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

several studies ([4–6]) show that specifically mobilized circulating macrophages perform this function.

Until such time as the details of Schwann cell-*M. leprae* interaction *in vivo* are elucidated, it might be prudent to apply the term "ingress" of bacilli rather than "phagocytosis."

What do the experts think?

—Dr. S. S. Pandya

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Drs. Band and Talwar Reply

TO THE EDITOR:

We thank Dr. Pandya for his comments on our work. May we offer some justification for the use of the term "phagocytosis" for the entry of mycobacteria into Schwann cells.

Several workers in the past have studied the behavior of the Schwann cell toward particulate matter of different kinds *in vivo* as well as *in vitro*. These studies have demonstrated that morphologically identifiable Schwann cells *in vivo* are capable of taking up particles such as myelin debris ([1, 7, 9–11, 20–22]), carbon particles ([15, 17]), and mycobacteria ([8]). A similar behavior of Schwann cells *in vitro* toward myelin debris ([23]), latex particles ([2]), and mycobacteria ([2, 13, 14, 16, 18]) has been known for a long time. Moreover, a similar, though more avid, uptake of nonmycobacterial particles such as carbon particles ([12]) and latex particles ([2]), as well as that of mycobacteria ([2, 12, 13]), has been observed with Schwannoma cells *in vitro*. Nearly all of the workers have used the term "phagocytosis" to describe such phenomena. It is difficult to envision that a mechanism other than phagocytosis accounts for the uptake of inert particles, such as that of carbon and latex. It is, thus, clear that Schwann cells are endowed with phagocytic capabilities. We, therefore, used the term "phagocytosis" for the uptake of mycobacteria by Schwann cells in recognition of their phagocytic nature, and to conform with common usage. An added reason for the use of this term was the relative lack of discrimination between different mycobacteria by Schwann cells ([2, 18]) and the inhibition of this interaction by inhibitors of macrophage phagocytosis ([3, 19]). As used in our work, the term was an operational one and did not imply any passive role of the mycobacteria during their entry into Schwann cells.

The use of the term "phagocytosis" should not by itself prevent investigators from defining the role of mycobacteria in the process of their entry into Schwann cells. Although we observed several parallels between the uptake of latex and mycobac-