

**Dr. Richard B. Flavell, CBE,
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Professor Flavell is a citizen of the UK and holds a Ph.D. in Fungal Genetics from the University of East Anglia (1967). He was awarded a postdoctoral fellowship by the Jane Coffin Childs Foundation for studies on fungal biochemical genetics at Stanford University, California (1967-69).

In 1969 Prof. Flavell joined the Plant Breeding Institute, Trumpington, Cambridge, England. He founded the Department of Molecular Genetics, which grew to include over sixty scientists investigating a broad range of topics in plant science. He was one of the first to establish recombinant DNA techniques in plant science for isolating genes and studying plant genome structure. In his research career he has published almost 200 scientific articles, lectured widely and has contributed significantly to the development of modern biotechnology in agriculture and to Public Understanding of Science.

In 1987 Professor Flavell was appointed as Director of the John Innes Institute, Norwich, England and subsequently helped lead the merger at one location of the John Innes Institute, the Cambridge Laboratory (the non-privatised sector of the Plant Breeding Institute which moved from Cambridge in 1990), and the Nitrogen Fixation Laboratory (previously situated at the University of Sussex) to become the John Innes Centre. Professor Flavell was appointed Director of the new Centre on 1st April 1994. The Centre is one of the world's largest and foremost in plant and microbial sciences, with an outstanding reputation. He also held the position of Professor of Biology at the University of East Anglia, Norwich.

Professor Flavell has been involved in a number of scientific activities such as Associate Editor, *Molecular Biology and Evolution*, Editor of *Plant Molecular Biology*, *Genes and Development*, *Environmental and Experimental Botany*, *BioEssays* and *The Plant Journal*. He has been Vice-President of the Genetical Society of Great Britain, Vice-President and President of International Society Plant Molecular Biology, and is a Fellow of EMBO. He became a fellow of the Royal Society in 1998 and received the CBE for services to plant and microbial sciences in 1999. He was Chairman of AMICA-EEIG a pan-European organisation concerned with the management and implementation of plant science across the European Union. He was also Secretary to the organization ISAAA that facilitates transfer of biotechnology applications to developing countries. He has served as an advisor to several companies, Government committees and international review bodies.

In October of 1998 Professor Flavell stepped down as Director of the Innes Centre to assume his present position as Chief Scientific Officer of Ceres Inc., a California-based plant genomics company.

The Biotechnology Perspective

Plants and animals do not evolve to serve as food and fiber and industrial feedstocks for man. Therefore their complement of genes need to be changed to fit them for agriculture, food and the many uses to which man puts them. This is done by plant breeding, that over the years has made major changes in the properties of plants by making and selecting new combinations of genes and variants of genes. In the next 20 to 30 years there will be another 1 billion people to feed about every 4 days and most of these people will live in developing countries where the need for improved plants is already greatest. Thus, there is an urgent need to increase food production in a wide variety of environments, in many species, and in a variety of economic and social environments. This will require the discovery and deployment of many more genes and gene combinations.

Biotechnology, and genomics in particular, can make an enormous contribution to finding the genes and gene combinations necessary within species germplasm and, through the making of transgenic plants, by adding them to elite crop cultivars. Given the expected growth in genomics and the knowledge of the *in vivo* function of genes including promoters over the next few years, the prospects are excellent for providing new tools to assist plant improvement. There remain many substantial issues for the extent to which biotechnology will contribute to the world food situation. These include the extent to which technology will be transferred to those who are breeding the locally adapted germplasm, the granting of licenses from those who hold patents, the public perception of the technology, the results of benefit—risk evaluations and the financing of the plant improvement programs. The application of genomics to assist in meeting the world's food needs and the challenges therein will be discussed.