Letters to the Editor

The Editor welcomes submissions for possible publication in the Letters to the Editor section that consist of commentary on an article published in the Journal or other relevant issues. Authors should:

- Include no more than 500 words of text, three authors, and five references
- Type with double-spacing
- See <http://jtcvs.ctsnetjournals.org/misc/ifa.html> for detailed submission instructions.
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Spatial orientation of the ventricular muscle band

To the Editor:

In the August 2001 issue of the *Journal*, a brief communication was published referring to the "ventricular muscle band."¹ Its basic premise was that the musculature of the right and left ventricles existed as a continuous band. In support of the concept, the authors cited several works previously published in Spanish and two investigations concerned only with the left ventricle. They failed to cite, however, or to discuss any of the previous investigations which, from Pettigrew onward, have shown that the musculature of the heart is arranged on the basis of a modified blood vessel, rather than in the fashion of a skeletal muscle with discrete origin and insertion.^{2,3} In particular, they neglected to discuss the recent elegant work by Jouk and colleagues,⁴ which expanded the concept of geodesic paths initially expounded by Streeter and Torrent-Guasp.⁵ Although supporting the basic concept of a geodesic arrangement, Jouk and his colleagues were unable to provide any evidence to support the concept of a muscular band encircling the cavities of both the right and the left ventricles. There is no question but that the anatomic orientation of the muscle fibers within the left ventricular wall is of potential surgical significance. The concept, however, should not be obfuscated by slavish acceptance of a hypothesis that has yet to be confirmed histologically.

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3. Sanchez-Quintana D, Anderson RH, Ho SY. Ventricular myoarchitecture in tetralogy of Fallot. *Heart.* 1996;76:280-7.
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Reply to the Editor:

The helical concept of spatial myocardial fiber orientation has been described by Senac, Krehl, and a large spectrum of anatomists over the past 500 years.¹ Three missing links have been the structural origin of the helical left ventricle and septum, why there was a right angle crossing of septal fibers, and the functional meaning of this anatomic configuration.

Some background into anatomic contributions appeared in our recent manuscript,² including the enormous contributions of Pettigrew, and recognition that Greenbaum and Anderson's histologic observations further clarified the helical intraventricular formation.³ We agree that the origin of the heart is from a modified blood vessel.⁴

The helical arrangement of the heart traverses the ventricular musculature and connects with actin, myosin, tropomyosin, and calcium. Efforts to link *histology* with structure require a pattern of dissection that does not violate underlying structure during unfolding of the helices to prevent disruption. Consequently, fibers cut in a dissected fetus by Jouk,⁵ in the orientation used can change the optical properties of birefringent material and not provide a pure optical method. These studies did not reconstruct the 3-dimensional fiber orientation, based on standard tomography methods, and they could not use this 2-dimensional dissection method to see the apex; the site of continuity of twist of car-