change in the color of the urine was immediate. In the negative cases, it was confirmed that none of the patients had taken dapsone for at least 3 days.

Of the 13 patients whose tests were doubtful, 6 were also taking thalidomide. In one of these patients the test was repeated three times and the result was always doubtful. We are not aware of any interaction between thalidomide and dapsone which could account for this finding.

The application of this method seems to be a simple, affordable means to detect or rule out one of the most important causes for the ultimate development of sulfone resistance in Hansen's disease, patient noncompliance. A positive urine test for dapsone in the presence of bacteriologically progressive disease would be strong evidence for sulfone resistance. This might be particularly useful in locations where mouse foot pad drug sensitivity studies are not readily available to confirm the diagnosis of sulfone resistance.

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Investigations into Cultivation of *M. leprae* in a Nasal Mucus Medium: A Preliminary Report

TO THE EDITOR:

The nostrils of lepromatous leprosy patients harbor a multitude of *Mycobacterium leprae* cells. These organisms are mainly responsible for spreading the disease to close contacts. A quantitative evaluation between the *M. leprae* of the skin and the nose showed that *M. leprae* from the nose had a significantly higher morphological index and greater length when compared with those in the skin of the same patients. Further, the number of globi was considerably more in nasal samples than in skin smears (Prabhakar, M. C., submitted for publication). Based on these data, it was postulated that the nasal cavity might provide some biochemical(s) which might nourish the *M. leprae* therein and facilitate their active multiplication ([3], and Prabhakar, M. C., submitted for publication). Efforts were made to cultivate *M. leprae in vitro* under conditions simulating those of the nostrils.

M. leprae cells were obtained from the nasal flushings of lepromatous patients according to the method described by Prabhakar ([1, 3]). In the author's opinion, for the cultivation of *M. leprae in vitro,* the *M. leprae* extracted from the nose of untreated lepromatous patients would be more suitable than those from any other source. In a few experiments, these organisms were used after purification according to the method described by Shepard ([4]).

Nasal mucus collected from healthy individuals was desiccated and, when completely dry, was powdered and preserved in

a tightly closed container at 4°C. Five, 10, and 15 mg per ml solutions were made in 0.1% w/v bovine serum albumin (BSA). A 0.1% solution of BSA served as control. The media were filter-sterilized, and the pH was adjusted to 6.2 (which corresponds to that of the nasal mucosa). The media were inoculated with freshly extracted *M. leprae* from the nose of lepromatous patients. Benzyl penicillin (100 U/ml) was added to each sample tube to prevent the growth of other microorganisms. Immediately after inoculation and after mixing thoroughly, smears were made with a standard loop (loop size was maintained constant), and spread in a circle 8 mm in diameter. After drying and fixing, staining was done with 3% carbol fuchsin, decolorized with 1% HCl in 70% ethanol, and counter-stained with 0.3% methylene blue. The number of organisms was counted across the diameter of the spot using a binocular Olympus microscope (100 ×). The samples were incubated at 31 ± 0.5°C (which corresponds to the temperature of the nasal passage). Smears were prepared on alternate days, dried, stained, and the acid-alcohol-fast bacilli (AAFB) were counted as described above. Control samples were also stained in the same manner, and the number of organisms counted.

It was observed that the above-mentioned medium (optimum 5 mg/ml), under the conditions stated above, encouraged the growth of AAFB. The morphology of the organisms was beautifully maintained.

Further studies are in progress to improve upon the cultivation and identification of the obtained cultures. Efforts are also being made to fractionate the nasal mucus, and cultivation is being tried in different fractions as well as with other substances and growth factors from cultivable mycobacteria ([2]) added. Further experiments are necessary before claiming the successful cultivation of *M. leprae*.

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Schwann Cells and *M. leprae*

TO THE EDITOR:

I congratulate Dr. Hamid Band and colleagues for their fascinating studies ([1-3]) on the interactions between Schwann cells and *Mycobacterium leprae*—a field of study which has thus far not received the attention it deserves from leprosy scientists.

As one with only a theoretical knowledge about the Schwann cell, might I make a comment? What is the hard evidence that Schwann cells internalize *M. leprae* by "phagocytosis" as the term is commonly understood? Indeed, does not use of the term "phagocytosis" imply—surely unjustifiably—a passive role for the organism in the process when it is clear that the organism finds a safe haven in the peripheral nerves (witness the phenomenon of persisters, and the perfect harmony between Schwann cell and organism in lepromatous leprosy)?

As medical undergraduates, we were taught that Schwann cells display "phagocytic" properties in clearing myelin droplets and debris in Wallerian degeneration. But