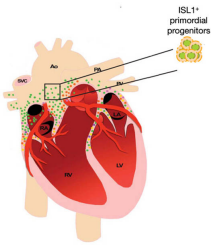


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By: Tudor Vieru, Science Editor



Scientists have identified what they say are the heart's "master" stem cells. Lei Bu et al., *Nature* 460, 113 (2009)

[Stem Cells for the Heart Found](#)

New tissue could soon be grown from just a few harvested cells

In a find that could potentially revolutionize the field of medicine, experts at the Massachusetts General Hospital have found a type of human heart stem cells that are able to basically differentiate into all major types of cells that exist in our hearts. The discovery is of critical importance, and finding the stem cells is a momentous achievement. These types of stem cells could offer a ray of hope for the thousands of patients currently on transplant lists, which could soon benefit from custom-built hearts, made entirely from their own cells.

While studying human fetal hearts, the science group, based at the laboratory of Kenneth Chien, who is the director of MGH Cardiovascular Research Center, was able to identify in humans the same source in stem cells that had been previously found in mouse models. They also determined that the cells had their amazing properties on account of the fact that they expressed the Islet 1 protein, which is also present in large concentrations in the developing heart, when babies are in the womb.

In a study published in the July 2nd issue of the journal *Nature*, the team explains that the newly identified cells are in fact "master stem cells" from which all other types of heart cells can be derived. They say that heart muscle (cardiomyocytes), smooth muscle, and blood vessel lining (endothelium) could also potentially be differentiated from the Islet 1-expressing cells. The stem cells that the team analyzed were created from embryonic stem cells, and were then tagged with a fluorescent marker, so as to tell them apart from other types of stem cells.

Chien explains very clearly that the new cells in themselves do not constitute a viable course of treatment. Rather, new therapies could stem from developing methods of identifying the cells that are already starting to transform so as to perform certain functions. However, the researcher adds, the heart stem cells will undoubtedly be used for drug screenings and disease modeling, which would in turn yield even more information as to how heart cells react to various stressors, and how these effects may be stopped, *ScienceNow* reports.