I wish to congratulate Dr. Lescanne and his colleagues on their very interesting paper concerning the microanatomy of the internal acoustic meatus (IAM), with particular emphasis on the meningeal layers. Data from this stimulating investigation confirm and complement the pioneering work of anatomists, results of neuroradiological studies, data from magnetic resonance imaging studies performed in recent years by a new generation of neuroradiologists, and, last but not least, research of neuropathologists. Lescanne, et al., describe the well-known anatomy of the IAM, with its dural and arachnoidal sheaths that surround the facial, intermediate, cochlear, and vestibular nerves as well as the vasculature. They found that the arachnoidal layer covers the entire meatal fundus, including the singular foramen, and is perforated by nerve fibers at the level of the cochlear and vestibular areas. Apparently, the authors overlooked the publication of Fisch and Rütten that who studied surgically treated intratemporal lesions (neuromas, meningiomas, and cavernomas) and found arachnoidal extensions along the entire fallopian canal as distally as the geniculate ganglion and petrosal nerves. This conflicting finding indicates a need for further microanatomical studies of the IAM and its adjacent areas.

Although initially I read the instructive paper of Lescanne, et al., with great pleasure, I was astonished to discover that the authors had deduced and assumed from their microanatomical studies in normal specimens that vestibular neuromas originate from vestibular ganglions. During their surgical explorations of vestibular neuromas, they had sometimes found the facial nerve closely adherent to the tumor, with no arachnoid situated between the nerve and tumor; they therefore denounced as inaccurate the theory of arachnoidal duplication. The arachnoidal membrane over the tumor was found to be either thin or thickened; but it was always thickened over the intracranial portion of the tumor and occasionally contained a collection of stagnant yellow cerebrospinal fluid (CSF) between the duplicated arachnoidal layers of the cistern.

In contrast to these described changes, the arachnoidal membrane of the lateral cerebellomedullary cistern, which contains cranial nerves nine, 10, and 12 and a segment of the posterior inferior cerebellar artery, was always found to be thin and transparent.
the mental recess and cause their duplication, even triplication, at the boundaries of the cisternal compartments around the foramen of Luschka, just over the supraoptivary fossa. In my publications (1976–1996) this concept was emphasized for the purpose of drawing my colleagues’ attention to the various cisternal compartments, their contents, and their relationship to the pia mater of the pons, medulla oblongata, converging cerebellar lobules, diverging arteries, particularly the arterioles to the pontobulbar sulcus, and the course of the veins. My intention was to define the distinct anatomy of the cisternal compartments, because I believe that each nerve group as well as the arteries and veins is enveloped in its own arachnoidal sleeve. Paying attention to these important facts of arachnoidal anatomy, one could completely remove vestibular neuromas in 466 patients. In the latter 346 patients the mortality rate was zero. During an observational time period of 10 to 35 years, recurrence of a vestibular neuroma occurred in four patients.

In 169 patients with moderate-sized tumors (2–4 cm) and in another 288 patients with large-sized tumors (> 4 cm), the arachnoidal cleavage plane could be followed from the area of pontobulbar sulcus laterally to the porus, and finally to the end of the meatus. In 68 patients harboring two small-, 24 moderate-, and 42 large-sized tumors, however, the arachnoidal membrane, nerves, and tumor capsule were found to be firmly adhering together. Although the process of dissection was considerably aggravated by this situation, in 57 patients the facial nerve could be anatomically preserved but, unfortunately, function did not return. (Four patients in this group developed recurrent tumors in the following 10–15 years.) In 11 of 68 patients, the nerves, arachnoidal layers, and tumor capsule had grown together, which required excision of this segment of facial nerve and a reanastomosis.

The severe segmental adherences in the ventrolateral area (see Nos. 13–14 in Figs. 6–7, page 107) cannot, in my opinion, be related to whether a single or double arachnoidal membrane exists around the tumor. Adherence is a reactive degenerative process of the arachnoidal layers due to biochemical activities of the neuromas and may occur in small (1 cm) tumors as well. It is well known that CSF protein is often markedly elevated. The phenomena of adherence and even of nondissectable adhesiveness among the tumor capsule, arachnoidea, and pia also occur frequently in cases of meningioma and craniopharyngioma, whose biological remains obscure.

The paper of Lescanne and colleagues represents a challenge for further investigation to be conducted by neuroanatomists, neuropathologists, and neurologists to elucidate the origin of vestibular neuromas, the nature of segmental or extensive adherences of arachnoidal membranes, and to resolve the question of whether the arachnoidal layer around a neuroma is single, duplicated, or thickened due to biochemical activities.

I would like to correct the authors’ misinterpretation of some of the material in my publications. The phrase “vestibular ganglions and their epiarachnoidal localization” was never used in my publications. I have never described the mental segment of the vestibular nerve as being located outside the subarcnoid space, and neither have I characterized the mental portion of the facial and cochlear nerves as being located inside the subarcnoid space. My concept of these matters does not correspond to the illustrations in Fig. 1A and B of the authors’ article, but rather to the picture in Fig. 1C in which the arachnoidal sheath covers all four nerves as far as the lateral end of the meatus, leaving an open space of 1 to 2 mm.

References
2. Cotugno D: De Ischiade Nervosa Commentarius. Viennae: Gräffer, 1770

RESPONSE: As demonstrated by the major contribution of Dr. Yaşargil, detailed knowledge of microanatomy is mandatory for good microsurgical practice, especially with