

# IMPROVING BIOSPECIMEN IDENTIFICATION PRACTICES IN BIOREPOSITORY AND RESEARCH LABORATORIES



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Brain Tumor Translational Resource

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## Background

One challenge in biobanking revolves around the need to accurately label specimens while maintaining patient privacy. Erroneous labeling of specimens can have potentially serious consequences as translational or clinical studies are often dependent on linking clinical data with biospecimens. Biospecimens may be released to multiple research laboratories with diverse students, technicians, and post-doctoral researchers. These research laboratory personnel often lack the training or background in the rigorous tracking and identification of specimens as practiced in clinical and pathology laboratory settings. In addition, patients have the right to retract their specimens from research, necessitating proper identification in order to better comply with such requests. UCLA researchers routinely undergo HIPAA training and know what they are not supposed to include in labels. However, in protecting patient privacy, biospecimens may be inadequately or confusingly labeled. Lastly, the research number assigned to biospecimens in our biorepository has been purely numerical and numbers can be easily transposed or incorrectly transcribed.

## Aims and Goals

Develop standard labeling guidelines for identifiers and dates in our biorepository and in recipient research laboratories at UCLA.

## Methods

### Specification of Identifier Type and Origin

Undesignated identifiers, can easily lead to confusion, especially if two different identifiers have the same number of digits or similar numbering systems. Our laboratory has instituted a standard practice of **specifying the identifier type** on the sample label, and from which **institution** the sample came (where permissible). In our setting, there are 3 purely numerical systems for research specimens called IOIS (patient unique), SSID (specimen unique), and LB (high privacy, patient and specimen unique).

Poor Labeling

S11-12345

Better Labeling

UCLA ID:  
S11-12345

St. Johns ID:  
S11-67890

Poor Labeling

8453

Better Labeling

IOIS 8453  
SSID2419

### Using Multiple Identifiers for Redundancy

One possible source of misidentification is research personnel incorrectly transcribing identifiers onto samples. We believe it is optimal for all samples to have **at least two different identifiers** so one may act as a backup should the other be incorrect. Researchers have a better probability to back-track to patient information in a database. Additional information such as known weight of sample or shape of tissue fragments on a glass slide compared to block may then resolve the issue. A properly specified date on the label may also be helpful.

Incorrectly Labeled Slide:  
UCLA ID: S11-12345  
St. Johns ID: S11-67890

Correct Database:  
Discrepancy noted

Patient Record:		
UCLA ID	St. Johns ID	Patient Name
S11-12344	S11-67890	Doe, John

## Specification of the Type Of Date Used

Dates are always desirable as part of labeling samples or keeping lab notes, but they must be specified as to what they reflect. A proposed nomenclature is as follows:

DO= Date Operation DA= Date Autopsy DR= Date Received DX= Date Experiment  
DC= Date Culture DF= Date Frozen DP= Date Procedure DI= Date Immunostained

## Use of a Four Letter Code to Reduce Errors from a Purely Numerical Code

For privacy reasons, name or initials on labels may provide too much information. Purely numerical identifiers are prone to transcription errors. Thus we are implementing a system to pair numbers with words in order to facilitate identification. We believe a number is more easily incorrectly transcribed as compared to a word, so the word can function as a backup to match a specimen to an identifier. We have created a **4,841 word library of unique 3 and 4 letter words that are attached sequentially to a series of numbers**, not in alphabetical order. Similar numbers will thus be easily distinguishable due to their paired words. When exhausted, the word library is attached in the same order to the next series of numbers. In a setting where **other identifiers are not permissible**, this system is used.

Two similar numerical identifiers easily distinguished by their four letter word:

UCLA Pathology ID:  
3223-SEES

UCLA Pathology ID:  
3232-TILE

An excerpt from our list of words:

003223 SEES  
003224 NESS  
003225 GOOS  
003226 JAUP  
003227 MODI  
003228 VIES  
003229 WOES  
003230 PURI  
003231 JUGA  
003232 TILE

## Educating Recipient Laboratories

It is very important to educate sample recipients of proper labeling practices, since specimens are no longer under the control of the biorepository once given to recipient research laboratories.

• Example: A postdoctoral researcher cultures some cells from tissue received from the biorepository, labeling them with the patient initials. Months after he has finished his research and departed the lab, other laboratory personnel wish to use these cell lines, but are unable to do so because they are uncertain of the true origin of the cells.

## Our "Ideal" Sample Label

Note how this ideal label has multiple identifiers with type specified, a four-letter word code, and a date of surgery clearly labeled. While different combinations of identifiers may be more appropriate in different situations, a similar combination to this is ideal where permissible.

UCLA ID: S11-12345  
IOIS: 3223-SEES  
DO: 1/1/2011

## Conclusion

By specifying identifiers and institutions, specifying types of dates, using multiple identifiers, using a four letter code in combination with pure numbers, and educating recipient laboratories on these practices, we believe that biorepositories will be able to reduce misidentification of specimens in translational research. One or more of these practices may apply depending on the situation. Automated labeling, bar codes, and RFID tags have roles in the biorepository but, for individual researchers without such resources, good labeling practices are vital.

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