

Towards Understanding the Origin of Genetic Languages

*Apoorva Patel
Centre for High Energy Physics and
Supercomputer Education and Research Centre,
Indian Institute of Science, Bangalore-560012
e-mail : adpatel@cts.iisc.ernet.in*

Molecular biology is a nanotechnology that works---it has worked for billions of years and in an amazing variety of circumstances. At its core is a system for acquiring, processing and communicating information that is universal, from viruses and bacteria to human beings. Advances in genetics and experience in designing computers have taken us to a stage where we can understand the optimization principles at the root of this system, from the availability of basic building blocks to the execution of tasks. The languages of DNA and proteins are argued to be the optimal solutions to the information processing tasks they carry out. The analysis also suggests simpler predecessors to these languages, and provides fascinating clues about their origin. Obviously, a comprehensive unraveling of the puzzle of life would have a lot to say about what we may design or convert ourselves into.