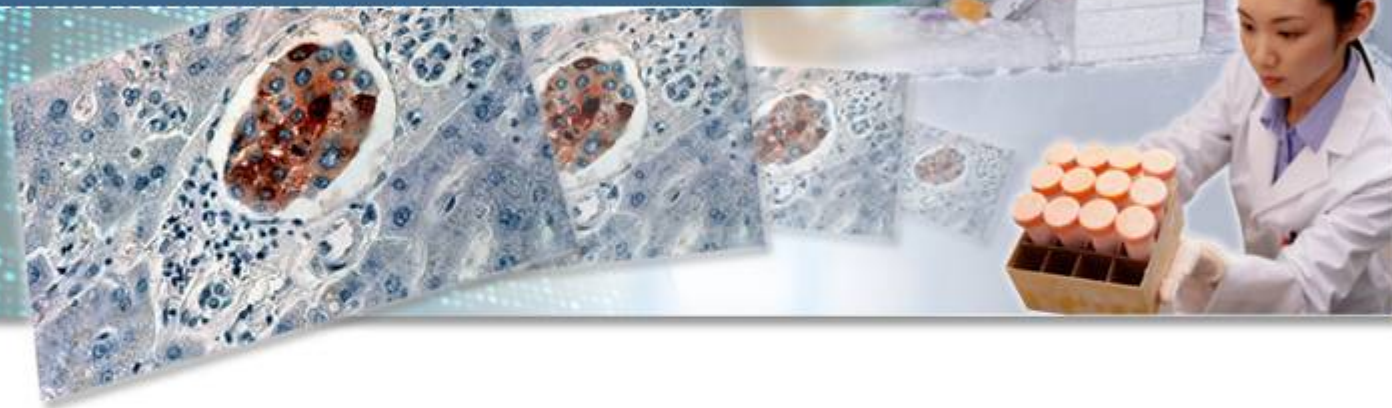


The logo for the Office of Biorepositories and Biospecimen Research (OBBR) is displayed in a large, light blue, serif font. The letters are bold and spaced out, with the 'O' and 'B' being particularly prominent.

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THE BIOSPECIMEN RESEARCH DATABASE: 1100 ARTICLES AND GROWING

B. Paige Bass, Ph.D.
Kelly Government Solutions
Curator for the Biospecimen Research Database

February 22-23, 2012

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Welcome to the Biospecimen Research Database

The Biospecimen Research Database (BRD) is a free and publicly accessible database that contains peer-reviewed literature pertinent to the field of human biospecimen science. The database is updated periodically with both recent and historical publications and may serve as a vehicle for literature review, evaluation of "in use" biospecimen handling protocols, development of new protocols, and identification of analytes that are susceptible or impervious to handling variability.



The Biospecimen Research Database

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- A free, searchable, and publicly accessible web-based database
- Articles pertinent to human biospecimen science are meticulously categorized and annotated by a team of Ph.D. level scientists
- Over 1150 published review and research articles
- Growing daily!
- Articles from 317 different journals published between 1968-2012
- Indexed and not indexed for PubMed
- Over 2100 unique visitors to the BRD last year



Identification of articles for inclusion in the BRD

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- 27 journals screened monthly
- Cross-referencing
- Targeted PubMed searches
- ISBER Literature Compilations
- Paper suggestions submitted to biospecimens@mail.nih.gov
- Over 700 articles are currently queued for curation

An example curation

Paper Details

Study Details

PubMed ID: 15605077 [PubMed](#)

Chu Wei-Sing, Furusato Bungo, Wong Kondi, Sesterhenn Isabell A, Mustofi Fathollah K, Wei Min Q, Zhu Zhenqing, Abbondanzo Susan L, Liang Qi

Ultrasound-accelerated formalin fixation of tissue improves morphology, antigen and mRNA preservation

Mod Pathol, 2005, Vol. 18, Page 850

Review Paper? No

Study Purpose

To assess if tissue morphology is adequately preserved by USAFF (5-30 min) compared to conventional formalin fixation (16-24 h) using several tissues (brain, tonsil, lymph node, lung, prostate, soft tissue) obtained by biopsy or post mortem.

Specimen

Biospecimen Type: Tissue Biospecimen Location: Brain

Diagnoses: None
Autopsy

Preservative Type: Formalin

Platform

Analyte: Morphology Technology Platform: Standard H-and-E microscopy

Experimental Factors

Classification	Factor	Value(s)
Biospecimen Preservation	Time in fixative	15 min
		30 min
		16 h
Biospecimen Preservation	Method of fixative delivery	Immersion Ultrasound-accelerated

Summary of Findings

Brain and lymphoid tissue fixed for 15-30 min by USAFF yielded tissue morphology comparable to conventional formalin fixation. Further, USAFF for 15 min resulted in enhanced eosin staining compared to other fixation durations and methods.

Link to concise paper purpose and conclusion

Paper reference information with PubMed linkout

Study purpose

Specimen details (type, location, diagnosis, preservative type)

Analyte and technology platforms

Experimental variables investigated

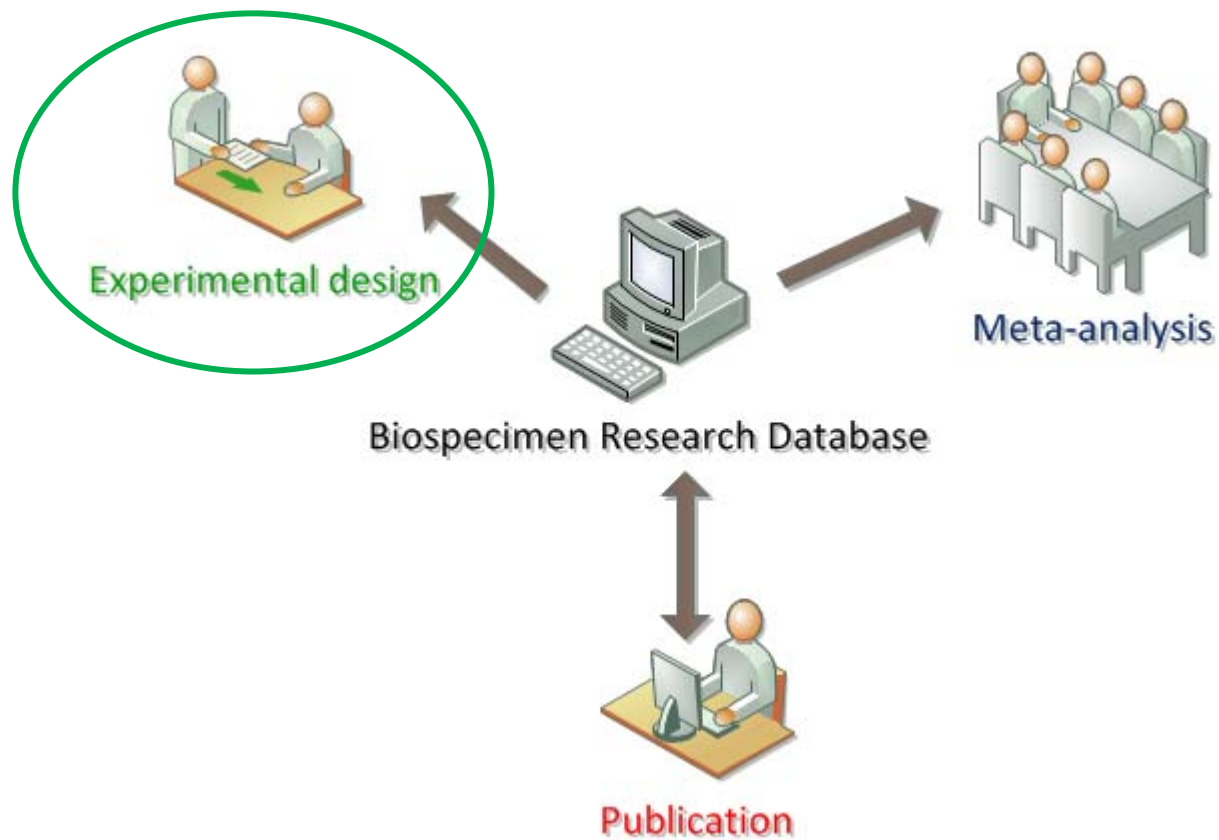
- Classification (biospecimen lifecycle)
- Factor (parameter investigated)
- Values tested

Summary of findings



Utility of the BRD

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Utility of the BRD: Experimental design

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For formalin fixation, how will my choice of fixative delivery method influence immunohistochemistry (IHC) and Western results?

Example fixative delivery methods:

Immersion

Injection

Perfusion

Ultrasound acceleration

Heat acceleration

Microwave acceleration

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Send to:

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- 1. [Expression of EBV encoded viral RNA 1, 2 and anti-inflammatory cytokine \(interleukin-10\) in FFPE lymphoma specimens: a preliminary study for diagnostic implication in Pakistan.](#)

Sheikh TI, Qadri I.

Diagn Pathol. 2011 Jul 27;6:70.

PMID: 21791113 [PubMed - indexed for MEDLINE] [Free PMC Article](#)

[Related citations](#)

NA

- 2. [\[HER2 ASCO guidelines. The answer to everything?\]](#)

Burandt E, Sauter G.

Pathologe. 2010 Oct;31 Suppl 2:285-91. German.

PMID: 20740285 [PubMed - indexed for MEDLINE]

[Related citations](#)

Requires translation

- 3. [Exposure of human nasal epithelial cells to formaldehyde does not lead to DNA damage in lymphocytes after co-cultivation.](#)

Neuss S, Moepps B, Speit G.

Mutagenesis. 2010 Jul;25(4):359-64. Epub 2010 Mar 18.

PMID: 20299426 [PubMed - indexed for MEDLINE] [Free Article](#)

[Related citations](#)

Cell culture

- 4. [Antibody response in mice immunized by mucosal routes with formalin-inactivated enteropathogenic Escherichia coli \(EPEC\) strains.](#)

Mice

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Expression of EBV encoded viral RNA 1, 2 and anti-inflammatory cytokine (ir [Diagn Pathol. 2011]

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- 1. [Expression study for di](#)
Sheikh TI, ...
Diagn Pathol.
PMID: 217911
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Burandt E, Pathologie. 20
PMID: 207402
[Related citations](#)
 - 3. [Exposure c](#)
Neuss S, M
Mutagenesis.
PMID: 202994
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 - 4. [Antibody re](#)
1. [Fine needle aspirate cell blocks are reliable for detection of hormone receptors and HER-2 by immunohistochemistry in breast carcinoma.](#)
Bueno Angela SP, Viero RM, Soares CT.
Cytopathology. 2012 Jan 3. doi: 10.1111/j.1365-2303.2011.00934.x. [Epub ahead of print]
PMID: 22220518 [PubMed - as supplied by publisher]
[Related citations](#)
2. [Optimization of immunolocalization of cell cycle proteins in human corneal endothelial cells.](#)
He Z, Campolmi N, Ha Thi BM, Dumollard JM, Peoc'h M, Garraud O, Piselli S, Gain P, Thuret G.
Mol Vis. 2011;17:3494-511. Epub 2011 Dec 29.
PMID: 22219645 [PubMed - in process] [Free PMC Article](#)
[Related citations](#)
3. [Histologic subtypes, immunohistochemistry, FISH or molecular screening for the accurate diagnosis of ALK-rearrangement in lung cancer: A comprehensive study of Caucasian non-smokers.](#)
Just PA, Cazes A, Audebourg A, Cessot A, Pallier K, Danel C, Vacher-Lavenu MC, Laurent-Puig P, Terris B, Blons H.
Lung Cancer. 2011 Dec 6. [Epub ahead of print]
PMID: 22153831 [PubMed - as supplied by publisher]
[Related citations](#)
4. [The HOPE fixation technique - a promising alternative to common prostate cancer biobanking approaches.](#)
Braun M, Menon R, Nikolov P, Kirsten R, Petersen K, Schilling D, Schott C, Gündisch S, Fend F, Becker KF, Perner S.

Titles with your search terms

- [Effect of formalin tissue fixation and processing on immunohistochemis \[Am J Surg Pathol. 2000\]](#)
- [Effects of prolonged formalin fixation on diagnostic immun \[J Histochem Cytochem. 2009\]](#)
- [Effects of processing delay, formalin fixation, and immunohistochemi \[Diagn Mol Pathol. 2008\]](#)

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BRD advanced search results

12 Study(s) Found

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Current Search Criteria

Biospecimen Type:	Tissue
Preservative Type:	Formalin
Analyte:	Protein
Classifications:	Biospecimen Preservation
Experimental Factors:	Method of fixative delivery
Paper Type	All Papers

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[Boon ME, Marani E, Adriolo PJ, Steffelaar JW, Bots GT, Kok LP](#)

Microwave irradiation of human brain tissue: production of microscopic slides within one day.

J Clin Pathol ,1988 ,Vol. 41 ,Page 590-3

PubMed

1 Study(s) Found

[Specimen:Tissue / Brain / Formalin / Autopsy / Neoplastic - Leukemia / Cardiovascular Disease / Platforms: Morphology - Standard H-and-E microscopy / Morphology - Light Microscopy / Protein - Immunohistochemistry /](#)

The preservation of brain specimens by microwaving in saline for 30 minutes, slicing, microwaving slices in saline for an additional 15 minutes, cutting into blocks and immersing in formalin for 3.5 h at room temperature, and then microwaving

[Ruijter ET, Miller GJ, Aalders TW, van de Kaa CA, Schalken JA, Debruyne FM, Boon ME](#)

Rapid microwave-stimulated fixation of entire prostatectomy specimens. *Biomed-II*

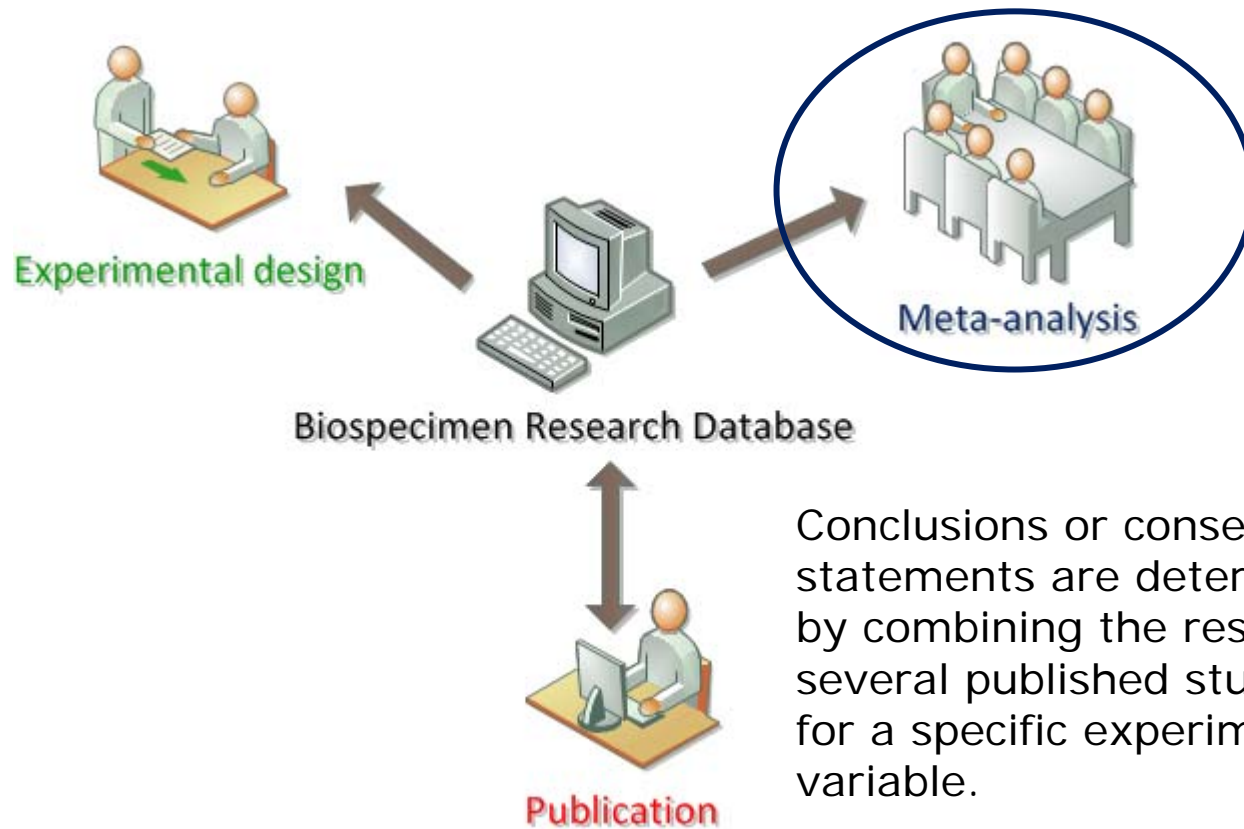


The effects of method of fixative delivery on protein in FFPE Tissue

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- Alternatives to immersion fixation, such as injection (De Marzo, 2002), perfusion (Adicks, 1997; Ruijter, 1997), ultrasound acceleration (Chu, 2005; Chu, 2006), heat acceleration (Barrett, 2004), or microwave acceleration (Azumi, 1990; Ruijter, 1997) yielded superior **IHC** results.
- On the other hand, some studies claim that these alternative methods of fixative delivery yield **IHC** results similar to immersion fixation which may be due to antigen specific effects (Fracasso, 2009; Ruijter, 1997; Hsu, 1991; Boon, 1988).
- Prostate tissue fixed by ultrasound accelerated fixation yielded **Western blot** results that were superior to tissue fixed by immersion (Chu, 2005).

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Meta-analysis

In general, for FFPE tissue, which preanalytical parameters have an effect on protein (for IHC, Western, etc.) and which do not?



Meta-analysis highlights for protein in FFPE tissue

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Preanalytical parameters

Analyte/ Technology Platform	Effect	No Effect/ Minor Effect	Unaddressed in Literature
Protein: IHC, Tissue Microarray, Western blot, LC-MS/MS *Antigen, tissue, and/or technology platform specific effects observed	Room temperature cold ischemia time		
	Formalin formula/pH*		
	Decalcification solution*		
	Method of fixative delivery		
	Temperature of fixation		
	Fixation duration*		
	Dehydration reagent* and temperature		
	Temperature of clearing		
	Embedding duration*		
	Storage duration of wax blocks*		
	Slide drying		
	Deparaffinization		

New user-centric features to be included in an upcoming release of the BRD



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[Waring WS, Evans LE, Kirkpatrick CT](#)

[Discuss](#)

Glycolysis inhibitors negatively bias blood glucose measurements: potential impact on the reported prevalence of diabetes mellitus.

J Clin Pathol ,2007 ,Vol. 60 ,Page 820-3

PubMed

1 Study(s) Found

[Specimen:Fluid /Blood /None \(Fresh\) /Normal /](#)
[Platforms: Carbohydrate - Clinical Chemistry/Au](#)

Glucose concentrations were 4.7% lower when blood rather than serum separator tubes ($p<0.0001$). The between tubes was not affected by storage at room

National Cancer Institute

NCI Wiki

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» Glycolysis inhibitors negatively bias blood glucose measurements potential impact on the reported prevalence of diabetes mellitus.

Glycolysis inhibitors negatively bias blood glucose measurements potential impact on the reported prevalence of diabetes mellitus.

1 Added by [Kelly Engel](#), last edited by [Sarah Graytak](#) on Jan 25, 2012. [View change](#)

Authors: Waring WS, Evans LE, Kirkpatrick CT
Title: Glycolysis inhibitors negatively bias blood glucose measurements: potential impact on the reported prevalence of diabetes mellitus. *J Clin Pathol*, 2007, Vol. 60, Page 820-3

PubMed

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Thank You!

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- Kelly Engel, PhD
- Sarah Greytak, PhD
- Andrea Kelly, PhD

- **Past and Present Members of the BRD Development Team**

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- Andrew Breychak
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- Eugene Wang

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