

The Debate over Genetically Engineered Food

by Sarwat Chowdhury

"I happen to believe that this kind of genetic modification takes mankind into realms that belong to God, and to God alone."

BRITAIN'S Prince Charles came into the lime light recently over his strong cautionary comments about the practice of developing genetically engineered food. The Prince of Wales reportedly said that, "I happen to believe that this kind of genetic modification takes mankind into realms that belong to God, and to God alone." This comment was part of his call for a wide public debate over genetically-engineered food.

Even though the controversy over genetically engineered food does not yet affect our day-to-day lives, this issue does seem to require some thought, and perhaps some soul-searching. Prince Charles' very public fears were promptly countered by a representative from Monsanto, the US based biotechnology company. The Monsanto representative claimed that modern genetic engineering techniques are in some ways similar to the age-old practices of selective breeding.

According to the proponents of genetically engineered (GE) food, such practices would usher in a new era of environmentally-friendly farming since less pesticides would be used. However the question is, whether this procedure is comparable to traditional selective breeding methods, and has there been adequate research done on GE food items before they are marketed?

Critics also dispute over the long-term environmental consequences of releasing these technically altered plants, and their effects on both human and other life forms. In the industrialized countries, these fears have caused consumer dissatisfaction because people find that there is often no specific labeling on such food items.

Therefore, when they are

buying food at the super-market, they are unable to differentiate between a genetically modified food item and a food item grown in a more traditional method. As GE practices become more prevalent, this question of choice soon will affect the people of non-industrialized nations as well.

Genetically Engineered Food and Safety Issues

Fears over environmental and health consequences of genetically engineered food production are not completely unfounded. We often hear of fresh outbreaks like the Streptococcus meningitis, E. Coli, and Mad Cow disease (linked to the use of bovine growth hormones) in various parts of the world. According to the 1996 World Health Organization (WHO) Report, at least 30 new diseases have emerged over the past 20 years, while old infectious diseases that had remained dormant for years returned in some places. Scientists critical of GE practices claim that, horizontal gene transfer and subsequent genetic recombination generated the bacteria strains responsible for the cholera outbreak in India in 1992. Again, many unrelated bacteria pathogens causing diseases like typhoid and even bubonic plague are said to share an entire set of genes for invading cells. Their spread is linked to horizontal gene transfer.

The idea of horizontal gene transfer is integral to the field of genetic engineering itself. Genetic engineering provides a technology to transfer genes horizontally between species that do not interbreed. There-

fore, the technology has the potential to increase the frequency of horizontal transfers of genes causing antibiotic resistance and diseases. There are many other aspects of genetic engineering biotechnology situations with far-reaching consequences for human life and their environment that seem to require further research and study before this technology can be applied to real life.

For example, the conventional idea that DNA is easily digested by enzymes in our stomach has become questionable as the DNA of a virus has been shown to survive the passage through the gut of a mice. Once in the cell, DNA can insert itself into the cell's genome and create genetic disturbances including cancer. Again with genetic engineering, the isolation, joining, and transfer of a single or multiple genes between totally unrelated organisms occur which circumvents natural species barriers. In fact, transgenic crops containing genes from viruses, bacteria, animal and unrelated plants have been generated, an occurrence not possible in a natural manner.

The balanced gene functions that have evolved together and have been preserved with traditional methods are lost with GE. Genetic engineering seems definitely to be very far from traditional breeding methods. Instead of increasing the world food supply, these altered food may actually cause unforeseen problems. GE techniques also involve transferring animal genes into plants which raises ethical questions including religious concerns as well.

From a scientific viewpoint, it is not necessarily the artificial nature of GE that makes such practices dangerous, but it is the unpredictability in how the introduced gene will interact with its environment that raises the level of uncertainty.

The Issue of Patents

Critics also argue that companies like Monsanto seek after corporate power by selling farmers their seed and also their own "patent"-ed pesticides. The issue of "patent" itself requires much further thought because it is so closely related to the rights of indigenous people, and the survival of local ecosystems. Intellectual property rights agreements, among other things, deal with the right to patent living organisms, which has many problematic consequences.

A case in point is the controversy over the Neem tree in India. The Neem tree has been used for centuries in the Indian subcontinent for medicinal purposes, toiletries (like soaps and toothpastes in Bangladesh), fuel etc. These multifarious uses of Neem was discovered by a US timber exporter in the early 1970s. By 1985, there were over 12 US patents taken out by US and Japanese firms on formulae for stable Neem-based solutions, emulsions etc. even though most of these uses of the Neem were well known to the local scientists and practitioners. Just because the local scientists did not have their inventions patented, the indigenous resource became vulnerable to a sort of piracy with the patents held by the multinational firms. The resulting high price of Neem seed turned a once-free resource into an extremely priced one for the local Indian farmers.

Genetically engineered foods are patentable. Therefore, a similar scenario like the Neem tree might develop with the patenting of genes of indigenous plants where the people from the developing countries would have to buy back from the western companies what they originally produced and memorialized. There is a potential for enormous profit from the sale of patented GE food and seeds, which may explain the rising interest in the sale of such items and the high pressure in the West for lax regulations on governmental safety demands.

Concluding Thoughts

Reductionist science approaches that push for genetically engineered food, seem to marginalize alternative methods that address social and environmental causes of malnutrition and ill-health like poverty and unemployment. Even though the use of the word "sustainable" is almost becoming a cliché now, if we try to describe the features of "sustainable agriculture", no one would deny that this should be characterized by the capacity to: regenerate the environment, to guarantee long-term food security, and also to conserve indigenous biodiversity at the same time. The inadequately researched and reductionist practice of genetically engineered food production somehow does not fit into this image, at least not with the available information at its present stage.

Breaking of DNA Code of TB Bacterium

Jyotirmoy Datta writes from New York

In 1996, after the Sanger Centre was provided money for its research, the National Institutes of Health of the United States, which had been unsuccessful in an earlier effort to break the code, approved funding for the Institute for Genomic Research (IGR) in Rockville, Maryland, to sequence the tuberculosis genome.

SCIENTISTS have broken the DNA code of the tuberculosis bacterium, a germ that kills more people in the world than any other infectious agent, according to a paper published in the journal Nature.

More than 500,000 people die of tuberculosis every year in India alone, says a World Health Organisation (WHO) report. And two million people develop active tuberculosis in the country each year, accounting for a quarter of the global total.

The scientific advance is likely to open up new approaches for developing drugs and vaccines against the microbe, and to reinvigorate research efforts in what has been up to now a difficult and slow-moving field, the New York Times said quoting the journal.

Tuberculosis is a deadly disease, killing three million people a year in the Third World, according to the WHO. In the United States, where it has long been treatable with antibiotics, health officials were concerned when drug-resistant strains emerged several years ago that the disease would become uncontrollable again.

The outbreak of these novel forms has been contained, but tuberculosis is no longer regarded with complacency even in the developed world.

The scientific breakthrough reported in Nature is the work of an international team led by Dr. Stewart T. Cole, a tuberculosis expert at the Pasteur Institute in Paris, and Dr. Bart G. Barrell, a DNA sequencer at the Sanger Centre near Cambridge, England.

The team succeeded in decoding the 4,411,529 chemical letters that constitute the genome, or DNA sequence, of Mycobacterium tuberculosis, as the microbe is known. Working at the structure of so enormous a DNA molecule was described by The Times as lying at the edge of the technically possible. About a dozen bacterial genomes have been sequenced since 1995, only one larger than that of tuberculosis.

The bacterium is inhaled and is usually contained within the lungs by the body's immune system. There it may lurk harmlessly for years, till age, stress or prolonged malnutrition weakens the immune system. Then the bacterium erupts, eating through the tissues of the lungs and blood vessels, making the patient cough up alarming displays of blood. Having the DNA sequence of the bacterium is like having the enemy's battle plan.

The sequence encodes every genetic defence and stratagem the bacterium has acquired in the course of evolution. Although full analysis of the sequence will take years, the Pasteur-Sanger Centre team has already discerned that the sequence encodes about 4,000 genes and has divined how some may assist the microbe at different stages of its cunning life cycle, The Times said.

About 400 of these genes, for example, belong to a previously unrecognised genetic family. Their purpose may be to help the bacterium change its outer coat, staying one step ahead of the attacks mounted by the body's immune system. Another large set of genes is

related to making fat-related chemicals known as lipids. These may be the key to sealing the bacterium's membrane and enabling it to survive for years until it waits for a weak spot to emerge in the body's defences. Tuberculosis experts in the United States were cited by the New York paper as hailing the breakthrough, saying that it would have a "major effect in accelerating ongoing work in terms of identifying the genes required for virulence and targets for drugs and vaccines."

The genome sequencing project had once looked as if it would be another fumble with two rival teams duplicating each other's work. In 1996, after the Sanger Centre was provided money for its research, the National Institutes of Health of the United States, which had been unsuccessful in an earlier effort to break the code, approved funding for the Institute for Genomic Research (IGR) in Rockville, Maryland, to sequence the tuberculosis genome. The Institute's director, J. Craig Venter, was the first to sequence a bacterial genome in 1995.

The Sanger Centre won the race since IGR is a month away from closing the gaps in its sequence, and then has further checking to do. The tuberculosis strain that infects humans seems to have split away some 10,000 years ago from the strain that infects cattle. Since this is about the time that man domesticated cattle, the human disease can be seen as a consequence of that agricultural revolution. — India Abroad News Service

Good Governance—Key to Implementing Child Rights

by M. A. Obaydullah

THE second Asia-Pacific Intergovernmental Meeting on Human Resources Development for Youth was held in Bangkok, the capital of Thailand, from 1 to 5 June. The theme was "Elimination of sexual abuse and sexual exploitation of children and youth in Asia and the Pacific".

Speakers at the meeting argued that good governance was concerned with a more open and participatory society whereby all those who interacted with children should be more transparent, honest and accountable towards children.

Good governance calls for more consultations and cooperation between governments, law enforcement authorities, the business sector and civil society including NGOs, the mass media, families, and child and youth representatives, they said.

They suggested a number of orientations to the Asian and Pacific region to promote child rights and good governance.

Among those were: improved selection and support of and capacity-building of law enforcers; more penalization of corruption; more people's participation in decision-making; monitoring and implementation; and more self-regulation.

If well implemented, empowered by a collective spirit and reinforced by mutual coop-

eration, the Asia-Pacific region would be able to pride itself on being a humane leader for the coming millennium.

The meeting was convened by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in cooperation with the UN Department of Economic and Social Affairs (DESA) in New York, the Swedish International Development Cooperation Agency (SIDA), the Christian Conference of Asia (CCA) and the United Nations Population Fund (UNFPA).

Participants consolidated a regional position to reflect the priority concerns of the region's young people. They also tried to identify practical measures for the regional implementation of the World Programme of Action for Youth to the Year 2000 and Beyond, as adopted by the UN General Assembly.

They reckoned that young job seekers would perhaps be the hardest hit by the current economic downturn because rising unemployment and unrest were being experienced in some countries. The needs of young people in the wake of the crisis should be responded rapidly and effectively. The region is home to over 600 million youth, defined by the UN as between 15-24 years, and contains approximately 60 per cent of the world's youth population.

The meeting focused on the needs of the least developed, land-locked and island developing countries of the ESCAP region. There was a large repre-

sentation of non-governmental organizations of youth and for youth at the meeting.

The meeting was inaugurated by Pancha Kesornthong, deputy prime minister of Thailand, who said that the meeting would provide an Asia-Pacific input to the forthcoming World Conference of Ministers Responsible for Youth, scheduled to be held in Lisbon, the capital of Portugal, in August this year.

Ms Anuradha Koirala, director of Maiti Nepal, made an impassioned plea on behalf of all abused women and children. "Society must change its attitude towards women and children," she said. Maiti Nepal, a social NGO, won the 1998 ESCAP/UNAIDS Award for its outstanding work to prevent sexual exploitation of children and youth.

Other speakers at the opening ceremony included William D. Angel, Youth Unit of DESA, New York; Anna Runeborg, SIDA, Stockholm; Feliciano Carino, CCA, Hong Kong and James Chui, UNFPA, New York. More than 200 representatives from over 35 member and associate member countries of ESCAP, other UN bodies, specialized agencies and related organizations, intergovernmental organizations as well as non-governmental organizations attended the five-day meeting.

Participants at the meeting reviewed the situation of the youth in four sectors, i.e., youth education, youth health, youth employment and youth participation. They devoted particular attention to the rising incidents of sexual abuse and exploitation of children and youth in the region.

Garfield®



by Jim Davis

Power Wastes

URBAN industrial wastes contain organic matter such as leaves, vegetable wastes which, on a dry basis, have calorific values comparable to other biomass like wood. Scientists at the Combustion Gasification Propulsion Laboratory, Indian Institute of Science in Bangalore, India, have recently developed cyclone gasifiers that can utilise these wastes for either thermal or electrical power generation.

Any combustible powdered material in reasonably dry form (with a moisture level of 15 per cent) can be gasified to obtain producer gas in the cyclone gasifier. There are numerous advantages of the gasification technique for power generation from organic solid wastes. It can easily handle material high-ash content and produce clean air that can be utilised directly in internal combustion engines.

DSE/Down To Earth Features

Diabetic Association of Bangladesh

Ibrahim Memorial Diabetic Centre
122, Kazi Nazrul Islam Avenue
Shahbagh, Dhaka-1000

Employment Notice

Applications are invited from the citizen of Bangladesh for the following posts:

Sl No	Name of posts & pay range	Age	Qualification & experience
1.	Senior Research Officer (Health Economics) Pay: Consolidated Tk 12525-17425/-	40 yrs	1. MBBS or 1st Class Masters or 2nd Class Masters with Second Class Hons. in Economics/Business Administration/Industrial Engineering/relevant subjects, and 2. PhD/M Phil/MS or equivalent degree in the abovementioned subjects. 3. 7 years research experience and 3 research papers published in reputed journals.
2.	Research Officer (Health Economics) Pay: Consolidated Tk 7600-12100/-	30 yrs	1. MBBS or 1st Class Masters or 2nd Class Masters with 2nd Class Hons in Economics/Business Administration/Industrial Engineering/relevant subjects. Candidates with experience in the relevant will get preference.

Applications are required to be submitted in prescribed form obtainable from the Cash Accounts Section, Room No. 208, Diabetic Association of Bangladesh, 122, Kazi Nazrul Islam Avenue, Dhaka-1000. The price for application form is Tk 40/-. Name of the applied post, age, indicates completed year on 30th June '98. Only short listed candidates may be called for an interview. Incomplete applications will be rejected. Appointment will be made as per the service regulations of the Association.

Secretary General
Diabetic Association of Bangladesh

GD-469

বাংলাদেশ প্রকৌশল বিশ্ববিদ্যালয়, ঢাকা

জরুরি বিজ্ঞপ্তি

সংশ্লিষ্ট সকলের অবগতির জন্য জানানো যাইতেছে যে, এই বিশ্ববিদ্যালয়ের তই কৌশল বিভাগ/সিএসই বিভাগ/পরীক্ষা নিয়ন্ত্রক অফিস/কেন্দ্রীয় লাইব্রেরির সহকারী প্রোগ্রামার পদে নিয়োগের ব্যাপারে পূর্ব নির্ধারিত লিখিত পরীক্ষা অনিবার্য কারণবশতঃ ১৮-৬-৯৮ তারিখের পরিবর্তে ২৮-৬-৯৮ তারিখ সকাল ৯-০০ ঘটিকায় স্থাপত্য ভবনের ৫০১ নং কক্ষে অনুষ্ঠিত হইবে। লিখিত পরীক্ষায় উত্তীর্ণ প্রার্থীগণের মৌখিক পরীক্ষা ২৮-৬-৯৮ তারিখের বিকাল ৩-০০ ঘটিকার পরিবর্তে একই দিন বিকাল ৪-০০ ঘটিকায় স্থাপত্য ও পরিকল্পনা অনুসূদের ডীন মহোদয়ের অফিস কক্ষে অনুষ্ঠিত হইবে।

এতদ্ব্যতীত প্রার্থীগণকে প্রেরিত সাক্ষাৎকার পত্রের শর্তাবলী/বিষয়বসী অপরিবর্তিত থাকিবে।

জিডি-৪৭০

রেজিস্ট্রার

বাংলাদেশ উন্মুক্ত বিশ্ববিদ্যালয়

BANGLADESH OPEN UNIVERSITY

ADMINISTRATION DIVISION, BOU CAMPUS, GAZIPUR, TEL: 9800801-4, FAX: 880-2-865750

Short Tender Notice

Memo No. BOU/Admn-37(112)/46/98/1413 Dated: 15-06-1998

Sealed tenders are hereby invited from the manufacturers, bona fide importers, local agents/distributors of principals in eligible source countries of Asian Development Bank for the following supplies for the BOU financed by the Asian Development Bank under ADB Credit No. 1173 BAN (SF). The terms and conditions of the contract for which this invitation is issued will be subject to the loan agreement for the Project, including ADB's "Guidelines for procurement" and GDB rules.

Tender No	Short description of item	Price of tender documents, per set (non-refundable)	Last date & time of bid selling	Last date & time of bid submission	Date & time of bid opening
46 (pro)/97-98	4 Door Brand new Sedan Car (Govt. Standardized brand)	Tk. 800.00	24-06-98 at 4-00 pm	25-06-98 at 12-00 noon	25-06-98 at 12-15 pm
47 (pro)/97-98	Large Screen Color Television & Audio-Video equipment for Library of BOU. (CD Player, CD Recording, LCD Projector, Video CD Player, LCD Data Projector and Other related items.)	Tk. 800.00	24-06-98 at 4-00 pm	25-06-98 at 12-00 noon	25-06-98 at 12-15 pm
48 (pro)/97-98	Computer Network System for Library (Computer, Printer, Desktop Scanner etc.)	Tk. 400.00	24-06-98 at 4-00 pm	25-06-98 at 12-00 noon	25-06-98 at 12-15 pm
49 (pro)/97-98	Heavy duty Photocopier and Multi-Color Photocopier-cum-Printer	Tk. 400.00	24-06-98 at 4-00 pm	25-06-98 at 12-00 noon	25-06-98 at 12-15 pm

N. B. The bidder may submit their offer either for one/more item(s) or all the item(s).

Bids along with bid bonds (earnest money) in the form of Bank Draft/Pay Order issued by any scheduled bank in favour of Bangladesh Open University @2% (two per cent) of the total quoted amount along with relevant documents should be delivered up to the time and date of closing of tender in the tender box kept in the office of the Registrar, Bangladesh Open University, South Block, 1st Floor, Board Bazar, Gazipur, Bangladesh.

The bids will be opened on the same date of closing at the time (Bangladesh Standard Time) mentioned above in presence of the bidder(s) or their authorised representative(s) if any, in the abovementioned office. Tenders sent by post or any other means must reach the above office by the date & time specified above. Delays shall not be condoned under any circumstances. Tenders received beyond the date and time specified above shall be rejected. Tender documents will be available from the office of the Director (Finance), BOU, Board Bazar, Gazipur-1704 on payment (non-refundable) of price of tender documents on all working days during office hours except holidays on presentation of application in letterhead pad. No tender documents will be sold on the closing date.

The authority reserves the right to accept or reject any or all tenders without assigning any reason whatsoever.

Deputy Director (Procurement)
For Vice-Chancellor/Project Director
Bangladesh Open University

GD-473

ঢাকা সিটি করপোরেশন

ঢাকা মহানগর জেনারেল হাসপাতাল

নয়াবাজার, ঢাকা

আপনার পরিবেশ সুন্দর ও পরিষ্কার রাখুন
আপনার শিশুকে টিকা দিন

দরপত্র বিজ্ঞপ্তি

ঢাকা সিটি করপোরেশন পরিচালিত মহানগর জেনারেল হাসপাতাল, নয়াবাজার, ঢাকা-এর জন্য সার্জিক্যাল উপকরণ সংগ্রহের নিমিত্তে সিডিউলে বর্ণিত আইটেমসমূহের জন্য বাংলাদেশ ফরম নং-২৯১১তে প্রকৃত আমাদানিকারক সরবরাহকারী/টিকাদারী প্রতিষ্ঠানের নিকট হইতে দরপত্র আবেদন করা যাইতেছে। উক্ত দরপত্র আগামী ১০-৩-১৪০৫ বাৎ/২৪-৬-৯৮ইং তারিখ রোজ বুধবার সংশ্লিষ্ট হাসপাতাল, কেন্দ্রীয় স্বাস্থ্য বিভাগে (নগর ভবন) ও আঞ্চলিক নির্বাহী কর্মকর্তাদের দপ্তরে সমুখে রক্ষিত বাজে বেলা ১১.০০ ঘটিকা পর্যন্ত গ্রহণ করা হইবে এবং ঐ দিনই বেলা ১.০০ ঘটিকায় দরদাতা/তাহাদের প্রতিনিধির সমুখে যদি কেহ উপস্থিত থাকেন। পরিচালক, ঢাকা মহানগর জেনারেল হাসপাতালের সমুখে খোলা হইবে। নিম্নবর্ণিত হারে জামানত যে কোন সিডিউল ব্যাংক হইতে পে-অর্ডার/ব্যাংক ড্রাফট-এর মাধ্যমে মেয়র, ঢাকা সিটি করপোরেশনের অনুকূলে দাখিল করিতে হইবে।

টেন্ডার নোটিশ ফরম ও সিডিউলের মূল্য বাবদ-নিম্নবর্ণিত হারে নগদ টাকার চালান মারফত নির্ধারিত ব্যাংক-এ জমা দিয়া উহা ঢাকা সিটি করপোরেশনের ক্যাশিয়ার সংশ্লিষ্ট হাসপাতাল ক্যাশিয়ার হিসাবরক্ষক ও আঞ্চলিক নির্বাহী কর্মকর্তাদের দপ্তর হইতে পাওয়া যাইবে। দরপত্র খোলার দিন টেন্ডার সংক্রান্ত কোন কাগজপত্র বিক্রয় করা হইবে না। টেন্ডারে বর্ণিত মালমালের দর অংকে ও কথায় স্পষ্টভাবে লিখিতে হইবে। এতদসংক্রান্ত যে কোন তথ্য অফিস চলাকালীন সময়ে সংশ্লিষ্ট হাসপাতালের পরিচালকের নিকট হইতে জানা যাইবে। যে কোন টেন্ডার গ্রহণ অথবা বাতিলের সর্বস্বমত সিটি করপোরেশন কর্তৃপক্ষ সংরক্ষণ করেন।

ক্রঃ নং	আইটেমের বিবরণ	সিডিউলের মূল্য	জামানত	সরবরাহের সময়সীমা
১।	সার্জিক্যাল উপকরণ (সিডিউল মোতাবেক)	৩০০.০০/- (অক্ষের-যোগ্য)	১%	কার্যক্রম প্রাপ্তির ৭ (সাত) দিনের মধ্যে।

ডিসিপি/পিআরডি/৪৯৯/৯৭-৯৮

পরিচালক
ঢাকা মহানগর জেনারেল হাসপাতাল

জিডি-৪৭৪