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(54) Title: HIGH TEMPERATURE CRYOGENIC PRESERVATION OF BIOLOGICALLY ACTIVE MATERIAL

(57) Abstract: Viable biological material is cryogenically preserved (cryopreservation) by preparing the material for freezing, immersing the material in a tank of cooling fluid, and circulating the cooling fluid past the material at a substantially constant predetermined velocity and temperature to freeze the material. A method according to the present invention freezes the biologic material quickly enough to avoid the formation of ice crystals within cell structures (vitrification). The temperature of the cooling fluid is preferably between -20 °C and -30 °C, which is warm enough to minimize the formation of stress fractures in cell membranes due to thermal changes. Cells frozen using a method according to the present invention have been shown to have approximately an 80 percent survival rate, which is significantly higher than other cryopreservation methods.