

The New Life Sciences:

3-6 April

Bibliotheca Alexandrina Conference Center



Ethics, Patents the Poor



reliminary Relort

BioVisionAlexandria 2004

The New Life Sciences: Ethics, Patents and the Poor

Organized in Partnership with The World Life Sciences Forum BioVision

3 – 6 April 2004

at
Bibliotheca Alexandrina (BA)
Alexandria, Egypt

DETAILED PROGRAM

Saturday, 3 April 2004

OPENING ADDRESSES

Great Hall

10:00-11:30

Special Inauguration Session where world renowned International Political, Social and Scientific Leaders will introduce BioVisionAlexandria 2004, with their views on the implications of the Life Science Revolution in today's world...

(in order of presentation)

Ismail Serageldin, Director, Bibliotheca Alexandrina (Egypt)

Philippe Desmarescaux, Chairman, The World Life Sciences Forum, BioVision (France)

Koji Omi, Former Minister for Science and Technology Policy (Japan)

Sherwood Rowland, Nobel Laureate, Chemistry 1995 (USA)

Mohamed Hassan, Executive Director, Third World Academy of Sciences

Jean-Marie Lehn, Nobel Laureate, Chemistry 1987 (France)

Ibrahim Badran, Former Minister of Health (Egypt)

H.E. Dr. Atef Ebeid, Prime Minister, Arab Republic of Egypt

11:30-12:00

Break (Visit the Book Fair!)

BioVision Nobel Laureates' Day

12:00-13:30

Highlights of the Biochemical Revolution

Great Hall

Chair: Francois Gros, Honorary Permanent Secretary, Academy of Sciences (France)

Ahmed Zewail, Chemistry 1999 (Egypt/USA) "BioVision at the Interface"

Jean-Marie Lehn, Chemistry 1987 (France) "Supramolecular Chemistry: Some Contributions to Life

Sciences"

13:30-14:30

Break (Visit the Book Fair!)

14:30-16:00 The

The New Life Sciences: Implication in Civil Society

Great Hall

Chair: M. S. Swaminathan, UNESCO Chair in Ecotechnology; M.S. Swaminathan Research Foundation

(India)

Ryoji Noyori, Chemistry 2001 (Japan) "Asymmetric Catalysis: Roles in Biomedical Science and

Technology"

Sherwood Rowland, *Chemistry 1995 (USA)* "The Changing Atmosphere in 2004"

16:00-16:30

Break (Visit the Book Fair!)

16:30-18:00 Round Table Discussion: Nobel Views and Perceptions

Great Hall

Moderator: Ismail Serageldin, Director, Bibliotheca Alexandrina (Egypt)

Sunday, 4 April 2004

08:30-09:30 Registration

09:30-11:30 Opening Plenary Session

Great Hall

"The New Biology: A Survey of the Issues"

KeyNote BioLeaders will open The World Life Sciences Forum BioVisionAlexandria 2004 by assessing the current and future applications of Life Sciences and their social or economic implications

Chair: Andrew Bennett, Executive Director, Syngenta Foundation (Switzerland)

Rapporteur: Gabrielle Persley, Chair, The Doyle Foundation (UK)

Economic Issues: Providing the Conditions for Life Science Research and Development

Ismail Serageldin, Director, Bibliotheca Alexandrina (Egypt)

Ever-green Revolution and Biohappiness

M. S. Swaminathan, UNESCO Chair in Ecotechnology; M.S. Swaminathan Research Foundation (India)

New Biology for Developing Countries: Opportunities and Constraints

Malcolm Elliott, Director of The Norman Borlaug Institute for Plant Science Research (UK)

Global Biotechnology Forum in Chile: Overview and Conclusions

Massimo Garzelli, Head of Regional Office, UNIDO

11:30-12:00 *Break (Visit the Book Fair and Posters' Area!)*

12:00-13:30 Special Session of the EAGLES Initiative

Great Hall

The EAGLES initiative has been created to propose strategies by which the huge power of the Life Sciences and biotechnology, mostly controlled by the developed world, can be directed for the benefit of the Third World... Its working session will be the opportunity to foster concrete grounds for action.

Chair: Ismail Serageldin, Director, Bibliotheca Alexandrina,

Chairman, European Action on Global Life Sciences (EAGLES)

Members of the EAGLES Consortium including:

Huanming Yang, Professor of Genetics, Director of Beijing Genomics Institute, Chinese Academy of Sciences, Beijing (China); Co-Vice-Chairman, European Action on Global Life Sciences (EAGLES)

Boerge Diderichsen, President, European Federation of Biotechnology

Marc van Montagu, Chairman, Institute of Plant Biology for Developing Countries (Belgium)

David McConnell, Smurfit Institute of Genetics, Trinity College (Ireland)

13:30-14:30 *Break (Visit the Book Fair and Posters' Area!)*

14:30-18:00 Parallel Sessions (see detailed program on the following pages)

18:30-19:30 CEO Panel Great Hall

Convener: Boerge Diderichsen, Novo Nordisk

• Hassan Abbas Helmy, Pharco

- Whitney Macmillan, Cargill
- Magid Abou-Gharbia, Wyeth
- Osamu Nagayama, Chugai Pharmaceutical Co, Ltd, JABEX

19:30-21:00 *Break (Visit the Book Fair and Posters' Area!)*

Parallel Session 1/4 on "Healthcare and the Poor"

Life Sciences Applications to New Healthcare in Low Resource Environments: High Hopes?

Rapporteur: Rafik Nakhla, Bibliotheca Alexandrina (Egypt)

Sunday, 4 April 2004

14:30-16:00 State of the Art (Panel 1)

West Hall

Chair: Ibrahim Badran, Former Egyptian Minister of Health (Egypt)

Discussant: Brian Clark, President, International Union of Biochemistry and Molecular Biology,

Aarhus University (Denmark)

■ **Muhammad Choudhary,** Acting Director, HEJ Institute of Chemistry, University of Karachi (Pakistan) "Medicinal Plants-Importance in Health and Economy"

Claude Jasmin, Founding President, International Council for Global Health Progress (France) "Losing Life"

Sir Peter Lachmann, Past President, Academy of Medical Sciences (UK)

"The Enduring Threat of Infectious Disease"

16:00-16:30 *Break (Visit the Book Fair and Posters' Area!)*

Technical Papers/Case Studies (Panel 5)

West Hall

Chair: Sir Peter Lachmann, Past President, Academy of Medical Sciences (UK)

Discussant: Claude Jasmin, Founding President, International Council for Global Health Progress (France)

Stephen Jarrett, Deputy Director, Supply Division, UNICEF "Vaccine Security: Ensuring the Uninterrupted Sustainable Supply of Affordable Vaccine to developing Countries"

Cherif Matta, Chemistry Department, University of Toronto (Canada)

"Computational Chemistry: A Powerful and Inexpensive Tool for basic and applied research in the life sciences"

Noel Murphy, Department of Genetics, Smurfit Institute of Genetics, Trinity College (Ireland)

"Delivering Practical, Sustainable Solutions for Problems of Neglected Diseases in the Post-genomics Era"

18:30-19:30 **CEO Panel**

16:30-18:00

19:30-21:00

11:00-12:30

Break (Visit the Book Fair and Posters' Area!)

Monday, 5 April 2004

09:00-10:30 Technical Papers/Case Studies (Panel 9)

West Hall

Great Hall

Chair: Mamdouh Gabr, Secretary General, Egyptian Red Crescent (Egypt)

Discussant: Werner Christie, Former Minister of Health,; President, World Health Connections (Norway)

Stefan Ehlers, Head of Department, Borstel Leibniz Center for Medicine and Biosciences (Germany)

"Genetics and Biotechnology in Tuberculosis Research: Ethical Issues"

Magid Abou Gharbia, Vice President, Wyeth Research (Egypt/USA)

"Impact of Chemical and Screening Technologies in Drug Discovery"

Annica Dahlstrom, Professor, Cell Biology, Göteborg University (Sweden)

"Women's and men's brains and the intellectual power"

10:30-11:00 *Break (Visit the Book Fair and Posters' Area!)*

Issues and Options (Panel 13) (round table discussion)

West Hall

Chair: Albert Sasson, Former Assistant Director-General of UNESCO (Morocco)

Panel Head: Werner Christie, Former Minister of Health,; President, World Health Connections (Norway)

"Global Health Challenges and the Impact of Biotech Community on the Developing World"

- **Stephen Jarrett,** Deputy Director, Supply Division, UNICEF
- **David Bennett,** Acting General Secretary, European Federation of Biotechnology (Netherlands)
- **Effat Badr,** Professor of Genetics, Alexandria University (Egypt)

Parallel Session 2/4 on "Agriculture and Safe Food Sufficiency"

AgBiotech for Higher Food Safety and Higher Productivity: Application and Inclusion Processes

Rapporteur: Cynthia Schneider, Ass. Professor, Georgetown University; Former US Ambassador

Sunday, 4 April 2004

14:30-16:00 **State of the Art (Panel 2)** Great Hall

Gabrielle Persley, Chair, the Doyle Foundation (UK) Chair:

Discussant: Rudy Rabbinge, University Professor at the Executive Board of Wageningen UR (Netherlands)

- **Patrick Cunningham,** Department of Genetics, Trinity College Dublin (Ireland) "New times, New Challenges"
- Marc van Montagu, Chairman, Institute of Plant Biotechnology for Developing Countries (Belgium)
- **Magdi Madkour,** President, Agriculture Research Centers, Ministry of Agriculture (Egypt) "Science and Technology Strategy for Improving Agricultural Productivity in Egypt"

16:00-16:30 16:30-18:00 Break (Visit the Book Fair and Posters' Area!)

Technical Papers/Case Studies (Panel 6)

Great Hall

Rudy Rabbinge, University Professor at the Executive Board of Wageningen UR (Netherlands) C. S. Prakash, Director, Center for Plant Biotechnology Research at Tuskegee University (USA) **Discussant:**

- Ingo Potrykus, Professor Emeritus, Institute of Plant Sciences (Switzerland) "Developments Beyond Golden Rice"
- **Mouin Hamze,** President, International Center for Advanced Mediterranean Agronomic Studies (Lebanon) "CIHEAM: an intergovernmental organization supporting development in the Mediterranean area" (Presented by Mohamed Nawar, President of Scientific Advisory Commission of CIHEAM)
- **Hanaiya El Itriby,** Director, Agricultural Genetic Engineering Research Center (Egypt) "Biotechnology Serving Agricultural Development in Egypt"
- Adel El Beltagy, Director General, International Center for Agricultural Research in Dry Areas (Syria) "Harnessing new science for sustainable agriculture in dry areas" (Presented by Richard Cross, Director of the Germplasm Program of ICARDA)

18:30-19:30 19:30-21:00

CEO Panel

Great Hall

Break (Visit the Book Fair and Posters' Area!) Monday, 5 April 2004

09:00-10:30

Technical Papers/Case Studies (Panel 10)

Great Hall

Alexander Von Der Osten, Former Director, Consultative Group on International Agricultural Chair:

Research (Germany)

Discussant: Marilia Nutti, Biosafety and Human Nutriton Researcher, National Research Center on Food

Technology, Embrapa (Brazil)

- Ronnie Coffman, Chair, Department of Plant Breeding, Director, International Programs/CALS, Ithaca (USA) "The Agricultural Biotechnology Support Project II"
- **Randy Hautea,** ISAAA Global Coordinator and SEAsia Director (Philippines) "Transferring Technology and Knowledge to Develop Biotechnology-derived Tropical Crops"
- Willy de Greef, Executive Director, International Biotech Regulatory Services (Belgium) "Agriculture in the age of regulation"

10:30-11:00

Break (Visit the Book Fair and Posters' Area!)

Issues and Options (Panel 14) (round table discussion) 11:00-12:30

Great Hall

Chair: Ingo Potrykus, Professor Emeritus, Institute of Plant Sciences (Switzerland)

Roger Beachy, President, Donald Danforth Plant Science (USA) **Panel Head:**

"Developing Partnerships to Facilitate Agriculture Biotechnology for Developing Economies"

- C. S. Prakash, Director of the Center for Plant Biotechnology Research, Tuskegee University (USA)
- Willy de Greef, Executive Director, International Biotech Regulatory Services (Belgium)
- Marc van Montagu, Chairman, Institute of Plant Biotechnology for Developing Countries (Belgium)
- Alexander Von Der Osten, Former Director, Consultative Group on International Agricultural Research (Germany)

Parallel Session 3/4 on

"Exploiting Biodiversity and Protecting the Environment"

Exploiting Natural Resources while Preserving Biodiversity and Protecting the Environment: What is the Secret Formula?

Rapporteur: Salah Soliman, Professor, Faculty of Agriculture, Alexandria University (Egypt)

Sunday, 4 April 2004

14:30-16:00 State of the Art (Panel 3)

East Hall

Chair: Michael Cernea, Former Senior Adviser for Sociology and Social Policy, the World Bank
Discussant: Eric Huttner, General Manager, Diversity Arrays Technology Pty Limited (Australia)

- **Farouk El-Baz,** Director, Center for Remote Sensing Boston University (USA) "Space platforms as environmental monitors"
- **Klaus Ammann,** Director, Botanical Garden, University of Bern (Switzerland) "Impact of Agriculture on Biodiversity"
- **Coosje Hoogendoorn,** Deputy Director General, International Plant Genetic Resources Institute (Italy) "Agricultural Biodiversity for Sustainable Development: Strengthening the Knowledge Base"

16:00-16:30 *Brea*

Break (Visit the Book Fair and Posters' Area!)

16:30-18:00 Technical Papers/Case Studies (Panel 7)

East Hall

Chair: Eric Huttner, General Manager, Diversity Arrays Technology Pty Limited (Australia)

Discussant: Brian Johnson, Head of Biotechnology Advisory Unit, English Nature (UK)

- Weber Amaral, Senior Scientist, International Plant Genetic Resources Institute (Italy) "Application of Biotechnology Tools on Biodiversity and Biocomplexity Studies"
- Mahmoud Solh, Director, Plant Production & Protection Division, Agricultural Department, FAO "Agrobiodiversity, People and the Environment"
- Ahmed Amri, Biodiversity Project Coordinator, West Asia Regional Program, ICARDA (Morocco) "Preventing land degradation and loss of agrobiodiversity in dryland ecosystems in West Asia"

18:30-19:30 19:30-21:00

CEO Panel

Great Hall

Break (Visit the Book Fair and Posters' Area!)

Monday, 5 April 2004

09:00-10:30

Technical Papers/Case Studies (Panel 11)

East Hall

Chair: Nadia Makram Ebeid, Former Minister of State for Environmental Affairs (Egypt)

Discussant: Emile Frison, Director General, International Plant Genetic Resources Institute (Italy)

■ Eric Huttner, General Manager, Diversity Arrays Technology Pty Limited (Australia)

"Diversity Arrays Technology, A Novel Tool for Harnessing the Genetic Potential of Orphan Crops"

- Antonio Paes De Carvalho, General Director, Extracta Moléculas Naturais Ltda (Brazil) "Intellectual property in Accessing Biodiversity"
- **C. S. Prakash,** Director, Center for Plant Biotechnology Research at Tuskegee University (USA) "Agriculture Biotechnology: Its Impact on Biodiversity"

10:30-11:00

Break (Visit the Book Fair and Posters' Area!)

11:00-12:30

Issues and Options (Panel 15) (round table discussion)

East Hall

Chair: Jim Peacock, President, Australian Academy of Science (Australia)

Panel Head: Brian Johnson, Head of Biotechnology Advisory Unit, English Nature (UK)

"Is Biosafety only the first step towards more sustainable cropping systems?"

- **Weber Amaral,** Senior Scientist, International Plant Genetic Resources Institute (Italy)
- Mahmoud Solh, Director, Plant Production & Protection Division, Agricultural Department, FAO
- Nadia Makram Ebeid, Former Minister of State for Environmental Affairs (Egypt)

Parallel Session 4/4 on "Trade, Patents and Developing Countries"

Facing the Issue: How can Free Trade and the Patent System Benefit Developing Countries?

Rapporteur: Frederick Erbisch, Former Director, Office of Intellectual Property, Michigan State University (USA)

Sunday, 4 April 2004

14:30-16:00 State of the Art (Panel 4)

Middle Hall

Chair: Claudio Carlone, Hypothesis Communication Agency (Italy)

Discussant: Philip Pardey, Professor of Science and Technology Policy, Department of Applied Economics

University of Minnesota (USA)

■ Malcolm Elliott, Director of The Norman Borlaug Institute for Plant Science Research (UK) "IPR: Must there be a Conflict between Commercial Need and Humanitarian Benefits?"

Carlos Romeo-Casabona, Director, Inter-University Chair BBV Foundation - Provincial Government of Biscay in Law and the Human Genome (Spain)

"Intellectual Property Rights and the controversy between Developed and Developing Countries: is it ethical to take care for animals suffering but to forget the needs for survival of humans?"

Zhu Chen, Vice President, Chinese Academy of Sciences (China)

"Filling the South-North gap in life science and biotechnology through capacity building, innovation and benefit sharing: View from a Chinese life scientist"

16:00-16:30 *Break (Visit the Book Fair and Posters' Area!)*

16:30-18:00 Technical Papers/Case Studies (Panel 8)

Middle Hall

Chair: Mohamed Hassan, Executive Director, Third World Academy of Sciences

Discussant: David Bennett, Acting General Secretary, European Federation of Biotechnology (Netherlands)

Claudio Carlone, Hypothesis Communication Agency (Italy)

"Venture Capital, Patents and the Market: The Case-Study of Biotechnology in Italy"

■ Willy de Greef, Executive Director, International Biotech Regulatory Services (Belgium)

"Non-Conventional IPR Issues"

Philip Pardey, Professor of Science and Technology Policy, Department of Applied Economics, University of Minnesota (USA)

"Agricultural R&D and Crop-related IPRs"

18:30-19:30 CEO Panel Great Hall

19:30-21:00 Break (Visit the Book Fair and Posters' Area!)

Monday, 5 April 2004

09:00-10:30 Special Session on Intellectual Property Rights (Panel 12)

Middle Hall

- **Ismail Serageldin,** Director, Bibliotheca Alexandrina (Egypt)
- **Carl-Gustaf Thornström,** Senior Research Advisor, Agriculture Department for Research Cooperation, Sida/SAREC (Sweden)
- Philip Pardey, Professor of Science and Technology Policy, Department of Applied Economics, University of Minnesota (USA)

10:30-11:00 Break (Visit the Book Fair and Posters' Area!)

11:00-12:30 Issues and Options (Panel 16) (round table discussion)

Middle Hall

Chair: Philip Pardey, Professor of Science and Technology Policy, Department of Applied Economics, University of Minnesota (USA)

Panel Head: David McConnell, Co-Vice Chairman of European Action on Global Life Sciences; Professor

at Smurfit Institute of Genetics, Trinity College (Ireland)

"Managing the risks of biotechnology"

- **Yuan Zheng-Hong,** Vice-Dean, Medical College, Fudan University (China)
- **Carl-Gustaf Thornström,** Senior Research Advisor, Agriculture Department for Research Cooperation, Sida/SAREC (Sweden)
- **Carlos Romeo-Casabona,** Director, Inter-University Chair BBV Foundation Provincial Government of Biscay in Law and the Human Genome (Spain)

Monday, 5 April 2004

O9:00-12:30 Parallel Sessions (see program on previous pages)

12:30-13:30 *Break (Visit the Book Fair and Posters' Area!)*

13:30-15:00

Promises and Delivery:

Great Hall

Inventing New Partnerships (Plenary Session)

From new biology to its universal applications: common elaboration of new partnerships

Chair: Philippe Desmarescaux, Chairman, The World Life Sciences Forum, BioVision (France)

Discussant: Andrew Bennett, Executive Director, Syngenta Foundation (Switzerland)

Rapporteur: Gabrielle Persley, Chair, The Doyle Foundation (UK)

Jim Peacock, President, Australian Academy of Science (Australia) "Partnerships for Success"

M. S. Swaminathan, UNESCO Chair in Ecotechnology; M.S. Swaminathan Research Foundation (India) "Towards an Era of Symbiotic Biopartnerships"

Ysbrand Poortman, Vice President, World Alliance of Organizations for the Prevention of Birth Defects (Netherlands)

"A Global Partnership of Scientists, Doctors and Patients' Organizations Working on Prevention and Management of Genetic Disease and Birth Defects"

15:00-15:30

Break (Visit the Book Fair and Posters' Area!)

15:30-17:00

Capacity Building in Science & Technology (Plenary Session)

Great Hall

"Inventing a Better Future: A Strategy for Building Worldwide Capacities in Science and Technology" with the InterAcademy Council's Report as the support of the discussion...

Chair: Margaret Catley-Carlson, Chair, Global Water Partnership (USA)

Rapporteur: Gabrielle Persley, Chair, The Doyle Foundation (UK)

Ismail Serageldin, Director, Bibliotheca Alexandrina (Egypt)

Muhammad Choudhary, Director, HEJ Institute of Chemistry, University of Karachi (Pakistan)

Mamphela Ramphele, Managing Director, the World Bank

Mohamed Hassan, Executive Director, Third World Academy of Sciences

17:00-18:00

Library Tour

18:00 EAGLES Reception

Middle Hall

"EAGLES: Come and Meet"

Tuesday, 6 April 2004

09:00-10:30 Reporting Plenary Session:

Great Hall

Conclusions and Recommendations from the Parallel Sessions

Conclusions and Recommendations of the four Parallel Sessions will be presented and open to discussion to all the participants of the Forum, opening grounds for new collaborations and concrete implementations

Chair: Gabrielle Persley, Chair, The Doyle Foundation (UK)

Healthcare and the Poor

Rafik Nakhla, Bibilotheca Alexandrina (Egypt)

Agriculture and Safe Food Sufficiency

Cynthia Schneider, Associate Professor, Georgetown University, Former US Ambassador (USA)

Exploiting Biodiversity and Protecting the Environment

Salah Soliman, Professor, Faculty of Agriculture, University of Alexandria (Egypt)

Trade, Patents and Developing Countries

Frederick Erbisch, Former Director, Office of Intellectual Property at Michigan State University (USA)

10:30-11:00 *Break (Visit the Book Fair and Posters' Area!)*

11:00-12:30 Closing Plenary Session

Great Hall

International Leaders will close The World Life Sciences Forum BioVisionAlexandria 2004 by sharing their views and hopes on the universal applications of Life Sciences.

The BioVision Award

The session will start with the presentation of the BioVision Award, given to young scientists who are achieving projects for the development and application of new technologies of Life Sciences, to benefit developing countries.

Chair: Ismail Serageldin, Director, Bibliotheca Alexandrina (Egypt)

Mamphela Ramphele, Managing Director, the World Bank

Francois Gros, Honorary Permanent Secretary, Academy of Sciences (France)

Philippe Desmarescaux, Chairman, The World Life Sciences Forum, BioVision (France)

LIST OF KEYNOTE SPEAKERS

Nobel Laureates

LEHN, Jean-Marie

1987 Nobel Laureate in Chemistry

Noyori, Ryoji

2001 Nobel Laureate in Chemistry

ROWLAND, Sherwood

1995 Nobel Laureate in Chemistry

ZEWAIL, Ahmed H.

1999 Nobel Laureate in Chemistry

Speakers

ABOU GHARBIA, Magid

Vice President & Head, Chemical & Screening Sciences, Wyeth Research (USA)

AMARAL, Weber

Senior Scientist, International Plant Genetic Resources Institute, IPGRI (Italy)

AMMANN, Klaus

Director, Botanical Garden (Switzerland)

AMRI, Ahmed

Biodiversity Project Coordinator, West Asia Regional Program, WARP, ICARDA (Morocco)

BADR, Effat

Professor of Genetics, Faculty of Agriculture, Alexandria University (Egypt)

BADRAN, Ibrahim

Former Minister of Health (Egypt)

BEACHY, Roger

President, Donald Danforth Plant Science Center (USA)

BENNETT, Andrew

Executive Director, The Syngenta Foundation (Switzerland)

BENNETT, David

Acting General Secretary, European Federation of Biotechnology (Netherlands)

CARLONE, Claudio

Chairman, Hypothesis Communication Agency (Italy)

CATLEY-CARLSON, Margaret

Chair of the Global Water Partnership (USA)

CERNEA, Michael

Former Senior Advisor for Sociology and Social Policy, the World Bank (Romania)

CHEN, Zhu

Vice President, Chinese Academy of Sciences (China)

CHOUDHARY, MUHAMMAD

Acting Director, HEJ Institute of Chemistry, University of Karachi (Pakistan)

CHRISTIE, Werner

President, World Health Connections; Former Minister of Health (Norway)

CLARK, Brian

President, International Union of Biochemistry and Molecular Biology, Aarhus University (Denmark)

COFFMAN, Ronnie

Chair, Department of Plant Breeding, Cornell University (USA)

CUNNINGHAM, Patrick

Professor of Animal Genetics, Trinity College; Member of European Group on Life Sciences (Ireland)

DAHLSTROM, Annica

Professor, Department of Cell Biology, Göteberg University (Sweden)

DE CARVALHO, Antonio Paes

President and CEO of EXTRACTA Moleculas Naturais S/A (Brazil)

DE GREEF, Willy

Executive Director, International Biotech Regulatory Services (Belgium)

DESMARESCAUX, Philippe

Chairman, The World Life Sciences Forum, BioVision (France)

DIDERICHSEN, Boerge

President, European Federation of Biotechnology; Vice-President, Novo Nordisk (Denmark)

EBEID, Nadia Makram

Former Minister of State for Environmental Affairs (Egypt)

EHLERS, Stefan

Head of Department, Borstel Leibniz Center for Medicine and Biosciences (Germany)

EL-BAZ, Farouk

Director, Center for Remote Sensing, Boston University (USA)

EL BELTAGY, Adel

Director General, International Center for Agricultural Research in Dry Areas (Syria)

EL ITRIBY, Hanaiya

Director, Agricultural Genetic Engineering Research Center (Egypt)

ELLIOTT, Malcolm

Director, The Norman Borlaug Institute for Plant Science Research (UK)

ERBISCH, Frederick

Former Director, Office of Intellectual Property at Michigan State University (USA)

FRISON, Emile

Director-General, IPGRI (Italy)

GABR, Mamdouh

Secretary-General, Egyptian Red Crescent (Egypt)

GARZELLI, Massimo

Head of Regional Office, UNIDO

GROS, Francois

Honorary Permanent Secretary, Academy of Sciences (France)

HAMZE, Mouin

President, International Center for Advanced Mediterranean Agronomic Studies—CIHEAM (Paris); Secretary General, National Council for Scientific Research, CNRS (Lebanon)

HASSAN, Mohamed

Executive Director, Third World Academy of Sciences

HAUTEA, Randy

Global Coordinator, International Service for the Acquisition of Agri-biotech Applications, SEAsia Director (Philippines)

HELMY, Hassan Abass

Chairman and Managing Director, Pharco Pharmaceuticals (Egypt)

HOOGENDOORN, Coosje

Deputy Director-General, Programmes, International Plant Genetic Resources Institute, IPGRI (Italy)

HUTTNER, Eric

General Manager, Diversity Arrays Technology Pty Limited (Australia)

JARRETT, Stephen

Deputy Director, Supply Division, UNICEF

JASMIN, Claude

Founding President, International Council for Global Health Progress (ICGHP); Professor of Oncology, Hematology and Immunology, Hôpital Paul Brousse (France)

JOHNSON, Brian

Head of Biotechnology Advisory Unit, English Nature (UK)

LACHMANN, Sir Peter

Former President, Academy of Medical Sciences (UK)

MACMILLAN, Whitney

Chairman Emeritus, Cargill Inc (USA)

MADKOUR, Magdi

President, Agriculture Research Centers, Ministry of Agriculture (Egypt)

MATTA, Cherif F.

Chemistry Department, University of Toronto (Canada)

MCCONNELL, David

Department of Genetics, University of Dublin (Ireland)

MURPHY, Noel

Department of Genetics, Smurfit Institute of Genetics, Trinity College (Ireland)

NAGAYAMA, Osamu

Chairman of the Board of Directors, President and Chief Executive Officer of Chugai and President of Jabex and JPMA (Japan)

NAKHLA, Rafik

Bibliotheca Alexandrina (Egypt)

NUTTI, Marilia

Biosafety and Human Nutrition Researcher, National Research Center on Food Technology, Embrapa (Brazil)

OMI, Koji

Former Minister of State for Science and Technology Policy (Japan)

PARDEY, Philip

Professor of Science and Technology Policy, Department of Applied Economics, University of Minnesota (USA)

PEACOCK, Jim

President of Australian Academy of Science (Australia)

PERSLEY, Gabrielle

Chair, The Doyle Foundation

POORTMAN, Ysbrand

Vice President, World Alliance of Organizations for the Prevention of Birth Defects (Netherlands)

POTRYKUS, Ingo

Professor Emeritus of Plant Sciences, Institute of Plant Sciences, Swiss Federal Institute of Technology (Switzerland)

PRAKASH, C. S.

Director, Center for Plant Biotechnology Research (USA)

RABBINGE, Rudy

University Professor, Executive Board of Wageningen UR (Netherlands)

RAMPHELE, Mamphela

Managing Director, Human Development Network, the World Bank

ROMEO-CASABONA, Carlos

Director, Inter-University Chair BBVA Foundation-Provincial Government of Biscay in Law and the Human Genome (Spain)

SASSON, Albert

Former Assistant Director General of UNESCO (Morocco)

SCHNEIDER, Cynthia P.

Associate Professor, Georgetown University; Former US Ambassador (USA)

SERAGELDIN, Ismail

Director of Bibliotheca Alexandrina, Chairman of European Action on Global Life Sciences (Egypt)

SOLH, Mahmoud

Director, Plant Production & Protection Division, Agricultural Department, FAO

SOLIMAN, Salah

Professor, Faculty of Agriculture, University of Alexandria (Egypt)

SWAMINATHAN, M. S.

UNESCO Chair in Ecotechnology; M.S. Swaminathan Research Foundation (India)

THORNTRÖM, Carl-Gustaf

Senior Research Advisor, Agriculture Department for Research Cooperation, Sida/SAREC (Sweden)

VAN MONTAGU, Marc

Chairman, Institute of Plant Biotechnology for Developing Countries (Belgium)

VON DER OSTEN-SACKEN, Alexander

Former Executive Secretary, Consultative Group on International Agricultural Research (Germany)

YANG, Huanming

Director, Beijing Genomics Institute/Genomics and Bioinformatics Center, Chinese Academy of Sciences; Co-Vice-Chairman, European Action on Global Life Sciences (China)

ZHENG-HONG, Yuan

Vice Dean, Medical College, Fudan University (China)

ORGANIZING COMMITTEE

Dr. Ismail Serageldin

Librarian of Alexandria & Chairman of the Conference

International Scientific Committee

Alberts, Bruce (USA)
Allende, Jorge (Chile)
Dahlstrom, Annica (Sweden)
Egwang, Thomas (Uganda)
El Beltagy, Adel (Syria)
Fraser, Claire (USA)
Gros, Francois (France)
Hamze, Mouin (Lebanon)
Huanming, Yang (China)
Javier, Emil (Philippines)

Kurokawa, Kiyoshi (Japan)

Peacock, Jim (Australia)

Persley, Gabrielle (United Kingdom)
Potrykus, Ingo (Switzerland)
Madkour, Magdi (Egypt)
Makhubu, Lydia (Swaziland)
Mayor, Federico (Spain)
McConnell, David (Ireland)
Rabbinge, Rudy (Netherlands)
Ramphele, Mamphela (USA)
Reifschneider, Francisco (Brazil)
Swaminathan, Monkombu Sambasivan (India)

Van Montagu, Marc (Belgium)
Wambugu, Florence (Kenya)

International Steering Committee

Denepoux, Stéphane (BioVision, France) Finas, Marie-Hélène (BioVision, France) Hussain, Sarwat (CGIAR, World Bank) Poincelet, Eric (BioVision, France) Thalmann, Roger (BioVision, France)

BA Steering Committee

El Faham, Mohamed El Mikaty, Hoda Nakhla, Rafik Soliman, Salah

Secretariat

Technical and Logistics Committee

Abdelrazek, Hanan Abdelhady, Layla Adly, Noha Ali, Alyaa Ammar, Sherif El Amir, Ayman El Sammak, Mohamed El-Fawal, Salma El-Hennawi, Shahinaz El-Sammak, Dina Osama, Aseel

El Shal, Ahmed El Sisi, Yasser Gafour, Olfat Hosni, Gamal Nasr, Medhat Riad, Sherif Tonbary, Abeer

Newsletter

Fahmy, Perihan Kandeil, Marwa Maher, Mohamed Sawiress, Hani

Book Fair

Abdelwahab, Hala Haggag, Ahmad

Website Resources

Abdelaziz, Tamer Asaad, Mariana Hamouda, Mohamed Massoud, Amani

BIOVISION NOBEL LAUREATES' DAY

Leveraging a seamless blend of sciences to understand the living



1999 Nobel, Ahmed ZEWAIL

Professor Ahmed H. Zewail, born in Egypt in 1946, won the 1999 Nobel Prize in Chemistry for his groundbreaking work in "showing that it is possible with rapid laser technique to see how atoms in a molecule move during a chemical reaction".

Linus Pauling Professor of Chemical Physics, Professor of Physics at the California Institute of Technology (CalTech) and Director of the NSF Laboratory for Molecular Sciences, he is internationally recognized for his efforts in a field which he pioneered, known as femtochemistry. This technique uses ultra-fast lasers to probe chemical reactions as they actually occur in real time.

Because reactions can take place in a millionth of a billionth of a second, Zewail's research has, with state-of-the-art lasers, made it possible to observe and study this motion for the first time, thus allowing scientists to explore nature at its fundamental level.

Specifically, Zewail seeks to better understand the way that chemical bonds form and break. With the development of laser techniques, he and his team have been able to obtain greater insights about the exact nature of chemical bonds. The field has had wide-ranging impact on chemistry and photobiology all over the world.

Zewail's current research is devoted to dynamical chemistry and biology, with a focus on the physics of elementary processes in complex systems. His other honors include the Robert A. Welch Prize, the Wolf Prize, the King Faisal Prize, and the Peter Debye Award. From Egypt, he received the Order of the Grand Collar of the Nile, the highest state honor, and postage stamps were issued to pay tribute to his contributions to science and humanity.

Presentation

BioVision at the Interface – Complexity and Diversity

From Big Bang to Femtosecond unit of time

Life science Multidisciplinary approach relies on diversity and complexity.

Knowing time scale and complexity in the space, it allows us to describe the physics and behavior of the living.

To understand how the genome works or even how to make new effective drugs, we need to break down complex phenomenon into their component elements.

To do so, we must move from visible to invisible, from classic world to quantum world, from billion years of universe evolution to the femtosecond (10⁻¹⁵ sec) time scale

With the new molecular camera technology, we can localize atoms in the space and time.

As an example, the Protein, which allows us to see (Rhodopsin), twists around in 200 femtoseconds.

In the field of life sciences, using the femtosecond time scale we can identify the motility of electrons in the DNA. This can be used to understand both genetic accident and drug design.

The new challenge is to extend our knowledge from the atomistic scale to the structure and dynamics of complex proteins.

Finally, we moved from x-ray and electronic microscopy to ultra-fast electronic diffraction.

This introduces us in space and time resolution of molecular tridimensional arrangements with ultra-fast electron crystallography.

We need to understand the physics, the mathematics and the chemistry of biology, to make improvements in life sciences.



1987 Nobel, Jean-Marie LEHN

Jean-Marie Lehn is a French chemist, born in 1939, who received his PhD from University of Strasbourg in 1963. A Professor at Louis Pasteur University (1970–78) and later at the Collège de France (1979–), Lehn did groundbreaking research in the creation of artificial enzymes.

Lehn expanded on the work of Charles J. Pedersen, in synthesizing crown ethers, a class of two-dimensional, ring-shaped organic compounds that are capable of selectively recognizing and combining with other molecules. In the course of his efforts to synthesize three-dimensional molecules that would possess similar reactive characteristics, Lehn created a molecule that combines with the important neurotransmitter, Acetylcholine, in the brain. This raised the possibility of creating artificial enzymes that function better than the natural enzymes found in the human body.

He shared the 1987 Nobel Prize in Chemistry with Pedersen and Donald J. Cram for the development and application of molecules with highly selective, structure specific interactions, i.e. molecules that can "recognize" each other and choose which other molecules they will form complexes with. This laid the foundation for the active interdisciplinary area of research within chemistry that has now come to be termed host-guest chemistry or supra-molecular chemistry.

Presentation

Supra-molecular Chemistry: Some Contributions to Life Sciences

The path toward complexity is self organization

There is no biology without chemistry and chemistry is the science of informed matter. On the molecular level, it represents storage while on the supra-molecular level it represents processing.

Mendelief periodic table, contains everything that constitutes the universe. Building bricks appears to be arranged in a logical array and not in a chaotic manner

Supra-molecular chemistry unlocks the door to molecular recognition understanding. It should have many applications: How killer cells destroy cancer cells? How viruses recognize host cells?

It involves interaction energy for building and information for selecting.

Four letters in a complex system makes the difference between cats, rats and humans: A-C-G-T. They recognize and bind to each other through very simple hydrogen bonds, two in one case and three in the other.

In 100 years, chemistry was able to produce more complex molecules with novel properties and applications in medicine and advanced technologies. An example of the material is the photo-chemical molecular device, fixed in monoclonal antibodies used to detect specific antigens. Supramolecular Chemistry allows us to imagine what happened during the prebiotic era. It provides the understanding of the processes of molecular recognition transformation and translocation. However self organization of the matter is observed but not yet fully understood.

On a chemical prospective, *selection* is driven by: information programmability, dynamic reversibility and constitution diversity.

These mechanisms introduce a *reversible adaptation* by trial and error of molecular fit which is the matrix of final *evolution*.



2001 Nobel, Ryoji NOYORI

Ryoji Noyori, born in Japan in 1938, shared half of the *2001 Nobel Prize in Chemistry* with William S. Knowles "for their work on chirally catalyzed hydrogenation reactions". The other half went to K. Barry Sharpless.

Together, Noyori and Knowles developed molecules that can catalyze important reactions so that only one of the two mirror image forms is produced. The catalyst molecule, which is chiral itself, speeds up the reaction without being consumed, and just one of these molecules can produce millions of molecules of the desired mirror image form. Their work opened up a completely new field of research in which it is possible to synthesize molecules and materials with new properties, and the results of their basic research are being used in industrial syntheses of many pharmaceutical products such as antibiotics, anti-inflammatory drugs and heart medication.

Noyori has been a Professor of Chemistry at Nagoya University since 1972, and is currently the President of RIKEN (the Institute of Physical and Chemical Research), Japan's top Center of Excellence (CEO) Institute in the field of natural science and technology. In addition, he is a member of the editorial boards of more than 30 international journals, and has served as Science Advisor for the Japanese Ministry of Education, Culture, Sports, Science and Technology.

Presentation

Asymmetric Catalysis: Roles in Biomedical Science and Technology

Bio effectiveness impact of molecule chilarity

Producing and designing drugs implies the mastering of a full range of key structural characteristics. Elementary composition, atom connectivity, configuration and conformation are the basis of molecules properties and functions.

History has shown that configuration is a crucial factor as different enantiomers can have varied pharmacological actions, which can lead to dramatic side effects. 15 years ago, the very large majority of drugs were produced under the racemic form which is a 50/50 mixture of right-handed and left-handed compound. New chemical synthesis methods based on asymmetric catalysis have emerged and allowed to produce not a mixture but a pure single form of enantiomer (right-handed or left-handed).

Reaction productivity issues have been resolved and nowadays this technique is applied in the field of drug synthesis process. Academic and industrial scientists focused especially on asymmetric hydrogenation of oleofinic substrates and ketones using "BINAP/Ru" an entirely new type of selective catalyst. Many industrial applications have been founded and the synthesis of advanced generation antibiotics is one of the many examples. Asymmetric catalysis can also be used in the drug research process and especially in the field of brain research.

Combining this technique with the use of PET (Positron Emission Tomography) allows to carry out studies using only an extremely small quantity of drug. Applying this technique from the very early stage of investigation could result in a significant reduction of drug development costs.





Sherwood Rowland, born in 1927, is an American chemist who shared the 1995 Nobel Prize in Chemistry with chemists Mario Molina and Paul Crutzen for research on the depletion of the Earth's ozone layer. Rowland specializes in the research areas of radiochemistry, photochemistry, and atmospheric chemistry. Rowland, while working with Molina, discovered that man-

made chlorofluorocarbon (CFC) propellants accelerate the decomposition of the ozonosphere, which protects the Earth from biologically harmful ultraviolet radiation.

Rowland and Molina theorized that CFC gases combine with solar radiation and decompose in the stratosphere, releasing atoms of chlorine and chlorine monoxide that are able to destroy large numbers of ozone molecules. Their research initiated a federal investigation of the problem. Research on CFCs and stratospheric ozone eventually led, in the 1970s to the regulation of use and manufacture of CFC-based aerosols in the United States, Canada and Scandinavia. The discovery of the so-called hole in the ozone layer over Antarctica in the mid-1980s supported their theory further. In 1987, the Montreal Protocol of the United Nations Environment Program became the first international agreement to control and reduce atmospheric damages by banning CFC production after 1996. Measurements of CFCs in the lower atmosphere confirm that the global response to this protocol has been remarkable.

Rowland has also been investigating the effect of methane gas, which has been steadily increasing in concentration, on the atmosphere. Methane absorbs global infrared radiation, and increases in its concentration contribute to the "greenhouse effect," the gradual warming of the earth's surface. He is currently the elected Foreign Secretary of the National Academy of Sciences. Prizes received by Rowland include the Tyler World Prize in Ecology and Energy and the Albert Einstein Prize.

Presentation
The changing atmosphere in 2004

Atmosphere interactions with biology

Changes taking place in the Earth's atmosphere can affect the human health, and the biological response of plants. The detailed knowledge of the atmosphere has been greatly advanced in the past several decades by the development of measurement techniques which have much greater precision and accuracy, much improved sensitivity and global coverage.

Three general classes of concern are depletion of stratospheric ozone, creation of ground–level ozone and global warming.

Stratospheric Ozone depletion is attributed to CFCs that have long atmosphere lifetimes. They accumulated steadily in the atmosphere until 1990's. The stratospheric removal process of CFCs by photolysis releases atomic chlorine, and triggers a chain reaction destruction of stratospheric ozone. U.N. established the Montreal protocol which banned CFC production. This ban has reduced the amounts of organic chlorine in the atmosphere.

The formation of urban ozone requires carbon monoxide and hydrocarbon, Nitrogen oxides, and sunlight. It can also be produced by burning of agricultural waste.

Carbon dioxide levels did not vary substantially for a period of 400 000 years. However, with the rise of industrial activity, global concentration skyrocketed through the last two centuries. Methane experienced similar fluctuations. Infrared radiation emitted by Earth is naturally absorbed by "greenhouse gases" such as carbon dioxide, ozone, and methane. This maintains the earth temperature at a superior level than it should theoretically be. The steady accumulation of "greenhouse gases" during the last centuries has significantly amplified this natural phenomenon.

Major sources of industrial energy involve the burning of the fossil fuels such as coal, oil and gas. The energy consumption is evenly spread between North America, Europe, the former Soviet Union and Eastern Europe and the developing world.

Regulatory processes for reducing the rates of accumulation of greenhouse gases have not been put in place in most countries, including the United States which has the highest per capita emission rate for carbon dioxide.

Conclusion

When Earth is threatened by industrial progress of mankind, scientific research needs, more than ever, to find effective solutions, which will address this crucial issue. Years of scientific discovery yield to different scientific perspectives.

- Nobel Laureates still admit that serendipity can be as effective as cutting-edge scientific techniques.
- Understanding of complex phenomenon can be based on billion years timescale observations whereas some others have to be clarified within only a femtosecond window.

The more we know, the less we understand. Future challenges require a multidisciplinary approach where branches of science are merging together. However, the three pillars of science remain *Basic research*, *Technology development* and *Society values*, with Basic research the foundation of knowledge.

How can we harness, this global community that believes in common humanities and is determined to pursue a greater understanding of the processes of life which constitutes the new life sciences of this new century.

An even greater understanding of the processes of life and means of knowledge is required in order to bring closer to reality the promise that is implicit to science. It will indeed one day be able to heal the sick, protect environment, feed the hungry and bring dignity to work.

Science can and has the promise to do, but perhaps institutions and structure in which we work are preventing the best of science in serving humanities.

Ismail Serageldin

BioVision Nobel Laureates' Day Committee

Writing Committee

Anhoury, Pierre (France) Madec, Olivier (France) Nakhla, Rafik (Egypt)

Revising Committee

Check Siu, Nadine (France)
Desmarescaux, Philippe (France)
Gafour, Olfat (Egypt)
Gros, Francois (France)

Secretaries

El Mekkawy, Sara (Egypt) El Gharabawy, Marwa (Egypt)



"The New Biology: A Survey of the Issues"

Chair:

Andrew Bennett, Executive Director, Syngenta Foundation (Switzerland)

Rapporteur:

Gabrielle Persley, Chair, The Doyle Foundation (UK)

Speakers:

- Ismail Serageldin, Director, Bibliotheca Alexandrina (Egypt)
- M. S. Swaminathan, UNESCO Chair in Ecotechnology; M.S. Swaminathan Research Foundation (India)
- Malcolm Elliott, Director of The Norman Borlaug Institute for Plant Science Research (UK)
- Massimo Garzelli, Head of Regional Office, UNIDO



- Context social, economic, ethical concerns
- Green to gene to evergreen revolutions
- Actions needed Who, What, Where, When and How?



Economic Context of New Life Sciences

- Income divide, S&T divide, Digital divide
- Future of life sciences will be determined by industrial countries markets/consumer preferences
- Differing issues/acceptance new technologies in Medicine, Industry, Agriculture, Environment
- PPPs Public-Private Partnerships or Patents, Price, Poverty
- IPRs Innovative Property Regimes to mobilise both private investments S&T and public goods

Social/Ethical Context of Life Sciences

- Public perceptions, trends, trust are critical
- Risks and benefits in all new technologies-Green, gene and evergreen technologies
- Risk assessment and risk management strategies
- Evergreen revolution:
 - "Productivity in perpetuity" based on principles of ecology, economics, social and gender equity



Evergreen Biosciences Revolution

- Threats to the evergreen revolution in agriculture
- Biotic and abiotic stresses (drought, salinity)
- Climate change (sea level rises, temperature)
- Market factors
- Benefits from evergreen biosciences revolution
- 2004: The Year of Rice
- Future rices more productive, nutritious, medicinal, diverse varieties, valuable by products
- Addressing threats through discoveries of Rice Genome

Challenges

- Many biotech applications beneficial to sustainable and/or organic agriculture
- soil fertility, water quality, plant and animal health, post harvest food quality, environment
- Transgenic technology unacceptable to most organic growers (not market certified technology)
- Enabling consumer choice critical
- Address issues of concern through engagement of society in science and ethical discourse



Action plans

- UNIDO process regional and global assessments 2002-2004
- UNIDO action plan for biosciences

- Enable all countries to access and safely use new technologies, including biotechnology
- Capacity building critical
- International standard laboratories required
- "Think globally, act locally"

Next Steps

- Leadership –political, business, civil society
- Need "humanistic science leaders" capable of mobilising S&T to promote economic and social equity
- The New Scholars of Alexandria



Round Table Discussion the EAGLES Consortium : Chair:

■ Ismail Serageldin, Director, Bibliotheca Alexandrina, Chairman, European Action on Global Life Sciences (EAGLES)

Speakers:

- Huanming Yang, Professor of Genetics, Director of Beijing Genomics Institute, Chinese Academy of Sciences, Beijing (China); Co-Vice-Chairman, European Action on Global Life Sciences (EAGLES)
- Boerge Diderichsen, President, European Federation of Biotechnology
- Marc van Montagu, Chairman, Institute of Plant Biology for Developing Countries (Belgium)
- David McConnell, Smurfit Institute of Genetics, Trinity College (Ireland)



Cotton in Australia

- Define problem (Future viability of cotton at risk due to pests and pesticide over use)
- Insect resistant, high quality cotton needed

- Public private partnerships
- Australian business (CSIRO-cotton growers-Cotton R&D Monsanto)
- International business (Australian varieties 20% US cotton varieties in 2003)

Wheat: Conventional and GM breeding in Graingene

- Multiple partners along business chain, in Australia and internationally
- Technology- abiotic and biotic stress, quality. Gateway- integrate traits
- Development, commercialisation pathway
- New conventional wheat varieties based on new science (23% yield increases)
- Focus, and clear pathway from discovery to delivery essential

Development partnerships

- Identify major opportunity/problem to address
- Identify partners who can contribute towards solution, and benefit from partnership
- Discovery to delivery chain complex but essential
- Early involvement and communication with stakeholders essential (no surprises)
- Regulatory and trade issues need to be addressed
- Plant breeding, seed production systems for delivery



MSSF Partnerships

- Range
- Lab to lab
- Lab to land
- Land to lab
- Land to land

Banks with a difference-community stakeholders

Gene banks-field gene banks

- Seed banks-
- in situ on farm conservation
- ex situ on farm conservation
- botanical and zoological gardens
- Water bank
- Grain bank

Biosphere Trusts

- Concurrent attention to conservation, enhancement, sustainable use and equitable benefit sharing in specific biosphere
- Examples partnerships between indigenous people and scientists



Participatory plant breeding

- Communities and science partners
- Access to genetic resources
- Access to benefits by farmers

- Integrated gene management
- Markets, technology, credit triangle

Equity and ethics in global negotiations

- WTP TRIPS
- UPOV
- CBD

Health alliances

- World Alliance of organizations for the Prevention of birth defects
- Principles (ethical principles)
- Objectives and commitment
- Multi disciplinary approach
- Community involvement
- Public-private partners
- Sustainable funding, capacity building



International Genetic Alliance

- Mission to seek a world where genetic conditions are understood, prevented, treated, ameliorated and cured
- International partners
- Value of public availability of data from the Human genome project

Global health equity partnerships

- Promotion of health equity around the global
- 1950 to 2020: Decades of uncertainty, diagnosis, treatment, now to prevention
- 2020- Patients as drivers of health care
- Disease management to Health maintenance



AJB Summary on Partnerships

- Three rich and different papers
- Peacock partnerships to bring new products to market, domestically and internationally
- Clear objectives, focus to bring products to people to markets
- IP generated and managed
- Communicated regularly
- Public private alliance

Development partnerships

- Better livelihoods for poor people
- Better management NR
- Better stewardship environment
- Rewards from working together towards an agreed outcome
- Recognition, role of women
- Faith and belief important



Summary of Health alliances

- Different type alliances, but also share common objective to mobilise resources to address genetic diseases
- Influence system through patient power

Common elements partnerships

- Shared common objectives \ clear focus
- Involved people more than institutions
- Shared rewards
- Reinvestment required
- Constant communication
- Transparency
- Time and space required

Questions

- Why not more successful partnerships?
- What are the risks?
- Who is responsible for liabilities?
- Fear of failure?
- Can successes be cloned?

Science and spirituality

- Science plus spirituality is progress for all
- Science minus enirituality is destruction for all



Capacity Building

- Capacity to understand, interpret and use new life sciences essential in all countries
- Individual, community and institutional capacities all important
- Context is world of 8 billion people, two thirds of whom live on US\$2 per day
- Political support essential for science to thrive, mobilising financial and policy support

InterAcademy council Report on "Inventing a Better Future" 2004

- Urgency in promoting S&T worldwide
- S&T capacity is essential for development
- Local S&T capacity essential-science and technology cannot simply be imported
- Science, technology and education inter-linked

Science and society

- Science for policy
- Policy for science
- National strategy
- Public involvement and support
- Digital libraries for the future



Human Resources

- Brain drain as a threat and an opportunity
- Brain gain through mobilising Diaspora as partners
- Enable scientists to function effectively in their own countries (eg competitive grants)
- Foster "south-south" collaboration form scientifically capable countries to others
- Support excellence in science

Centers of Excellence

- Foster centers of excellence to concentrate financial and human resources
- Regional approaches desirable
- NEPAD priority for centers of excellence in S&T in Africa (including biosciences)
- NEPAD needs to take S&T seriously in Africa, if it is to be successful



Financing mechanisms

- Global funds
- Sectoral funds
- Regional funds
- Private sector
- International consortia

Commentary on InterAcademy Council Report

- "Capacity building in S&T is common sense but too sensible for the development community to pay attention"
- No country is too poor for science
- Need basic science capacity in South, as well as applied science
- Political vision important (examples)
- Data needs
 - Need reliable data to set baselines and determine priority programs



Science teachers importance

- Scientists need to be involved in curriculum development to interest children in science
- Invest in science teachers as a priority

Issues for action

- How to meet infrastructure/IT/other needs?
- Support excellence in science through competitive grants, merit, and results
- Support centers of excellence, not try do every thing everywhere
- Reward excellence and results
- Intensify collaboration with Diaspora

Next steps

IAC Report identifies next steps and who should be responsible for action

Chair's Summary on Capacity Building

- Priority for S&T
- Focus
- Promote report and recommendations for action, with and beyond scientific community
- Policy to ensure priority and wise use of resources for S&T
- Profit / gains from brain drain



Chair:

- Ibrahim Badran, Former Egyptian Minister of Health (Egypt)
- Sir Peter Lachmann, Past President, Academy of Medical Sciences (UK)
- Mamdouh Gabr, Secretary General, Egyptian Red Crescent (Egypt)
- Albert Sasson, Former Assistant Director-General of UNESCO (Morocco)

Rapporteur:

Rafik Nakhla, Bibliotheca Alexandrina (Egypt)

Speakers:

- Muhammad Choudhary, Acting Director, HEJ Institute of Chemistry, University of Karachi (Pakistan)
- Claude Jasmin, Founding President, International Council for Global Health Progress (France)
- Sir Peter Lachmann, Past President, Academy of Medical Sciences (UK)
- Stephen Jarrett, Deputy Director, Supply Division, UNICEF
- Cherif Matta, Chemistry Department, University of Toronto (Canada)
- Noel Murphy, Department of Genetics, Smurfit Institute of Genetics, Trinity College (Ireland)
- **Stefan Ehlers,** Head of Department, Borstel Leibniz Center for Medicine and Biosciences (Germany)
- Magid Abou Gharbia, Vice President, Wyeth Research (Egypt/USA)
- Annica Dahlstrom, Professor, Cell Biology, Göteborg University (Sweden)
- **David Bennett**, Acting General Secretary, European Federation of Biotechnology (Netherlands)
- Effat Badr, Professor of Genetics, Alexandria University (Egypt)



A Cry for Africa

- Sub-Saharan Africa is dying
 - Cancer
 - HIV 28 Mil
 - Malaria 270 Mil
 - Parasites
- African Endemic diseases present a problem:

- Trypanosomyasis
 - 300 000 to 500 000 new cases per year
 - No new drugs
 - 50 years old
 - Available until 2006
 - Very toxic
 - African Wildlife represents an opportunity to understand resistance



Gender Difference and Brain

- Gender identity resides in brain
- Women use 20% more 5 HT
- Women have thicker corpus collosum
- Women can work with both hemispheres
- Hormones contribute to gender behavior
- Men on testosterone antagonist were less aggressive
- Men have more stupid and genius individuals than women

Key Word

- Prevention
- Treatment
- TB
- Drugs
- Biotechnology
- Plant
- Solution



Prevention

Paradigm shift to preventive medicine

- Changing Habits
- Vaccination

The Precautionary principle

"When an activity raises threats of serious or irreversible harm to human health or the environment, precautionary measures that prevent the possibility of harm (for example, moratorium, prohibition) shall be taken even if the causal link between the activity and the possible harm has not been proven or the causal link is weak and the harm is unlikely to occur"

- Particularly in medicine and public health, it is very doubtful whether it is ethically preferable to do harm by omission rather than commission
- The precautionary principle is therefore no substitute for rigorous risk benefit assessment of all course of action including doing nothing



Prevention

Cancer is preventable by some measures:

- Tobacco
- Peanuts with Aflatoxins
- Avoiding STD HPV with condoms
- Smoked food
- Prevention is less Expensive
- Biotechnology is bringing vaccines
- Vaccines have reduced disease incidence by 98-99%
- There is a need for new vaccines
 - High priority for TB More Money
 - High priority for HIV
- UNICEF buys 40% units basic vaccines at only 5% value
- Price Difference in vaccines between basic and enhanced vaccines drive focus on high income countries



TB

- Challenges:
 - Single drug resistance

- Multi drug resistance
- Need for new vaccine
- Field research is needed
- Biotechnology Promise
 - Markers
 - New Vaccine

Drugs

- Current drugs act on only 500 targets out of 27 000
- Plants are good source for semi pure bioactive material
- Bioactive plant material do not replace other forms chemical or Biotech.
- China has both lines Plant based and Biotech



Solution

I P is a fact should not become a dogma

- Political Will
- South/North Collaboration in R&D Specially first phases
- South/South Collaboration (China/Cuba)
- Partnership
- Focus
- Screening of Plants for Bioactive substances
- Computational Chemistry is a tool for preliminary research



Chair:

■ Gabrielle Persley, Chair, the Doyle Foundation (UK)

- Rudy Rabbinge, University Professor at the Executive Board of Wageningen UR (Netherlands)
- Alexander Von Der Osten, Former Director, Consultative Group on International Agricultural Research (Germany)
- Ingo Potrykus, Professor Emeritus, Institute of Plant Sciences (Switzerland)

Rapporteur:

Cynthia Schneider, Ass. Professor, Georgetown University; Former US Ambassador

Speakers:

- **Patrick Cunningham**, Department of Genetics, Trinity College Dublin (Ireland)
- Marc van Montagu, Chairman, Institute of Plant Biotechnology for Developing Countries (Belgium)
- Magdi Madkour, President, Agriculture Research Centers, Ministry of Agriculture (Egypt)
- Ingo Potrykus, Professor Emeritus, Institute of Plant Sciences (Switzerland)
- Mouin Hamze, President, International Center for Advanced Mediterranean Agronomic Studies (Egypt)
- Hanaiya El Itriby, Director, Agricultural Genetic Engineering Research Center (Egypt)
- Adel El Beltagy, Director General, International Center for Agricultural Research in Dry Areas (Syria)
- Ronnie Coffman, Chair, Department of Plant Breeding, Director, International Programs/CALS, Ithaca (USA)
- Randy Hautea, ISAAA Global Coordinator and SEAsia Director (Philippines)
- Willy de Greef, Executive Director, International Biotech Regulatory Services (Belgium)
- C. S. Prakash, Director of the Center for Plant Biotechnology Research, Tuskegee University (USA)
- Alexander Von Der Osten, Former Director, Consultative Group on International Agricultural Research (Germany)



Key Themes

Burden of the regulatory process

The growing gap in attitudes and adoption of biotech between north and south (east)

2002 and 2004

- BioVision Alexandria 2002: chief obstacle to realizing potential of science for developing world was weak infrastructure -- capacity, government, finance, education, transportation
- 2004: chief obstacle is the "extreme cautionary approach" and incredible bureaucracy of the regulatory process worldwide



Ingo Potrykus

- The present radical application of the precautionary principle is immoral. It leads to defined, predictable, and dramatic changes to life, health, and biodiversity. All risks claimed, so far, inherent to GMO-technology are, in comparison, minor and they are just hypothetical
- Regulatory regimes affected by this attitude lead to an astronomic waste of financial, intellectual and mental resources. They are unjustified, and they prevent the use of GMO-technology in public projects and to the benefit of the underprivileged. Those with power in the public and political domain ignoring these facts......share responsibility for future unnecessary suffering and deaths of millions

Development of Vitamin A rice

- 114 patents to overcome
- 10 -15 years after discovery before marketing
- Burden of securing patent permission, plus regulatory labyrinth too onerous for single researcher or public institution



The Cost of Caution

- Calculate cost of "guilty until proven innocent" logic of the precautionary principle:
- 500,000 children per year going blind

Up to 6000 per day dying of vitamin A malnutrition

Science Success

- Agriculture and Biotechnology Support Project (ASBP II) at Cornell developing a fruit and shoot borer resistant eggplant (FSBR) that will:
 - reduce crop loss (up to 54-70%)
 - will reduce pesticide use
- 164 million dollars per year economic gain
- Affordable food for millions...but
- 6-13 years from transgenic plant to commercial release



Science Success

- Donald Danforth Plant Science Center
- Conquering Cassava Mosaic Disease
 - 12 years of research

- 10 more of field trials
- No good choice of regulatory processes
- Cost of 1-5 million dollars per desirable trait

Inevitable Conclusion

- U.S. regulatory process so onerous that will deter development of fruit or vegetables with desirable traits
- Cheaper choice -- chemicals



Animal Agriculture – More Obstacles

- Of 1300 drugs developed, only 1% done for tropical diseases
- Theileria, East Coast fever 24 million cattle at risk, led to 1 million deaths per year at cost of 170 million Euros extends across 11 Africa countries
- Disease sequenced; knowledge for vaccine exists for more than 5 years
- No investment, no vaccine

Challenge: Science to Market

- Challenge for public or academic institutions to bring product to market:
- High cost of R and D
- Public sector inexperienced in "D"
- Transaction costs high
- Regulatory environment hostile
- Funding scarce



Indemnification

- What if client country will accept product without US regulatory seal of approval?
- Too dangerous because of danger of exposure in lawsuit
- Indemnification a major issue

Willy de Greef's Action Plan

- Sounds hopeless....What is the answer?
- Get involved in discussion and drafting of international treaties and protocols that become law.
 - Cartagena Treaty (biosafety)
 - Biodiversity Protocol
- Public sector of Life Sciences needs to be present at relevant policy platforms
- Need organized representation of scientific community as stakeholder group
- Attend treaty and protocol meetings
- Speak up early in process
- Alliances with sympathetic environmental activists



Consequences of Inaction

- What are the consequences of absence of life sciences from the Debate?
- Cartegena protocol -- require permit to bring newly developed GM crops into developing countries. So if student on fellowship develops product in Europe, restrictions on bringing it back.

Reality Check

- Reality is that agriculture policy is being decided in environmental forums
- Politically correct to oppose biotech
- Without innovation policy regulation becomes policy
- 2007 Cartagena decision on liability

The Right and Left Hand

- World Food Summit: harness technology to increase food security
- Biodiversity Convention says we should reduce reliance on technology for food
- EU Commission predominantly supports biotechnology; EU Parliament does not



Words of Experience

Communicate early and often

- Complement local efforts
- Focus on delivering products
- Create institutional partnerships through products

Models: ISAAA

- Papaya Biotechnology Network of Southeast Asia
 - North South
 - South South collaborations
- Tailored to research needs and capacities of partner countries
- Product in field trials
- Comprehensive Program of Communication and Education
- Communicate at every stage of project to every audience
- Brings scientists, regulators, business people, administrators, and farmers from partner countries in south together with client country farmers and clients
- Public meetings
- Fellowship program



Egyptian Success Story: AGERI Magdy Madkour and Hanaiya El Itriby

- Agriculture in Egypt 54 % Workforce, 20% National Income, 20% Export
 Earning
- 8.2 million acres (feddans = 1.05 acre) under cultivation, 1/3 reclaimed from desert

Egyptian Agricultural Reform

- Liberalize sector
- Limit government control
- Increase returns per unit of land and water consumed
- 4.1% growth in agriculture production
- Bt cotton partnership with Monsanto
- 3 years from signing agreement to field trials
- Partnerships with seed companies, including competitors



Conclusion: the Balance Shifts?

- 15% increase in volume of GM foods 2002-2003
- No improvement in (non) acceptance of GM foods in Europe
- Doubts about adoption of GM foods on the rise in the U.S.
- Use of GM foods growing in Asia

Food for Thought

- Could there be a different paradigm for risk/benefit calculation that takes into account risk from NOT developing product?
- Indemnification model based on national government indemnification for works of art on loan for exhibitions
- Orphan crops legislation comparable to orphan drugs



Chair:

- **Michael Cernea,** Former Senior Adviser for Sociology and Social Policy, the World Bank
- Eric Huttner, General Manager, Diversity Arrays Technology Pty Limited (Australia)
- **Nadia Makram Ebeid,** Former Minister of State for Environmental Affairs (Egypt)
- Jim Peacock, President, Australian Academy of Science (Australia)

Rapporteur:

■ Salah Soliman, Professor, Faculty of Agriculture, Alexandria University (Egypt)

Speakers:

- Farouk El-Baz, Director, Center for Remote Sensing Boston University (USA)
- Klaus Ammann, Director, Botanical Garden, University of Bern (Switzerland)
- Coosje Hoogendoorn, Deputy Director General, International Plant Genetic Resources Institute (Italy)
- Weber Amaral, Senior Scientist, International Plant Genetic Resources Institute (Italy)
- Mahmoud Solh, Director, Plant Production & Protection Division, Agricultural Department, FAO
- Ahmed Amri, Biodiversity Project Coordinator, West Asia Regional Program, ICARDA (Morocco)
- Eric Huttner, General Manager, Diversity Arrays Technology Pty Limited (Australia)
- Antonio Paes De Carvalho, General Director, Extracta Moléculas Naturais Ltda (Brazil)
- C. S. Prakash, Director, Center for Plant Biotechnology Research at Tuskegee University (USA)
- Weber Amaral, Senior Scientist, International Plant Genetic Resources Institute (Italy)
- Mahmoud Solh, Director, Plant Production & Protection Division, Agricultural Department, FAO
- Nadia Makram Ebeid, Former Minister of State for Environmental Affairs (Egypt)



Parallel Session 3- "Exploiting Biodiversity and Protecting the Environment"

Use of Space Platforms to Monitor Environmental Changes

- We need to understand the effects of environmental changes on biodiversity.
- It is important to ascertain the nature of the changes and where, when and at what rate do they occur.
- By application of remote sensing techniques particularly photographing the earth from space platforms much can be learned and changes can be monitored.
- From satellites such as "Meteosat" of the European Space Agency (ESA) at height of about 36.000 km, repetitive geostationed images can be acquired and transmitted in an hourly base.
- Unmanned imaging satellites placed at 600-1000 km above the earth collect and transmit images providing greater local detail than is possible from the high altitude satellites.
- Manned missions in orbit ranged from 200 to 600 km, such as the Space Shuttle (400 km) transmit images show greater detail at 10 meter resolution.
- A new generation of commercial satellites such as IKONOS fly at altitudes of 400 500 km and provide details of less than one meter because of their clarity and log of ambiguity, these images are very useful in enforcing the laws of environmental protection.



Applicability

- Images obtained by all such systems are useful tools in environment monitoring.
- Meteorological satellites helped in better understanding global weather patterns and the effects of local events on them.
- Medium resolution images are used to record and measure the effects of phenomena such as hurricanes and forest fires in vegetated areas, waging war in desert regions, and oil spills in the oceans.
- High-resolution images provide details of environmental parameters that affect ecosystems and pinpoint sources of pollution incidences whether natural or manmade.

Biodiversity Deterioration and its Causes

- Intensive agriculture has negative impacts on both species and genetic biodiversity within agricultural systems, primarily due to low crop and structural diversity and through the use of pesticides and tillage.
- The impact of intensive agricultural on nature biodiversity primarily stem from conversion of natural habits into ag production from irrigation.
- Transport of fertilized and pesticide residues into aquatic systems also causes significant habitat deterioration through eutrofication and toxicity



Solutions

- Increasing the efficiency of agricultural production can reduce these impacts, as can minimizing off-site movement of fertilizers and pesticides.
- The use of technologies such as GMCs may also play an important role in solving part of the problem.
- Creating agricultural systems with lower impact on offside biodiversity and maintenance of high levels of inside biodiversity using all available technologies while simultaneously encouraging appropriate biodiversity friendly farmer practices will also help.

The Challenges We Face

- Rise in crop production needed to meet population growth
- Crop and genetic diversity that crucial for increased productivity, and for increased resistance to abiotic stress
- Local lack of knowledge
- The need for identification, measuring, and monitoring of problems and changes
- The need to identify problems and areas of vulnerability



Importance of Traditional and New Practices

- Integration of traditional and new information on the component of agriculture biodiversity
- Crops
- Livestock
- Soil biota
- Pollinators
- Pest and pathogens
- Predators
- And use them as indicators for diversity change and in assessment of gene flow



Improving the use of diversity

Gene bank management should be improved

- The use of high-through put tools for characterization
- Use of local wild species in breeding
- Defining the genetic erosion baselines
- Creating networks of existing genomic projects
- Encouraging functional genomics and allele-mining strategies
- In order to understand the diversity and ecosystems focusing is needed on the: contributions to ecosystem services (watershed management, nutrient cycling); the nature and distribution of below-ground diversity, interaction of on-farm diversity with wider ecosystem diversity, and crop diversity as part of IPM
- In order to highlight the economic output of diversity there are needs for:
- Evaluating the economic value of diversity
- Equity in cost-sharing across society to encourage farmers to adopt good biodiversity managing practices (GBMP)



Needs

- Optimizing agricultural biodiversity for more productivity and food security and human and environment wellbeing
- To accomplish these aims; diversity must be protected and maintained side by side with promotions of underutilization of species and adopting useful policies useful and incentive approaches
- Narrowing the gap of knowledge we have on evaluating and protecting agricultural biodiversity by more studies and experiments and more cooperation
- The overall message is a confident one; that is science has tools to help us above the issues or will help us invent appropriate tools



Why Trees Biodiversity is so Important

- Biodiversity is vital to sustain forests
- Genetic diversity of trees is less well known than for other plants, but may be very important for a future where demands for wood will increase, putting even greater pressure on our natural forests. Excellent example of issue of sustainable use from the Amazon and Patagonia was mentioned.
- Difficulty in defining and measuring genetic diversity
- Biodiversity and Ecotourism
- Example given on Costa Rica case showed the importance of ecotourism as a component of sustainability but not at the cost of using more damaging agriculture
- Protection of Genetic resources is vital in that other cases
- Agrotourism Rice Producing areas in Iran and UK landscape
- Dryland Biodiversity
- Dryland ecosystems are important not only to those who live there but to all of us, especially as they hold very high genetic diversity.
- There are frightening trends in degradation of these areas, mostly from human activities. We are losing the battle for sustainable use of these areas.
- Only long term hope of success is harnessing indigenous knowledge, scientific information and the will and skill of the people who live in areas rich in agrobiodiversity by using indigenous spices, landraces & genetic resources completed with intelligent use of land and water which are the key ingredient for all life.



Degradation of Natural Resources in Asia

- The trends in degradation of natural resources in West Asia show that 90% in the WANA region affected by desertification and that 10 to 15% of plant species endangered.
- Expected decreases by 2010 are of 22% of rangeland; 21% of cropped areas and 30% of forest land.
- Focused on the factors lead to degradation of habitats:
- Climate variation and changes
 - Human activities such as the overuse and destruction of natural habitats
- ICARDA Efforts to Improve Biodiversity and to Strengthen Beneficial Resilience of the Agroecosystems
- Use of strategy and methods based on community approach were recommended to integrate the outputs of public institution, private sector, other communities and NGOs.
- In order to conserve agrobiodiversity in West Asia region more than 130,000 accessions are stored in ICARDA genebank, more than 40% of them being originated from WANA region.
- Adopting all kind of add-value technologies in an integration way to serve human and other organisms and environmental health and wellbeing.



Patent and Biodiversity

- Mutual cooperation between local small institutions and global corporation could result in saving biodiversity and in bringing equitable part of the benefit to the developed countries.
- The key role, in the Brazilian case, was to integrate efforts, resources, traditional knowledge and local research results of the public experience, academia and national developing firms together to create fair cooperation agreements with international clients. The vital point in making this work is that access to biodiversity should be allowed only through legal contracts.
- The cost for R&D in this Brazilian mode was less higher than that in developed countries but can be only afforded by that mutual cooperation.



DArT

- Diversity arrays technology (DArT) was developed based on a principle to differentiate between fragments specific for some individuals and those common to all.
- Dart makers is defined as DNA segments, that present or absent depending on the individual genotype. DArT works with a molecular base respond to changes that cause the defined segement to be present or absent and they could be located any where in the genome.
- This DArT markers could be used in:
 - Whole genome fingerprint

- Diversity analysis
- Genetic analysis
- They have been used and proved usefully in barley and rice
- Some other crops are in the way
- DArT is particularly of interest to orphan crops as it does not require sequence information



Conclusion

- North-South and South-South R&D collaboration is vitally important.
- Ways through which modern varieties of crops were developed are:
 - Hybridization including crosses with wild relatives
 - Mutation
 - Cell culture
 - Modern genetic modification

- The last way offers:
 - Relatively good precision and predictability
 - Subtle changes
 - Flexibility
 - Expeditious
- Genetic modifications may and may be not have impact on biodiversity, enhanced weediness, non-target organisms, gene flow to wild relatives, horizontal transfer of genes and soil, water and air quality.
- Analysis of risk adopting GMCs should be done through a case-by-case approach.
- This is acceptable since risk is a nature of the product and not how it was developed.
- Impact of Biotech in Crop and Pest Management in the USA.
- Commercially there are 8 crops currently planted giving increase in production of 4 billion pounds (\$ 1.5 billion) and reduction of 46 million pounds in pesticide use.
- However, because of complexity of the impact of GMOs on biodiversity and the lack of information issues should be studied on a case by case basis.



Biosafety For More Sustainable Cropping System

- The debate on Bt-maize clearly indicate that because of available information were too little and too late the result was that public and political skepticism and loss of market in Europe.
- GMHT crops were developed in US in early 1990's to aid soil conservation and to make weed control easier and more effective.
- But no consideration of their impacts on biodiversity in farmland was given until 2000 in UK.
- Issue raised one gene flow, toxicity of inbuilt pesticides to non-target organisms and indirect impacts of the commercial use of GMHT crops still need to be solved.
- It was not intended to say that transgenic crops are unsafe-just that the evidence for safety came much too late to calm public fears.
- Changes in crop management are more important than the characteristics of the crop itself.
- Over all researchers and developers need to see and exam in the issue earlier not after thought
- Public and private research institutions must work hand in hand with regulators and consumer representatives to spot and commission research to provide evidence that needed if we are proposing changes in agricultural, aquaculture or forestry.



Issues

Timing, quality and focus of biosafety research

- Should we move from risk assessment to sustainability assessment?
- What evidence base do we actually need to make sound decisions and defend them?
- What should be the diverse behind R&D and who should drive?



Chair:

■ Claudio Carlone, Hypothesis Communication Agency (Italy)

- **Mohamed Hassan,** Executive Director, Third World Academy of Sciences
- Philip Pardey, Professor of Science and Technology Policy, Department of Applied Economics, University of Minnesota (USA)

Rapporteur:

■ Frederic Erbisch, Former Director, Office of Intellectual Property, Michigan State University (USA)

Speakers:

- Carlos Romeo-Casabona, Director, Inter-University Chair BBV Foundation Provincial Government of Biscay in Law and the Human Genome (Spain)
- **Zhu Chen,** Vice President, Chinese Academy of Sciences (China)
- Claudio Carlone, Hypothesis Communication Agency (Italy)
- Willy de Greef, Executive Director, International Biotech Regulatory Services (Belgium)
- **Philip Pardey,** Professor of Science and Technology Policy, Department of Applied Economics, University of Minnesota (USA)
- Yuan Zheng Hong, (China)
- Carl-Gustaf Thornström, Senior Research Advisor, Agriculture Department for Research Cooperation, Sida/SAREC (Sweden)



Definitions

■ IP = Intellectual Properties or Ideas

■ IPR = Intellectual Properties Protected by a Federal Government

The Beginning – A Challenge

- Serve the biotech innovators and potential innovation users better
- Put "new wine into old bottles"
- Use imagination to develop the "new" bottle

Intellectual Property Protection Systems

- Patents
- Copyrights, Trade and Service Marks, Plant Variety Protection
- Newer systems
 - Convention on Biological Diversity (CDB)
 - Treaty on Plant Genetic Resources for Food and Agriculture (PGRFA)

CBD and **PGRFA**

- Biological or natural sources owned by the state
- State has right to exploit its own resources
- Question: Is the South so rich in biological diversity that it could exploit the North?



Ethics – A Universal Concern

- Apply to all transactions
 - North South
 - South North
 - South South
 - North North
- Question: Whose ethics?

Hunger

- Shown to be decreasing
- Appear to be two major factors
 - Lowering food prices
 - Increasing plant growth
- Projection by 2050 all will be fed
- Ethical consideration: should one be satisfied with simply providing short term assistance?

Improving intellectual property handling

Ethical consideration: Does the revising/updating of the global protection system become an ethical situation?



Ethics and the Law

- Patent laws
 - Unpatentable inventions contrary to the public order
 - Unpatentable immoral inventions
- TRIPS
 - Means for south to harmonize intellectual property legislation
- Doha Declaration
 - Allows importation of disease fighting drugs



Making Great Strides Forward – China

- Major biotech research achievements
 - Human genomic contribution
 - Indicia rice genome identification
 - Major disease gene identification
- Increase in patent applications by residents
- Benefits of biotech research

- Now decrease in the North-South division
- In the future
 - Establishing win-win North-South cooperative research programs
 - Developing a global research network
 - Sharing expertise and materials in South-South relationships
 - Building human dignity



Business Development

- Biotech startup companies
 - Substantial funding during startup phase needed
 - Initial startup phase may take up to 3 years
- Problems
 - Securing financing
 - Obtaining patent-tune factor
 - Meeting all regulatory requirements
 - Producing a marketplace product may take 5-6 years
- Biotech research in the South will result in potential startup company technologies
- Where will startup financial support come from?
- Where will startup management be drawn from?
- Is this another ethical opportunity for the North?



Other IP Considerations

- Copyright prevents others from copying
- Digital revolution
 - Easy to copy almost anything
 - Information obtained quickly and easily
 - Information shared
 - Information copied
 - Distance no barrier
- Digital revolution
 - Electronic publication
 - Peer review
 - Publish or perish
- Effect on patenting system
- South/North need to address revolution



Associated Considerations – Biosafety

Are biotech products such as GMOs safe?

- 30 year safety record
 - No deaths
 - No injuries
 - No damage to the environment
- Public misconception
- Potential to hurt developing countries

Other Considerations – capabilities

- Education is important
- Unrestricted IPR would developing countries take advantage of this?
- Much IP available now because of jurisdictional protection
- Problem
 - Lack of trained biotechnology researchers
 - Lack of appropriate equipment and facilities
 - Lack of proper country laws and regulations
- Adoptive research capabilities



Other Considerations – Miscellaneous

- Another source of IP patents whose protection has expired public domain
- Does the location of innovation or discovery effect how the IP may be used?
- Who is responsible for problems caused through the utilization of free IPR?
- Can the private sector survive when IP is given away and IPR not enforced?
- How can one operate in the biotech research world when so much is patented?
 Freedom to Operate



Conclusions

There are more questions than answers

- Ethical considerations are important in any and all IP and IPR interactions
- Building biotech capability does more than just provide new inventions
- Developing new biotech companies is difficult, but may be most difficult in the South
- Misconception is more of a problem in biotechnology than are present biosafety standards
- Capability constraints may be more of a problem in biotech research than limitations of available intellectual properties

Recommendations

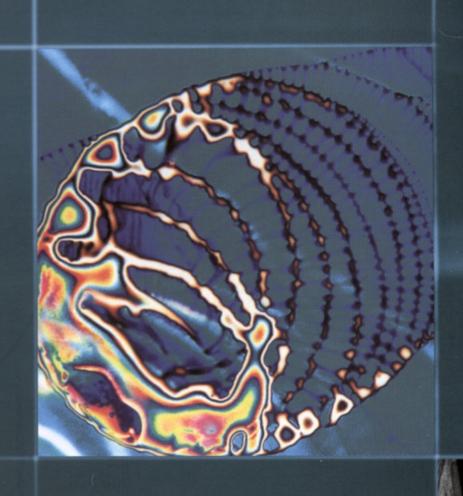
- South-North interactions should be proactive not reactive
- South –North parties must work together through biotechnology to build the world's capability to care for its people
- Solving world IP/IPR biotech problems can require thinking and working outside the traditional IP box



Do not forget the challenge and

"Dare to Dream Be Bold"

Ismail Serageldin





P.O. Box 138 El-Shatby - Alexandria 21526 EGYPT

Tel.: +(203) 4839999 Fax: +(203) 4830339

www.bibalex.org/bioalex2004conf