of normal mice with *M. leprae* provides evidence against his theories, which emphasize the harmful effects of pro-oxidant diets. If so, this is most unfortunate because the experimental infection in the mouse and the similar infection in the rat provide opportunities to explore the effect of diet on leprosy. I feel that this experimental area has been ignored much too long. In my own case, discussions with experts in the area have been discouraging because of stated difficulties in experimentally reproducing the usual types of human malnutrition in the mouse or rat. Dr. Bergel's nutritional theories are unique, however, and I believe that they are testable experimentally with these systems. He may be discouraged from proceeding by his belief that values that do not have a normal frequency distribution cannot be analyzed statistically (his limitation number 3). Fortunately, nonparametric methods are entirely suitable for such distributions ([1]). An approach through incisive experimentation would be most helpful. Many observers have been impressed by the association of endemic leprosy with inadequate nutrition.

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HLA Antigens and Leprosy

TO THE EDITOR:

The broad spectrum of clinical forms of leprosy, ranging from tuberculoid to lepromatous leprosy, is determined by the underlying degree of cell-mediated immunity of the host; specific immune response genes (Ir), linked to HLA genes in the major histocompatibility complex, could play a significant role in conditioning the host's susceptibility and/or the type of leprosy.

Many previous population studies of the association of HLA antigens with leprosy, whether tuberculoid or lepromatous, carried out in different ethnic groups failed to show conclusive results, but the family studies of de Vries, *et al.* ([1,2]) have indicated an HLA-linked genetic influence on the course of *M. leprae* infection. On the other hand, the study of Stoner, *et al.* ([4]) has evidenced the absence of an HLA-linked genetic defect underlying the *in vitro* unresponsiveness of lepromatous leprosy patients to *M. leprae* antigens.

We have studied the distribution of HLA antigens in 32 unrelated Italian Caucasian lepromatous leprosy patients and in 210 healthy, unrelated individuals of the same ethnic background. Patients and controls were typed for 52 HLA antigens of A, B, and C loci by the standard NIH Terasaki lymphocytotoxicity microtechnique. The HLA specificities tested were those recognized by the VII Histocompatibility Workshop.

BW52, BW38, and B7 appeared to have an increased frequency in patients when compared to controls (χ^2 with Yates' correction: 5.4, $p < 0.025$; 5.0, $p < 0.05$; 4.7, $p < 0.05$, respectively), but multiplying the significance values by the number of antigens tested ([3]), the differences were no longer significant. Thus our findings do not agree with any one of the previous population studies carried out whether among Caucasian or non-Caucasian ethnic groups. It is likely that the typing of many more patients for HLA-D and DR loci will probably provide more conclusions about some HLA-linked genetic influence on susceptibility to leprosy and/or on the clinical course of this disease.

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Unusual Reaction to Intramuscular Sulfone in Two Leprosy Patients in Malaysia

TO THE EDITOR:

A large number of lepromatous patients resident in or nearby the National Leprosy Control Centre at Sungei Buloh, Selangor, are on injection therapy, usually 400 mg of sulfone twice weekly (2 ml from a 10 ml vial of microcrystalline dapsone in refined coconut oil). In the past 30 years perhaps a million of these injections have been given to patients at Sungei Buloh. Side effects have been few and minor, save for the rare formation of an injection abscess, but in April 1977, within two days from each other, two patients who had injections in the upper left arm developed a sudden and immediate blanching of the distal part of the limb with marked cyanosis and extreme discomfort and tingling but not pain. In both cases the radial pulse could be detected but was of low volume; otherwise, the hand and lower part of the forearm appeared to have no circulation, and there was deep cyanosis but no paralysis, both patients being able to move the fingers and the wrist joint normally. The reaction appeared to be confined only to the injected limb, and there was no sign of systemic upset; in both cases the reaction subsided completely within six hours, no treatment being given other than massage and the application of heat.

The first patient, a 32 year old female Chinese, had been on sulfone injection twice weekly for the past five years. The second patient, a 52 year old male Chinese, had been on injection therapy from 1950 to 1958 when he was changed to oral DDS; he was restarted on injection therapy in 1974 and had continued on twice weekly injections. Both patients have subsequently had further sulfone injections, and there has been no repetition of the drug reaction.

The only other incidence of a similar nature occurred in 1955 to another Sungei Buloh patient, but on that occasion the reaction was very much more severe, resulting in superficial gangrene of the tips of all fingers and thumb but affecting the terminal phalanges only; they subsequently healed with minimal scarring. The patient afterwards continued sulfone injections and had no further reaction to them.

The cause of these reactions is a matter for conjecture; presumably they were triggered by intravascular injection of an arteriole in the muscle; a less likely possibility is that the injections were given too rapidly and around the radial nerve musculo-spiral canal; this unusual form of reaction to sulfone injections does not appear to have been reported before.

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