

Editorial

N Mukunda, Chief Editor

As our readers are aware, publication of this journal is one of the ways in which the Indian Academy of Sciences is trying to contribute to the improvement of learning and teaching science and mathematics in our schools and colleges. We have recently carried information on a modest programme of the Academy to support short visits by college and university students and teachers to work with Fellows of the Academy on specific projects, and conversely for Fellows to give intensive series of lectures in colleges and universities (*Resonance*, Vol.2, No.3, 1997). In the Classroom section of this issue, Madhav Gadgil (who earlier contributed a series on 'Biodiversity') presents an extended article on a proposed nationwide effort – Project Lifescape – to make the teaching of biodiversity a 'live' and integral part of the biology curriculum at the college level. Against the background of our vast and varied biodiversity, and the need to inventory, understand and protect it, he suggests various ways in which the six thousand odd colleges teaching undergraduate science could become part of a concentrated and carefully orchestrated activity including fieldwork, build-up and exchange of information, etc. In some ways this is easier to achieve in biology than in chemistry or physics – at least in that part of biology that concentrates on the great diversity of life forms on earth rather than on the molecular biological aspects. In addition, there will be a need for flexibility in drawing up and revising curricula, and here the autonomous colleges (with a better record in some states than in others!) could take the lead. Let us hope there is an enthusiastic response to this project and proposal!

Vineeta Bal and Satyajit Rath's series on the immune system tackles this time the question of how this system decides when to produce antibodies, when killer cells and when helper cells.



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Even a layperson would be really impressed by the fantastic complexity of the system as a whole – a well-organized surveillance outfit with roving soldiers on the watch all the time, with instructions to search and destroy, engulf and devour. Truly a picture of the fight for life, on both sides!

Stephen Freeland and Laurence Hurst's article on the evolution of curious sex ratios in different species throws light on the question: whose fitness is sought to be maximised as the principle of natural selection plays itself out on the stage of evolutionary biology? It turns out that "the fitness of genes, rather than of individuals, is the primary currency of evolution." Natural selection is an extraordinarily subtle idea, and if one is naive, one can easily convince oneself that it is a tautology! We hope some time through our pages to convey to our audience the scope and importance of the work of the trio – Ronald Fisher, J B S Haldane and Sewall Wright – in the "modern" phase of evolutionary theory, something that should be as well and widely known as " $E=mc^2$ ". Someday also to appreciate this quip by a biologist friend: we humans are a particularly baroque example of the extent to which DNA is prepared to go to perpetuate itself.

Our back cover portrait this time features "the Prince of Mathematicians" Carl Friedrich Gauss, and a general article by Surya Ramana accompanies it. Remembering that Gauss had called mathematics "the queen of science", his relationship to mathematics becomes clear! From Gauss in 1806 through Riemann and Felix Klein to David Hilbert till 1930, Göttingen was a world centre of mathematics. Not bad in comparison that the Kerala school, highlighted last month, lasted from about 1350 to 1600 A.D.!

