James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research

STANDARD OPERATING PROCEDURE

Title:	**General Archiving for Ventricular Assist Device Cores**		
Procedure:	**BB.017.01**	**Supercedes:**	**none**
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Revision History		
Date	**Reviewer**	**Summary of revision**
20Apr2009	Crystal Leung	Reformatted to iCAPTURE format

Purpose

The purpose of this document is to outline standardized procedures for iCAPTURE Biobank personnel to follow when archiving specimens from ventricular assist device (VAD) surgery.

Samples are collected from patients that have been through the informed consent process and agreed to participate in the tissue banking program. Tissue is only suitable for specific research studies if preserved appropriately. This SOP and accompanying protocol set out a well recognized method for effectively archiving heart specimens and preserving their RNA, DNA and protein constituents utilizing several different fixatives for optimal preservation.

Responsibilities

This procedure is applicable to:

- Biobank personnel
- Other personnel who may be responsible for archiving VAD cores

Safety

Universal precautions are a method of infection control in which all human tissue, blood and body fluids are treated as if they are infectious. Be sure to wear appropriate personal protective equipment (gloves, yellow gown, eye protection etc.). This SOP does not cover detailed safety procedures for handling Human Biological Materials (HBMs) or hazardous chemicals. **Refer to BB.001.01** "Handling Biohazardous Materials".

Definitions

LVAD	Left ventricular assist device
LVAD core	The tissue that is cored out of the heart during an LVAD insertion surgery
PPE	Personal protective gear including and not limited to: gloves, biohazard gown, lab coat, eye protection, surgical mask, etc.
Archive	The physical process of harvesting tissue for indefinite storage
Fixation	To preserve tissues in an as life-like a state as possible.
Biobank identification number	Unique identifier that links a specific piece of data or sample to a patient in an un-identified form. This includes CR(S) and PRL numbers
Biohazardous materials	Human tissue, cells, body fluids, or culture materials that may contain infectious or other hazardous materials
Biospecimens (wet data)	Any tissue, blood, blood product, urine, DNA or RNA extraction or product.
SOP	Standard Operating Procedure. Document used to control the methods and requirements by which personnel will perform their activities.

Materials and Equipment

Foil – 3x3 inch squares	Tissue cassettes
Dry ice	RNAlater – 1.5 ml
Dry ice box	Freezer canisters
Freezer boxes	White plastic tubs to hold formalin (from Histo)
OCT molds	Latex gloves
Yellow gown	Biohazardous bags (8" x 12
Cryogel e.g. OCT gel	Scalpel

10% buffered neutral formalin	Phenokil™
Forceps	Liquid Nitrogen
Camera and computer	Absorbent pad
Ruler	Safety glasses

Procedures

1. The OR will page the Cardiovascular Biobank when the VAD core(s) is removed and placed in Heart Collection Buffer. Tissue will be placed into the OR core fridge

2. Pick up LVAD core(s) from fridge

3. Photocopy OR requisition form.

4. Enter the patient information into the Surgical Log-in book (**see BB.011.01**) and generate the next CRS number.

5. Complete a Surgical Specimen manila folder. Place the OR requisition form and LVAD core archive form in this folder when done.

6. Using the CRS number, label all tissue cassettes, OCT molds, RNA later vials and pieces of tin foil that will be needed. **Ensure that you use the solvent resistant pen (white body with a black cap) to label the tissue cassettes.** The OCT molds and foil pieces may be labeled with the black permanent marker (does not have to be with the solvent resistant pen). This number will identify the specimens for later retrieval.

7. If one specimen is received, the specimen will be designated H1, if more than 1 specimen, then use sequential numbering – H1, H2, H3 etc. Label H1 on the OCT mold, foil, cassette and RNA later tube and carry on to H2 for subsequent sections.

8. Place specimen on black photograph mat, and take adequate number of images.

9. Fill the small white styrofoam box with a layer of dry ice (dry ice is kept on the bottom shelf of the CV Registry -80C freezer located on the 2nd floor Burrard Blg.). Place a small metal tray on the dry ice and this will be used to freeze the

OCT and foil wrapped tissues. All frozen samples should be stored on the dry ice while you are archiving the core tissue.

10. Take section the tissue and place in cassette and place into formalin. Each piece should represent the full thickness of the myocardium (epicardium – endocardium).

11. Fill up the labeled OCT mold ½ with OCT mold gel. Take section the tissue and place in OCT mold – fill the remainder of the OCT mold with OCT gel. Be sure not to make any bubbles in the OCT gel. Place the OCT mold in the surgical tray on dry ice. Each piece should represent the full thickness of the myocardium (epicardium – endocardium). **See BB.HIST_003.01.**

12. Take a section of the tissue and wrap it into the labeled 3x3 inch piece of foil. Wrap the ends such that the tissue will not fall out. With a long handled pair of forceps, place the foil into liquid nitrogen for at least 10 seconds. Place the foil in the surgical tray on dry ice. Each piece should represent the full thickness of the myocardium (epicardium – endocardium). **See BB.HIST_006.01.**

13. Take a section of tissue and submerge into a labeled vial of RNAlater.

14. Once you have finished the protocol, place the metal tray in the -80C freezer.

15. Take the small container of formalin and submit to the iCAPTURE Histology department for processing and embedding.

16. Put the labeled RNAlater vial into the small 4C fridge overnight

17. Remove all images off the digital camera card and store them on the secure P: drive **See BB.002.01.**

18. The following day, take all frozen sections and RNAlater vial and place into the next sequential freezer box and store in -80C fridge. Record the CRS number in the "Freezer Log-in" book. **See BB.013.01**

REMINDERS:

- take fresh weight of specimen(s)
- mark surgical number on each specimen cassette
- wear appropriate safety gear i.e. – goggles, gloves, face masks, yellow gowns
- comment on anything you feel is unique or of interest to the pathologist