fibroblasts. These should be able to continually remodel the valve matrix and produce its components (eg, glycosaminoglycans) with very high turnover.

On this basis, this work is a great contribution in the complex field of engineered tissue valves, and the announcement is impressive because it should be able to offer a different and easier way to reseed valves before implantation. The authors are congratulated for their current achievements and should be encouraged to validate their results in other in vivo models.

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Reply to the Editor:

We thank Dr Dainese for this comment. Several groups have demonstrated that in vitro seeding of cells on artificial scaffolds or on natural matrices in a biomimetic environment succeeded in the generation of functional tissue-engineered heart valves.^{1,2} More recently, Yacoub³ has said in an interview about mesenchymal stem cells that “if you subject these cells, in a 3 dimensional matrix, to programmes of conditioning using cyclic pressure of a predefined nature, they change their phenotype to one that is very similar to valve tissue.” Yacoub and his team still believe that the future of the tissue-engineered heart valve is dependant of an in vitro seeding in a bioreactor. To our knowledge, for the first time in this field, our work⁴ suggests that direct injection of mesenchymal stem cells seems to induce almost physiologic recolonization of valvular matrix under physiologic shear stress. Re-endothelialization of a decellularized xenogeneic matrix can be obtained in vivo without the cumbersome step of bioreactor recellularization. This has the evident advantage of simplifying the recellularization procedure and guaranteeing that recolonizing cells will stand the actual high shear conditions of a cardiac valve. However, we have to underline the evident limits of our work. First, we do not know

at the present time whether the recolonizing cells directly derive from the injected cells or from autologous cells migrating from blood or neighboring tissue. Second, as suggested by Dainese et al, a longer follow-up period is mandatory and should be prolonged for more than 1 year to confirm our results.

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