

Designing an Effective Sample Collection Document

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Kinship DNA Identification

- Obtaining accurate biological relationships is of vital importance for an efficient DNA kinship identification process following a mass fatality.
- Inaccurate information collected from reference donors can slow down the DNA identification process.

Family and/or Donor Reference Collection (FDRC) Form

- The initial FDRC form used was developed after lessons learned from 9/11 and the Tsunami.
- The new FDRC form was widely used in Katrina's DNA identification effort. Now, it is time to look back and improve the form even more for its use in future mass fatalities.

It is essential that all necessary data to establish correct biological relationships and information needed to contact the DNA donor can be recorded on the FDRC form; however the emotional and traumatic aftermath of a mass fatality demands the implementation of a simple and straightforward form.

Aim

Identify sections of the *Louisiana Missing Persons DNA Unit Family and/or Donor Reference Collection* (FDRC) form that individuals completed correctly and sections that individuals had difficulties with and use this information to redesign the form and to make plans for its implementation in future mass fatalities.

Name of Missing Individual: _____
(Last, First, Middle, Suffix)

Please note:

If personal items of the missing individual are being submitted for analysis, a biological reference sample from the spouse, domestic partner, or full-time roommate is useful even if no biological relationship exists. Please refer to the **Personal Item Submission Form** when submitting personal items.

The individuals in the darkest shaded boxes (the biological parents and biological children) are the best comparison samples for identification through kinship. If these samples are unavailable, samples from other biological relatives can be submitted.

If a child provides a sample for parental identification the child's other biological parent should also provide a sample.

For identification through kinship analysis:

Full siblings are preferable over half.

Grandparents should only provide a sample if the mother or father cannot provide a sample.

Grandchildren should only provide a sample if their parent, who is related to the missing individual (as a son or daughter), is unavailable.

The laboratory will assess the samples provided. The most appropriate sample(s) will be used to identify the missing individual. The family may be contacted if additional samples are needed.

I am also a relative of the following other missing individuals (**For each missing relative, please complete another Family and/or Donor Collection Form**):

Name _____ I am their _____
(Name of other missing relative) (e.g., mother, father, sister, son)

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(Name of other missing relative) (e.g., mother, father, sister, son)

Name _____ I am their _____
(Name of other missing relative) (e.g., mother, father, sister, son)

Name _____ I am their _____
(Name of other missing relative) (e.g., mother, father, sister, son)

I, _____ hereby grant permission to extract and type

(Please print or type name of donor)

my DNA for the purpose of assisting in the identification of a missing person.

(Signature of donor or guardian if donor is a minor) (Date)

The sample was collected by _____ on _____
(Collector name and signature) (Date)

(Collection location and address)

The Project

- Between September 2005 & June 2006 there were 1500 completed FDRC forms of which 724 were analyzed.
 - 2 versions of the FDRC form were used
 - version 1.4 (n=113) and version 1.5 (n=611)
 - In both versions there was an identical front page, however in version 1.4 a separate consent form was used and procedures for labeling the swab envelope differed
 - The transition from version 1.4 to 1.5 originated from a change in technical oversight of collections from DMORT to Louisiana State Police

Collecting the Data

- For each form we recorded:
 - Who completed the form
 - By comparing gross characteristics of the handwriting to the signature
 - Collector, Donor, Other, Unknown
- For each section we recorded:
 - Whether the response was corrected
 - Yes/No
 - Type of response
 - Correct – Section was completed with information requested
 - A dash was used to state that the information was non-existing
 - Incorrect – Section was completed with inaccurate or insufficient information
 - Omitted – Section was left blank while the form clearly illustrated that the section should have been completed
 - Donor Country & DOB
 - N/A – Section was left blank and the rest of the form did not indicate that the information was existing
 - Suffix & # other missing relatives

Louisiana Missing Persons DNA Unit Family and/or Donor Reference Collection Form

Missing Individual Information

Last Name	Suffix (Jr., Sr.)	First Name	Middle Name	Sex (circle) M F	Total # of other missing relatives
The missing person has been known by the following additional names (include maiden name)		Date of Birth Year: _____ Month: ____ Day: ____			Social Security Number or citizenship (if not a US citizen) _____ - _____ - _____

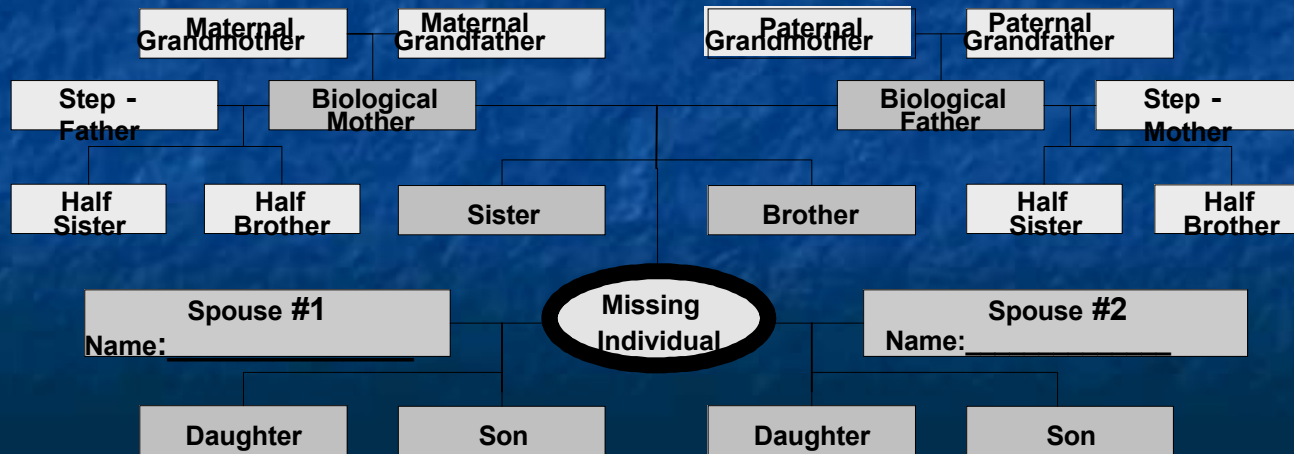
Donor Information

PLEASE NOTE: Donors need to fill in a separate form and submit a separate sample for each of their missing persons

Last Name	Suffix (Jr., Sr.)	First Name	Middle Name
Best call back telephone numbers (list in order of preference) 1 st : () 2 nd : () 3 rd : ()			
Home Street Address			
City	State	Zip	Country
Date of Birth Year: _____ Month: ____ Day: ____	Sex (circle) M F	E-mail address (please print)	

I am providing a family reference sample as I am the missing individual's _____ (e.g., mother, father, sister, son.)

Please circle your relationship to the missing individual:



Other: (please specify) _____ (example: grandchild, friend, roommate)

Name of Missing Individual: _____
(Last, First, Middle, Suffix)

Please note:

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(Signature of donor or guardian if donor is a minor) (Date)

The sample was collected by _____ on _____
(Collector name and signature) (Date)

(Collection location and address)

The Project

- Assuming the ability to identify the missing individual:

- There are three sections of the FDRC form which are essential in the identification process
 1. # of other missing relatives
 2. Relationship section
 3. Pedigree

Analyses

- Scored the three essential sections with one point each if completed correctly.
 - Minimum score was 0, maximum score was 3.

Data Recorders

- A majority of FDRC forms, 48.6% were completed by the DNA collector while the donor completed 32.7% of forms
- The DNA collector had the highest % of FDRC forms, 38.9% in which all three essential sections were completed correctly
- Comparing the quality of the data for the Missing Relative section & Pedigree against the data recorder revealed a statistically significant relationship.
- There was no relationship between the observed responses for the Relationship section and the data recorder who completed the form.

Table 1. Total nr of correct responses for the three essential sections for 2 data recorder categories

<i>Data recorder</i>	Total nr. of correct responses for (1) # Other Missing Relatives, (2) Relationship Section & (3) Pedigree			
	0.0	1.0	2.0	3.0
Collector	9 2.6 %	90 25.6 %	116 33.0 %	137 38.9 %
Donor or Other	16 4.5 %	80 22.3 %	185 51.5 %	78 21.7 %
Total	170	92	13	346

Frequent vs. Incidental

- A majority of DNA samples, 59.8%, were collected by frequent collectors, compared to 40.2% of DNA samples collected by incidental collectors
- There were 13 collectors who classified as frequent collectors, ranging from 10 to 94 documents per collector
- The frequent collectors had the highest percentage, 35.1% of FDRC forms in which all three essential sections were completed correctly

Table 2. Total nr of correct responses for the three essential sections for type of collector

<i>Type of Collector</i>	Total nr. of correct responses for (1) # Other Missing Relatives, (2) Relationship section & (3) pedigree			
	0.0	1.0	2.0	3.0
Frequent Collectors (with 10 or more)	12 2.8 %	76 17.6 %	193 44.6 %	152 35.1 %
Incidental Collectors (with less than 10)	15 5.2 %	97 33.3 %	113 38.8%	66 22.7 %
Total	27	173	306	218

Early vs. Late

- Most of the DNA samples (n=417) were collected in 2005 and 307 samples were collected in 2006
- The FDRC forms can be divided in Early (2005) and Late (2006)
- FDRC Forms completed in 2005 had the highest percentage, 39.8% of documents in which all three essential sections were completed correctly
- Comparing the quality of the data for the Missing Relative section & Pedigree against the collection year, there was a statistically significant relationship.
- No significant relationship was found for the Relationship section against collection year.

Table 4. Responses for Pedigree per Collection year

<i>Collection Year</i>	<i>Response</i>		
	Correct	Error	Omitted
Early (2005)	350 83.9 %	32 7.7 %	35 8.4 %
Late (2006)	173 56.4 %	36 11.7 %	98 31.9 %
Total	523	68	133

Recommendations for the redesign of the form

- Develop an one-page FDRC form
 - 14 forms had an uncompleted back page
- Mention on the form that the collector should complete it by eliciting information from the donor
- Make it more evident that the first part of the form relates to information for the Missing Person and not the Donor
 - Corrected rate was over 5% for the first sections
- Suggest to large institutions that DNA collections are done by the same person

Recommendations for the redesign of the form

- Collect information about phone numbers and when is an appropriate time to call
- Exclude or adapt the pedigree
 - 72% correct rate
 - To compensate for the loss of information provided by the pedigree a new section should be developed to establish accurate biological relationships
- Redesign the section asking for # of other relatives missing
 - 37% correct rate
 - More prominent place & include check box
- Develop a short instruction/training DVD
 - Exclude the instruction text box on back page