Health Sciences Tissue Bank Facilities/Equipment Description

The Health Sciences Tissue Bank (HSTB) provides essential support for University of Pittsburgh research programs needing biological materials from patients seen at UPMC. The main objectives of the HSTB are to provide a mechanism to simplify and streamline the process of research tissue accrual and disbursement, and to provide efficient research pathology support services including histology, immunohistochemistry and paraffin tissue microarrays. The Health Sciences Tissue Bank is part of the University of Pittsburgh Core Research Facilities. Although the tissue bank is under the auspices of The University, we also have a strong working relationship with UPMC and the Department of Pathology. The HSTB has three College of American Pathology (CAP) certified laboratories in the flagship UPMC hospitals: (b)(4) (b)(4) as well as a collection site in the community hospital (b)(4) In addition, the HSTB extensively interacts with Oncology and Pathology Informatics and has computer and server facilities located in these collaborative facilities. The facilities available to the tissue resource at each of these institutions are detailed below:

Shadyside Hospital (SYS)

Health Sciences Tissue Bank Shadyside Laboratory Space:

The Health Sciences Tissue Bank (HSTB) administrative office is located a short distance from the (b)(4); (b)(6) (b)(4); (b)(6) (b)(4); (b)(6) The HSTB laboratory and freezer room space occupies 3300 square feet. This space includes the tissue banking lab space, research histology lab space, freezer rooms and storage rooms. The space is divided into six rooms. The largest room, measuring 30'x20', is for tissue processing, slide retrieval and storage. This laboratory is equipped with a cryobath, liquid nitrogen tank and dry ice for varied methods of snap freezing tissue, a Thermo cryostat used to cut frozen sections for quality review by a pathologist. Centrifuges, Cytospin, calibrated pipettes, microscopes, and sterile supplies are available for tissue procurement and dissection. The lab space has a refrigerator to store media and other necessary reagents as well as a -80°C freezer for short term sample storage. There are 9 working stations in the lab area all equipped with desktop computers, barcode scanners and hooked up to a network printer. There is a storage area for paraffin embedded tissue blocks and slides. Locked filing cabinets are located in the space for secure storage of documents and files. These facilities provide staff with all the necessary materials to procure quality tissue for tissue collection and disbursement.

The smaller laboratory area, measuring 30'x10' is for research histology. This lab space has the unique equipment necessary for formalin fixed paraffin embedded (FFPE) tissue processing and staining, along with the specific equipment needed for paraffin tissue microarray (TMA) construction. For paraffin processing, a ThermoShandon Excelsior tissue processor and Sakura Tissue Tek embedding center are used. There are 3 Microm microtomes, 2 are equipped with histocollimators. They can be setup for routine sectioning, thick sectioning microtomy and laser capture microdissection (LCM) slides or other protocol specific requests. There is 1 automated stainer for H&E staining and 2 automated Dako stainers used for immunohistochemical (IHC) staining along with calibrated pipettes for serial dilution and titration protocols, which are used to stain tissue based on study design. The tissue microarray portion of the lab contains 2 Beecher Tissue Microarrayers with coring capabilities from 0.6 to 2.0mm. The histology lab also contains its own ThermoShandon cryostat allowing for the capability of providing frozen section slides. Included in the lab is a 2°-8°C walk-in cooler and -20°C freezer for reagent storage. Other available supplies include water baths, glassware, 2 incubator ovens, a fume hood for cover slipping and other tools needed to perform daily tasks. The histology space includes 3 active work stations with desktop computers hooked up to a network printer. One of the work stations has a Slidemate slide writer locally connected to one of the computers used for automated slide labeling.

There are two designated freezer areas. One contains 12 Thermo -80C freezers, while the other room is set up specifically for vapor phase liquid nitrogen freezers, containing 6 vessels. This space has piped liquid nitrogen from the hospital facility. Both freezer rooms also contain additional secure storage space. There are two hallways, measuring 30'x6' and 25'x8', used for filing cabinets for glass slides, paraffin blocks and supplies.

Health Sciences Tissue Bank Shadyside Office Space:

(b)(6) and the tissue banking staff have offices within the (b)(4); (b)(6) area, which are in near proximity to the (b)(4) . The Director, (b)(6) has a 500 sq. ft. office suite which contains a desk space with a desktop computer and multiheaded microscope. This space also contains a conference table with seating for 8. Outside of his suite, there is an anteroom with desk space for his administrative assistant. The Assistant Director has a 110 sq. ft. office within the HSTB at UPMC

Shadyside, along with an 80 sq. ft. shared office space for the Project and Quality Managers. The Research Histology Supervisor has a 130 sq. ft. lab space on the histology side of the main laboratory set up. All office spaces contain desktop computers with dual monitors mapped to network printers, scanners, telephones, locked filing cabinets, and other office supplies necessary for administrative operations. The rooms are also equipped with a dry-erase whiteboard for teaching assistance and microscopes as needed.

(b)(4); (b)(6) This area is approximately 450 sq. ft and includes the main gross room and the frozen section area. It functions as the central processing and sectioning lab for gross pathology at (b)(4); (b)(6) It has 5 grossing stations that have fume hoods for processing non-sterile specimens. Each of the fume hoods is equipped with PCs linked to the hospital mainframe system, sinks, and a DictaPhone Voice Processor for dictation of gross descriptions.
This facility is a fully functional surgical pathology gross room, and contains equipment necessary for this purpose. Such equipment includes: Leica CM1800 CryoStat, H&E staining station, ButcherBoy band saw for sectioning of bone, Cabinet X-Ray System Faxitron Series HP, Polarstar No-frost refrigerator, Revco -70 C upright freezer, Flammable cabinet, Cryobath CB-60 isopentane cryopreservation unit, Aculab GS-2001 Standard Digital Scale, and dissecting equipment, chemicals, glassware, and storage shelves for such purposes. This room also has a two-head American optical microscope for frozen section interpretation.

Health Sciences Tissue Bank - Imaging Services: Imaging services are offered through the Health Sciences Tissue Bank (HSTB). The digital imaging core facility offers clinical and research services. The imaging core has imaging equipment for generating, annotating, interpreting, storing and analyzing digital images. This facility is located at UPMC Shadyside in the Hillman Cancer Pavilion and has about 200 sq. ft. of space for the imaging laboratory. The imaging facility provides pathologist oversight, technical support staff and space for imaging studies, validation, training and conferencing. Images can be securely hosted and made available to investigators for remote viewing or saved locally for investigators on a DVD, USB flash drive or external hard drive.
Equipment: Imaging devices include Nikon digital cameras for macroscopic pathology and Spot insight cameras for microscopic imaging. For virtual microscopy at 20x, 40x and 60x magnification a variety of whole slide scanners (Omnyx, Aperio and Hamamatsu Nanozoomer) are available. The Nanozoomer has z-stack (multiple plane) capability.
Image analysis: The imaging facility offers image algorithm development and image analysis. The Visiopharm platform is primarily used for this work, which allows cellular structures and biomarkers in tissue samples to be detected and quantified, automated alignment of serial tissue sections, and tissue microarray (TMA) image analysis. Quantitative image analysis of immunohistochemistry can also be performed on images using Aperio's nuclear, positive pixel count or membrane algorithms.

(b)(4); (b)(6)

Health Sciences Tissue Bank (b)(4); (b)(6) Laboratory Space:
The HSTB laboratory and freezer room space occupies 1800 sq. ft in (b)(4); (b)(6) This space includes the tissue banking laboratory and three freezer rooms. The lab space is 100 sq. ft. and is equipped for tissue processing, slide retrieval and storage. This laboratory contains a cryobath and dry ice for varied methods of snap freezing tissue, a Thermo cryostat used to cut frozen sections for quality review by a pathologist. Centrifuges, cryobath, calibrated pipettes, microscopes, and sterile supplies are available for tissue procurement and dissection. The lab space has a refrigerator to store media and other necessary reagents as well as an adjacent 100 sq. ft. freezer room with a -80°C freezer for short term sample storage. There are 4 working stations in the lab area all equipped with desktop computers, barcode scanners and hooked up to a network printer. There is a storage area for paraffin embedded tissue blocks and slides. Locked filing cabinets are located in the space for secure storage of documents and files.
The Presbyterian site has three freezer rooms in (b)(4); (b)(6) one located on the (b)(4) and two located (b)(4) measuring 600 and 300 sq. ft. Combined, the freezer rooms house 14 -80°C freezers and 1 liquid nitrogen storage vessel. The largest of the three rooms located (b)(4) also has 1 desktop computer. The (b)(4); (b)(6) site also has administrative office space located down the hall from the laboratory. The office is 80 sq. ft. and contains a desktop computer and locked filing cabinets. These facilities provide staff with all the necessary materials to procure quality tissue for tissue collection and disbursement.

UPMC (b)(4); (b)(6) Pathology Gross Room: