The Biospecimen Research Database

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NATIONAL CANCER INSTITUTE

Outline

OBBR Office of Biorepositories and Biospecimen Research

- Vision & organization of the database
- RAND literature survey
- Curation
- Future direction

Vision

OBBR Office of Biorepositories and Biospecimen Research

- **Database for**
  - Evidence for protocols
    - Published
    - Unpublished
    - Research network studies
      - caBIG compatible access to data
  - Analysis of evidence
  - Biospecimen protocols

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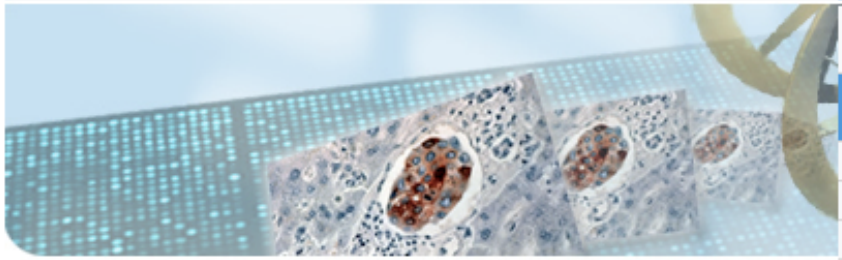

In Focus:

Biospecimen Best Practices Forums

The National Cancer Institute (NCI) is holding a series of public forums about the *NCI Best Practices for Biospecimen Resources*, which outlines technical, operational, ethical, legal and policy principles for biospecimen resources. The purpose of these forums is to educate and obtain feedback about the *NCI Best Practices* from a broad range of perspectives, including that of investigators, physicians, industry representatives, hospital administrators, cancer survivors, patient advocates, and the general public. These forums will be held on November 5, 2007, in Boston, Massachusetts, December 3, 2007, in Chicago, Illinois, and January 28, 2008, in Seattle, Washington, and will feature expert presentations and interactive discussions. Attendance is free and open to the public. For more information, visit http://www.nci-bestpractices-forum.com.

News:

Recap of the First Biospecimen Best Practices Forum

The first of a series of educational and outreach forums was held on June 18, 2007 in Bethesda, MD more

OBBR's Mission:

The NCI established the Office of Biorepositories and Biospecimen Research (OBBR) in 2005 to guide, coordinate, and develop the Institute's biospecimen resources and capabilities. The OBBR's mission is to ensure that human specimens available for cancer research are of the highest quality. more

Quick Links

- Biospecimen Research Network
- Providing Your Tissue for Research
- Biospecimen Basics

Open "http://biospecimens.cancer.gov/science/brd/" in a new window behind the current window

The “ice cube tray”

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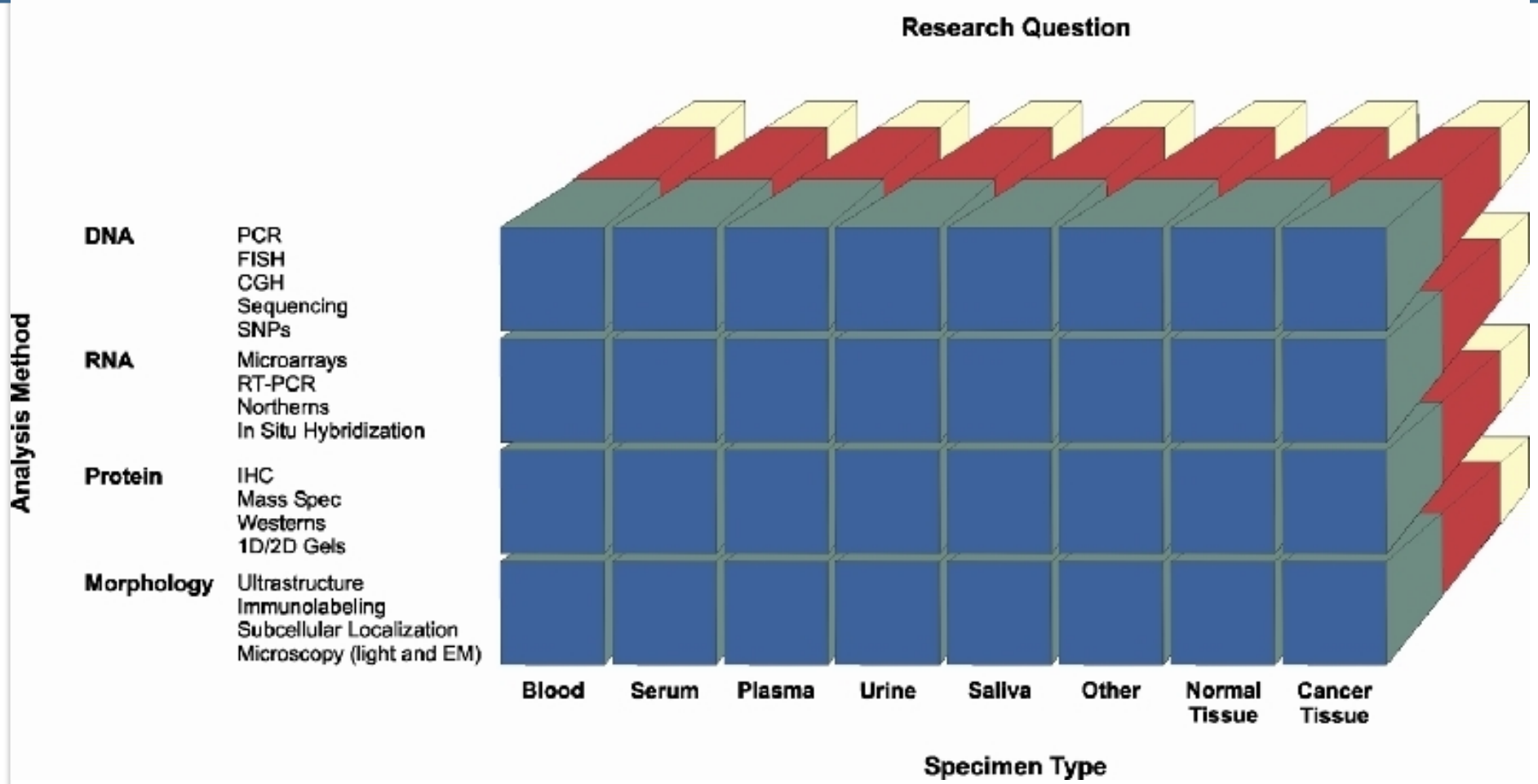

Biospecimen Research Network (BRN)
Network Events
Scientific Literature
Lifecycle of Biospecimens

NCI Biospecimen Resources

Returning Reviewers Login
login

HOME SEARCH

Search the Biospecimen Network Repository (Quick Search)

To find research studies for a biospecimen type and platform click on a cell in the table below.

Analyte	Technology Platform	Biospecimen Locations						Neoplastic Tissue	
		Blood	Serum	Plasma	Urine	Saliva	Other	Normal	Cancerous
DNA	Array CGH								
	CGH								
	DNA Sequencing								
	FISH								1
	In situ hybridization								
	PCR								
RNA	cDNA Microarray							3	6
	Northerns							1	2
Protein	Immunohistochemistry							1	3
	Mass Spec			2				1	
	SELDI-TOF Mass Spectrometry			1				1	1
	Westerns								1
	ELISA								
Morphology	Standard H-n-E microscopy								
	Subcellular localization								
	Ultrastructure								

Simple Search Advanced Search

http://brd-stage.nci.nih.gov/BRN/paperStudyDetails.seam?paperId=33&conversationId=178&dataModelSelection=study%3AsearchResults%5B1%5D

Google

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Paper and Study Details

PubMed ID: 11469890 PubMed

Huang J, Qi R, Quackenbush J, Dauway E, Lazaridis E, Yeatman T

Effects of Ischemia on Gene Expression

Journal of Surgical Research, 2001, Vol. 99, Page 222

Review Paper? No

Purpose of Paper: To determine the effects of time at room temperature after surgical removal on gene expression profiles in normal adjacent tissue from a human colon cancer specimen.

Conclusion of Paper: Time at room temperature after surgical removal of normal colon mucosa from a human colon cancer specimen has significant effects on gene expression in as little as 20 minutes.

Studies

Detail

Specimen: Tissue / Colorectal / Frozen / Neoplastic - Normal Adjacent

Platform: RNA - Northerns /

Findings : No differences in RNA quality were detected by ethidium bromide staining of 18S and 28S ribosomal RNA even after 60 minutes at room temperature after surgical removal in colon cancer and normal adjacent tissue. In addition, there was no noticeable effect on the expression of GAPDH as measured by Northern blot.

Detail

Specimen: Tissue / Colorectal / Frozen / Neoplastic - Normal Adjacent

Platform: RNA - cDNA Microarray /

Findings : Significant changes in gene expression levels occur in normal adjacent colon tissue as early as 20 minutes after surgical removal. Increases in expression of some genes and decreases in expression of others were observed.

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Study Details

PubMed ID: 15211754 PubMed

Spruessel Annika, Steimann Garnet, Jung Mira, Lee Sung A, Carr Theresa, Fentz Anne-Kristin, Spangenberg Joerg, Zornig Carsten, Juhl Hartmut H, David Kerstin A

Tissue Ischemia Time Affects Gene and Protein Expression Patterns within Minutes Following Surgical Tumor Excision

BioTechniques, 2004, Vol. 36, Page 1030

Review Paper? No

Study Purpose

To determine the impact of time at room temperature between colon resection and snap freezing in liquid nitrogen on gene expression profiles of normal adjacent colon tissue that was resected with colon cancer.

Specimen

Biospecimen Type: Tissue
Biospecimen Location: Colorectal
Diagnoses: Neoplastic - Normal Adjacent
Preservative Type: Frozen

Platform

Analyte: RNA
Technology Platform: cDNA Microarray

Experimental Factors

To determine the impact of time at room temperature between colon resection and snap freezing in liquid nitrogen on gene expression profiles of normal adjacent colon tissue that was resected with colon cancer.

Specimen

Biospecimen Type: Tissue
Biospecimen Location: Colorectal
Diagnoses: Neoplastic - Normal Adjacent
Preservative Type: Frozen

Platform

Analyte: RNA
Technology Platform: cDNA Microarray

Experimental Factors

Classification	Factor	Value(s)
Postacquisition	Time at room temperature/pre-fixation time	5 min 8 min 10 min 12 min 15 min 20 min 30 min

Summary of Findings

No differences of RNA quality were observed over a period of 30 minutes. Changes in gene expression profiles were already observed 5-8 minutes after colon resection. 15 minutes after surgery, 10-15% of all genes differed significantly (>2-fold) from the baseline values, and by 30 minutes after surgery, 20% of all detectable genes differed. Changes of expression were found in molecules in a wide variety of functional groups, such as oncogenes, transduction, nuclear genes, kinases, chaperones, and cell growth.

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Study Details

PubMed ID: 16822846 PubMed

Lin Daniel W, Coleman Ilsa M, Hawley Sarah, Dumpit Ruth, Gifford David, Kezele Philip, Hung Hau, Knudsen Beatrice S, Kristal Alan R, Nelson Peter S

Influence of Surgical Manipulation on Prostate Gene Expression: Implications for Molecular Correlates of Treatment Effects and Disease Prognosis

Journal of Clinical Oncology, 2006, Vol. 24, Page 3763

Review Paper? No

Study Purpose

To conduct cDNA microarray hybridization to examine changes in gene expression associated with surgical resection of the prostate gland by radical retopubic prostatectomy as compared to in situ prostate biopsy.

Specimen

Biospecimen Type: Tissue
Biospecimen Location: Prostate
Diagnoses: Neoplastic - Normal Adjacent
Preservative Type: OCT

Platform

Analyte: RNA
Technology Platform: cDNA Microarray

Experimental Factors

Journal of Clinical Oncology, 2006, Vol. 24, Page 3763

Review Paper? No

Study Purpose

To conduct cDNA microarray hybridization to examine changes in gene expression associated with surgical resection of the prostate gland by radical retopubic prostatectomy as compared to in situ prostate biopsy.

Specimen

Biospecimen Type: Tissue
Biospecimen Location: Prostate
Diagnoses: Neoplastic - Normal Adjacent
Preservative Type: OCT

Platform

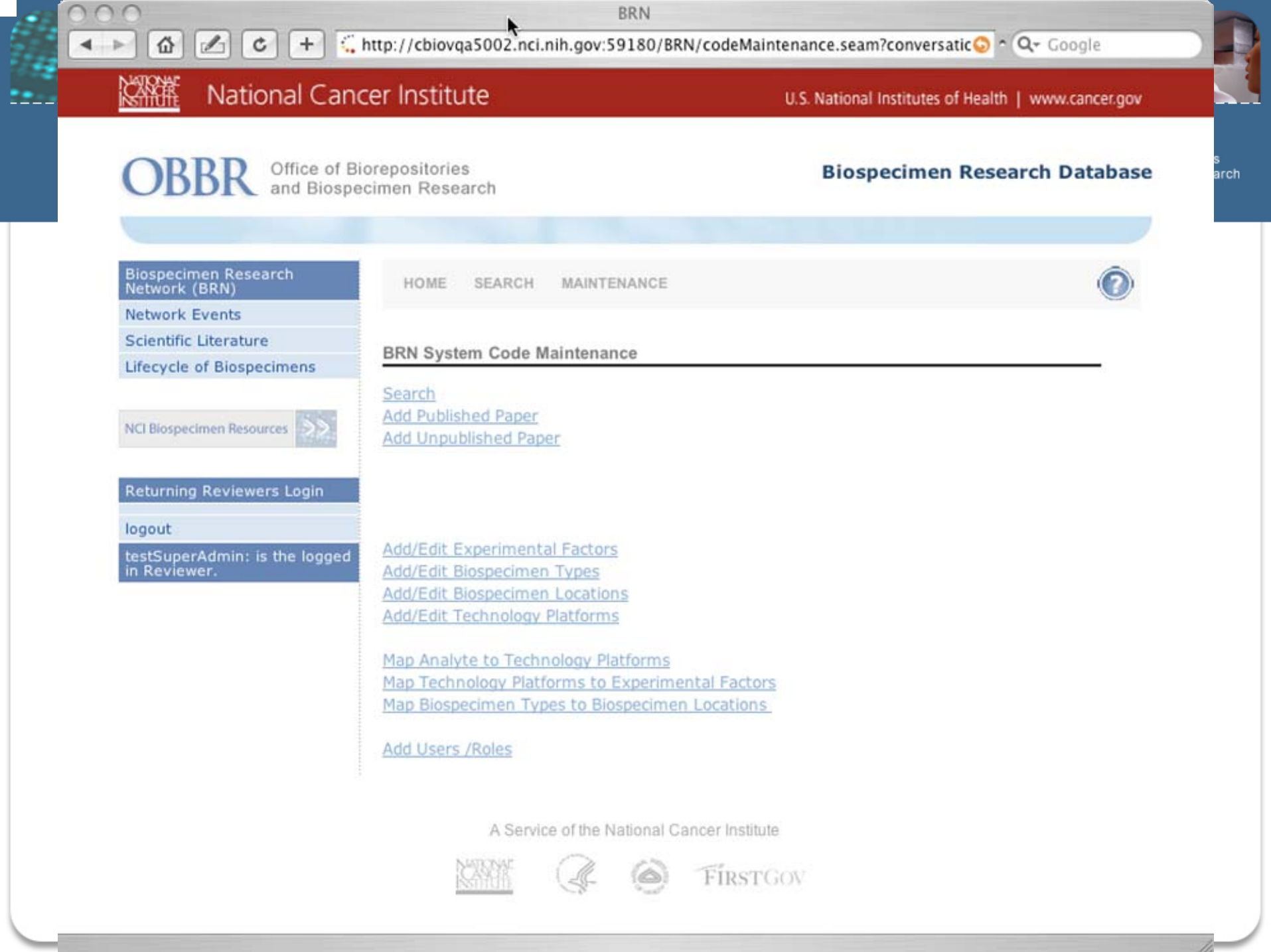
Analyte: RNA
Technology Platform: cDNA Microarray

Experimental Factors

Classification	Factor	Value(s)
Preacquisition	Type of surgical/medical procedure	radical retopubic prostatectomy in situ prostate biopsy

Summary of Findings

Examination of 5,753 cDNAs by microarray hybridization showed 62 unique genes that had higher expression in postsurgical specimens as compared to presurgical specimens with false-discovery rates of 10% or lower. These include several genes involved in the acute phase response, IER2 and JUNB, and the regulation of cell proliferation, P21Cip1 and KLF6. No genes were found to be downregulated. Many of the genes that were found to be differentially expressed between pre- and postsurgical specimens are associated with the JNK stress-response pathway.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http://cbiovqa5002.nci.nih.gov:59180/BRN/codeMaintenance.seam?conversatic
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MAINTENANCE
BRN System Code Maintenance
Search
Add Published Paper
Add Unpublished Paper
Add/Edit Experimental Factors
Add/Edit Biospecimen Types
Add/Edit Biospecimen Locations
Add/Edit Technology Platforms
Map Analyte to Technology Platforms
Map Technology Platforms to Experimental Factors
Map Biospecimen Types to Biospecimen Locations
Add Users /Roles
A Service of the National Cancer Institute
FIRSTGOV

Next Steps for the Database

OBBR Office of Biorepositories and Biospecimen Research

- Expand information with:
  - **Data from existing studies that focus directly on the effects of preanalytical variables on biospecimens**
  - **Results from Biospecimen Research Network studies**
  - **Procedures for clinical laboratory testing relevant to research on genetic changes in cancer**
  - **Other potential sources of data (e.g., unpublished data)**
- Perform Meta-analysis of data:
  - **To inform development and prioritization of Biospecimen Research Network laboratory studies**
  - **To inform development of evidence-based Standard Operating Procedures (SOPs)**
- Add protocols to the database

Issues for discussion

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- **Research network contributions**
  - Detail data
  - Use of caBIG compatible software
- **Protocols**
  - Web 2.0 mechanisms
    - Wiki, Forums,…
    - Open community input
    - Minimal oversight
  - Or more controlled access
    - To concise analysis of evidence

Acknowledgments

OBBR Office of Biorepositories and Biospecimen Research

RAND

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NCI

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  - Jyothsna Chilukuri
  - Stephen Hunter
  - Paul Morris

NCI Wants Your Input

OBBR Office of Biorepositories and Biospecimen Research

- To identify key scientific papers and protocols (published and unpublished)
- Please contact OBBR for further information and to volunteer to help us make this database a vital tool for Biospecimen Science
  - Telephone: 301-496-2741
  - Web: www.biospecimens.cancer.gov
  - Email: biospecimens@mail.nih.gov
- Your chance to make this a useful tool