

## Editorial\*

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*N Sathyamurthy, Chief Editor*

“Who am I?” – a philosophical question that has puzzled humankind since time immemorial. Our ancestors sought an answer to this puzzle, and some of them who meditated in the Himalayas is said to have found the answer. Adi Shankara epitomized this effort and explained to all who cared to learn.

A relatively simpler question to answer is where my genes come from. It comes from the mother inheriting half of her genome, as well as her mitochondrial DNA, and from the father, who passes on half of his genome (including the Y chromosome if I am male). A careful analysis of genomic and mitochondrial DNA data helps us trace our ancestry. Studies so far have revealed the diversity of the human genome. Luigi Luca Cavalli-Sforza, who is featured on this issue’s back cover, was a remarkable scientist who first decided to trace the spread of humans across the Earth using genetic data. Using gene frequencies of blood group systems, and developing statistical methods to reconstruct evolutionary trees from genetic data, Cavalli-Sforza and Edwards published the first such tree in as early as 1963, followed by a tree based on more comprehensive data and analyses in 1994. He showed that modern humans spread out of Africa. He studied the peopling of Europe in some detail and also obtained data from India along with Madhav Gadgil. Partha P. Majumder, who has himself been working on the population genetic structuring in the people of India, describes the life and work of Cavalli-Sforza in an Article-in-a-Box in this issue. The issue also carries a Classics article by Cavalli-Sforza and co-workers on the great human expansion.

What of the origins of people in the Indian subcontinent? Did they come from Africa? Were there multiple migrations into In-



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dia? Who were Harappans? Who were the Aryans and the Dravidians? Analysis of genomic, archaeological, and linguistic data has provided some answers. India has been a true melting pot.

The book *Early Indians* by Tony Joseph, reviewed in this issue by T N C Vidya, comes to the conclusion, “We are all Indians. And we are all migrants”. This resonates with what I have heard elsewhere, “We are all Americans. And we are all immigrants”.

In an engaging Face-to-Face interaction with the undersigned, Professor P Balaram discusses how he chose his career and his research problems over the years, and how he went about understanding the nuances of protein structure through the synthesis of peptides. He discusses for the benefit of young readers, the philosophy of research and the personalities of research among other things. One thing that emerges clearly from the narration is that there is no substitute for hard work and patient thinking. Awards and honours come along, but they cannot be the target of research. Very rarely people declare that they would solve a particular problem, and get the Nobel Prize. In an answer to the question on the origin of life, Balaram points out that the book by Charles Darwin is titled, *Origin of Species* and not *Origin of Life*. How the first species arose is a difficult question to answer, but how the variations came about seems to be easier to understand.

This issue of *Resonance* also carries General Articles and Classroom Sections. The general article on the history of the discovery of fluorescence by Amrit Krishna Mitra delves into the characteristics of fluorescence and its utility. François Séguin tries to help us understand the composition of binary quadratic forms, starting from Gauss and ending with Bhargava. Raghu Mahajan and Vijay Singh explain the Feynman diagrams and their utility.

In the classroom articles, Anwane and Anwane go into the modulations of Foucault pendulum and how to explore them using the software MAPLE. Kapil Paranjape discusses the game of dice and how to predict the outcome using the probability theory. Sonia Ratnani explains how to identify functional groups in organic compounds in a cost-effective, ‘green’ way.



## EDITORIAL

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An Editor's job is seemingly easy. All (s)he has to do is to get a few people to write, get their manuscripts reviewed, get the authors to revise the manuscripts keeping in mind the comments of the reviewers, get the copy editing done, get the authors to check their proofs, and manage to have different articles in a predefined pattern, within a deadline set, month after month (in the case of monthly issues). While good articles are appreciated by the readers, the Editor shares the consequential responsibility of any errors. Hence, an Editor cannot afford to make a mistake. But he does. I did.

While writing the Editorial for the April issue, I wrote with misplaced enthusiasm, "After all, it is chemistry that underlies all physical phenomena". Sure enough, one of my colleagues pointed out that it must be the other way around. What can be more convincing than the recording of the image of a black hole that physics underlies all natural phenomena? My apologies to the readers for this unintentional error.

