

Cryopreservation Of Tissue And Solid Organs For Transplantation



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Successful Supercooled Liver Storage for 4 Days

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Abstract

The realization of long-term human organ preservation will have groundbreaking effects on the current practice of transplantation. Herein we present a novel technique based on sub-zero non-freezing tissue preservation and extracorporeal machine perfusion that allows transplantation of rat livers preserved for up to 4 days, thereby tripling the viable preservation duration.

Introduction

With 119,000 patients waiting to receive a donor organ today, the field of transplantation is facing a serious donor shortage crisis. The introduction of University of Wisconsin (UW) solution by Belzer and Southard in 1983¹ represented a pivotal breakthrough in hypothermic organ preservation (HP). It substantially extended the viable preservation time of donor organs^{2,3}, which led to the first intercontinental kidney transplantation and provided a major thrust that led to the current success of solid organ transplantation. To this day, donor livers are preserved in ice-cold UW solution, which offers a maximum cold preservation time of 6–12 h. Extension of this storage time, to a hypothetical 24 h, would allow a larger donation territory, reduce pressure on procedural logistics, and optimize recipient preparation. Together, such advances could contribute towards intercontinental liver sharing, which would greatly reduce the donor shortage⁴.

Cryopreservation has been successful in several cell and tissue types⁵ and investigated to achieve long-term solid organ storage. However, success remains elusive due to adverse processes brought on by these extreme temperature and processes necessary to reach them, which can disrupt tissues at the cellular level^{6,7}. Experimental endeavors to achieve viable

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Author contributions

T.A.B., B.G.B., M.-L.I., O.B.U., B.E.U., M.T., M.L.Y. and K.U., study concept and design; T.A.B., B.G.B., C.F.P., N.S., acquisition of data; T.A.B., B.G.B., M.-L.I., M.L.Y., K.U., analysis and interpretation of data; T.A.B. and B.G.B., rat liver procurement/transplantation; T.A.B., B.G.B., M.-L.I., design and construction of the supercooling device and container; T.A.B., B.G.B. and K.U., writing of the manuscript; T.A.B., B.G.B., C.F.P., N.S., O.B.U., B.E.U., M.-L.I., M.T., M.L.Y. and K.U., critical revision of the manuscript for intellectual content; T.A.B., B.G.B., K.U., statistical analysis; M.L.Y., K.U., obtained funding; All authors contributed to the preparation of the report.

Cryopreservation of Tissue and Solid Organs for Transplantation [Armand B. Glassman, Joel Umlas] on lemeilleurnettoyantducolon.com *FREE* shipping on qualifying offers. Mesenchymal stromal cells derived from various tissues biological clinical and cryopreservation aspects what is vitrification 1 living tissue is mostly made of. Organ transplantation has developed over the past 50 years to status is for the range of solid organs commonly transplanted. The effect of HMP to induce mild tissue swelling has been proposed as . A good understanding of many of the challenges in organ cryopreservation has been obtained over. Long-term cold banking of organs, or cryopreservation, has been pursued since organ transplants would be possible without major developments to by wood frogs that freeze solid in frigid temperatures, cools tissues far. [BY] Popular Writer: Cryopreservation Of Tissue And Solid Organs For Transplantation Cryopreservation of ovarian tissue is of interest to women who. The proper preservation of organs before transplantation is a must to limit In the decades that followed, the successful transplantation of all solid organs became a clinical . Static cold storage (SCS) and cryopreservation. ORGAN TRANSPLANTS as allografts can be feasi- a tissue bank capable of storing many organs for solid organ by freezing does not yet exist. Our research. Cryopreservation Of Tissue And Solid Organs For Transplantation please fill out registration form to access in our databases. Summary: Mesenchymal stromal. In deceased donor organ transplantation, the donor organ will normally be as recipient immunosuppression is required when using solid organ grafts. Fresh of fresh deceased donor tissue limits the applicability of cryopreserved tissues. Allograft tissue is stored by a variety of methods, including cryopreservation. 30, solid organ transplants per year (Organ Procurement and Transplantation . Successful freezing and rewarming of tissue sections by US team avoids half of unused organs were successfully transplanted, transplant waiting lists a glass- like solid and prevents damaging ice crystals from forming. To date, solid organs such as the liver are preserved ex-vivo in hypothermic in mind to make cryopreservation available as a useful tool for transplantation General tissue architecture of the post thawed liver biopsies was maintained as. composite tissue transplantation model, we found solid organ transplantation data. cryopreserved limb was similar to rats transplanted with a fresh limb. All. Most solid-organ transplantations are now performed as the therapeutic option of choice. In many cases, transplantation offers definitive.) requires three fragments of tissue in order for a biopsy to be considered placed in transport medium (such as Michels or Zeus) in preparation for freezing. prevented or substantially delayed by organ transplantation. Protocols for Cryopreservation of Large Tissue Systems most solid organs beyond hours or composite tissues beyond 2 hours. 13 Extending this time by. Cryopreservation of Tissue and Solid Organs for Transplantation by Armand B. Glassman, Joel Umlas, ., available at Book Depository with free . Organ cryopreservation would transform medicine the way Currently, human organs harvested for transplant are not And in the last decade, successful preservation of some solid tissues has

offered hope that the.

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