In this issue

Genetic polymorphisms in *Drosophila*

Singh (**page 461**) has briefly summarized the genetic polymorphisms at the level of chromosome, allozyme and DNA with a brief discussion on balanced polymorphism and heterosis, genetic coadaptation, linkage disequilibrium and genetic hitchhiking which are of evolutionary significance related to genetic polymorphisms in *Drosophila*.

Of the millions of species that inhabit the earth, biological researchers tend to concentrate on relatively few organisms that subsequently become model systems. Many organisms have been studied but some have become popular models. Of all these models, *Drosophila* has received maximum attention and is known as the most popular biological model. At global level more than 1500 species of *Drosophila* are known and in India more than 100 species have been reported which include both new species and new records. Thus there is a rich species diversity in the genus *Drosophila*. The most commonly used species for different kinds of studies is *Drosophila melanogaster*. In India, the most commonly used species from the viewpoint of population, behaviour and evolutionary studies is *Drosophila ananassae* which is a cosmopolitan and domestic species having common occurrence in India and endowed with several unusual genetic features. Although genetic polymorphisms have been studied in a variety of organisms including humans, *Drosophila* has been most extensively used for this kind of study.

A large body of data have been documented in a large number of species of *Drosophila* pertaining to genetic polymorphisms which has provided ample evidence for the presence of substantial degree of genetic variability although level of genetic variability may show inter- and intra-species variations. The role of different evolutionary forces such as natural selection and random genetic drift has also been demonstrated in the maintenance of these polymorphisms. Natural selection is considered to be an important evolutionary force in the maintenance of genetic polymorphisms although random genetic drift also plays an important role in influencing gene frequency changes in populations of small size and also at the level of molecular genetic variations. As advocated in the natural selection theory and synthetic theory, in the population evolving by gradual change, the amount of genetic variability is important because the rate of evolution is absolutely limited by the degree of genetic variability. Genetic polymorphisms are also useful to study genetic relationships among subpopulations of a species. It is also useful to draw inferences about evolutionary history and about evolutionary processes from the viewpoint of evolutionary biology.

Occurrence of cancer in patients with and without diabetes

Cancers of all forms account for about 12% of total deaths throughout the world. In India, cancer has become one of the ten leading causes of death. It is estimated that there are nearly 1.5–2 million cancer cases at any given point of time. According to recent reports, approximately 217 million people worldwide have diabetes and this number is expected to increase to at least 366 million by 2030. By the year 2030, India is expected to be the home of 100 million diabetic people compared to over 62 million diabetic people at present. Though an interrelationship between diabetes and cancer was found over 100 years ago, it is only modern, prospective, epidemiological cohort and case-control studies conducted in several countries that have provided reliable evidence of an increased cancer risk in diabetic patients, mainly in those with type 2 diabetes.

Both cancer and diabetes have become a major concern in the health of adult population in India. Surprisingly, not many studies have addressed the issue of prevalence of various cancers in diabetic patients. As the magnitude of both these health problems in India is growing at an alarming rate, effective management of these health problems warrants such studies for better management. See **page 486**.

Indivisible planetary science paradigm

The visionary evolutionist, Lynn Margulis, taught the importance of envisioning the Earth as a whole, rather than as unrelated segments spread among various scientific specialties. In the same spirit and in the broader framework of the Solar System, Marvin Herndon (**page 450**) presents a new, indivisible planetary science paradigm. This is a self-consistent vision of the nature of matter in the Solar System, and the dynamics and energy sources of the planets. Highlights include Earth's early formation as a Jupiter-like gas giant and concomitant dynamics, formation of the parent matter of ordinary chondrites and main-Belt asteroids, Mercury's internal composition, and the rationale for Mars potentially having a greater subsurface water reservoir capacity than previously realized.