DNA'. We made no such extreme claim. It is the DNA structure which is under review, not the histone structure, and it would have been better if the heavy atoms had been in the DNA. But our objection to the work of the Klug/Richmond/Luger group on the nucleosome core particle was more fundamental: the algorithms insisted upon by that group cannot regress on any model except the double helix.

Further, there was no demonstration in the Luger *et al.*[1] paper that the resolution that was attained, while a major improvement over earlier work in that field, was sufficient to distinguish a W–C double helix from a both-senses helical duplex having the topologically non-wound structure developed by the research groups of Sasisekharan and Rodley.

We pointed out, and Gautham ignores Bates' showing that B-DNA X-ray diffraction is more consistent with SBS than DH, when examined by the Patterson method which does not assume a helix or any other shape.

We cannot let pass Gautham's remark '[t]he article abounds in quotations out of context, which it would be tedious to catalogue'. Having wasted so much time on pseudo-corrections, he now grandly waives all duty to stipulate what is wrong with our paper.

We agree of course that *Current Science* has on this occasion – in a context of protracted important controversy and attempted suppression – taken the bold step of allowing citation of unrefereed works. One reason why this could be permissible in this context is the persistent blocking of non-DH theories by many journals unwilling to test the early work of Nobel Laureates against later, competent work by others we cite in that field.

The crystallographic community must adjust its cultural predeliction to ignore competent work using other methods of physical chemistry and prepare itself both to explain such results and to allow the inferences drawn from them to inform its own crystallographic work. Oligodeoxyribonucleotide crystallography really cannot be pursued successfully in scientific isolation.

1. Luger, K., Mader, A., Richmond, R. K., Sargent, D. F. and Richmond, T. J., *Nature*, 1997, **389**, 251.

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NEWS

2004: Year of Scientific Awareness

Science is a way of understanding the world, a perspective and a pattern of thinking that begins early in one's life. Scientific advances over the last fifty years have led to revolutionary changes in health, nutrition and communication, and generally enhancing socio-economic development and the quality of our lives. The role of science promises to be greater in the future because of the ever-more-rapid scientific progress. Our society is becoming increasingly dependent on science and technology. It is essential for the well being of our society that all citizens develop 'science literacy', an appreciation of science, the benefits of technology, and the potential risks associated with advances in both.

Science literacy does not imply detailed knowledge of any of the basic sciences like physics, chemistry or biology, but rather a broad understanding and appreciation of what science is capable of achieving and, equally important, what science cannot accomplish. Science literacy enables the public to make informed choices and to reject superstitions, blind-belief, unproven conjectures, and to avoid being mystified into making wrong decisions, where matters of science and technology are concerned (Box 1).

Science literacy aims to develop two broad goals: to promote literacy in science, mathematics and technology among the general public and to attract future generations to careers as researchers, entrepreneurs and teachers on whom the nation's continuing economic health and national security will depend.

Society makes progress in addressing critical issues by having both a skilled, creative, and productive workforce and a citizenry able to judge the risks and enjoy the benefits of advances in science and technology. Common people are unable to appreciate beauty in science, which is quite different from their capability to appreciate artwork, a piece of good music or beauty of a poem. This illiteracy of the general public on scientific subjects (sometimes even amongst politicians and decision-makers) reflects poor activity in science popularization and mystification of scientific work and data. In spite of this, people are still fascinated with complex scientific problems such as how large the universe is, what life and death are, and so on. The community of scientists has an important task for enhancement of science literacy in the society.

To push forward awareness within the scientific community itself, mainly among young graduate and postgraduate students that will make up the future generations of scientists, discussions should frequently be held during Ph D training, engaging young scientists on concrete projects and actions to promote scientific education.

Secondly, science education should be targetted at teachers, science communicators, journalists, and the general public, to popularize scientific information and the scientific method. New academic course materials may have to be produced in this direction. Scientists and the scientific community can contribute to narrow down the present gap between accumulated knowledge on one hand, and the quantity and quality of what the public knows on the other. Science is everywhere and one slowly recognizes the influence of science in everyday life.

Thirdly, scientists should engage themselves in active production of tools for science popularization. They should contribute to general publications for the

Box 1. Who is scientifically literate? (UNESCO, 1993)

A scientifically literate person:

1. Knows something of the role of science in society and appreciates the cultural conditions; knows the conceptual inventions and investigative procedures.
2. Understands the inter-relationships of science and society, ethics, the nature of science, including basic concepts and relationships of science and humanities.
3. Appreciates the role of science in a humanistic way, and feels comfortable when reading or talking with others about science at a non-technical level.
4. Is curious about the how's and why's of materials and events – and genuinely interested in hearing and reading about things that claim the time and attention of scientists.
5. May never create any ideas pertaining to science, but will be conversant with the ideas that are being considered.

public, magazines, books, textbooks for school children and adolescents, exhibits for museums and galleries, informative websites, videos, theatre plays, and other means to disseminate information associated with invention and discovery, the essence of science.

In an effort to boost the interest of students in basic sciences, the Department of Science and Technology (DST), Government of India has announced 2004 as the 'Year of Scientific Awareness' (YSA 2004)[1]. DST is functioning as the nodal department to coordinate and monitor activities during the year through the National Council for Science and Technology Communication (NCSTC) and Vigyan Prasar (VP).

The main objectives of YSA 2004 are: (i) to enhance public awareness on the importance of science and technology; (ii) to convey the excitement of advances in science and technology to the young; (iii) to stimulate scientific temper in the common man, and (iv) to increase the capacity of the community for informed decision-making.

As a part of the YSA 2004 programme, the unique 'Vigyan Rail: Science Exhibition on Wheels' has been designed and implemented by VP and DST in coordination with the Ministry of Railways[2]. The Hon'ble Prime Minister of India flagged-off the Vigyan Rail on 15 December 2003 from New Delhi. The Vigyan Rail is a unique initiative in science popularization, to take science and technology to the people utilizing the extensive railway network in the country. A specially designed train with twelve compartments for exhibits depicting India's achievements in various fields of science and technology would move throughout the length and breadth of the country for about eight months. The Vigyan Rail will stop at 56 stations in different States/Union Territories, with each stop lasting for 2–7 days depending upon the geographical location and population.

The YSA 2004 programme covers themes like: (i) water and sanitation; (ii) health and nutrition; (iii) conservation of bio-diversity; (iv) preparing the community for managing natural disasters, and (v) empowering people through information technology.

Academic institutions, science-based organizations, research laboratories, science clubs, labour unions, employees' associations, youth and women groups, gram panchayats, etc. should conduct and coordinate several awareness and popular science activities in their respective areas for the benefit of common people.

The Gujarat Council of Science City (GCSC), working under the aegis of DST, Government of Gujarat has initiated a programme to inform the public about the exciting world of science and technology at the Gujarat Science City. GCSC has released an event calendar that depicts various scientific themes linked with important dates in the year that would be celebrated to inculcate scientific temper, attitude and deploying science for awareness and empowerment of the community.

1. Year of Scientific Awareness: Special Feature, *Frontline*, 13 February 2004.
2. Vigyan Rail: Science Exhibition on Wheels, Vigyan Prasar, www.vigyanprasar.com

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MEETING REPORT

Focus on earth science*

A two-day presentation of the project progress reports as a part of the 15th Group Monitoring Meet and the 10th Project Advisory Committee Meet of Earth System Science Division of the DST was organized by the Department of Geology, Banaras Hindu University. Besides presentations on new project proposals and progress reports by faculty members from different institutes, the 'Young Scientist Presentation' was an important highlight of this meet. It has been DST's initiative to encourage, give exposure and provide expert comments to motivated young earth science researchers through such presentations. Accordingly, eleven candidates carrying out research in earth sciences under different fellowship schemes were invited to present their work in this meet.

Solving Navier–Stokes equation at geologically realistic boundary conditions, S. Mukherjee (IIT Roorkee) provided a two-stage numerical exhumation model in terms of combined ductile shear and channel flow of the Higher Himalayan

*Based on a presentation of progress reports organized at Banaras Hindu University from 4–6 December 2003.