

**WORLD HEALTH  
ORGANIZATION**

**Regional Office  
for the Eastern Mediterranean**



**ORGANISATION MONDIALE  
DE LA SANTÉ**

**Bureau régional  
pour la Méditerranée orientale**

REGIONAL MEETING ON LEPROSY

Mogadishu, 25 - 28 February 1980

EM/MTG.LEP./15

February 1980

**RESEARCH PRIORITIES FOR TDR PROGRAMME  
AND  
FOR REGIONAL RESEARCH PROGRAMME**

by

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RESEARCH PRIORITIES FOR SPECIAL PROGRAMME FOR RESEARCH AND TRAINING IN  
TROPICAL DISEASES AND REGIONAL RESEARCH PROGRAMME

1. The Special Programme

The UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases has been in existence for more than five years. The programme, which includes leprosy among the six tropical diseases initially selected, is a goal-oriented research and training programme with twin objectives of (a) research and development to obtain new and improved tools for control of major tropical diseases, and (b) strengthening of the research capability of the tropical countries. The research is conducted on a global basis by multi-disciplinary Scientific Working Groups.

The leprosy activities in the Special Programme are carried out by two Scientific Working Groups, one on Immunology of Leprosy (IMMLEP) established in 1974, and the other on Chemotherapy of leprosy (THELEP) established in 1976.

1.1 IMMLEP

The need for developing a method of primary prevention against leprosy and also immunological tools for identifying sub-clinical infection has been felt for a long time, in view of the relative inadequacy of the current methods to control the disease. With the availability of large quantities of M. leprae from the tissues of infected armadillo, significant research in several areas became possible.

The objectives of IMMLEP are:

- (a) development of an antileprosy vaccine;
- (b) development of leprosy specific immunological methods for detection of immune responses to M. leprae; and
- (c) an increased understanding of immunopathological mechanisms involved in leprosy.

The major accomplishments of IMMLEP so far are:

- (i) Expansion of the supply of armadillo-derived M. leprae.
- (ii) Development of refined methods of purification of M. leprae from infected tissues.
- (iii) Development of soluble test antigens.
- (iv) Development of antigen reference systems.
- (v) Identification of small numbers of putative M. leprae-specific antigens or determinants.
- (vi) Application of an immunofluorescence technique for detection of M. leprae-specific antibodies, to immuno-epidemiological studies.
- (vii) Detection of circulating complement split products in erythema nodosum leprosum (ENL)
- (viii) Induction of strong and enduring cell-mediated immunity to M. leprae in mice and guinea-pigs by methods potentially acceptable for human use.
- (ix) Protection of mice and small numbers of armadillos against infection with viable M. leprae by means of killed vaccine.

## 1.2 THELEP

The potentially serious situation with regard to increasing occurrence of resistance of M. leprae to dapsone, and the problem of relapse due to microbial persistence together emphasized the need for a substantial and rapid improvement in leprosy chemotherapy. With the development earlier of laboratory techniques such as the mouse foot pad method for cultivation of M. leprae and the availability of newer drugs with high anti-microbial potency, significant research in the chemotherapy of leprosy became possible.

The objectives of THELEP are:

- (a) finding out better methods to use existing drugs;
- (b) promoting development of new drugs; and
- (c) assessment of the needs for improved chemotherapeutic methods.

The significant accomplishments under THELEP so far are:

- (i) Establishment of clinical trials using a standard protocol.
- (ii) Study of pharmacokinetics of drugs and drug combinations.
- (iii) Field surveys to measure prevalence and incidence of dapsone resistance.
- (iv) Synthesis, screening, and action-mechanism studies of analogues of drugs like clofazimine, thalidomide etc.
- (v) Development of rapid in vitro screens for anti-M. leprae activity.
- (vi) Further development of immuno-deficient animal models like nude mice.
- (vii) Application of ELIZA technique for detection of dapsone in urine.

## 2. Regional Research Programme

Leprosy research in the region will have to be developed keeping in view the special needs and requirements, if any, of the region. Areas of research in leprosy not covered by the Special Programme could be of special interest in certain countries. Such areas of research could include studies on the epidemiology of leprosy, both descriptive and analytical. In countries where leprosy is confined to certain foci, study of risk factors associated with the prevalence and incidence of the disease could be of interest. In the field of chemotherapy, studies on paucibacillary leprosy could be of value in reducing the treatment period. Lastly, operational studies to improve specific activities under the present strategies could be of great practical use. In addition, it is also possible to carry out research activities as part of the Special Programme for Research and Training in Tropical Diseases, or get its active collaboration. The WHO HQ Leprosy Unit is keen on promoting research at the country level and provide support for planning and implementation of relevant research activities.