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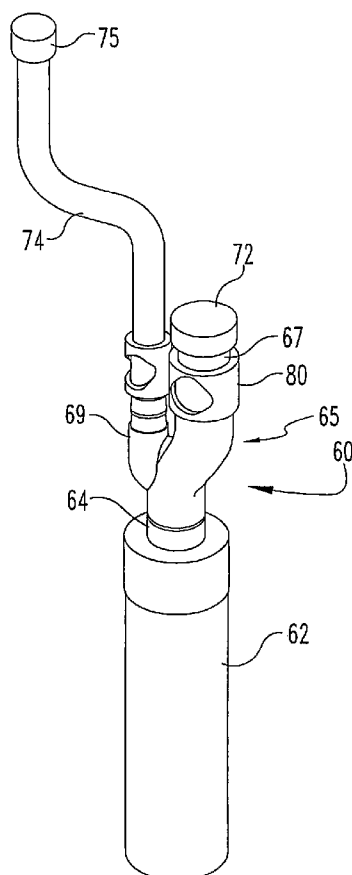
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(54) Title: SYSTEMS AND METHODS FOR CRYOPRESERVATION OF CELLS



(57) Abstract: An auto-nucleating device includes a hollow tube containing a crystalline cholesterol matrix therein. The ends of the tube are closed by a membrane that is impermeable to the cholesterol but permeable to liquids contained in a cryopreservation vessel. The auto-nucleating device is disposed within the vessel and provides a site for ice nucleation during freezing of the liquid within the vessel. One such cryopreservation vessel is a flexible vial having a closed port at one adapted to be pierced by a needle to withdraw the liquid within. The opposite end of the vial is initially open to receive the liquid. The end is then sealed to form a closed system for cryopreservation. Another cryopreservation vessel includes an adaptor mounted to a port of a liquid container. The adaptor includes one tubular branch that is closed by a needle septum while another tubular branch includes a barbed fitting for engaging a flexible tube. The flexible term terminates in a needle septum. The container is initially at below-atmospheric pressure. In use, the liquid sample is injected by needle through the septum in the second branch. Once the container is filled with the sample, the flexible tube is heat sealed and severed just above the barbed fitting. The sealed container may then be subject to a cryopreservation protocol. After thawing, the sample liquid may be withdrawn by a needle puncturing the septum in the first branch.



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