

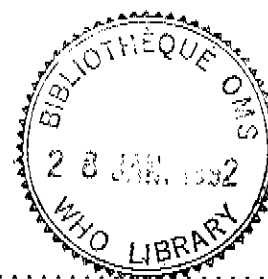


UNDP/WORLD BANK/WHO SPECIAL PROGRAMME FOR  
RESEARCH AND TRAINING IN TROPICAL DISEASES (TDR)

FOURTEENTH SESSION OF THE JOINT COORDINATING BOARD (JCB)

WHO headquarters, Geneva, Switzerland  
25 and 26 June 1991

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## 1. INTRODUCTION

Representatives of 25 governments - elected members of the Joint Coordinating Board (JCB) - and of the three co-sponsoring agencies of the Special Programme for Research and Training in Tropical Diseases (TDR), met as JCB(14) at WHO headquarters, Geneva, on 25 and 26 June 1991. Representatives of nine governments and 15 organizations participated in the session as official observers. The JCB members and observers participating in the session and the names of their representatives are listed in Annex 1 [document TDR/JCB(14)/91.2 Rev.1].

The session was opened by Dr M. L. Abdelmoumène, Deputy Director-General of WHO. A summary of his statement to JCB(14) is contained in Annex 2.

In accordance with the TDR Memorandum of Understanding, the Board elected a Chairman for a two-year term of office and a Vice-Chairman for a one-year term of office. JCB(14) elected Dr G. A. Williams, Director, Disease Control and International Health, Federal Ministry of Health, Lagos, Nigeria, as Chairman of the Board until its Sixteenth Session in 1993. The Board elected Dr I. Eidheim, Head of Section, Norwegian Directorate of Health, Oslo, Norway, as Vice-Chairman until its Fifteenth Session in 1992.

The Board adopted the agenda as presented [document TDR/JCB(14)/91.1 Rev.1, attached as Annex 3].

Professor O. Ransome-Kuti, Minister of Health of Nigeria and Chairman of the WHO Executive Board, gave a keynote address to JCB(14) entitled "Providing Health Services For All". The Board expressed its gratitude to Professor Ransome-Kuti for his excellent address. A summary of his address is contained in Annex 4.

JCB(14) approved the Report of the Thirteenth Session of the Joint Coordinating Board [document TDR/JCB(13)/90.3].

## 2. SCIENTIFIC AND TECHNICAL ACTIVITIES

JCB(14) considered TDR's scientific and technical progress as described in the Tenth Programme Report covering the 1989-1990 biennium. The Board received an overview of the Programme's activities, including product development and future perspectives for TDR's research capability strengthening activities, by Dr T. Godal, Director TDR. The interim report on new directions in research capability strengthening, which was presented to the Board, is contained in document TDR/JCB(14)/91.5. A summary of Dr Godal's presentation is contained in Annex 5.

As part of the Director's report, Professor E. Bonilla, Faculty of Economics, University of the Andes, Bogotá, Colombia, gave a project report on work supported by TDR entitled "Women and Malaria: a Colombian Case". A summary of her report is included in Annex 5.

JCB(14) examined the Report of the Thirteenth Meeting of the Scientific and Technical Advisory Committee (STAC), introduced by Professor B. R. Bloom, Chairman STAC (document TDR/STAC-13/91.3). In addition, Professor A. S. Muller, Chairman JCB(13), gave a short report on his attendance at STAC-13. Summaries of Professor Bloom's and Professor Muller's statements are included in Annex 5.

JCB(14):

- (i) Thanked the Scientific and Technical Advisory Committee for its thorough review of the Programme's scientific components in relation to priority setting and the distribution of resources. Recognized that such priority setting was a difficult task as the Programme's activities on all six target diseases and on research capability strengthening were important. Expressed the hope that despite budget reductions in some components, adequate funding would continue to be available for high priority research in these components. Agreed with STAC's recommendations for the allocation of resources among the components and endorsed the high priority given to malaria and product development.
- (ii) Welcomed STAC's initiative to hold two Prospective Thematic Reviews next year on vaccine development and on research capability strengthening and looked forward to receiving the reports of the two reviews at JCB(15) in 1992. Noted that the review of research capability strengthening activities would, *inter alia*, examine the impact of TDR's training activities, support through the FIELDLINGS initiative, and the variations in scientific productivity among the disease endemic countries which had received TDR support, with a view to learning from experience gained and making suitable adjustments in future strategies.
- (iii) Agreed that the Programme should adopt a flexible approach with regard to research capability strengthening. Concurred with the suggestion that the next phase of research capability strengthening activities should incorporate a differentiated approach, including specific activities for the least developed countries, and greater focus on individuals and on training relative to institution strengthening activities.
- (iv) Recommended that TDR protect its investment in its trainees, ensuring their return to their home countries and institutions and, in cases where special circumstances temporarily prevented them from returning home, facilitate their installation into neighbouring countries to enable them to carry out relevant research.
- (v) Reiterated the comments made at JCB(13) on the cost of training in developed countries and urged that greater efforts be made for training to take place in developing countries. Suggested that TDR provide support where necessary to existing training establishments in developing countries.
- (vi) Expressed its appreciation of TDR's role and capabilities in the development of new disease control products and endorsed the establishment of the Product Development Unit (PDU). Requested that a document on the progress and plans of the PDU's activities, and details on multidisease chemotherapy activities, be presented to JCB(15) in 1992.
- (vii) Recognizing the capabilities of TDR to plan and manage research activities on new and improved disease control tools, and in view of the close affinity between leprosy and tuberculosis and the growing incidence of tuberculosis in many countries, reiterated the request of JCB(13) that WHO explore the possibilities of closer collaboration between the relevant programmes with regard to research on both diseases. Recommended that the management resources of TDR be used as appropriate to pursue research goals which were shared by these two diseases. Noted that WHO was convening a meeting in August 1991 to consider a number of management options for the tuberculosis programme, which could include joint steering committees, and that specific recommendations with respect to leprosy and tuberculosis research would be considered by the Standing Committee and presented to JCB(15) in 1992.
- (viii) Re-emphasized the importance of close collaboration between TDR and relevant organizations outside WHO; and between TDR and relevant WHO programmes to optimize the use of available resources and strengthen areas of common interest.
- (ix) Supported increased emphasis and wider collaboration with the WHO Division of Control of Tropical Diseases on operational research on disease control strategies and programmes. Noted the continued importance of basic research on the target diseases.

(x) Stressed the importance of close collaboration between TDR and tropical disease endemic countries in the areas of operational research and the transfer of products which should be affordable, appropriate and acceptable by the countries. Noted the intention of the Programme to conduct research on populations with little or no access to health services with a view to promoting low-cost self-help systems.

(xi) Expressed its pleasure with the progress and directions of the Social and Economic Research Component. Stressed the importance of research on women and tropical diseases; on the pivotal role of the family and the community; and on the economic impact of tropical diseases.

(xii) Re-emphasized the importance of the catalytic role of the Programme in stimulating others to become more involved in health research activities.

(xiii) Decided to review in two years' time the practice of the JCB Chairman attending the annual meeting of the Scientific and Technical Advisory Committee.

(xiv) Thanked Professor E. Bonilla for her excellent project report on women and malaria in Colombia.

(xv) Expressed its gratitude to Professor A. S. Muller for his excellent chairmanship of the JCB over the past two years. Thanked Professor Muller for his report on his attendance at the thirteenth meeting of the Scientific and Technical Advisory Committee.

(xvi) Expressed its appreciation of the presentations by Director TDR and the Chairman of the Scientific and Technical Advisory Committee.

### 3. TECHNICAL PRESENTATION ON COLLABORATION WITH INDUSTRY

The technical presentations at JCB(14) focused on collaboration with industry. Dr P. Reeve, Head of the TDR Product Development Unit, introduced the issues relating to collaboration between TDR and the pharmaceutical industry, stressing areas where the needs and potential were greatest. Summaries of Dr Reeve's introduction and of the presentations as listed below are contained in Annex 6.

<u>Presentation</u>	<u>Presenter</u>
Opportunities and challenges for growing biotechnology companies in international health	Dr W. T. Hockmeyer, President and Chief Executive Officer, MedImmune Inc., Gaithersburg, Maryland, USA
Collaboration between the private and public sectors in the development of diagnostic procedures for tropical diseases	Professor J. Ramachandran, Director, Astra Research Centre India, Bangalore, India, and Adjunct Professor, University of California, San Francisco, California, USA
Collaboration between the private and public sectors in the development of vaccines for tropical diseases	Dr M. De Wilde, Director of Research, SmithKline Beecham Biologicals S.A., Rixensart, Belgium
A concept of industry cooperation in TDR	Dr F. Trautweiler, Vice-Director, Research and Development, Pharmaceuticals Division, Ciba-Geigy Limited, Basle, Switzerland

#### JCB(14):

(1) Welcomed and encouraged the close collaboration between TDR and industry in product development.

(ii) Urged the Programme to assist in the transfer of relevant technologies and the production of disease control tools in developing countries.

(iii) Emphasized the importance of ensuring that clinical and field trials of new disease control tools were conducted in accordance with national and international ethical standards.

(iv) Noted the need for TDR to have adequate resources to carry out field trials and suggested that the Programme explore with the co-sponsoring agencies "debt swap" arrangements as a mechanism to meet local currency requirements.

(v) Expressed its gratitude to the representatives from industry for attending the JCB session and discussing collaboration with TDR.

(vi) Expressed its thanks to Dr C.-H. Vignes, WHO Legal Counsel, who was retiring from the Organization after 30 years of service. Dr Vignes had given his valuable advice to TDR since its inception and had guided many sessions of the JCB on legal issues. On behalf of the JCB, the Chairman wished Dr Vignes an active, long and happy retirement.

#### 4. REPORT OF THE STANDING COMMITTEE

The Board reviewed the issues raised in the Report of the Standing Committee [document TDR/JCB(14)/91.4], which were introduced by Dr B. Liese, Director, Health Services Department, The World Bank.

On behalf of the Standing Committee, Dr Liese paid tribute to the work of Dr P. Ladouceur, Responsible Officer for Programme Management, TDR, and Secretary of the Standing Committee, who would be leaving the Programme in the near future. Dr Liese thanked Dr Ladouceur for his assistance in ensuring the presentation of excellent documentation to the Standing Committee and the Joint Coordinating Board, and especially for his clear presentations of the Programme's financial reports and budgets which had become a model for other programmes to follow. The Standing Committee would miss Dr Ladouceur's assistance and wished him well for the future.

JCB(14):

(i) Expressed its pleasure with the effective collaboration between TDR and the Onchocerciasis Control Programme in West Africa (OCP); endorsed the mechanisms agreed by the two Programmes for carrying out research on a macrofilaricide and approved the financial implications for TDR.

(ii) Thanked the Standing Committee for its fundraising activities. Urged the Committee to increase its efforts to raise the funds required to meet the level of the Programme Budget for the 1992-1993 Biennium, using all possible mechanisms, including contributions in non-convertible currencies.

(iii) Reaffirmed that the preferred mode of funding to TDR was by means of undesignated contributions and stressed that the designated funding policy should not be changed.

(iv) Commended the Standing Committee for promptly informing the Joint Coordinating Board on the Committee's decision to accept the contribution from the Government of the Netherlands designated for the project on the development of antimalarial drugs based on Artemisia annua, and agreed to accept the contribution for the full three-year period.

(v) Authorized the Standing Committee to accept, in consultation with the JCB, other designated contributions in exceptional cases for a small number of specific projects if such opportunities arose, provided these were in line with TDR's priorities and the Programme retained scientific control of the projects.

(vi) Agreed to continue holding the annual JCB session at the end of June.

(vii) Agreed to the continuation of the simplified procedure of inviting members and observers to the JCB session.

5. FINANCIAL MATTERS

5.1 Financial Report for 1990 and Revised Programme Budget for the 1990-1991 Biennium: Financial Status in 1990-1991

JCB(14) reviewed the Programme's financial situation in the 1990-1991 biennium and accepted the Financial Report for 1990 and Revised Programme Budget for the 1990-91 Biennium [document TDR/JCB(14)/91.6].

The Board expressed its concern at the level of the contribution of WHO to TDR, and hoped that WHO would at least maintain and if possible increase the level of its contributions to the Programme.

5.2 Plan of Action and Programme Budget for the 1992-1993 Biennium and Estimates for 1994-1995: Financial Prospects for the 1992-1993 Biennium

JCB(14) examined the Proposed Programme Budget for the 1992-1993 Biennium and Estimates for 1994-1995 (document TDR/PB/92-93), which was introduced by Dr P. Ladouceur, Responsible Officer for Programme Management, TDR. The proposed budget level of US\$ 76 845 000 represented an increase of 5.4% over the level of the 1990-1991 revised budget of US\$ 72 923 300.

The main new feature for 1992-1993 was the Product Development Component, with a budget of US\$ 6.97 million. Resources for this component had been obtained partly from an overall increase in the Research and Development budget and partly from a reallocation of resources from other components as recommended by the Scientific and Technical Advisory Committee. Malaria remained the most important of the TDR target diseases and received the highest allocation - 35.8% of the Research and Development budget, excluding the Product Development Component. Greater emphasis was placed on social and economic research. There were decreases in some components, such as leprosy and African trypanosomiasis, in view of the changing epidemiological situation and the development of new control tools for these diseases.

Research Capability Strengthening was allocated 24.9% of the total budget, in line with the recommendation of the two External Review Committees which had been endorsed by the JCB.

Savings had been made in Programme Management, especially personnel, mainly as a result of streamlined procedures and efficiency gained from the increased use of computers. As from January 1992, the Programme would no longer fund ten TDR posts in the Regional Offices. To simplify the budget and accountability the posts would be included in the budgets of the Regions and the Regions would no longer contribute to TDR to compensate for the costs of the posts.

Dr Ladouceur summarized TDR's estimated financial status in the 1992-1993 biennium. After taking account of the estimated carry-over of US\$ 3.7 million from the current biennium, an increase of US\$ 6.8 million in contributions to TDR over currently estimated contributions of US\$ 64.4 million in 1990-1991 would be required to meet the proposed level of the 1992-1993 budget.

JCB(14):

(i) Approved the proposed Programme Budget as presented, at the level of US\$ 76 845 000 for the 1992-1993 biennium. The budget summary is attached as Annex 7.

(ii) Recognized the difficult financial choices faced by the Programme, especially to secure funds for the Product Development Component, which resulted in budget reductions in a number of components. In this regard, some members of the JCB questioned

whether the level of funding for African trypanosomiasis, and for epidemiology and field research support would be adequate.

(iii) Appreciated the Programme's efforts to keep management costs as low as possible and to make effective use of computer technology, and its efforts to reduce personnel requirements, especially in Programme Management.

(iv) Commended the Programme for a "transparent" Programme Budget and expressed its appreciation for the clear and comprehensive presentation of the budget.

(v) Noted that an increase in contributions of US\$ 6.8 million over anticipated contributions in the 1990-1991 biennium would be required to finance the Programme Budget for the 1992-1993 biennium and recognized that significant efforts would be required to raise this additional amount, especially in view of new demands on development assistance budgets. Fourteen JCB participants indicated continued financial support for the Programme.

(vi) Noted that the WHO Regional Offices would continue to assist the Programme, as in the past, under the new funding arrangements for the tropical diseases research liaison posts in the Regional Offices.

6. SELECTION OF ONE MEMBER OF THE JCB ACCORDING TO PARAGRAPH 2.2.3 OF THE  
TDR MEMORANDUM OF UNDERSTANDING

JCB(14) followed the selection procedures established during its previous sessions and adhered to the 60-day deadline for the receipt of applications for JCB membership under paragraph 2.2.3 of the Memorandum of Understanding. The Board selected the Government of Brazil for JCB membership for a period of three years from 1 January 1992.

The list of members of the Joint Coordinating Board as of 1 January 1992 is attached as Annex 8.

7. MEMBERSHIP OF THE SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE (STAC)

JCB(14) endorsed the proposed membership of the Scientific and Technical Advisory Committee as of 1 January 1992. The list of members is attached as Annex 9. The Board noted that steps were being taken to include members from Latin America from 1993.

8. DATE AND PLACE OF THE FIFTEENTH SESSION OF THE JCB

JCB(14) decided that the Fifteenth Session of the Joint Coordinating Board would take place on Tuesday 30 June and Wednesday 1 July 1992 at WHO headquarters, Geneva, Switzerland.

9. CLOSURE OF THE SESSION

The Chairman considered that JCB(14) had been one of the most productive sessions of the Board in terms of the importance of the issues discussed and the decisions taken. The outcome had partly been due to the excellent preparations made by the secretariat and the high quality of the documentation provided. The Chairman thanked the participants for their constructive and helpful suggestions which had largely contributed to the success of the deliberations, and he also thanked the interpreters for facilitating communication among the participants. The keynote address by Professor O. Ransome-Kuti had been practical and innovative, and the technical presentations had provided considerable insight into the potential for and constraints against bringing new and improved tools for the control of tropical diseases to the market. TDR's competent management and effective impact strongly appealed to the contributors and the Chairman believed that TDR would be able to mobilize the additional funds required by the Programme. TDR was a very important Programme and the Chairman was pleased that its future looked bright.

TDR/JCB(14)/91.2 Rev.1

UNDP/WORLD BANK/WHO SPECIAL PROGRAMME FOR  
RESEARCH AND TRAINING IN TROPICAL DISEASES

FOURTEENTH SESSION OF THE JOINT COORDINATING BOARD

WHO headquarters, Geneva, 25 and 26 June 1991  
Executive Board Room

LIST OF PARTICIPANTS

AUSTRALIA

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Dr Ian WELCH, Director, International Health Section, Department of Health, Housing and Community Services, Canberra, ACT

BELGIUM

Monsieur le Docteur Johan VAN MULLEM, Médecin de l'Administration générale de la Coopération au Développement, Bruxelles

Monsieur Marc GEDOFT, Premier Secrétaire, Mission permanente de la Belgique auprès de l'Office des Nations Unies et des Institutions spécialisées à Genève

Monsieur W. STEVENS, Attaché, Mission permanente de la Belgique auprès de l'Office des Nations Unies et des Institutions spécialisées à Genève

BRAZIL

Dr Henrique L. LENZI, Vice-President for Research, Oswaldo Cruz Foundation, Rio de Janeiro

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Dr Steven SIMON, Director, Health Section, Professional Services Branch, Canadian International Development Agency (CIDA), Hull

Mrs Ginette MARTIN, Senior Programme Officer, Multilateral Technical Cooperation Division, Canadian International Development Agency (CIDA), Hull

Dr John L. AUSMAN, Counsellor, Permanent Mission of Canada to the United Nations Office and International Organizations at Geneva

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Dr Cornelius OEPEN, Technical Programme Planner, Division for Public Health, Nutrition and Population Development, German Agency for Technical Cooperation, Eschborn

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Mr Martin DE LA BEY, Section for Research and Technology, Ministry for Development Cooperation, Ministry of Foreign Affairs, The Hague

Professor Alexander S. MULLER, Professor of Tropical Health, Faculty of Medicine, Department of Social Medicine, University of Amsterdam, Amsterdam [Chairman JCB(13)]

Ms Geeskelien WOLTERS, First Secretary, Permanent Mission of the Kingdom of the Netherlands to the United Nations Office and International Organizations at Geneva

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Dr Larry L. VALLADARES, Director General of Hygiene and Epidemiology, Ministry of Health, Managua

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SOLOMON ISLANDS

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SOMALIA

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Professor Anders BJÖRKMAN, Consultant, Swedish Agency for Research Cooperation with Developing Countries (SAREC), and Associate Professor, Karolinska Institute, Stockholm

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Monsieur le Professeur Antoine DEGREMONT, Directeur de l'Institut tropical suisse, Bâle

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TURKEY

No representative able to attend

UNITED KINGDOM

Dr David N. NABARRO, Chief Health and Population Adviser, Health and Population Division,  
Overseas Development Administration, London

Mr John D. MOYE, WHO Desk Officer, Health and Population Division, Overseas Development  
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Professor Peter SMITH, Head, Department of Epidemiology and Population Sciences, London  
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Ms Helen PICKERING, Third Secretary, United Kingdom Mission to the United Nations Office  
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Dr Richard E. BISSELL, Assistant Administrator, Bureau of Science and Technology, Agency  
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Dr Dennis CARROLL, Science Adviser, Office of Health, Bureau of Science and Technology,  
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Dr Dennis JOHNSEN, International Health Attaché, United States Mission to the United  
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Ms Paula FEENEY, AID Affairs Officer, United States Mission to the United Nations Office  
and other International Organizations at Geneva

YEMEN

Dr Salah Salem HAITHAMI, Deputy Director General of Health Studies and Research, Ministry  
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ZAMBIA

Dr Evarist K. NJELESANI, Permanent Secretary and Director of Medical Services, Ministry  
of Health, Lusaka

UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)

Mr Timothy S. ROTHERMEL, Director, Division for Global and Interregional Programmes,  
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Mr Frank HARTVELT, Deputy Director, Division for Global and Interregional Programmes,  
UNDP, New York, N.Y., USA

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WORLD HEALTH ORGANIZATION

Regional Office for the Eastern Mediterranean

Dr G. E. RIFKA, Director, Eastern Mediterranean Liaison Office, Geneva, Switzerland

Regional Office for South-East Asia

Dr LIM TEONG WAH, Medical Research Officer, Special Programmes, New Delhi, India

Onchocerciasis Control Programme in West Africa (OCP)

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Dr Mohamed L. ABDELMOUMENE, Deputy Director-General

Dr Ralph H. HENDERSON, Assistant Director-General/Special Programme Coordinator

Dr Tore GODAL, Director, Special Programme for Research and Training in Tropical Diseases

Dr José A. NAJERA-MORRONGO, Director, Division of Control of Tropical Diseases

Mr Edward E. UHDE, Director, Division of Budget and Finance

Dr Paul LADOUCEUR, Responsible Officer for Programme Management, Special Programme for  
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Dr Javid A. HASHMI, Responsible Officer for Research Capability Strengthening, Special  
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Mr Graham C. MILLER, Audit Manager, External Audit

Mr Peter S. JONES, Chief, Office of Internal Audit

Mr Thomas S. R. TOPPING, Senior Legal Officer

Keynote Address Speaker

Professor Olikoye RANSOME-KUTI, Minister of Health, Federal Ministry of Health, Ikoyi,  
Lagos, Nigeria, and Chairman of the WHO Executive Board

Advisers

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Chairman of the TDR Scientific and Technical Advisory Committee

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UNDP/WORLD BANK/WHO SPECIAL PROGRAMME FOR  
RESEARCH AND TRAINING IN TROPICAL DISEASES

FOURTEENTH SESSION OF THE JOINT COORDINATING BOARD

Geneva, 25 and 26 June 1991

SUMMARY OF THE OPENING STATEMENT TO JCB(14)  
BY DR. M. L. ABDELMOUMENE, DEPUTY DIRECTOR-GENERAL OF WHO

Dr Abdelmoumène referred to the enormous toll in human suffering caused by tropical diseases which infected one person in ten on earth - over 500 million people. He quoted Dr H. Nakajima, Director-General of WHO, who had said "Beyond their toll of individual illness and death, these tropical diseases impede national and individual development, make fertile land inhospitable, impair intellectual and physical growth, and exact a huge cost in treatment and control programmes". Tropical diseases formed part of the "double burden" carried by many developing countries which were facing the new challenges of "modern" society while still struggling with the age-old problems of poverty, malnutrition and communicable diseases. Such countries needed strengthened capabilities and better weapons to combat the major tropical diseases. These were the reasons why WHO placed so much emphasis and so much hope on the work of TDR, and why the participation of Joint Coordinating Board members and observers in supporting and reviewing the work of the Programme constituted such an essential contribution to world health development.

Dr Abdelmoumène welcomed Professor O. Ransome-Kuti, Minister of Health of Nigeria and Chairman of the WHO Executive Board, who would give the keynote address on "Providing Health Services For All". The topic should serve as a reminder that the ultimate purpose of TDR's research efforts was the delivery of better health care for all peoples. In reorienting the health development strategies of WHO for the 1990s and beyond, the Director-General had placed particular emphasis on integrated disease control as part of overall health care and human development, and dissemination of information for advocacy and for educational, managerial and scientific purposes.

TDR was one of the pillars of WHO's technical and scientific productivity. The Programme produced good science and from that developed effective disease control tools of real relevance to communities. TDR worked closely with other technical programmes of WHO and served in particular as the integral "research side" of the Division of Control of Tropical Diseases - the degree of cooperation was a model for WHO. Integration among all concerned could make a health system strong, avoiding duplications and contradictions between programmes, creating useful synergies and reducing costs. TDR's emphasis on the end-users of its products was leading the Programme into the issues of integration at the community, district and national levels.

Dr Abdelmoumène referred to TDR's pioneering work within WHO in developing sound and productive collaboration with industry. The Product Development Unit, which the Joint Coordinating Board had agreed to establish in 1990, was facilitating this collaboration and he welcomed the participants from industry who would describe their view of the issues involved during the technical presentations.

Dr Abdelmoumène also referred to WHO's renewed emphasis on malaria in response to the increasing resistance of malaria parasites to drugs and the increasing numbers of cases of severe malaria in endemic countries. WHO was planning an international ministerial conference on malaria, to be held in the Netherlands in 1992. TDR was actively working on malaria with more than one-third of its research and development budget devoted to malaria research and the development of antimalarial products.

The constitutional mandate of WHO, as a specialized technical agency of the United Nations, was "to act as the directing and coordinating authority on international health work". WHO could assume this leadership role through such programmes as TDR which could make a critical difference in the success of health development strategies. Dr Abdelmoumène assured the Joint Coordinating Board that the Director-General and he made a clear commitment to TDR to maintain its position as a pillar of WHO's international health work.

TDR/JCB(14)/91.1 Rev.1

UNDP/WORLD BANK/WHO SPECIAL PROGRAMME FOR  
RESEARCH AND TRAINING IN TROPICAL DISEASES

FOURTEENTH SESSION OF THE JOINT COORDINATING BOARD

WHO headquarters, Geneva, 25 and 26 June 1991  
Executive Board Room

AGENDA

Reference Documents

1. Opening of the Session
2. Election of Chairman and Vice-Chairman
3. Adoption of Agenda TDR/JCB(14)/91.1 Rev.1  
TDR/JCB(14)/91.1a
4. Keynote Address by Professor O. Ransome-Kuti, Minister  
of Health of Nigeria  
  
Title: "Providing Health Services For All"
5. Matters Relating to the Report of the Thirteenth Session  
of the Joint Coordinating Board (JCB) TDR/JCB(13)/90.3
6. Scientific and Technical Progress Tenth Programme Report
  - 6.1 Director's Report, Summarizing Progress in the  
Last Biennium and Plans for TDR's Activities  
in the 1990s, Including Product Development and  
Future Perspectives for TDR's Research Capability  
Strengthening Activities TDR/JCB(14)/91.5
  - 6.2 Report by Chairman, Scientific and Technical Advisory  
Committee: To Include TDR/STAC-13/91.3
    - Review of Research and Development Components  
in Relation to the Distribution of Resources  
in the 1992-1993 Biennium
7. Technical Presentation on Collaboration with Industry Tenth Programme Report
8. Report of the Standing Committee: To Include TDR/JCB(14)/91.4
  - New Mode of Collaboration with the Onchocerciasis  
Control Programme in West Africa Concerning  
Research for a Macrofilaricide
  - Fundraising Activities
  - Designated Funding Policy

Reference Documents

8. Report of the Standing Committee (continued)
  - Arrangements for JCB Sessions
  - Observer Status at JCB Sessions
9. Financial Matters
  - 9.1 Financial Report for 1990 and Revised Programme Budget for the 1990-1991 Biennium; Financial Status in 1990-1991 TDR/JCB(14)/91.6
  - 9.2 Plan of Action and Programme Budget for the 1992-1993 Biennium and Estimates for 1994-1995 Proposed Programme Budget for the 1992-1993 Biennium and Estimates for 1994-1995
  - 9.3 Financial Prospects for the 1992-1993 Biennium
10. Selection of One Member of the JCB According to Paragraph 2.2.3 of the TDR Memorandum of Understanding TDR/JCB(14)/91.7  
TDR/JCB(13)/90.3  
Annex 9  
Memorandum of Understanding -  
TDR/CP/78.5/Rev.88
11. Membership of the Scientific and Technical Advisory Committee TDR/JCB(14)/91.8
12. Date and Place of the Fifteenth Session of the JCB TDR/JCB(14)/91.4
13. Other Business
14. Closure of the Session

UNDP/WORLD BANK/WHO SPECIAL PROGRAMME FOR  
RESEARCH AND TRAINING IN TROPICAL DISEASES

FOURTEENTH SESSION OF THE JOINT COORDINATING BOARD

Geneva, 25 and 26 June 1991

SUMMARY OF THE KEYNOTE ADDRESS TO JCB(14) BY  
PROFESSOR O. RANSOME-KUTI, MINISTER OF HEALTH OF NIGERIA  
AND CHAIRMAN OF THE WHO EXECUTIVE BOARD  
- "PROVIDING HEALTH SERVICES FOR ALL"

Professor Ransome-Kuti referred to the Alma Ata Declaration which prescribed that primary health care (PHC) services should be delivered where people lived and worked at a cost they, the community and the nation could afford and with their full participation. In most countries it meant reversing the pattern of health care delivery from hospital to community-based service systems.

For more than 30 years, WHO had developed models throughout the world for the planning, implementation, management, monitoring and evaluation of primary health care services. However, frustration with the failure of many developing countries to confront the task and the continued high mortality and morbidity rates due, particularly, to preventable diseases, provoked the birth of vertical programmes such as EPI (expanded programme on immunization), ORT (oral rehydration therapy), and family planning. Backed by considerable resources, these vertical programmes swept through many developing countries because they were "do-able" and effective in reducing death and ill health particularly among mothers and children. It was now apparent that these programmes were not sustainable in the absence of a health service infrastructure and the continued flow of resources. Professor Ransome-Kuti believed that these vertical programmes had delayed the development of national health care systems by many years.

Professor Ransome-Kuti had attended a joint meeting of UNICEF and WHO in January 1991 at which the Executive Director of UNICEF had stated that the possibility of reducing mortality and morbidity among children and mothers in the 1990s was very high because the technology to do so existed. To achieve this vision UNICEF and all the agencies and organizations involved in health development had to work synergistically.

In the 1960s and 1970s health plans were made using a top-down approach and were written and directed by ministry officials, but these plans were not implemented because the countries could not afford the resources required to carry them out. In the 1980s, the planners were at the district or local government levels - closer to the people, and phased methods were developed which the countries could afford. In addition, donors were prepared to fund and participate in geographically focused development in one or more district or local government areas.

Nigeria's approach to its national health system was set out in its national health policy written under the chairmanship of Professor A. O. Lucas, former Director of TDR. Nigeria was divided into 21 states and one capital territory, with 450 local governments which were subdivided into 4500 districts. The PHC system began under 52 local governments, one chosen by each state, one chosen by each medical school and one by each school of health technology; the last two were to provide technical assistance to the local governments and to use the services developed to train medical students and community health workers respectively.

Led by the Federal Ministry of Health, the local governments carried out a survey of the health problems in each area and the resources available to solve them. Using

both data, each drew up a plan of its health services using the principles of primary health care and the budget required to implement and maintain the services within their resources. At that point the federal government made a grant of half a million Naira to each local government to set up the system.

For three months after the plans had been written nothing happened, so a further workshop was organized to decide on the steps to be taken to implement the plans. It was decided that the village health services would be the first to be set up - a bottom-up approach compared to the previous top-down one. Village development committees were set up and each committee chose a volunteer to be trained as the village health worker and decided on the remuneration that he/she should receive. The survival and effectiveness of the services depended on the village development committees and the strength of the national health system depended on effective village health services. The health management system consisted of the health or development committees at the village, district and local government levels. Supervision of the village health services was important for their effective integration into the national health system. This supervision was undertaken by the district health committees on which the chairmen of the village development committees were heavily represented. Agents of the district health services visited the villages to gather information required by the district health committees to carry out their supervisory functions. A similar arrangement existed between the district health services and the local government health committees on which the chairmen of the district health committees were represented.

Professor Ransome-Kuti described the beginnings of the Nigerian national health information system. Federal agents, known as "federal technical facilitators", trained in management and health information systems worked with the village health workers, village and district development committees to instruct them on their functions and how to use the health information system. However, it would take time to institutionalize these systems. Setting up these systems cost money and fortunately Nigeria benefited from contributions by donor agencies which were helping to make these systems work.

In the beginning the vertical programmes like EPI and ORT had developed their own records to monitor and evaluate their activities. Whilst the federal government had established the health system directly with the local governments and the villages in collaboration with the states, these vertical programmes worked through coordinating units at the state health level. They depended on the states to carry the services to the villages, whilst under the primary health care model the services should be provided where the people lived and worked and not at any higher level. This had caused some problems with regard to integration of their records into the national system but progress had recently been made in this area.

A lot of training had taken place and Nigeria had developed a large pool of trainers particularly at the local government and district levels focusing on the village health workers and traditional birth attendants. Training programmes were also expensive and here again Nigeria had benefited from contributions from donor agencies. The new technologies developed were being communicated to the schools of health technology set up to train the health personnel on primary health care services.

The emphasis had always been on setting up systems which the communities and local governments could afford to implement and maintain. The Bamako Initiative was used to enhance the resources available to the village health services through a drug revolving fund that would yield some profit to be used to make the services available to everyone.

The first referral point from the village health services was the district health centre from where the village services were supervised and supplied. Local governments were expected to upgrade or provide a health facility in each district. The district health services were not as developed as the village health services and needed to be improved. As from the end of June 1990, the primary health care services had been placed under the jurisdiction of the local governments and the states were to supervise the secondary health system.

Professor Ransome-Kuti was proud that Nigeria's primary health care system had been wholly indigenous in conceptualization. However, it had been based on past experience and he paid tribute to the work of the expatriate doctors and aid agencies which had contributed to the Nigerian health system. Professor Ransome-Kuti also paid tribute to President Babangida, the Commander-in-Chief of Nigeria's Armed Forces, who had facilitated the implementation of the existing primary health care system.

FOURTEENTH SESSION OF THE JOINT COORDINATING BOARD

Geneva, 25 and 26 June 1991

SUMMARIES OF PRESENTATIONS MADE UNDER ITEM 6  
OF THE AGENDA - SCIENTIFIC AND TECHNICAL PROGRESS -  
BY DR T. GODAL, DIRECTOR TDR; PROFESSOR E. BONILLA, FACULTY OF ECONOMICS,  
UNIVERSITY OF THE ANDES, BOGOTA, COLOMBIA - "WOMEN AND MALARIA:  
A COLOMBIAN CASE"; PROFESSOR B. R. BLOOM, CHAIRMAN STAC;  
AND PROFESSOR A. S. MULLER, CHAIRMAN JCB(13)

1. SUMMARY OF THE PRESENTATION BY DR T. GODAL, DIRECTOR TDR

Dr Godal highlighted progress in research and development and summarized considerations on new directions in research capability strengthening. The Board's views on the latter area would be taken into account by the Scientific and Technical Advisory Committee (STAC) during its forthcoming Prospective Thematic Review on research capability strengthening. The basic priority now permeating TDR's activities was to develop approaches not necessarily to prevent infection but only the most serious consequences. In addition, the Programme would increasingly direct attention to the underprivileged populations in the least developed countries.

Basic Research

The most significant breakthrough over the past year was the discovery of techniques to move genes into and out of Leishmania and Trypanosoma parasites. This opened up a new field of research and potential health interventions in parasitology, especially with regard to vaccine development. For example, transformed parasites might themselves be used to deliver vaccine antigens.

Based on STAC's recommendation, TDR had moved into molecular entomology over the past year. The aim was to develop new approaches for vector control based on a fundamental understanding of the parasite-vector relationship. In this endeavour TDR would collaborate with the John D. and Catherine T. MacArthur Foundation, which had started the initiative, the Wellcome Trust and the French National Centre for Scientific Research (CNRS). Hopefully from the very beginning of this activity, scientists from the South would be involved and appropriately trained.

Product Development

Dr Godal reported on experience gained in drug and vaccine development, focusing on certain key products.

Drug Development

TDR had now gained experience in every step of the development process for drugs, diagnostics and other health tools, from the research concept through to use in the field. The whole drug development process would take about 15-20 years. Drug development costs to TDR ranged from US\$ 5-25 million. These figures were the actual costs to the Programme and did not represent true costs. In addition, production facility expenses were excluded from TDR costs. These figures compared very favourably to typical industrial costs of some US\$ 200 million and were made possible by cost-sharing, in particular with developing endemic countries.

Dr Godal referred to eight products. With regard to arteether against malaria, TDR had completed the preclinical development in collaboration with the Walter Reed Army Institute of Research and phase I trials were imminent. TDR had spent so far six years and US\$ 0.9 million on arteether development. Clinical testing was estimated to take about four years at a cost of US\$ 3.5 million. A special arrangement had been made with

the Dutch company ACF Beheer B.V. for the production of arteether. At the same time TDR was supporting work in China on the production of artemether. In view of the urgency of the situation, the Programme was supporting clinical trials of artemisinin derivatives against severe malaria because of their fast action and superiority to other antimalarial drugs. TDR's investment in artemisinin derivatives would be substantial over the next few years, between US\$ 1.5 - 2 million per year.

Studies on ivermectin for lymphatic filariasis had been carried out entirely by the TDR Steering Committee on Filariasis. Data were available for its registration as a microfilaricide and submission for registration was expected to take place later in the year. It was not yet clear whether Merck & Co., Inc. would agree to supply ivermectin free of charge also for lymphatic filariasis.

UMF 078 was a very promising macrofilaricide. It had been developed under the TDR Steering Committee on Filariasis, at a cost of US\$ 1.5 million over ten years, and had now been taken over by the joint macrofilaricide project - MACROFIL. If all went well, it should reach registration in 1996 or 1997. Steps were being taken to find a company to produce the drug at the lowest possible cost. UMF 078 and arteether illustrated TDR's new position whereby it had developed products to an advanced stage and was consequently in a strong position vis-a-vis a potential industrial counterpart.

With respect to ofloxacin for leprosy, phase IV trials had started and offered the prospect of reducing treatment times for multibacillary disease from two years to one month. The trials might involve as many as 15 different centres and were expected to take four years at a cost of US\$ 2.8 million. TDR had an agreement with the Daiichi Pharmaceutical Co., Ltd in Japan to provide the drug free of charge for the trials.

With regard to multidrug therapy for leprosy, TDR had spent US\$ 0.8 million on research and field evaluation relating to MDT which was the sheet anchor of the WHO strategy for leprosy control. By the end of 1991, over 3 million leprosy patients would have benefited from MDT, which in turn would contribute to a global reduction in leprosy prevalence of about 40%.

Dr Godal referred to three products which had been developed jointly between TDR and industry. Eflornithine, the first new drug against sleeping sickness for 40 years, had been registered by the United States Food and Drug Administration at the end of 1990. The company Marion Merrell Dow Inc. had agreed to make the drug available at production cost and would produce it for four years, after which the company would make the patents and the technology available for the transfer of production to a low-cost country. Ivermectin for onchocerciasis had been developed in collaboration with Merck & Co., Inc. Mefloquine for malaria had been developed in collaboration with F. Hoffmann-La Roche & Co.

#### Vaccine Development

Much of TDR's activities related to vaccine development were still in the phase of product development research but there were three candidates beyond that point. A candidate malaria antigen for a transmission-blocking vaccine, expressed in yeast, had been shown to produce blocking antibodies in mice and monkeys. Clinical trials could begin in 1992.

The development of a killed leishmaniasis vaccine had some unique features. TDR had first transferred the technology to a developing country - the Islamic Republic of Iran - and then started the clinical trials; thus the cost would be very low for TDR.

The killed M. leprae vaccine had a much longer perspective due to the special nature of the disease. The most striking feature of this development was that the Programme was able to carry out large trials at virtually no cost to TDR.

Preliminary data suggested that vaccines could be developed at reasonable cost to TDR - less than US\$ 10 million.

Dr Godal concluded that the Programme could develop drugs and vaccines within acceptable time-frames and at remarkably low cost. Collaboration with industry was beneficial but not mandatory except in terms of production. It seemed that the most rational approach would be for industry to be involved particularly in the preclinical phase. In the clinical phase, one partner should have the main responsibility as co-development seemed to slow things down.

#### Field Research

Dr Godal highlighted some important results from the field. The polymerase chain reaction (PCR) was being used in the field for onchocerciasis to distinguish between the savannah and forest types of the disease. This was important as the parasites behaved differently for the induction of blindness. In one of the large studies on ivermectin in Guatemala, a profound effect on the transmission of the disease had been observed and consideration was being given to the eradication of onchocerciasis from that area.

In the first test of the effect of insecticide-impregnated bednets on childhood mortality from malaria, a study in the Gambia had shown a 70% reduction in mortality in the 1-4 year old age group, whether or not the nets were combined with prophylaxis. TDR was planning large-scale trials to confirm the findings in other ecological and socio-economic conditions. Self-diagnosis of malaria in Somalia might form the nucleus of a new self-help approach to malaria treatment, starting with simple indicators to distinguish malarial from other fevers.

JCB(13) last year had expressed strong support for greater involvement of TDR in operational research. One of the early projects in this area had been set up in collaboration with the Government of Nigeria. A small grant programme had been put into place to support research which would answer operational questions involved in the distribution of ivermectin for onchocerciasis in Nigeria.

#### Research Capability Strengthening

JCB(13) last year had requested that a policy paper on research capability strengthening (RCS) activities be presented to JCB(14) in 1991. In preparation for the paper, TDR had analysed the RCS activities in relation to research and development activities at the country level and had initiated assessment of the impact of long-term institution strengthening grants on scientific productivity, staff development and resource-generating ability of research institutions in disease endemic countries. The preliminary results of the survey had been presented to STAC at its thirteenth meeting in March 1991 and STAC had decided to undertake a Prospective Thematic Review on research capability strengthening during the coming year. An interim report was therefore submitted to JCB(14) and the final report would be presented to JCB(15) in 1992.

The main finding from the survey was that the degree of participation in TDR's research and development activities varied greatly from one country to the next. Some countries had shown considerable growth in recent years and others had stabilized at a relatively high level, while others had shown a decline and still others had revealed no growth in research and development activities despite continuously high support for RCS activities. The reasons for these variations would be examined in greater detail. It appeared that TDR's RCS activities were deeply affected by political and macro-economic changes and that efforts in the least developed countries had not been productive. There was therefore a need for more pragmatic strategies for the least developed countries.

One of the most important contributions which TDR could make to tropical disease research in the next century was to establish mechanisms now for recruiting the best talent in developing countries into this field. Increased emphasis would therefore be placed on training and support would shift from focusing on institutions to focusing on individuals.

Dr Godal also referred to the JCB's past requests for further integration of research capability strengthening and research and development activities. New

opportunities existed in the areas of molecular entomology, product development and operational research; and approaches included programme-based grants, re-entry grants and the policy for research training to take place to the largest extent possible in the context of research and development projects.

#### Personnel

Exceptionally, Dr Godal referred to various staff changes in the Programme. Two key staff were about to leave TDR: Dr P. Ladouceur, Responsible Officer for Programme Management, after six years of service during which the Programme had shown a steady growth in budget and expenditure - the JCB had benefited greatly from Dr Ladouceur's clear presentations of the Programme's financial reports and budgets; and Dr L. Martinez, Secretary of the Steering Committee on the Immunology of Malaria, after ten years of service working on malaria vaccine development - Dr Martinez had been promoted by the Director-General of WHO to the post of coordinator of the global activities relating to the Children's Vaccine Initiative.

Dr Godal welcomed the new staff: Dr K. Behbehani, secretary of the integrated chemotherapy unit; Dr M. Gomes, coordinator of the FIELDLINC programme; Dr P. Reeve, Head of the Product Development Unit; and Dr H. Remme, in charge of epidemiology.

#### 2. SUMMARY OF THE PRESENTATION BY PROFESSOR E. BONILLA, FACULTY OF ECONOMICS, UNIVERSITY OF THE ANDES, BOGOTA, COLOMBIA - "WOMEN AND MALARIA: A COLOMBIAN CASE"

In the regions where tropical diseases predominated, all members of the population risked becoming sick. However, the risk varied according to the roles assumed by the different groups of the population determined by gender, age and the socio-economic position of the individuals and their households.

Professor Bonilla presented some reflections on how the health status of the adult woman was affected by malaria in a different way than other members of the household. The conclusions were based on studies conducted in Colombia between 1981 and 1988 in two communities - La Tola on the Pacific coast and Cunday in the Andean region.

Two interrelated dimensions were basic in the organization of society. The social stratification based on the access to and the control of the means of production, which determined the socio-economic position of its members, and the social division of labour into productive and reproductive activities. According to this very basic conceptual consideration, sex played an important role in the organization of society. Differences among men and women were biological as well as socially based and were expressed in two different conceptual definitions: sex and gender. Sex referred to the biological category and gender referred to the social category based on cultural and historical elements and determined the behaviour and the social division of roles between men and women. Women's health had to be understood taking into account both their role within the household as mothers, wives and housewives - which determined their position in society, and their participation in market-oriented activities.

As wives, mothers and housewives, women were responsible for the well-being of all the members of the family. As such they assumed a very central health role to keep healthy all the members of the household, to prevent illness, to take care of the sick members of the household and even to replace the labour of the sick relatives. A woman's health status was therefore affected indirectly by the illness risk of all the members of the household as well as directly for her own risk of disease. Accordingly, risk factors which affected women did not have significant consequences for other members of the household; while on the contrary, risk factors affecting other members of the household had a significant impact on women.

In the study at La Tola, it had been observed that sick women neglected their own health because of their need to look after others to a point at which they became very

ill. This in turn, implied a longer period of incapacity. Care for the sick woman was generally done by a woman of another household, usually a relative or a neighbour. Chances to be cared for were lower for the sick adult woman, which of course had implications for her recovery and future health. Women's possibilities to be replaced were also different to those of the other sick members in the family. The complexity of the woman's time budget made it difficult for any other person to replace all her activities. At La Tola it had been observed that the sick woman often continued with some domestic activities while the other household tasks were interrupted and her productive activities were very frequently deferred.

When the sick person was another member of the family, two aspects had to be kept in mind. Firstly, the woman's time budget was affected either by taking care of or replacing the sick person. In the study at La Tola it had been observed that the woman's labour day lengthened, the workload increased and some of her activities were deferred. Secondly, there was an emotional and physical burden for the woman who felt responsible for the recovery of the sick person, took on the duties of caring for the person and possibly their domestic and remunerated labour, in addition to her own workload. In the case at La Tola, it had been observed that neither women nor their relatives were aware of this cost but they reported feeling guilty when they could not properly care for the sick person due to their regular activities, especially the market-oriented ones which could not be deferred.

Professor Bonilla suggested some areas of future research activities to determine the health costs to female health providers and health perception by gender. The traditional role of care givers had been analysed in terms of benefits for the household but not in terms of the personal costs for the women. It was therefore necessary to explore the costs for the women who deferred the satisfaction of their personal needs and expectations in order to care for the sick members of the household, and the negative consequences on their well-being caused by postponed and longer incapacity and by the anxiety of the uncertain situation of sickness and potential death. In terms of policy implications, it was important to construct a profile of men and women as health providers and to answer such questions as: how the health care role was perceived by women and men; what were the perceptions and attitudes of women and men about their health problems; what were the different kinds of cultural, practical and scientific knowledge that made women able to perform the tasks of health providers and made men feel unable to do so; and why women accepted the role of active health care givers and men took such a passive role.

Future research on gender and tropical diseases should be creative and practical in terms of policy implications. Therefore studies on gender and health should emphasize an interdisciplinary approach to the problems in terms of theoretical conception and in the methodology to design data collection and analysis. Interrelated quantitative and qualitative analyses should be promoted. The research should be designed to allow a high degree of participation of the population under study. This would provide a better understanding of the problem of tropical diseases in different situations, the possibility of making the community aware of the tropical disease problems and consequently increase the chances to actively involve the population in the prevention and possible eradication of the disease. In this context the participation of the female population and the motivation of the male population would be very fruitful. Also, preference should be given to studies which had the potential to transform the conditions of the affected population in terms of state policies and programmes as well as community action.

### 3. SUMMARY OF THE PRESENTATION BY PROFESSOR B. R. BLOOM, CHAIRMAN STAC

On behalf of the Scientific and Technical Advisory Committee, Professor Bloom expressed his appreciation of the participation by Professor A. S. Muller, Chairman JCB(13), in the thirteenth meeting of STAC.

Professor Bloom referred to the hard task of STAC-13 to reallocate funds in order to find resources for three initiatives recommended by STAC last year and accepted by

JCB(13): the Product Development Unit, integrated chemotherapy for protozoal parasites, and genetics of mosquito vectors. STAC had decided not to make cuts across the board but had analysed each scientific Programme component. Professor Bloom described the decision-making process whereby each Steering Committee Chairperson and Steering Committee Secretary had reported on achievements and goals, and STAC had subsequently discussed the priorities, general strengths and weaknesses of the Programme and the competence and functioning of each Steering Committee based on STAC members' observations at Steering Committee meetings. The budget of the Social and Economic Research Component had not been reduced; the components which had been cut the least were malaria and leishmaniasis, and those which had been cut the most were African trypanosomiasis and leprosy. The greatest support was directed to activities where there was felt to be the greatest need, for lack of appropriate drugs or vaccines, and the greatest reductions occurred in those Steering Committee activities where there had been the most progress in the development of effective interventions.

With regard to the future, STAC had recommended that two Prospective Thematic Reviews (PTRs) take place during the coming year on research capability strengthening and on vaccine development. Research capability strengthening activities received 25% of the Programme's budget. Last year JCB(13) had requested a policy paper on these activities. An interim report was presented to JCB(14) and the final report would be presented to JCB(15) in 1992 following the review. The PTR would outline future directions and make specific recommendations relating to policies with regard to the most advanced developing endemic countries as well as the least developed countries; human resources development, because of its crucial role in future research on tropical diseases; and future integration of research capability strengthening and research and development activities in TDR. The PTR on vaccines would review the status of activities in TDR and elsewhere, examine the opportunities and feasibilities and make recommendations on priorities and organization of vaccine development activities.

Professor Bloom referred to the symposium at STAC-13 and the five presentations by scientists who had described developments at the frontier of science and how these might be applied to tropical diseases research. One presentation had been on the impact of the genetics of Caenorhabditis elegans on helminthic parasites of man, and the hopes that work on this organism would lead to new possibilities for drug targets, vaccines and methods for dealing with potential resistance. Another presentation had focused on operational research on ivermectin-based onchocerciasis control and the success of community-based diagnosis of vision impairment. The third presentation had described the molecular approaches to analysis of pathogenesis of Shigella flexneri which helped in understanding how the parasites caused disease. The fourth presentation had focused on newly developed transgenic mice, adding new genes and knocking out old ones. Hopefully such kinds of new animal models would find their way into research on tropical diseases. The last presentation had dealt with the importance of sophisticated economic analysis in tropical diseases research.

Professor Bloom also referred to the human genome project - the sequencing of every gene in the human genome to understand at least genetically how we worked. No pathogens had originally been on the agenda for this expensive project but finally two pathogens had been chosen - M. leprae and M. tuberculosis. TDR had given US\$ 15 000 from the Director's Initiative Fund to the project to demonstrate that the technique using these two pathogens was feasible. Two weeks ago the researchers working on the project received an award of US\$ 3 million from the National Institutes of Health in the USA. Professor Bloom stressed the courage of Director TDR investing in a project which would not immediately produce a vaccine or a drug but which would lead to the identification of every gene in the leprosy bacillus, and consequently every antigen and every drug target. TDR's meagre funding had acted as leverage to secure major funding from other sources.

Professor Bloom compared the cost of producing a drug in industry with the actual costs to TDR, to which Dr Godal had referred earlier. He considered that TDR's leverage to get a product developed was extraordinary.

Finally, Professor Bloom stressed the quality of the staff working in TDR and their loyalty to the people suffering from the tropical diseases, and the dedication and services of the scientists who collaborated with the Programme. During the budget allocation process, each Steering Committee Chairperson and Secretary had been fighting for the cause of the people suffering from the disease dealt with by their Committee and had difficulty in accepting that their important research efforts had to be cut. STAC respected greatly the commitment of the staff and the scientists carrying out the research.

4. SUMMARY OF THE REPORT BY PROFESSOR A. S. MULLER, CHAIRMAN JCB(13), ON HIS ATTENDANCE AT STAC-13

Professor Muller informed the Board that during his two-year JCB chairmanship he had attended the meetings of the Standing Committee which had preceded the sessions of the Joint Coordinating Board and had been able to attend the meeting of STAC-13 in March 1991. It had been an interesting experience to see how the various TDR bodies operated and Professor Muller considered that there was a good balance in terms of their respective responsibilities.

Attendance at the thirteenth meeting of STAC had been very useful, stimulating and interesting particularly because Professor Muller had been treated as a member of the Committee. Professor Muller commented on the unusual significance of the meeting in view of the need to reallocate funds from the scientific Programme components for the new initiatives, particularly the Product Development Unit. It had been a hard task for the STAC members whose views had differed according to their expertise. He referred to the difficult situation facing the scientists attending STAC for the first time and suggested a longer term of office for STAC members to help increase the team spirit and facilitate the discussions.

Professor Muller stressed the importance of the independent review process of STAC and wondered whether the presence of the JCB Chairman had had any effect on this, especially with regard to how the contributors would view the Committee's recommendations. Professor Muller had enjoyed his participation in the meeting not only as JCB Chairman but also as a scientist and hoped that his contribution had been useful. He wondered how much the JCB Chairman would be able to contribute to STAC's deliberations if he/she did not have a relevant professional background. Professor Muller suggested that the practice of the JCB Chairman attending the STAC meetings be reviewed in due course based on the experience gained.

UNDP/WORLD BANK/WHO SPECIAL PROGRAMME FOR  
RESEARCH AND TRAINING IN TROPICAL DISEASES

FOURTEENTH SESSION OF THE JOINT COORDINATING BOARD

Geneva, 25 and 26 June 1991

SUMMARIES OF THE TECHNICAL PRESENTATIONS TO JCB(14)  
ON COLLABORATION WITH INDUSTRY

1. INTRODUCTION

Dr P. Reeve, Head of the TDR Product Development Unit, referred to the discussions at JCB(13) in 1990 on the costs and complexities of pharmaceutical development and on the value of collaboration with industry. TDR increasingly appreciated the importance of the unique contribution by industry to the development of products for the control of tropical diseases. In view of concerns expressed about WHO/TDR's relationships with commercial enterprises and the importance of transparency in such relationships, the TDR Standing Committee had considered it would be valuable to invite several representatives from industry to present to the JCB their perceptions of the opportunities for developing products for use against the tropical diseases and the problems involved.

Dr Reeve described the fundamental similarities between TDR and the pharmaceutical industry and the opportunities for collaboration. Both were involved in health care and were technically-driven enterprises operating in a regulatory framework. Both were increasingly constrained by economic considerations. Working in the public sector, TDR was not concerned with profitability and the need to provide financial return to its contributors but the Programme shared with industry some of the goals and measures of achievement. In the end useful products, effective tools and applicable strategies for disease control had to be developed. The pharmaceutical industry was currently profitable and had substantial research and development resources but, given the need for profitability and the costs and uncertainties of product development, even these resources were limited.

Dr Reeve referred to the key strengths of TDR and the pharmaceutical industry. TDR's major strengths were in research, compound screening, a worldwide network of experts and abilities to carry out cost-effective clinical trials in disease-endemic countries. Key strengths in industry, not matched in TDR, were marketing abilities to identify product opportunities and preclinical development resources. The latter included process development abilities in chemistry, molecular biology, fermentation and large-scale cell culture essential for the testing, development and manufacture of pharmaceutical products.

Dr Reeve suggested that a joint approach would build on these strengths and might include the following activities:

- (i) sharing information on basic research in infectious diseases;
- (ii) access to lead compounds for TDR testing and development;
- (iii) provision of preclinical resources by joint ventures, contract funding or industrial subsidy;
- (iv) assistance for TDR-sponsored clinical trials by supply of test products and advice on protocol design and data management;
- (v) collaboration with TDR in streamlining regulatory processes; and

(vi) collaboration with TDR in socio-economic studies on product needs, supply and distribution.

2. OPPORTUNITIES AND CHALLENGES FOR GROWING BIOTECHNOLOGY COMPANIES IN INTERNATIONAL HEALTH

Dr W. T. Hockmeyer, President and Chief Executive Officer, MedImmune Inc., Gaithersburg, Maryland, USA, welcomed the opportunity of suggesting ways in which growing biotechnology companies and the pharmaceutical industry in general could collaborate with the World Health Organization in developing or producing products for international health needs.

MedImmune Inc. was a biotechnology company which focused on developing immunotherapeutics and vaccines for infectious diseases. Its efforts with regard to vaccine development directed considerable resources towards developing BCG as a recombinant vaccine vehicle. The use of BCG as a vehicle for delivering other protective antigens from various pathogens should enable such products to be safe and effective, given at birth or very early in life, require a single or at most two injections, and provide long-lasting immunity. Ideally such vaccines should be relatively simple to produce, stable at ambient temperatures, easy to administer and affordable. Development programmes seeking to meet these objectives would be long term. The technology was being worked out and a wide variety of protective antigens had been expressed from multiple pathogens in BCG, and the company hoped to collaborate with WHO in the development of some of these vaccines. The goal was to try to develop a vaccine delivery system which met as many public health delivery and efficacy criteria as possible - a system which was as useful in protecting against DPT as against malaria.

MedImmune Inc. had entered into an inter-institutional agreement with three different universities in the USA and the World Health Organization, based on the fact that some of the early scientific work on the genetic engineering of recombinant BCG had been supported by WHO. Under the agreement, WHO would have half an inventor's share of any royalties that derived from any commercialized recombinant BCG vaccines. This confirmed the Company's good faith and commitment to develop vaccines which would benefit people in developing countries. Dr Hockmeyer believed that royalties represented the most appropriate mechanism for respecting WHO's interest rather than policies which relied solely on trying to control prices. In the agreement MedImmune Inc. had agreed to recognize the unique circumstances and sensitivities relating to pricing of products in the developing world. However, no company could agree a priori to external control of prices.

WHO's financial contributions to the development of vaccines were in fact very small compared to the actual cost but the support was pivotal and critical in attracting scientists whose technology could be meaningfully applied to tropical diseases and acted as leverage to mobilize other funding. The actual expenditure could be staggering. The cost of developing a single approved drug could be more than US\$ 200 million and estimates to produce a vaccine could be up to US\$ 100 million.

Dr Hockmeyer considered the general issues relating to the mutually desired industry/WHO collaboration in developing new vaccines. He referred to large and small companies' responsibilities to their shareholders in generating a reasonable return on investment. No for-profit corporation could be successful or even survive to produce vaccines relevant only to diseases of developing countries. Development of products for the developing countries was usually justified by a small but profitable tourist market or by using tropical disease antigens as models for refining vaccines or in seeking to understand how to target vaccines to induce specific kinds of immune responses. Such realities were unlikely to change soon. However, the approach to the problem of inadequate vaccines for developing countries could be changed and WHO had a unique opportunity to foster this change.

As a first step, WHO and industry could stimulate efforts to reformulate existing vaccines to expand the number of diseases immunized against in any single vaccine

series. In fact this effort was already underway. Current products could perhaps be changed and improved to accommodate better international health needs and benefit all peoples. However, reformulation was not simple and had to be studied extensively.

Secondly, a new generation of products could be designed which could be equally important to the developed and developing countries. Real advances could be made here as there would be a stimulus to invest in such products in view of their worldwide marketability. Success would depend on changing the fundamental manner in which vaccines were developed.

Industry was already beginning to move in the direction of developing technology for new vaccines and WHO could stimulate this further by supporting the development of such technology. Work could be focused on perhaps two important infectious diseases for which current immunization schemes did not protect the infant. Prototype vaccines maturing from such efforts should be tested in clinical trials supported by WHO. If these prototype vaccines looked promising, it should be possible to obtain broad financial support from governments, organizations and corporations which could then envision both the feasibility and implications of a simplified and universal childhood immunization programme.

The major limitation to effective immunization of the world's children was neither technology nor lack of collaboration between scientists, industry and WHO. Rather it was money. The cost of development and implementation of universal childhood immunization was beyond that of WHO and the world's pharmaceutical industry. The cost would be borne by the world, provided its more affluent inhabitants recognized that only their will-power, not technological limitations, prevented universal immunization from happening. The role of the pharmaceutical companies, large and small, and WHO was to prove and make the world aware of this feasibility. Medimmune Inc., and surely many other companies, were eager to collaborate with WHO to achieve this important goal.

### 3. COLLABORATION BETWEEN THE PRIVATE AND PUBLIC SECTORS IN THE DEVELOPMENT OF DIAGNOSTIC PROCEDURES FOR TROPICAL DISEASES

Professor J. Ramachandran, Director, Astra Research Centre India, Bangalore, India, and Adjunct Professor, University of California, San Francisco, California, USA, described the Astra Research Centre India which was a unique experiment in collaboration between the public and private sectors and North-South collaboration. It had been established in 1985 by A.B. Astra, Sweden at Bangalore, India, to pursue research in tropical diseases in view of the availability of Indian scientists with high competence in molecular biology, biochemistry and biophysics. The Centre was governed by a board of ten scientists, five nominated by A.B. Astra and five appointed by the Government of India. The Centre was fully funded by A.B. Astra.

The objectives of the Centre were to discover and develop novel diagnostic procedures, therapeutic products and targets for rational drug design for tropical and other infectious diseases. Diagnostic procedures had been developed by the Centre for malaria, enteroinvasive bacteria, shigella included, tuberculosis and neuro-cysticercosis. The test for malaria depended on the use of a DNA probe and the other three tests were based on immunological methods.

Professor Ramachandran described the malaria test because of its wide applicability for the detection of parasitic DNA and the simplified approach which had been taken. He also summarized the essentials for a good DNA-based procedure to be useful in endemic countries. The procedure used for malaria could be used for a variety of other parasitic organisms as the principles were the same.

The Centre had been trying for several years to collaborate with both the public and private sectors to develop the kits, perform quality control, test the kits in the field and set up effective distribution mechanisms. In general, public organizations had been highly successful in testing the kits in the field and Professor Ramachandran paid

tribute to the public sector institutions which had been involved in the field trials of the diagnostics developed by the Centre. However, collaboration with the public sector with regard to the development of the kits and their distribution had been disappointing and the Centre had had to turn to the private sector.

4. COLLABORATION BETWEEN THE PRIVATE AND PUBLIC SECTORS IN THE DEVELOPMENT OF VACCINES FOR TROPICAL DISEASES

Dr M. De Wilde, Director of Research, SmithKline Beecham Biologicals S.A., Rixensart, Belgium, welcomed the opportunity to address the Joint Coordinating Board on the issue of collaboration with industry. His Company had a tradition of manufacturing vaccines and had a long history of collaboration with WHO.

The basic question was whether the price of newly developed vaccines would reach the low level of current EPI components. In addressing this issue, Dr De Wilde compared oral poliomyelitis vaccine to recombinant hepatitis B vaccine. Oral poliomyelitis vaccine was a trivalent live vaccine, used in low dosage form with a very high productivity which required relatively little equipment, small, fully amortized facilities, and research and development costs were amortized. As a result, the cost of the vaccine was extremely low. Hepatitis B vaccine, which was the first recombinant vaccine ever to be produced and sold for human use, was different. It was a recombinant subunit, monovalent vaccine, with 100-fold lower productivity than oral poliomyelitis vaccine. Processing costs were high and large research and development investment (not amortized) was needed together with large capital investment (not amortized) and, as a result, the cost of making the vaccine was much higher.

With regard to a potential malaria vaccine, Dr De Wilde made some assumptions on its production as SmithKline Beecham had already made considerable investments in this field in recent years. At least in the medium term, a malaria vaccine would have to be recombinant or peptide-based by the nature of the organism and would be multivalent, its productivity would be in the range of the recombinant hepatitis B vaccine with large research and development costs and large capital investment, so the cost of a vaccine would be similar to that of the recombinant hepatitis B vaccine.

Incentives for malaria vaccine development were, from a scientific point of view, that it was possible to protect volunteers against artificial challenge by irradiated sporozoites and, from a marketing point of view, that a malaria vaccine would be purchased by travellers and the military. The disincentives were mostly technical, for example there was no adequate animal model, no immunological correlates of protection, antigenic variability, and a multi-stage vaccine would be needed. It would be a complex vaccine and a costly endeavour. In view of the scientific complexities, each vaccine candidate would have to be taken to human trial (with artificial or natural challenge), involving a certain amount of process development work, regulatory issues and quality control, and a lot of resources would be required.

Dr De Wilde drew some conclusions from the analysis. New vaccines would be expensive. Manufacturers in one way or another had to recover their research and development and capital investment costs and needed guaranteed purchase of the vaccines. There should also be no "double standard" between vaccines developed, produced and distributed in the developing world to those produced in the developed world. To overcome these obstacles, new philosophies were needed for the public/private sector partnership.

Dr De Wilde stressed the partnership aspect and described the possible contribution of TDR to vaccine development in industry. TDR could help with the clinical trials, by identifying sites, providing the necessary resources and collecting data. TDR could help to ensure that clinical protocols and documentation were adequate for regulatory approval. In addition, TDR could fund applied research aimed principally at target antigen selection and the establishment of immunological correlates of protection. These forms of collaboration would be extremely important for the future.

## 5. A CONCEPT OF INDUSTRY COOPERATION IN TDR

Dr F. Trautweiler, Vice-Director, Research and Development, Pharmaceuticals Division, Ciba-Geigy Limited, Basle, Switzerland, referred to his Company's justification for carrying out collaborative drug research and development in the area of tropical parasitic diseases, to the agreement between the World Health Organization and Ciba-Geigy which had been signed in 1990, and to the actual projects which were being carried out under the agreement.

With regard to justification, many questions had to be answered before embarking on a research or a development project, such as the medical need; feasibility and probability of success; and profitability, financial support and return. With respect to medical need, one had to consider whether it made sense to search for a new chemotherapeutic agent or whether to direct efforts towards vaccines or vector control. WHO had an important contribution to make in monitoring and updating information on the medical need. In considering feasibility, not every goal was achievable and some projects had to be abandoned and new ones identified. The process was facilitated if research produced new insights into the diseases and their causative parasites. It was desirable that WHO support such research. No drug was perfect and after successful development and approval by the authorities, market introduction had to deal with problems of less than ideal performance. WHO could make an important contribution at this stage. As far as profitability was concerned, most of the development projects on the tropical parasitic diseases could not be justified if the usual financial return on investment was to be expected. However Ciba-Geigy Corporate Principles permitted greater financial risks in third world projects if they were undertaken with the participation of government agencies or institutions.

Dr Trautweiler described the current agreement between WHO and Ciba-Geigy relating to the chemotherapeutic treatment of human parasitic diseases, which had been signed in mid-1990. The agreement based the development process on sharing responsibilities and costs between WHO and Ciba-Geigy and decisions were made by mutual agreement. As mutually agreed, Ciba-Geigy made compounds available to WHO for screening, most of which came from the Company's animal health research activities. This would be followed, after mutual agreement, by the development of those compounds which showed a desirable profile in the screens. Ciba-Geigy performed, or would buy from third parties, the necessary preclinical studies. After mutual agreement, WHO would take responsibility for carrying out the clinical trials and would pay for them. Ciba-Geigy would provide the clinical trial material and insurance coverage for the patients, clinical investigators and WHO. Registration documentation would be produced in collaboration between the two parties. After submission of the registration documentation, a licence agreement would be worked out between both parties concerning manufacture, use and sale of the product.

Dr Trautweiler informed the Board that under the above-mentioned agreement, three projects concerned with filaricidal compounds were in process. The first project was at the screening phase. Ciba-Geigy had prepared a first set of 100 compounds which were potential filaricides. WHO had arranged for screening in laboratories of its choice. The chemical formula of the compounds was unknown to the screening laboratories and to WHO. Results were expected soon.

The second project was concerned with the filaricide CGI 18 041 which was being developed as a back-up to amocarzine currently in phase II/III clinical trials. The strategy was to proceed with development of CGI 18 041 up to phase IIa where its dosage, efficacy and tolerability in patients could be tested and compared with the performance of amocarzine.

The development of CGP 6140, amocarzine, was the third project covered by the agreement. At present results from phase II/III clinical trials were being analysed and evaluated. If Ciba-Geigy and WHO agreed that the compound was a viable filaricidal drug, the registration documentation would be assembled and submitted to the Swiss Internal Regulatory Body (IKS).

A fourth project with a different indication was also in process. It was concerned with triclabendazol, sold by Ciba-Geigy as Fasinex for the treatment of liver flukes mainly in sheep. The compound also cured humans infected with Fasciola hepatica and was being developed, presently in phase II, under a separate agreement between WHO and Ciba-Geigy. The agreement was similar to the one mentioned above, but the main difference was that Ciba-Geigy bore the cost of the clinical trials.

TDR BUDGET SUMMARY FOR THE 1992-1993 BIENNIUM  
(US\$ 000 and Per Cent)

PROGRAMME AREA/COMPONENT	1990-1991		1992-1993		1994-95	
	(1) APPROVED BUDGET	(2) REVISED BUDGET	(3) PROPOSED BUDGET	(4) INCREASE/(DECREASE) (3)-(2)	(5) PER CENT	(6) ESTIMATED
I Technical and Administrative Bodies	645.0	620.0	650.0	30.0	4.8	700.0
--Per cent of Total	0.9	0.9	0.8	0.8		0.8
II Research and Development						
General Activities	1,342.5	1,105.0	1,190.0	85.0	7.7	1,300.0
Director's Initiative Fund	1,500.0	750.0 *	1,500.0	750.0	100.0	1,700.0
Product Development	-	-	6,970.0	6,970.0	-	7,700.0
Chemotherapy of Malaria	6,025.5	6,290.0	6,300.0	10.0	0.2	6,900.0
Immunology of Malaria	5,575.0	5,335.0	5,050.0	(285.0)	(5.3)	5,600.0
Applied Field Research in Malaria	3,500.0	4,075.0	3,950.0	(125.0)	(3.1)	4,300.0
Schistosomiasis	3,000.0	3,290.0	2,650.0	(640.0)	(19.5)	2,900.0
Filariasis	4,775.0	4,475.0	4,200.0	(275.0)	(6.1)	4,600.0
African Trypanosomiasis	3,300.0	3,330.0	2,540.0	(790.0)	(23.7)	2,800.0
Chagas Disease	2,600.0	2,690.0	2,365.0	(325.0)	(12.1)	2,600.0
Leishmaniasis	3,000.0	3,186.0	2,950.0	(236.0)	(7.4)	3,200.0
Leprosy	6,600.0	5,960.0	4,600.0	(1,360.0)	(22.8)	5,100.0
Biological Control of Vectors	2,300.0	2,400.0	2,350.0	(50.0)	(2.1)	2,600.0
Social and Economic Research	2,525.5	3,015.0	3,040.0	25.0	0.8	3,300.0
Subtotal-Programme Area II	46,043.5	45,901.0	49,655.0	3,754.0	8.2	54,600.0
--Per cent of Total	63.1	62.9	64.6	95.7		64.7
III Research Capability Strengthening						
General Activities	2,255.2	2,045.0	1,760.0	(285.0)	(13.9)	1,900.0
Institution Strengthening	8,300.0	6,250.0	6,200.0	(50.0)	(0.8)	6,800.0
Training	5,700.0	7,850.0	9,250.0	1,400.0	17.8	10,200.0
Epidemiology and Field Research	2,650.0	2,125.0	1,940.0	(185.0)	(8.7)	2,100.0
Subtotal-Programme Area III	18,905.2	18,270.0	19,150.0	880.0	4.8	21,000.0
--Per cent of Total	25.9	25.1	24.9	22.4		24.9
IV Programme Management						
Personnel	3,456.2	3,950.0	4,130.0	180.0	4.6	4,500.0
Operational Support	700.0	780.0	650.0	(130.0)	(16.7)	700.0
General Support	2,138.0	2,350.0	2,610.0	260.0	11.1	2,900.0
Regional Offices	1,052.3	1,052.3	0.0	(1,052.3)	(100.0)	0.0
Subtotal-Programme Area IV	7,346.5	8,132.3	7,390.0	(742.3)	(9.1)	8,100.0
--Per cent of Total	10.1	11.2	9.6	(18.9)		9.6
GRAND TOTAL	72,940.2	72,923.3	76,845.0	3,921.7	5.4	84,400.0

\* An amount of US\$ 750 000 was reallocated in 1990-91 from the Director's Initiative Fund to the operations budgets of other components

FOURTEENTH SESSION OF THE JOINT COORDINATING BOARD

Geneva, 25 and 26 June 1991

MEMBERSHIP OF THE JOINT COORDINATING BOARD  
(as of 1 January 1992)

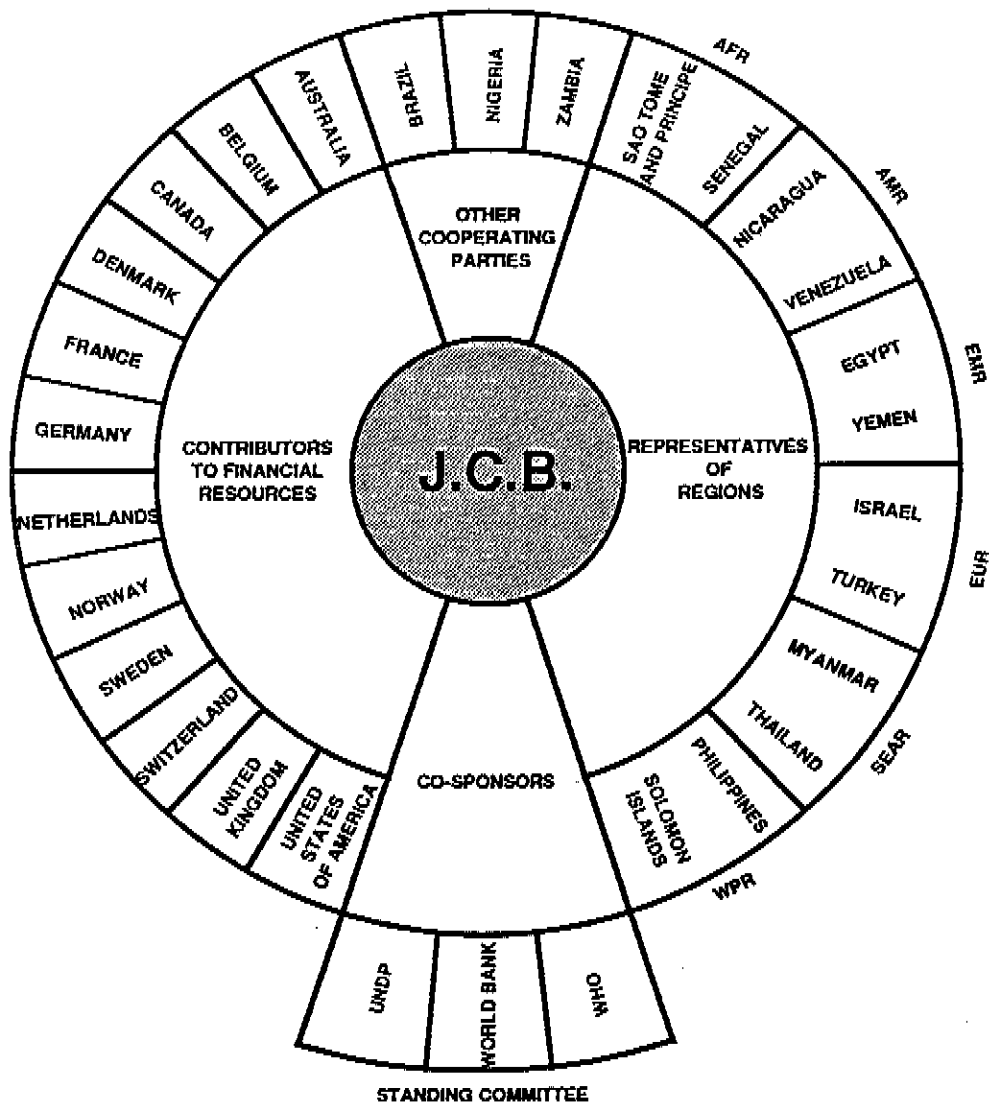
List of Tenures

Australia	to 31 December 1993
Belgium	to 31 December 1994
Brazil	to 31 December 1994
Canada	to 31 December 1992
Denmark	to 31 December 1992
Egypt	to 31 December 1994
France	to 31 December 1994
Germany	to 31 December 1992
Israel	to 31 December 1992
Myanmar	to 31 December 1992
Netherlands	to 31 December 1993
Nicaragua	to 31 December 1992
Nigeria	to 31 December 1993
Norway	to 31 December 1994
Philippines	to 31 December 1994
Sao Tome and Principe	to 31 December 1992
Senegal	to 31 December 1994
Solomon Islands	to 31 December 1992
Sweden	to 31 December 1992
Switzerland	to 31 December 1993
Thailand	to 31 December 1994
Turkey	to 31 December 1994
United Kingdom	to 31 December 1994
United States of America	to 31 December 1993
Venezuela	to 31 December 1994
Yemen	to 31 December 1992
Zambia	to 31 December 1992

United Nations Development Programme  
World Bank  
World Health Organization

UNDP/WORLD BANK/WHO  
 SPECIAL PROGRAMME FOR RESEARCH AND TRAINING IN TROPICAL DISEASES

Membership of the Joint Coordinating Board (JCB)  
 (as of 1 January 1992)



FOURTEENTH SESSION OF THE JOINT COORDINATING BOARD

Geneva, 25 and 26 June 1991

MEMBERSHIP OF THE SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE (STAC)  
(as of 1 January 1992)

<u>Name and Title</u>	<u>Term of Appointment</u>
*BEHBEHANI, Prof M. K., Vice-Rector for Research, University of Kuwait, Safat, <u>KUWAIT</u>	to 31 December 1993
BLOOM, Prof B. R., Professor and Chairman, Department of Microbiology and Immunology, Albert Einstein College of Medicine of Yeshiva University, New York, N.Y., <u>UNITED STATES OF AMERICA</u>	to 31 December 1992
CAPRON, Prof A. R., Director, Centre for Immunology and Parasite Biology, Pasteur Institute, Lille, <u>FRANCE</u>	to 31 December 1992
CASTILLO, Prof Gelia T., Professor of Rural Sociology, Department of Agricultural Education and Rural Studies, College of Agriculture, University of the Philippines at Los Baños, Laguna, <u>PHILIPPINES</u>	to 31 December 1994
**GABR, Prof M., Head, Paediatric Department, Faculty of Medicine, Cairo University, Cairo, <u>EGYPT</u>	to 31 December 1992
GARATTINI, Prof S., Director, "Mario Negri" Institute for Pharmacological Research, Milan, <u>ITALY</u>	to 31 December 1993
HOL, Prof W. G. J., Assistant/Associate Professor, Department of Chemistry, University of Groningen, Groningen, <u>NETHERLANDS</u>	to 31 December 1992
JAMISON, Prof D. T., Professor, Graduate School of Education/Professor, School of Public Health, University of California, Los Angeles, California, <u>UNITED STATES OF AMERICA</u>	to 31 December 1994
MÄKELÄ, Prof P. Helena, Director, Bacteriology Department, National Public Health Institute, Central Public Health Laboratory, Helsinki, <u>FINLAND</u>	to 31 December 1992
MOLYNEUX, Prof D. H., Director, Liverpool School of Tropical Medicine, Liverpool, <u>UNITED KINGDOM</u>	to 31 December 1993
PIKE, Prof M. C., Professor and Chair, Department of Preventive Medicine, University of Southern California School of Medicine, Los Angeles, California, <u>UNITED STATES OF AMERICA</u>	to 31 December 1992

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\*Membership suspended during period of employment as a WHO staff member

\*\*Co-opted in his capacity of Chairman of the WHO Global Advisory Committee on Health Research

STAC MEMBERSHIP (1992) (continued)

<u>Name and Title</u>	<u>Term of Appointment</u>
RAJEWSKY, Prof K., Professor of Molecular Genetics, Science Faculty, University of Cologne, Cologne, <u>GERMANY</u>	to 31 December 1992
RAMACHANDRAN, Prof J., Director, Astra Research Centre India, Bangalore, <u>INDIA</u> , and Adjunct Professor, University of California, San Francisco, California, <u>UNITED STATES OF AMERICA</u>	to 31 December 1992
SALAKO, Prof L. A., Head, Department of Pharmacology and Therapeutics, University of Ibadan, Ibadan, <u>NIGERIA</u>	to 31 December 1993
SALOMAO, Dr M. Angélica, Chief, Division of Surveillance and Endemic Diseases, Ministry of Health, Maputo, <u>MOZAMBIQUE</u>	to 31 December 1994
SERGIEV, Dr V. P., Director, Martsinovsky Institute of Medical Parasitology and Tropical Medicine, Moscow, <u>USSR</u>	to 31 December 1992
SHIMAO, Dr T., Chairman, Board of Directors, Japan Anti-Tuberculosis Association, Tokyo, <u>JAPAN</u>	to 31 December 1993

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