious pest of many crops in India including cotton. In India, large-scale failure to control this pest with insecticides was first recorded in the major cotton-growing region of Andhra Pradesh in 1987 (ref. 1). Synthetic pyrethroid is one of the latest chemical insecticides in the series of insecticide molecules released in the Indian market in 1982. Appearance of pyrethroid resistance in *H. armigera* has been reported in Andhra Pradesh1–3, Tamil Nadu4–6, Delhi, Punjab and Haryana7,8. Three types of pyrethroid resistance mechanisms were identified in *H. armigera*9, i.e. reduced cuticular penetration, decreased nerve sensitivity and enhanced metabolic detoxification. Among these, esterases-mediated metabolic detoxification plays an important role in the detoxification of pyrethroid insecticides in *H. armigera*9 and other insect pests10–12. However, the relationship between pyrethroid resistance and carboxylesterase in the Tamil Nadu populations was not known and this prompted the present investigation. This information could be relevant to management of *H. armigera* control programmes and might help in the development of strategies to overcome resistance to pyrethroids.

Four different populations of *H. armigera*, namely pyrethroid susceptible, fenvalerate-resistant, cypermethrin-resistant and deltamethrin-resistant were reared on semisynthetic diets13. The resistant individuals were collected from insecticidal selection pressure areas of Tamil Nadu under cotton cultivation. Pyrethroid-susceptible larvae were obtained from Tamil Nadu Agricultural University, Coimbatore. The F1 generation larvae were used for insecticide bioassay and carboxylesterase enzyme studies.

Bioassays were conducted on third instar larvae (30–40 mg weight/larva) using a procedure based on the standard *Heliothis* susceptibility test recommended by the Entomological Society of America14. Serial dilutions of technical grade pyrethroid insecticides (fenvalerate, cypermethrin and deltamethrin from Spic Science Foundation, Chennai) in analytical grade acetone were prepared and a 1.0 µl