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Cryogenic Organ Banking Getting Closer Implications Profound for Transplant Patients

Rancho Cucamonga, CA – May 3, 2004 – A paper just published by 21st Century Medicine, Inc. in the April issue of the international scientific journal *Cryobiology* announces several fundamental breakthroughs on the path to successful organ banking at cryogenic temperatures. “Thanks to the successful combination of these new technologies, we were able, for the first time, to routinely recover kidneys from a temperature of -45°C (-49°F) and transplant them successfully,” said 21st Century Medicine Chief Scientific Officer, Dr. Gregory Fahy.

Cryopreservation, or preservation at cryogenic temperatures, could provide many important benefits for organ transplantation. “Once organs are no longer perishable, it will become possible to perform transplant operations at a time and place that is most convenient for both patients and surgeons,” said 21st Century Medicine CEO, J. Dean Barry. “Global organ sharing and better tissue matching should improve patient outcomes and reduce costs, while limiting side-effects of immunosuppressive drugs.”

Organ cryopreservation is a complex procedure, in which many kinds of problems have to be solved simultaneously in order for success to be achieved. Ice formation is damaging to organized tissues and must be avoided, even at very low temperatures. Liquids that prevent ice damage tend to be toxic, and it is tricky to introduce them into kidneys and remove them without causing damage. In addition, the act of cooling the organ can be damaging all by itself.

But the paper reports that, for the first time, all of these problems have been controlled. “By routinely recovering kidneys from -45°C, we have shown that our techniques for avoiding injury are effective and reliable even for whole organs,” Dr. Fahy explained.

There is still at least one problem that may have to be solved before organs can be routinely banked. The paper reports that in kidneys cooled to below -45°C, a very small amount of ice can form in small subregions of the kidney when the kidney is rewarmed. However, encouraging progress on that problem has already been made, Dr. Fahy said.

The organ preservation technologies being developed by 21st Century Medicine should also be applicable to non-vital organs such as gonads and to tissue-engineered organ replacements now being developed to meet the organ shortage, Mr. Barry said. “This is really a platform technology. It should ultimately be applicable to the preservation of any medically valuable cell, tissue, or organ.”

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21st Century Medicine is a biomedical R&D company focused on developing preservation protocols, solutions & devices essential to storage & transportation of living systems both in a liquid state and at cryogenic temperatures. It provides cryopreservation products and services as well as contract research services in transplantation medicine, drug discovery and development, and assisted reproduction, among other areas.