

NEWS and NOTES

This department furnishes information concerning institutions, organizations, and individuals engaged in work on leprosy and other mycobacterial diseases, and makes note of scientific meetings and other matters of interest.

International Congress for Microbiology

The Xth International Congress for Microbiology was held in Mexico City, Mexico, 9-15 August 1970, under the auspices of the International Association of Microbiological Societies presided over by Professor André Lwoff. The programing of the congress was handled by the local Organizing Committee headed by Dr. C. Casas-Campillo, President, and Dr. L. F. Bojalil, Secretary-General. The scientific sessions were held in the conference buildings of the "Unidad de Congresos del Centro Médico Nacional." Some 3,000 microbiologists attended the meeting from 29 different countries.

Among the scientific highlights of the conference was the presentation by S. Luria on the "Contribution of Microbiology to Molecular Biology" in which the new area of science known as "membranology" or supramolecular biology was characterized. Data from this area resulted in the interesting speculation as to whether genetic information could reside in replicating membranes independent of nucleic acid "carriers." In a dramatic series of electron micrographs O. L. Miller and co-workers presented the first visualization of the transcription process in *Escherichia coli*, showing that the rate of formation of messenger RNA appears to regulate the rate of translation or protein synthesis necessary for cell division. Regulatory data of this type is of extraordinary interest to investigators attempting to initiate transcription-translational processes to achieve cell division in *Mycobacterium leprae*. The most recent advances in oncogenic RNA virus replication were presented by S. Spiegelman. For the first time the central dogma that DNA is the sole residium of genetic information was broken with the demon-

stration that the viral RNA contains the essential genetic information for particle replication.

Tissue mediated immunity and cellular hypersensitivity continued to receive important research emphasis. Of particular relevance to mycobacterial diseases were presentations by J. L. Turk and G. B. MacKanness in the colloquim on cellular hypersensitivity. Evidence presented by J. L. Turk was based on regional lymph node biopsies from treated and untreated leprosy patients. From an immunologic point of view lepromatous leprosy represents a condition of immune deviation or split tolerance due to antigenic overloading resulting in specific tissue-mediated immunologic tolerance to *M. leprae*. However, the split tolerance concept permits the production of humoral antibody which can produce Arthus-type antigen antibody reactions resulting in reaction states (erythema nodosum leprosum) in lepromatous leprosy. The condition of split tolerance was correlated with the loss of sensitized or committed lymphocytes from the paracortical regions of the lymph nodes resulting in the lack of production of chemical mediators necessary for macrophage activation and antigen processing. It was speculated that the basic cause for lymphocyte depletion arose from a genetic trait of thymic deficiency or alternatively from the production of autoimmune antilymphocyte globulin antibody. This last possibility was consistent with the discovery of circulating autoimmune antibodies in sera from leprosy patients. Significance was attached to data obtained from lymph node biopsies of bacteriologic negative patients who had received 10 years of continuous DDS therapy. In these cases, while a complete cessation of clinical symptoms had occurred, it was nevertheless apparent that there was no reestablishment of paracortical lympho-

cytes in the lymph nodes. Thus it was argued, that, with the complete withdrawal of drug and the absence of lymphocyte effectors of specific tissue immunity, this type of patient would undergo clinical relapse provided a small number of viable *M. leprae*, beyond the detectable level, still persisted in the tissues.

This work thus represents a fundamental contribution to leprosy immunology and poses several important questions for future investigation. The most important concerns the question of whether injections of chemical mediator or lymphokine preparations, now available from tissue culture procedures, can in any way influence the course of lepromatous leprosy infections. Since lymphokines have a molecular weight around 40,000 it is conceivable that small molecular weight sub-units likewise need investigation. Certainly the potential for immunologic-mediated chemotherapy becomes an exciting possibility. Consistent with this is the recent work of J. M. Gaugas, R. J. W. Rees, A. G. M. Weddell and E. Palmer presented at the International Leprosy Colloquium at Borstel, Germany, wherein thymus grafts were used to significantly reverse the course of lepromatous leprosy infections in thymectomized and irradiated mice thus demonstrating the significance of the thymus in committing the small lymphocyte to specific lymphokine production in order to achieve tissue immunity.

A second question concerns the relationship of regional lymph node lymphocyte populations to skin sensitivity reactions. Certainly the lack of paracortical lymphocytes and the generalized Mitsuda negativity of treated lepromatous patients indicates excellent correlation. It would, however, be of interest to investigate the nodal lymphocyte populations in the smaller number of treated lepromatous patients that undergo conversion to Mitsuda positivity.

The presentation of G. B. MacKanness emphasized the cooperative relationship between the lymphocyte and macrophage in tissue immunity. An immune response to intracellular bacterial parasites is associated with proliferation of lymphoid cells which result in a large population of immunologi-

cally committed small lymphocytes. The committed lymphocyte alone cannot confer protection without a response from mononuclear phagocytes. The lymphocyte functions as a source of chemical mediator which triggers three major effects: phagocytic cells both fixed and free divide in response to infection; circulating monocytes accumulate at sites of bacterial invasion; and individual macrophages respond to stimulation with changes in morphology and activation of their antigen processing capacities. For long term protection from intracellular parasites an attenuated replicating bacterial cell which persists in the tissues is necessary to maintain an adequate level of tissue immunity.

The general sessions of the Congress provided a number of papers of interest. In continuing their study of leprosy immunology, S. H. Han and J. J. Tseng reported that the normal lymphocyte transfer reaction in lepromatous leprosy patients was significantly depressed which agreed with previous observations on skin allograft rejections, lymphocyte transformation and macrophage migration-inhibition, all of which indicated a generalized impairment of cell-mediated immunity consistent with J. L. Turk's split tolerance concept.

In the area of chemotherapy I. Phillips and J. L. Stanford reported that rifampicin was markedly efficacious against experimental *M. ulcerans* infections in the mouse. In particular it was noted that rifampicin was active against a large number of isolates which were completely resistant to the riminophenazine, B.663. Clinical trials with rifampicin and mycobacterial ulceration cases are now in progress in the Congo and Uganda. Properties of high level sulfone-resistant mycobacterial mutants were reported by N. E. Morrison showing competitive reversal of DDS action by p-aminobenzoic acid and p-aminobenzoylglutamic acid consistent with the view that DDS is a structural analog of p-aminobenzoic acid and inhibits mycobacterial growth through antifolate activity.

In the general mycobacterial session S. Froman, L. Phillips and M. I. Sellers provided an answer to the long-sought-for environmental source of pathogenic drug-resistant strains of *M. kansasii*. The natural

reservoir for infection was shown to be water and to a lesser extent milk. Numerous successful isolations were obtained from tap-water with positive isolations tracing back to the source of water supply. *M. kansasii* along with *M. marinum* infections thus originate from a water-borne reservoir.

Veterinary mycobacterial diseases were represented by R. S. Merkal, who reported on the nutrition and respiration of slow-growing mycobactin-dependent and independent isolates of *M. johnei*. While acetate was actively oxidized by a cyanide-sensitive cytochrome pathway it was of no value nutritionally. Tuberculous adenitis in swine was reported by C. O. Thoen, A. G. Karlson and R. D. Ellefson to be caused by *M. avium* isolates which were closely related to the Group II Battey organisms isolated from human patients.

The biologic activity of fractionated somatic BCG proteins were reported by C. Rivas-Gomez, L. F. Bojalil and L. Ortiz-Ortiz, where it was found that ribosomal protein produced a delayed type hypersensitivity response in BCG-sensitized animals which was absent in control animals.

Mycobacterial taxonomy benefited from the application of two new technics. A serologic classification scheme was presented by J. L. Stanford based on gel diffusion studies of somatic antigenic profiles from 400 strains. Species specific antigens were characterized. The method is of interest since it is being used with nonculti-

vable organisms such as *M. lepraemurium* and *M. leprae*. Gas chromatographic separation profiles of long chain fatty acids derived from Nocardia and mycobacterial cell walls have been successfully used by M. P. Lechevalier and H. Lechevalier for taxonomic classification. Both technics have convincingly shown that *Mycobacterium rhodochrous* is in fact a member of the genus Nocardia while *Narcodia farcinica*, first isolated by Nocard from cattle, belongs to the genus Mycobacteria.

There were no papers presented on attempts to grow noncultivable microorganisms.

At the Plenary Session of the Congress delegates approved various committee reports and noted with satisfaction that a World Directory of Culture Collections will soon be published. The delegates approved the restructuring of future congresses so that the Xth International Congress for Microbiology was the last of its kind to be held. Future congresses will be smaller in size, reflecting the effects of specialization, in that they will be held separately in the three microbiologic areas of bacteriology, mycology and virology. An invitation had been received from Israel for the next bacteriology congress to be held in 1972. The Plenary Session closed with delegates overwhelmingly approving the election of Professor Victor M. Zhdanov, U.S.S.R., to the presidency of the International Association of Microbiological Societies. — N. E. MORRISON

NEWS ITEMS

Netherlands. *Registration of new leprosy patients.* In 1969, 28 and in the first 9 months of 1970 already 21 new leprosy patients have been registered in the Netherlands, bringing the total of registered cases in the post war period to more than 600. With few exceptions all patients are immigrants or Dutch people, who have lived in endemic countries abroad. About one-third of these patients have been bacteriologically positive while resident in the Netherlands. Only a minority of the patients have been temporarily hospitalized. Most patients have lived a normal life in the community. In 1960 one autochthonous case was discovered, a man who never

left the Netherlands and who had no known contact with leprosy patients. Until present, no more new autochthonous patients have been found. About 300 patients still receive outpatient treatment or are under observation. The number of patients who, for social reasons, have been admitted to the small sanitarium, maintained by the Q. M. Gastmann Wichers Foundation, is now reduced to only 8 patients, and transfer of these patients to general institutions is being considered. Outpatient treatment is mainly centered in the Dermatological Departments of the University hospitals and is supervised by expert staff.—D. L. Leiker.