

IMPROVING BIOSPECIMEN COLLECTION PRACTICES AT THE UCCITB

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Abstract

The University of Cincinnati Cancer Institute Tumor Bank (UCCITB) was established to collect, store and distribute human tumor, paired normal tissue, blood and other biofluid to basic, translational and clinical research. Specimens are collected from individuals with malignant diseases seen at UC medical campus. De-identified medical and pathology information for all participants are available to researchers in strict compliance with privacy rules. All tissues are collected and stored as flash frozen cryovials and/or freezing media molds at -80°C and/or in formalin fixed paraffin embedded blocks. Blood is collected in acid citrate dextrose and sodium citrate vacutainer blood tubes and stored as whole blood, plasma and nucleated cell pellet at -80°C. To insure high specimen quality, UCCITB implemented a sample processing sheet where six time points from initial excision time to storage time are recorded for each specimen. Through compiled data analysis, we were able to assess and address different issues and improve in several areas. As a result, we developed a specimen banking form with integrated labels that helped us accomplish several goals: 1) facilitate participant identification for specimen banking by medical staff at the clinics, operation rooms and pathology services which resulted in less confusion and better communication, 2) include brief instructions in the form for staff who may be unfamiliar with CITB procedures. This limited specimen mishandling, speed sample processing and improve specimen quality, 3) the form encloses important information related to the sample handling that improved the CITB quality control and database, and 4) detachable labels ensured proper labeling and limit sample loss. To further address the problem of delay of tissue processing, CITB developed a travel processing kit to process tissue on site. This kit has allowed us to shorten tissue processing by 22 minutes on average.

Biospecimens

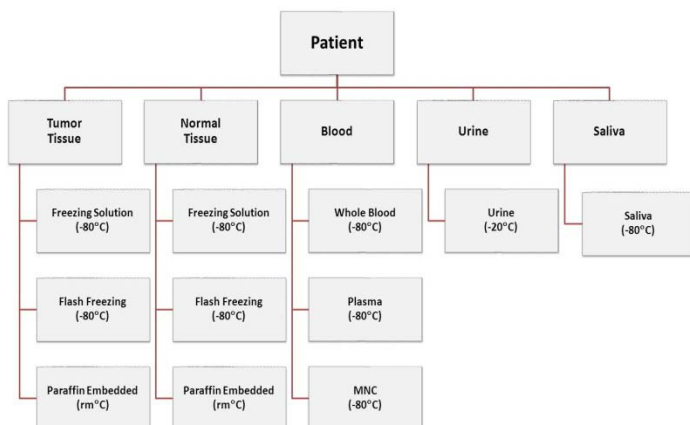
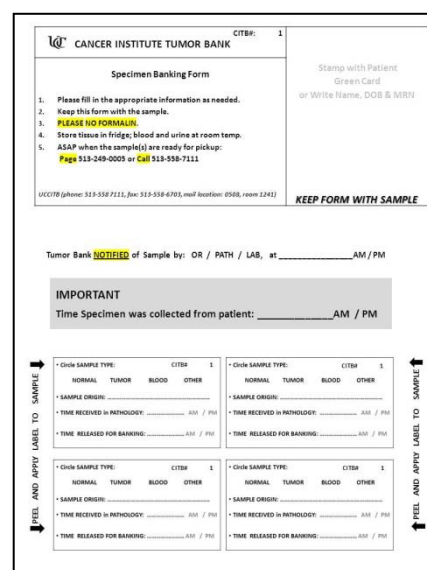


Figure 1. Specimen Banking Chart: Different specimens are being collected and stored at the UCCITB.

Specimen Banking Form

Continuing our effort to standardize specimen banking procedures, CITB is introducing a one-page form with integrated labels that will streamline specimen procurement from the time a patient consents to the time CITB staff collect their samples (Figure 2). The form will be available for use in clinics, operating rooms and pathology laboratories depending on the type of specimen (Figure 3). The specimen banking form will facilitate participant identification for specimen banking by medical staff at the clinics, operation rooms and pathology services which resulted in less confusion and better communication. The form includes brief instructions for staff who may be unfamiliar with CITB procedures. This limited specimen mishandling, speed sample processing and improved specimen quality. It encloses important information related to the sample handling that improved the CITB quality control and database. In addition, this form includes detachable labels ensuring proper labeling and limiting sample loss.



UCCITB CANCER INSTITUTE TUMOR BANK CITB# 1
Stamp with Patient Green Card or Write Name, DOB & MDD

- Please fill in the appropriate information as needed.
- Keep this form with the sample.
- PLEASE DO NOT FREEZE!**
- Store tissue in fridge, blood and urine at room temp.
- ASAP when the sample(s) are ready for pickup: ☎ 513-558-0025 or ☎ 513-558-7111

UCCITB (phone: 513-558-7111, fax: 513-558-4703, mail location: 0508, room 1241) **KEEP FORM WITH SAMPLE**

Tumor Bank **NOTIFIED** of Sample by: OR / PATH / LAB, at _____ AM / PM

IMPORTANT
Time Specimen was collected from patient: _____ AM / PM

CHOOSE SAMPLE TYPE	CITB#	1	CHOOSE SAMPLE TYPE	CITB#	1
NORMAL TUMOR BLOOD OTHER			NORMAL TUMOR BLOOD OTHER		
SAMPLE ORIGIN: _____			SAMPLE ORIGIN: _____		
TIME RECEIVED IN PATHOLOGY: _____ AM / PM			TIME RECEIVED IN PATHOLOGY: _____ AM / PM		
TIME RELEASED FOR BANKING: _____ AM / PM			TIME RELEASED FOR BANKING: _____ AM / PM		

PEEL AND APPLY LABEL TO SAMPLE

Figure 2. Specimen Banking Form

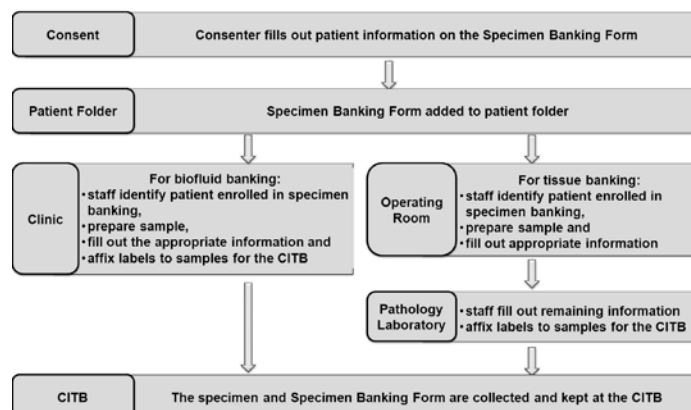


Figure 3. Usage Pathway for the Specimen Banking Form through the clinic for biofluid banking and through the OR and Pathology for tissue banking.

Travel Processing Kit

To minimize processing times a portable on site tissue processing kit was developed. The kit contains all components necessary to cryopreserve and begin formalin fixing tissue (Figure 4). The Travel Processing Kit includes multiple tissue processing kit packets (gloves, cryovials, biopsy cassettes, cryomolds, small ziplock bags and bench coat), as well as basic supplies such as forceps, forester forceps, freezing solution, back up supplies, formalin jar, liquid nitrogen dewar, Biocision CoolBox with dry ice and 4°C cool pack, office supplies and processing sheets.

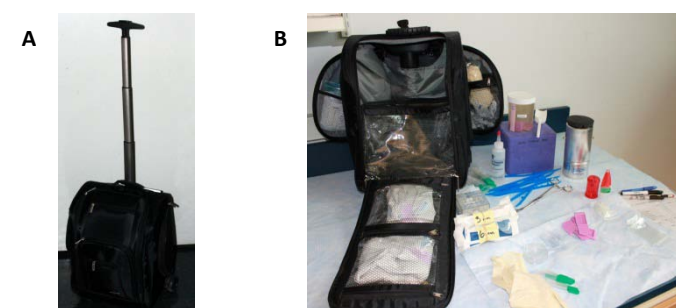


Figure 4. Travel Processing Kit Ready to Go On Site. (A): compact and mobile travel processing kit. (B): Internal Contents of the Travel Processing Kit

Usage of the travel processing kit has significantly reduced sample processing time (Figure 5). As part of our quality control procedures, key time points are collected: time sample received (T₁), time sample processing started (T₂) and time sample processing completed (T₃). The implementation of the travel processing kit resulted in a shorter sample processing time.

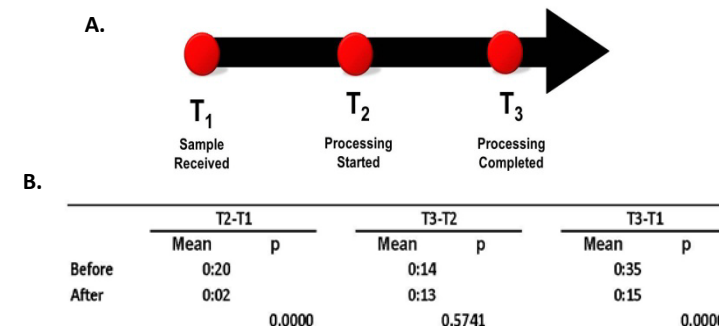


Figure 5. Time Point Comparison of Tissue Processing Before and After Traveling Kit Implementation. (A): The time line illustrates the various time points associated with specimen banking. (B): The difference in tissue processing times prior to and after implementation of the travel tissue processing kit. Mean values of 36 time points are presented. A student t-test was performed and statistical significance was found at a p value of 0.0005 or less.