



## **Genetics/Nutrition**

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**Institute for Theological Encounter with Science and Technology**

**Cardinal Rigali Center • 20 Archbishop May Drive • Suite 3400-A • St. Louis, Missouri 63119 • USA  
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# Genetics/Nutrition

## Abstract:

Biotechnology is alive and well among us. Newspapers carry stories almost daily about “genetically enhanced” or “genetically modified” food. Those terms often affect readers in a number of ways. To some, the term genetically enhanced food connotes a force for good, particularly for those living in countries where people are starving. To others, either term, genetically enhanced or genetically modified food, brings little comfort; rather the words carry an emotional and intellectual burden along with fear of the consequences of such things as “frankenfood” ringing in their heads. . Still others feel that scientists and biotechnologists should proceed with caution, testing and retesting the modified foods until they are considered safe for human consumption.

This book contains essays written for this workshop by scientists, biotechnologists and a theologian who examine the various approaches to genetically modified food as well as an essay on the discovery and development of drugs from plants. Plenary discussions follow wherein the participants and the essayists exchange ideas on new developments in biotechnology, the role of the universities in the “business” of engineering food, the benefits and dangers of such a technology and the theological impact on people worldwide.

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## Foreword:

When the Board of Directors initially began to discuss this as a possible topic in 1999, there was a great deal of confusion in the larger society about the genetic manipulation of food. This confusion was in part caused by some of the “science” of opponents of modifications on the one hand and some exaggerated claims for genetic modification on the other hand. There were calls against “Frankenfood” on the part of opponents and suggestions that fantastic progress was just around the corner on the proponents’ part.

In the time between the conception of holding such a Workshop and its fruition, at least some of the antagonisms have become more muted. Clearly, controversy still exists. There are still rallies and meetings against further genetic modification of food. Politically, there are still attempts to introduce legislation to prohibit genetic modification and calls to the federal administrative agencies to much more strictly monitor any modifications proposed. At this meeting, while touching on these issues somewhat obliquely at times, we preferred to talk about the educational, philosophical and theological aspects of the issues.

Also, this meeting occurred in the shadow of the destruction of the World Trade Center in New York. The horror of this event and the stunned disbelief that it had occurred, clearly affected the participants. The need of the participants at least to come to grips with the events of September 11, 2001 was evident. The destruction of the World Trade Center was an immediate and influential context of the meeting.

As the discussion will show, the meeting opened with the scientific aspects of biotechnology -- a wider construct than genetic modification. The "scientific" papers were rather general, attempting to approach as even-handedly as possible the questions raised by the opponents of biotechnology. The papers discussed both the nutritional and pharmaceutical aspects of plants as well as the need for genetics to be more open to development in its approach to plants, animals and humans. As the meeting continued and people became better acquainted, both the depth and quality of the debate improved. It was at this point that questions of university funding and the type of training available to students came into much clearer focus. The influence of money coming into the university from industry was discussed. Initially, I think, industrial funding was seen as a temptation to cheat or even to lie on protocols. Industrial funding was mentioned as a contributing factor to fudging data and other abuses.

As the sessions continued, I believe the participants slowly modified this notion. It was suggested that there may be more fudging of data in government labs and under government auspices than in industry or universities and more in biology than in physics or chemistry. The industrial laboratories and researchers have more at stake in the real world than the governmental agencies. This is particularly true in the pharmaceutical industry and other businesses who are truly interested in obtaining the best data possible. In brief, the criterion is not to be found in their desires or hidden agenda, but in the best data obtainable and the best interpretation of that data. This is not always the criterion used in national labs or in the wider environmental movement. The presence of a self-serving agenda is more likely in scientific work in cases where the researchers or the interpreters are not liable to lawsuits or other penalties. In industry or in public corporations, court cases and penalties are far more likely to occur than in, say, the Environmental Protection Agency.

A great deal of discussion centered on scientific training in the universities. From the indictment that at least in genetics and biotechnology the universities are merely graduating technicians, the discussion moved briefly into the area of the notion of a liberal arts core. It was conceded that the introduction of such a core is unlikely because of the number of courses needed in scientific disciplines. This tends to give short shrift to liberal arts courses in the education of science students. Beyond raising the notion that the only thing that can come from this is a further alienation of science from the accumulated wisdom of the past, the discussion pointed to the problem but in no way attempted to solve it.

Throughout the meeting the question of the place of faith in the controversy between genetic modification of food and the more customary methods of farming was injected. It was noted in several places that biotechnology is merely an available tool in the production of more food. The use of Bt corn as well as organic farming will fit into this framework. It is not inevitably written that the raising of enough food to feed the population of the world is a zero-sum game. The increase of food production in one aspect does not necessarily mean the loss in another.

In growing enough food to feed one's own family as well as other families, one thing that we have to keep in mind is profitability. Profitability is not a foreign concept in Christian faith. Even the Lord praised the industry of those servants whose work showed a profit as opposed to the servant who buried his master's money and returned the same amount on the master's return. The method of farming that shows the most profit will usually be the method adopted. Other methods will be employed. But the market will reward those farmers who adopt the more profitable methods.

There is more at stake in any discussion of the science and politics of food. We always have to keep in mind the value of the advice given by farmers who know and respect the growing conditions in their locale. More, we

need a comprehensive approach to the needs of developing countries. It will do little good to introduce high-technology to farmers in a place where the water is polluted. The same number of people would still sicken and die from water-borne causes. These people are less interested in the difference between linear and non-linear problems in the genetics of food than in clean drinking water. This is an aspect of the growth of food that cannot be avoided.

Finally, the whole discussion of food leads to the ultimate reason for it and what that may mean to humans. All people need food; food and water sustain life. That is perfectly clear. But there is the eschatological aspect to food as well. As intimate as its relation is to the survival of the human being, food has further meaning.

In the Old Testament almost nothing of deep significance occurs without the presence of food – a meal, a banquet, a sacrifice. It would seem that God is quite aware of the necessity of food for human survival and betterment. It is clear in the Old Testament that fertility is a gift of God mediated by nature. The land is fertile on its own; all it needs is rain and rain is a gift of God.

In the New Testament the feeding of five thousand with a few loaves and fishes takes on a further meaning. Christ says: “My flesh is real food and my blood is real drink.” The Eucharist must be at the center of any Christian view of food and nutrition. The Church is the Body of Christ. If we really understood the meaning of the Eucharist and its eschatological significance, we would have no problem either with genetic engineering or with organic farming. We would have found harmony in creation; we would have helped to repair the sin of Adam and Eve. A book’s foreword, however, is not the place to spell out the mystery of food. In the end, food, along with the human, is mystery – as is the meal table.

In conclusion let us all remember that “in my Father’s house there are many mansions.” Let’s not oppose genetic engineering of food to organic farming as if only one mode is meant to survive. The final quest of both is edible food in abundance. All methods of producing this result are valuable.

Our thanks to *Our Sunday Visitor Foundation* for their generous grant which partially funded this Workshop. This grant contributed to a scholarship fund affording the college students the opportunity to participate in this weekend discussion. It was also helpful in meeting the costs of the weekend.

Robert Brungs, SJ  
Director: ITEST  
March, 2002



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