



Human vs Non-Human Bone Origin Determination

Test No. 23-5501 Summary Report

Each sample pack consisted of digital images of five different bones of unknown origin. Participants were asked to determine if each bone was of human origin or non-human origin. Data were returned from 31 participants and are compiled into the following tables:

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This report contains the data received from the participants in this test. Since these participants are located in many countries around the world, and it is their option how the samples are to be used (e.g., training exercise, known or blind proficiency testing, research and development of new techniques, etc.), the results compiled in the Summary Report are not intended to be an overview of the quality of work performed in the profession and cannot be interpreted as such. The Summary Comments are included for the benefit of participants to assist with maintaining or enhancing the quality of their results. These comments are not intended to reflect the general state of the art within the profession.

Participant results are reported using a randomly assigned "WebCode". This code maintains participant's anonymity, provides linking of the various report sections, and will change with every report.

Manufacturer's Information

Each sample pack consisted of several digital images (2-4) of five different bones. Participants were asked to determine which of the bones (Items 1 through 5) were human in origin and which were of non-human animal origin.

SAMPLE PREPARATION:

Bones from a variety of species were selected and photographed. Photographs of several representative perspectives were chosen for each bone. These images were digitally resized to scale and adjusted for consistency of color and contrast. The images were then zipped and uploaded to the CTS Portal for download by test participants.

VERIFICATION:

All predistribution laboratories reported the expected identification results for Items 2 - 5. Two of three predistribution laboratories reported the expected identification result for Item 1. After verification, an additional photo of Item 1 was included in the sample pack to aid in identification.

Item	Source
1	Bear, Fourth Metacarpal
2	Human, Lumbar Vertebra
3	Pig, Humerus
4	Human, Second Metacarpal
5	Human, Capitate

Summary Comments

The 23-5501 Human vs Non-Human Bone Origin Determination test was designed to allow participants to assess their proficiency in determining whether a bone was of human origin or non-human origin. Items 1 and 3 were of non-human origin, and Items 2, 4, and 5 were of human origin. (Refer to the Manufacturer's Information for preparation details)

A total of 31 participants submitted results. Item 1 did not achieve consensus. A total of 23 participants (74%) identified Item 1 as being of non-human origin and eight participants (26%) identified the bone as being of human origin. All participants identified Item 2 as being of human origin and Item 3 as being of non-human origin. For Item 4, 27 participants (87.1%) identified the bone as being of human origin and four participants (12.9%) reported "Inconclusive." A majority of these participants noted that an additional view of the item was necessary to make a conclusive determination. For Item 5, 30 participants (96.8%) identified the bone as being of human origin and one participant (3.2%) reported "Inconclusive."

Examination Results

What is the origin of the bone represented in the submitted photographs (Items 1-5)?

TABLE 1

WebCode	Item 1	Item 2	Item 3	Item 4	Item 5
2KXV6N	Non-Human	Human	Non-Human	Human	Human
2VU69Y	Human	Human	Non-Human	Human	Human
4KVQ3K	Human	Human	Non-Human	Human	Human
7BYR4B	Non-Human	Human	Non-Human	Human	Human
7R4YJC	Non-Human	Human	Non-Human	Human	Human
8JADQJ	Non-Human	Human	Non-Human	Human	Human
8NGYEG	Non-Human	Human	Non-Human	Human	Human
8PTE9G	Non-Human	Human	Non-Human	Inc	Inc
93DDEA	Non-Human	Human	Non-Human	Human	Human
9AAFZU	Non-Human	Human	Non-Human	Human	Human
9DYKBE	Non-Human	Human	Non-Human	Human	Human
9RG8KC	Non-Human	Human	Non-Human	Inc	Human
BFV8FE	Non-Human	Human	Non-Human	Human	Human
BZZKC8	Non-Human	Human	Non-Human	Human	Human
C7LZF6	Human	Human	Non-Human	Human	Human
DAWDGP	Non-Human	Human	Non-Human	Human	Human
DLKEWW	Human	Human	Non-Human	Human	Human
EGTP76	Non-Human	Human	Non-Human	Inc	Human
JMEEDH	Non-Human	Human	Non-Human	Human	Human
K78GUH	Non-Human	Human	Non-Human	Human	Human
K7B48Q	Non-Human	Human	Non-Human	Human	Human

TABLE 1

WebCode	Item 1	Item 2	Item 3	Item 4	Item 5
L3WL62	Non-Human	Human	Non-Human	Human	Human
LPFYEM	Human	Human	Non-Human	Human	Human
LQCC2F	Human	Human	Non-Human	Human	Human
PQP4KZ	Non-Human	Human	Non-Human	Human	Human
PVBZ7C	Human	Human	Non-Human	Human	Human
PX8AJT	Human	Human	Non-Human	Human	Human
Q2WCJK	Non-Human	Human	Non-Human	Human	Human
Q4RU3Y	Non-Human	Human	Non-Human	Human	Human
QAJ3MT	Non-Human	Human	Non-Human	Human	Human
UGZ8LU	Non-Human	Human	Non-Human	Inc	Human

Response Summary					Participants: 31
<i>What is the origin of the bone represented in the submitted photographs (Items 1-5)?</i>					
	<u>Item 1</u>	<u>Item 2</u>	<u>Item 3</u>	<u>Item 4</u>	<u>Item 5</u>
Human	8 (25.8%)	31 (100.0%)	0 (0.0%)	27 (87.1%)	30 (96.8%)
Non-Human	23 (74.2%)	0 (0.0%)	31 (100.0%)	0 (0.0%)	0 (0.0%)
Inconclusive	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (12.9%)	1 (3.2%)

Additional Comments

TABLE 2

WebCode	Additional Comments
2VU69Y	image 1e, is not human
8JADQJ	Item 1: Non-human metacarpal. Item 2: Human vertebra (lumbar spine). Item 3: Non-human humerus/juvenile. Item 4: Human metacarpal (2nd). Item 5: Human carpal (capitate).
8PTE9G	Although Item 4 appears to be a human 2nd metacarpal, an additional photo of the base (proximal end) of the bone is typically used to ascertain the appropriate ray for this bone, and also would have assisted in a final conclusion for human vs. non-human origin. Although Item 5 appears to be a human capitate, additional photos are needed to conclude human vs. non-human origin.
9AAFZU	ITEM 1 : Metapodial (Fauna). ITEM 2: Human lumbar vertebra. ITEM 3: Right humerus (Fauna). Immature specimen. ITEM 4. Human metacarpal. ITEM 5: Human large carpal bone that seems to correspond to a left bone. We had some trouble with the photographs as we couldn't open them at first.
9RG8KC	Item 4 - images of proximal end would be beneficial. Macroscopic images of palmar surface of distal end would be beneficial. Provisional opinion is that the bone is likely human but the photographs provided are not sufficient for a determination.
DLKEWW	1. Os metacarpale IV – human hand. 2. Lumbar vertebrae - human spine. 3. Non Human bone. 4. Os metacarpale II – human hand. 5. Capitatum – human - human hand.
EGTP76	Item 4 - the dorsal view image is not taken of an angle that allows the examiner to view the relative dimensions of the distal end of the bone (i.e. head). This is most likely a human 2nd metacarpal bone however I would request more images or alternatively request a physical examination of the bone to form a definitive opinion.
JMEEDH	the photographs are very heavy and it takes too long to open the files or the computer doesn't work after trying to opened
LQCC2F	1. A human hand metacarpus number 5. 2. A human lumbar vertebra. 3. A non- human bone. 4. A human metacarpal number 3. 5. A carpus of a human hand (h. large).
PQP4KZ	#1. Non-human: metacarpal (likely Ursidae, right 4th). #2. Human: lumbar vertebra. #3. Non-human: right humerus (likely Suidae). #4. Human: right 2nd metacarpal. #5. Human: left capitate. While consistent with human origin, the dorsal surface (distal lateral aspect) is somewhat atypical. Would not report based on photos alone and would ask agency to submit for confirmation prior to reporting.
Q2WCJK	1. Animal metacarpale(bear).The bones are relatively strong, the distal articular surface has cristae (palmar), and the proximal articular surface is narrow and long. 2.Human lumbar spine .The vertebral body is kidney shaped, the cone is oval, the spinous process is flat, etc. 3.Animal humerus.The bone is short, sturdy, dumbbell-shaped, with a wide trochlear joint surface at one end, an enlarged and uncured humeral head at one end, and a significantly concave olecranon fossa at the dorsal end of the distal humerus. 4.The second metacarpal bone of human right hand .With four joint surfaces at the proximal end, triangular like plane at the distal end of the dorsal side, and spherical like joint surface at the distal end. 5.Human left capitate bone.With head,base,facet for the hamate,facet for the scaphoid,facet for the lunate,facet for the trapezoid,nonarticular palmar surface and dorsal surface.

-End of Report-
(Appendix may follow)

Test No. 23-5501: Human vs Non-Human Bone Origin Determination

DATA MUST BE SUBMITTED BY **March 13, 2023, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: NXLKG8

The Accreditation Release section can be accessed by using the "Continue to Final Submission" button above. This information can be entered at any time prior to submitting to CTS.

Scenario:

In five unrelated cases, photographs of bones have been submitted for analysis to determine whether they are human or non-human in origin. Each Item (1-5) below represents a separate, independent case.

Items Submitted (Sample Pack HNH):

Item 1: Images 1a, 1b, 1c, 1d, 1e

Item 2: Images 2a, 2b, 2c, 2d

Item 3: Images 3a, 3b

Item 4: Images 4a, 4b, 4c, 4d

Item 5: Images 5a, 5b, 5c

To verify a complete and accurate download, the hash value for the downloaded .ZIP file is as follows:

23-5501 Human vs. Non-Human.zip MD5 hash value: f98060ae5034d895e63b47e7dfa4fd71

23-5501 Human vs. Non-Human.zip SHA1 hash value: c6f1f1a405a314ad111e6723c6b98ac6874a697d

1.) What is the origin of the bone represented in the submitted photographs (Items 1-5)?

- | | | | |
|---------------|-----------------------------|---------------------------------|-------------------------------------|
| <i>Item 1</i> | Human <input type="radio"/> | Non-Human <input type="radio"/> | Inconclusive* <input type="radio"/> |
| <i>Item 2</i> | Human <input type="radio"/> | Non-Human <input type="radio"/> | Inconclusive* <input type="radio"/> |
| <i>Item 3</i> | Human <input type="radio"/> | Non-Human <input type="radio"/> | Inconclusive* <input type="radio"/> |
| <i>Item 4</i> | Human <input type="radio"/> | Non-Human <input type="radio"/> | Inconclusive* <input type="radio"/> |
| <i>Item 5</i> | Human <input type="radio"/> | Non-Human <input type="radio"/> | Inconclusive* <input type="radio"/> |

*Should an item(s) be marked "Inconclusive", please document the reason in the Additional Comments section of this data sheet.

Please note: Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.

2.) Additional Comments

RELEASE OF DATA TO ACCREDITATION BODIES

The Accreditation Release is accessed by pressing the "Continue to Final Submission" button online and can be completed at any time prior to submission to CTS.

CTS submits external proficiency test data directly to ASCLD/LAB, ANAB, and/or A2LA. Please select one of the following statements to ensure your data is handled appropriately.

- This participant's data is intended for submission to ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section below must be completed.)
- This participant's data is not intended for submission to ASCLD/LAB, ANAB, and/or A2LA.

Have the laboratory's designated individual complete the following steps **only if your laboratory is accredited in this testing/calibration discipline** by one or more of the following Accreditation Bodies.

Step 1: Provide the applicable Accreditation Certificate Number(s) for your laboratory.

ANAB Certificate No.
(Include ASCLD/LAB Certificate here)

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety.

Authorized Contact Person and Title

Laboratory Name

Location (City/State)