Reply to Letter to the Editor

Re: Characterization of the ventricular conduction system in the developing mouse heart

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Received 29 March 2001; accepted 29 March 2001

We wish to thank the Editor of Cardiovascular Research for giving us the opportunity to answer Dr. Anderson’s comments on our recently published paper [1]. First, we would like to express our admiration for Dr. Anderson’s work and we appreciate the interest he has shown in our publication. The fact that he has found some aspects of our paper to subject to criticism does not in any way diminish our respect for Dr. Anderson and his work. Indeed, criticism and counter-opinions stimulate research and lead to the progress of knowledge.

The first point under discussion is the reference that we make to the work done by Drs. Racker and Kadish [2] on the conduction system of dogs (our reference #37). These authors state that the atroventricular node has proximal and distal extensions, which they call the proximal and distal AV bundles. These extensions of the AV node can be identified [2] on the basis of their specific histological characteristics. By citing these studies, we only recognize the plurality of the scientific contributions and, in this particular case, the existence of some controversy on the definition of the anatomy of the conduction system. However, this does not mean that we endorse or accept the distinction made by Drs. Racker and Kadish as a dogma. Indeed, we state two lines below (our references #38–39) that work done by Dr. Anderson and his colleagues has not demonstrated differences within the AV node tissue on molecular grounds. Thus, careful reading of the article indicates that our findings and conclusions on this specific point are closer to Dr. Anderson’s personal view than he thinks.

The second point raised by Dr. Anderson relates to the work done by Drs. Lamers, Moorman and others [3,4] on the early development of the human heart. These authors established the existence of a subpopulation of myocardial cells which formed a ring encircling the primary interventricular foramen. These myocardial cells were positive for the neural antigen G1N2, and were subsequently identified as the sole precursors of the atroventricular conduction tissue (this work is reviewed in our references #1, 4). We have not specifically addressed this point for just one reason; the positive reaction of the conduction system precursors to the G1N2 antibody does not directly imply that these cells have to express the molecular determinants of the mature conduction system, or that all the G1N2-positive cells will end up as conduction tissue cells. Thus, our probes could neither confirm, nor lead to the rejection of, the nature of the precursor ring. By stating that the bundle of His may derive from the ventricular myocardium we recognize the existence of minor discrepancies with previous models. The fact that one of us (DF) has collaborated with Dr. Moorman for a long time does not imply that we have to endorse his contribution in its entirety, or that we cannot disagree, albeit minimally, with his conclusions. We think that Dr. Moorman understands this very well and can only praise his stylish attitude and continuous support.

References
