



# **Human vs Non-Human Bone Origin Determination Test No. 21-5501 Summary Report**

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Each sample set consisted of digital images of five different bones of unknown origin. Participants were asked to determine if each bone was of human origin or of non-human origin. Data were returned from 32 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

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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, placed in a template (frame), and adjusted for consistency of color and contrast. The images were then zipped and uploaded to the CTS Portal for download by test participants.

Item	Source
1	Human, adult radius
2	Domestic dog, femur
3	Human, adult clavicle
4	Domestic dog, tibia & fibula
5	Human, adult ilium

## **Summary Comments**

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The 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, 3, and 5 were of human origin, and Items 2 and 4 were of non-human origin (Refer to the Manufacturer's Information for preparation details).

Of the 32 responding participants, all identified Items 1, 3, and 5 as being of human origin, and Items 2 and 4 as being of non-human origin.

# Examination Results

*What is the origin of the submitted bones (Items 1-5)?*

TABLE 1

WebCode	Item 1	Item 2	Item 3	Item 4	Item 5
34DBJ9	Human	Non-Human	Human	Non-Human	Human
38DLE9	Human	Non-Human	Human	Non-Human	Human
3GF2Z8	Human	Non-Human	Human	Non-Human	Human
3WWWG4	Human	Non-Human	Human	Non-Human	Human
4MLUV3	Human	Non-Human	Human	Non-Human	Human
6JGNT3	Human	Non-Human	Human	Non-Human	Human
6ME64B	Human	Non-Human	Human	Non-Human	Human
8EZ3WZ	Human	Non-Human	Human	Non-Human	Human
8ZEQJ6	Human	Non-Human	Human	Non-Human	Human
9R4L9Z	Human	Non-Human	Human	Non-Human	Human
A8RJMZ	Human	Non-Human	Human	Non-Human	Human
AH937W	Human	Non-Human	Human	Non-Human	Human
AXLB8Z	Human	Non-Human	Human	Non-Human	Human
BE8JH4	Human	Non-Human	Human	Non-Human	Human
EEBDPY	Human	Non-Human	Human	Non-Human	Human
F7FUNV	Human	Non-Human	Human	Non-Human	Human
FNEPLT	Human	Non-Human	Human	Non-Human	Human
HCFTCQ	Human	Non-Human	Human	Non-Human	Human
KGM2RL	Human	Non-Human	Human	Non-Human	Human
M4U8PX	Human	Non-Human	Human	Non-Human	Human
M92PRP	Human	Non-Human	Human	Non-Human	Human

TABLE 1

WebCode	Item 1	Item 2	Item 3	Item 4	Item 5
P4YP6P	Human	Non-Human	Human	Non-Human	Human
PFT2FH	Human	Non-Human	Human	Non-Human	Human
QU484L	Human	Non-Human	Human	Non-Human	Human
QUNMJN	Human	Non-Human	Human	Non-Human	Human
RYG4AN	Human	Non-Human	Human	Non-Human	Human
UMDVHG	Human	Non-Human	Human	Non-Human	Human
W9PBDD	Human	Non-Human	Human	Non-Human	Human
WQBVWH	Human	Non-Human	Human	Non-Human	Human
X7EP3H	Human	Non-Human	Human	Non-Human	Human
YUWMWB	Human	Non-Human	Human	Non-Human	Human
ZXE8G6	Human	Non-Human	Human	Non-Human	Human

Response Summary					Participants: 32
<i>What is the origin of the submitted bones (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	<b>32 (100.0%)</b>	<b>0 (0.0%)</b>	<b>32 (100.0%)</b>	<b>0 (0.0%)</b>	<b>32 (100.0%)</b>
Non-Human	<b>0 (0.0%)</b>	<b>32 (100.0%)</b>	<b>0 (0.0%)</b>	<b>32 (100.0%)</b>	<b>0 (0.0%)</b>
Inconclusive	<b>0 (0.0%)</b>	<b>0 (0.0%)</b>	<b>0 (0.0%)</b>	<b>0 (0.0%)</b>	<b>0 (0.0%)</b>

# Additional Comments

## TABLE 2

WebCode	Additional Comments
3WWWG4	Item 1 corresponds to a human radius, compatible with the left side probably (we would need to better see the distal epiphysis). Item 2 corresponds to non human right femur of a mature specimen, compatible with a specimen of the Canidae family. Item 3 corresponds to a human left clavicle. Item 4 corresponds to a non human tibia and fibula of a mature specimen, compatible with a specimen of the Canidae family. Item 5 corresponds to a human right hip bone of an adult.
6JGNT3	Se reciben quince fotografías en las que se observan cinco muestras óseas para determinación de especie, sin información relacionada del contexto. Aunque existen diferentes métodos para la diferenciación de huesos humanos de huesos no humanos, basados principalmente en; morfometría, análisis microscópico, análisis radiológico, entre otros. Al no contar con las estructuras óseas para ser aplicados, el presente análisis se fundamenta únicamente en el análisis morfológico de las estructuras óseas observadas en las fotografías allegadas, el cual consiste en la observación de diferentes características tales como; tamaño y relación entre su forma y función. Elemento 1: a partir de la morfología observada en el tercio proximal a nivel de la cabeza radial que se aprecia de forma circular, como la presencia de la tuberosidad radial y de la cresta interósea, al igual que la morfología de la epífisis distal, se establece que corresponde a un radio humano. Elemento 2: teniendo en cuenta la longitud, el desarrollo óseo, como la morfología del tercio proximal y de la epífisis distal, se establece corresponde a fémur no humano. Elemento 3: a partir de la longitud de la estructura ósea como de la forma de la diáfisis y la morfología del extremo esternal y del extremo acromial, se sugiere corresponde a clavícula humana. Elemento 4: teniendo en cuenta la finalización del desarrollo óseo con respecto a la longitud de las estructuras y la fusión observada a nivel de articulación proximal y distal, como la morfología de la diáfisis y de las epífisis se establece corresponde a tibia y peroné no humanos. Elemento 5: a partir de la morfología observada a nivel de ilion y de pubis, como la forma y distribución de las regiones articulares, se establece corresponde a coxal humano. [Requested translation was not provided by time of publication.]
9R4L9Z	Item 1: left human radius. Item 2: non human femur. Item 3: left human clavicle. Item 4: non human tibia. Item 5: right human os coxa.
FNEPLT	Noted that some/most of the specimens appear to be reproductions rather than natural bone. Images are of good quality and sufficient morphology is shown to make the assessment (whole bones are present).
M92PRP	Item 1: Image 1a, 1b: Left radius. Item 3: Image 3a, 3b: Left clavicle. Item 5: Image 5a, 5b, 5c: Right innominate.
X7EP3H	Item 1: It's the human radius. The human radius has typical features such as radius head, radius neck, radial tuberosity, interosseous ridge, radius styloid process, and wrist joint surface, etc. Item 2: It's the animal femur, which is significantly different from the human femur. The whole bone is thicker and shorter, the femoral neck is shorter, there is no lesser trochanter and intertrochanteric line, the dorsal side of the femoral neck is significantly depressed, the intertrochanteric ridge has a larger curvature, there are bony bulges on the patellar surface in front of the condyle, etc. Item 3: It's the human clavicle. One end is thick and is the sternum end, one end is flat and is the acromion end, the inside 2/3 is convex forward, and the outside 1/3 is convex backward. Item 4: Animal tibia and fibula. The middle and lower segments of the tibia and fibula are ossified and fused together, the tibial tuberosity is prominent, and the front edge of the tibia is not sharp, which is significantly different from the human tibia and fibula. Item 5: Human hip bone. Humans are animals that walk upright, and the pelvic morphology and structure are significantly different from

## TABLE 2

WebCode	Additional Comments
	those of animals. The hip bone is composed of three bones: ilium, pubis and ischia. The iliac is fan-shaped, concave in the middle, relatively weak, and hypertrophic at the upper edge. The ischia is well developed, triangular, with visible ischial tuberosity and triangular ischial notch, and the volume of the pubic junction Smaller, relatively larger than the upper and lower branches of the pubic bone and the obturator.
ZXE8G6	Excelente prueba. [Requested translation was not provided by time of publication.]

-End of Report-  
(Appendix may follow)

## Test No. 21-5501: Human vs Non-Human Bone Origin Determination

DATA MUST BE SUBMITTED BY **Aug. 16, 2021, 11:59 p.m.** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: CNBQYN

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

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:

21-5501 Human vs Nonhuman.zip MD5 hash value: ea4eb64c99c53c352653552a8d7ed424

21-5501 Human vs Nonhuman.zip SHA1 hash value: de3ba96e0f38c0e87bdd2b4b28cf4b40ab967acb

### 1.) What is the origin of the submitted bones (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**

### Anthropology Survey

1: Does the quality of the photographs meet your laboratory's requirements?

2: Is your laboratory accredited in forensic anthropology? If so, by which accreditation body?

3: Are you a board-certified forensic anthropologist? By which certification organization(s)?

4: Were references (exemplars or literature) used to make your determinations in this proficiency test? If so, which?

5: Do you participate in any professional organizations/bodies? If so, which ones?

6: Work in your laboratory includes which of the following areas (list the letters associated with each area): geographical profile (A), minimum number of individuals (B), medico-legal significance (C), osseous histology (D), osseous radiographic comparisons (E), pathology/trauma analysis (F), physical comparison (G), postmortem interval/taphonomy (H), segregation of commingled remains (I), qualitative determination (J).

7: What skill sets would you like covered in a proficiency test?

8: Please provide any additional recommendations you may have for expanding proficiency testing in anthropology:

## 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)