C-kit/CD117 Cells From Amniotic Fluid and Membranes and Their Cardiomyogenic Potential

To the Editor:

I read with interest the article by Tsuji et al., as well as the related editorial, that appeared recently in Circulation Research. Although the findings and differentiation data of the study were intriguing, the study raises some questions regarding the cell type that was identified in the amniotic membrane and the omission by the authors to report and discuss some of the relevant literature. In particular, it is not clear whether or not the cells express c-kit. Although the authors showed in Online Figure 1 (A) and in the main text of the article (as well as was reported by Penn and Mayorga in the accompanying editorial) that cells do not express CD117, Figure 1H of the article shows the cells expressing c-kit that, to my knowledge, represent the same antigen. I appreciated that the cells may not have expressed the protein or that the protein may not have been present on the cell surface, and that only expression at RNA level could be detected; however, I believe that this should have been discussed in the article. If cells are c-kit+, then my colleagues and I have shown that those are present both in the amniotic fluid and the membranes, and we have described how these cells have a broadly multipotent potential. They expressed, similarly to the human amniotic membrane-derived mesenchymal cells pluripotent markers such as Oct4 and SSAA-4; could be expanded extensively without feeders with a doubling time of 36 hours; and are not tumorigenic. Clonal cells derived from amniotic fluid were maintained for over 250 population doublings while retaining normal karyotype and long telomeres. Moreover, c-kit+ cells from amniotic membranes and fluid displayed both in vitro and in vivo a multilineage hematopoietic potential. My colleagues and I have also explored their cardiomyogenic potential, and we did see some differentiation potential both in vitro and in vivo, but, similarly to Tsuji et al., we could not distinguish whether differentiation was attributable to fusion of stem cells with cardiomyocytes.

I would like to know from the authors whether the cells they described are c-kit+ or not and how do they interpreted their data in relation to the ones published before on c-kit+ cells.

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