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**Harnessing Stem Cells for Heart Failure**

Heart failure is another area being targeted by a number of cell therapy companies, including Cleveland-based Juventas Therapeutics Inc.

Juventas is working on a heart failure product based on research into stromal cell-derived factor (SDF)-1 by Marc Penn, MD, PhD, a cardiologist at the Cleveland Clinic. SDF-1 is a naturally occurring protein in the body that increases in response to tissue injury by attracting stem and other regenerative cells to promote the healing process. The natural SDF-1 response is limited and usually lasts for about five days, but Juventas has developed a way to lengthen the response to as long as two weeks. A number of studies involving SDF-1 have shown that increasing the amount of time the protein is active can promote tissue repair and prevent cell death as well as recruit more stem cells to a damaged area of the body.

Rahul Aras, PhD, Juventas president and CEO, told Medtech Insight his company has been able to achieve positive results in preclinical trials of Juventas' JVS-100, which encodes SDF-1 to promote prolonged cell survival and increase new blood vessel formation. The studies to date have been conducted on heart failure in pigs, and the next step is to begin a Phase I clinical trial in humans. Enrollment in that trail, which will involve 16 patients, began in early April at Northwestern University and Columbia University.

Like many of companies working on technology that involves stem cells, Juventas is a number of years away from reaching the market, and funding will be an issue every step of the way. To date, the company has secured close to $10 million in venture capital, and the list of investors includes Triathlon Medical Venture Partners, Early Stage Partners, Fletcher Spaght Ventures, Reservoir Venture Partners, North Coast Angel Fund, X Gen Ltd., JumpStart Inc., and Blue Chip Venture Co.