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Report on the

**Second International Symposium on
Genetic Engineering and Biotechnology**

on the theme of

Biotechnology for Environment and Agriculture

held from January 6 to 9 at

Hotel Marriott, Karachi

Organized by the

International Centre for

Genetic Engineering and Biotechnology

Trieste, Italy

and

Centre for Molecular Genetics

University of Karachi

Karachi, Pakistan

by:

**Professor Nuzhat Ahmed
Centre for Molecular Genetics
University of Karachi
Karachi-75270
Pakistan**

INTRODUCTION

This is a Report being submitted by the Centre for Molecular Genetics, University of Karachi, Karachi, Pakistan, after the successful fulfillment of the contract with UNIDO which encompassed the holding of the Second International Symposium on Genetic Engineering and Biotechnology with the theme "Biotechnology for Environment and Agriculture". The symposium was held at Hotel Marriott, Karachi and was attended by over 150 delegates. 48 papers were presented at the symposium of which 25 were presented by the visiting foreign delegates. The session were specially designed to discuss the use of Biotechnology for the Amelioration of Environment and also included topics from agriculture biotechnology which dealt with the use of environmentally friendly alternatives for the disease control in animals and plants. This symposium was a part of the ICGEB's programme of activities for 1993, and was the first conference of ICGEB, to be held in Pakistan.

THE SYMPOSIUM

This symposium was the second meeting of international scientists working in the fields of Genetic Engineering and Biotechnology, held by the Centre for Molecular Genetics, University of Karachi, at Hotel Marriott, Karachi. Due to the increasing global concern for the Environment and rapid developments in the field of Bioremediation through Biotechnology, the emphasis of this meeting was on using Biotechnology for the Amelioration of the Environment. The International Centre for Genetic Engineering and Biotechnology, Trieste, Italy supported the organization of this symposium by a generous grant which provided the seed money and made this symposium possible.

Other topics included in this meeting was agricultural biotechnology with the emphasis on the use of biological control and the development of environmentally safe alternatives for currently used disease control methods in animals.

THE SESSIONS AT THE SYMPOSIUM

The symposium included the sessions on Environmental Monitoring, Biodegradation of Toxic Chemicals, Bioaccumulation and Bioadsorption of Heavy Metals, Biological Control in Agriculture, Agricultural Genetics and Biotechnology, Lactic Acid Bacteria in Food and Agriculture, Release of Genetically Engineered Organisms and Biotechnology as an Industry in the developing country.

A BRIEF REVIEW OF THE SESSIONS

There were several papers presented in the sessions by scientists who have an international repute and are considered authorities on their respective subjects.

Prominent among the speakers on the topic of Environmental Monitoring were Dr. Anwar Nasim from Saudi Arabia who talked about the potentials of PCR in environmental monitoring. The session on Biodegradation of Toxic Chemicals was specially very important and it included the distinguished scientists in the field such as Professor Ananda Chakrabarty from USA and Dr. Kensuke Furukawa from Japan. The US EPA was also represented in this session by Dr. John E. Rogers. The important issue of Pesticide degradation was discussed by Dr. G.R. Chaudhry who was also one of the key figure in the organization of this symposium.

In the session focussing on the Molecular Genetics of heavy Metal resistant bacteria, the prominent speakers were Professor Simon Silver from USA who talked about the development of reporter gene systems for heavy metal bacterial biosensors, while Professor Max Mergeay from Belgium focussed on the study of resistance genes and their expression and the potential of development of heavy metal resistant bacteria for use in bioremediation. Two papers from the Centre for Molecular Genetics were also presented.

The Biological Control session consisted of presentations involving the use of bacteria for control of plant pathogenic fungi. In this respect three papers were presented from the Botany Department of the University of Karachi.

The session discussing the Release of Genetically Engineered Organisms was highlighted in a paper by Dr. Gilbert Howe from the UK. His presentation outlined the possible impact of GEO's on the environment including human health, and stressed upon the essential task of testing and scrutiny of GEO's before the release. He also dealt in detail with the establishment of safety standards and checks at the local level and the guidelines under which such evaluations should essentially be made. The USDA, APHIS was represented by Dr. Quinten B. Kubicek, while Dr. Masanori Fujita from Japan talked about the potentials of waste water treatment by GEMS and Dr. M.A. Gealt from USA transfer of genes during waste water treatment.

The Lactic Acid Bacteria session dealt with the topics such as development of molecular studies of Lactobacilli discussed by Dr. P.J. Warner of UK and their potential for use in development of Probiotics for cattle and poultry. Dr. Ingolf Nes from Norway, outlined the Bacteriocins produced by the Lactobacilli and their mode of action in restricting proliferation of related bacterial species.

The discussions in the Agricultural Genetics and Biotechnology session had an assortment of different topics which were more related to the local agricultural setup. Speakers at the session touched upon the topics like the evaluation of the Genetic potential of local breeds of poultry and micropropagation in horticulture, in vitro selection for herbicide tolerance.

DAILY PROGRAMME OF THE FOUR-DAY CONFERENCE

The daily programme of the symposium began at 9:00 a.m. and wound up at 5:00 p.m. There were two tea-breaks and a lunch break where the arrangements were made by the organizers for all the attending delegates. Dinners were held at places outside the Hotel where all delegates were invited.

THE INAUGURATION

The Symposium was inaugurated on the 6th of January 1993 by the Chief Minister of the province of Sindh, Mr. Syed Muzzafar Hussain Shah. The provincial Minister for Agriculture.

Mr. Syed Asghar Ali Shah was also present on this occasion. The Chief Minister commended the organizers of this symposium for the timely organization of this scientific activity in Karachi, and stressed on exploring the possibilities of environmental amelioration by using the new and emerging discipline of Biotechnology.

EXCURSION

An excursion to the Mangrove Forest area near Karachi was made on Friday 8th January. This tour was made possible by the courtesy of the Pakistan Chapter of the International Union for Conservation of Nature (I.U.C.N.). The tour included a sightseeing trip on a boat around the mangrove forest area which is under danger of extinction due to pollution from the industrial wastes and the IUCN is working for the protection of this area and the wildlife that exists there.

CONCLUDING SESSION

The Concluding Session was chaired by Mr. Shahzad Skaikh, Secretary for Agriculture and Wildlife, Ministry of Agriculture, Government of Sindh. The Vice Chancellor of the University of Karachi, Professor Syed Irtefaq Ali and Director General of EPA Sindh, Mrs Mehtab Akbar Rashdi were the Chief Guests. In this session, the post symposium recommendations were presented by Dr. Anwar Nasim who also summed up the activities of the symposium. The session ended with a vote of thanks to all participants from Professor Nuzhat Ahmed and the expression of a desire to congregate again at Karachi for the Third International Symposium, in 1997.

EVALUATION OF THE SYMPOSIUM ACTIVITIES

This Symposium, other than being a forum for scientific information exchange, has been helpful projecting that Biotechnology has enormous potentials for control for environmental pollution.

SCIENTIFIC EXCHANGE

On the scientific and academic level, valuable exchange of information has taken place between the researchers at the University of Karachi, the Karachi Laboratories of the Pakistan Council for Scientific and Industrial Research, National Institute for Genetic Engineering and Biotechnology, Faisalabad, and several scientists and researchers visiting from the different Universities of Pakistan. The Pakistani researchers have benefited from the first hand information exchange and knowing about the current state of the research being carried out in the field of Environmental Biotechnology. This will help them in setting new directions for their research and set a goal for their research culminating in the development of Biotechnology for amelioration of the environment with reference to the specific needs of Pakistan.

AWARENESS FOR ENVIRONMENTAL BIOTECHNOLOGY

Though public awareness on the issue of environment is on the rise in Pakistan, the role that Biotechnology can play in this respect, was not clear. The Symposium has been extremely helpful in convincing our bureaucrats, policy makers and the general public that Biotechnology holds enormous potential for amelioration of the environment. The Environmental Protection Agency, Sindh, who also joined hands in organizing this conference, has shown its interests, and extended all possible help for employing this new technology for the task of pollution control. A project in this respect has been submitted to the EPA, Sindh. The Ministry of Agriculture, Government of Sindh has also shown its interest in the task of Biodegradation of Pesticides and also research related to Salinity tolerance in plants.

The industrial sector has also shown an interest in employing Biotechnology for treatment of industrial wastes. A group involved in oil refining, has shown interest in oil biodegradation and treatment of toxic byproducts of the refining process.

RESEARCH COLLABORATIONS

The Symposium has been very helpful in initiating the establishment of liaison for research among visiting scientist from the developed world and Pakistan. Professor Max Mergeay from Belgium working in the field of Bioaccumulation of Heavy Metals, Professor Masanori Fujita from Japan involved in research on Biodegradation and Dr. Anwar Nasim from Saudi Arabia with interests in Environmental Monitoring, have already consented to develop collaborations with the Centre for Molecular Genetics. Dr. P.J. Warner who is already involved in a collaboration with CMG visited the National Institute for Genetic Engineering and Biotechnology, Faisalabad to explore the possibilities of collaborative research there.

OTHER CO-SPONSORS OF THE SYMPOSIUM

The British Council and the National Science Foundation, USA also provided travel grants for some scientists coming from USA and the UK. A Travel grant was also provided by the Third World Academy of Sciences, Trieste, Italy.

FINANCIAL STATEMENT

Following is the statement of expenditure made from the UNIDO funds. Receipts of the relevant expenses are attached.

A: Payments made in US Dollars

AIR-TRAVEL EXPENSES

	Name of Delegate and country	Amount paid (in US \$)	Receipts attached
1.	Professor Max Mergeay (Belgium)	1,560 .	Yes
2.	Professor M. Fujita (Japan)	1,500 .	Yes
3.	Dr. Kensuke Furukawa (Japan)	1,500 .	Yes
4.	Dr. John Rogers (U.S.A.)	1,378 .	Yes
5.	Dr. M. Tsuda (Japan)	1,500 .	No (awaited)
6.	Dr. Ingolf Nes (Norway, Oslo-London-Oslo)	350 .	No (awaited)
Total		7,788	

**B. Payments made in Pakistani Rupees,
(US dollars converted to Pak. Rs.
@ 1.00 US\$ = Pak. Rs. 25.90)**

	Pak. Rs.	U.S.\$	
1.			
	286,000	11,042	Yes
2.			
a)	25,000	965	Yes
b)	24,000	927	Yes
Total		335,000	12,934

GRAND TOTAL

20,722

7 *Accounts Audited and
found correct.*

[Signature]
AUDITOR
University of Karachi

FINANCIAL STATEMENT (continued)

Approved Amount of Contract	US\$	20,000
Amount Released by UNIDO		16,000
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Balance to be Released		4,000

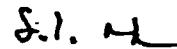


~~Director Finance~~
UNIVERSITY OF KARACHI,
Director Finance

University of Karachi
Karachi



Organizing Secretary of
the Symposium
Prof. Nuzhat Ahmed
Director
Centre for Molecular Genetics
University of Karachi.



~~Vice-Chancellor~~
Chairman of the Symposium
Vice-Chancellor
University of Karachi
KARACHI.
Professor Dr. Irtefaq Ali
Vice Chancellor
University of Karachi

Accounts.