



OSAC Research Needs Assessment Form

Title of research need: Population Frequency Data for Radiologic Identification

Keywords: Identification, Population Frequency, Radiology

Submitting subcommittee(s): Anthropology **Date Approved:** 1.28.16

(If SAC review identifies additional subcommittees, add them to the box above.)

Background information:

1. Description of research need:

Known or estimated population frequencies of traits/characteristics form the basis for the validity of any forensic identification approach. The comparison of antemortem and postmortem radiologic data has become a well-accepted method of identification in forensic anthropology, radiology and pathology. These comparisons, however, typically involve a subjective assessment of the visual similarity between the antemortem and postmortem data. Such assessments are insufficient for determining the evidentiary value of an association, cannot be used to calculate the probability of a correct (or incorrect) identification, and may be subject to confirmation bias. The study and documentation of population frequencies for skeletal and dental anomalies will help provide a more objective, statistical basis for a forensic identification.

2. Key bibliographic references relating to this research need:

Christensen AM. Testing the reliability of frontal sinuses in personal identification. *Journal of Forensic Sciences* 2005;50:18-22.

Derrick SM, Love JC, Wiersema JM, Hipp JA, Akella NS, Zeigler J. Novel computer-assisted identification method using radiographic comparison. NIJ Grand Award 2010-DN-BX-K194; Final Technical Report (248511), 2014.

Ruder TD, Thali YA, Rashid SNA, Mund MT, Thali MJ, Hatch GM, Christensen AM, Somaini S, Ampanozi G. Validation of postmortem dental CT for disaster victim identification. *Journal of Forensic Radiology and Imaging* 2016; In Press.

3a. In what ways would the research results improve current laboratory capabilities?

This research would allow forensic practitioners involved in radiologic identification to quantify the strength of association between antemortem and postmortem radiologic data.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

Anthropologists are often involved in the analysis of skeletal remains in an effort to facilitate identification. The development of standards/guidelines for personal identification based on skeletal features is one of the tasks of the Anthropology Subcommittee. This research would further validate and quantify an approach that has typically been largely subjective.

3c. In what ways would the research results improve services to the criminal justice system?

This research would assist in quantifying the evidentiary value of forensic radiologic comparisons, which would clarify to judges and jurors the likelihood that a radiologic identification is correct versus incorrect.

4. Status assessment (I, II, III, or IV):

I

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	I	III
Existing current research is being conducted	II	IV

This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.

Subcommittee

Approval date:

1.28.16

(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)

SAC

1. Does the SAC agree with the research need? Yes No

2. Does the SAC agree with the status assessment? Yes No

If no, what is the status assessment of the SAC:

Approval date:

(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)