

## TEACHERS CORNER: FORENSIC ANTHROPOLOGY RESOURCES

by Marilyn R. London



**W**hy are bones so fascinating? What can we learn from them? Research on bones—both human and non-human—has been popular for centuries. Both artists and scientists have long recognized that bones represent the remains of a living organism. For example, in Shakespeare's *Hamlet*, the Prince of Denmark holds the skull of a court jester in his hands and recalls the life of the man: "Alas, poor Yorick! I knew him, Horatio, a man of infinite jest, of most excellent fancy" (*Hamlet* Act V, Scene 1). Hamlet knew the jester during life, but the anthropologist who studies bones must reconstruct the life of the unknown individual based on scientific analysis of the remains.

Anthropology in the United States is usually divided into four basic subfields. These are cultural or social anthropology, archaeology, linguistics, and physical anthropology. Anthropologists in the United States are trained in all four subfields in undergraduate school and then go on to specialize in graduate school. Almost all forensic anthropologists have archaeological field experience, which is very much like crime scene investigation. In both cases, the investigator must document everything with notes and illustrations and write a report. There is only one chance to do the investigation correctly; once the archaeological site or the crime scene has been disrupted, it will never look the same.

Physical anthropology includes human anatomy, population biology, genetics, growth and development, human evolution, non-human primate behavior, human variation, and human biology. Some physical anthropologists focus their studies on how all of these topics affect the human skeleton. One of the applications of skeletal biology is forensic anthropology. Many students have heard this term on television shows and in movies, and they want to consider this profession as a career.

Forensic anthropology is the application of anthropology to the processes of law. The forensic anthropologist creates a "biological profile"—age, sex, stature, ancestry, trauma, and pathological conditions—that can help verify the person's identity or lead to a positive identification through medical or other records. The bones record

events (disease, trauma) in an individual's life. The forensic anthropologist always works as part of a team that includes other forensic scientists such as forensic entomologists and forensic psychiatrists, and does not determine the cause of death; that role belongs to the medical examiner or coroner.

### Activity

Activities that introduce the student to the scientific method of investigation can be developed using anthropology. Once the student has mastered this approach, it can be applied to any science.

Anthropologists need to be familiar with normal variation within a population in order to identify age, sex, and ancestry of an individual. To introduce the importance of using the correct sample size, recording accurate data, and taking variation into account, a few measurements can be taken on the students and analyzed with simple statistics. Stature and arm span (fingertip to fingertip) are two of the easiest measurements to take, but any standard measurements can be used. Each student should be measured, and the results recorded. Simple statistics (mean, mode, median, standard deviation) can be computed for the class as a whole, for males and females separately, and for randomly selected groups. Have the students compare the results when smaller groups are used for the analysis. In addition, pairs of measurements can be plotted against each other to see if there is positive, negative, or no correlation between them. Once again, smaller groups can be compared to the class as a whole. (An interactive website on statistical analysis can be found at [home.clara.net/sisa/](http://home.clara.net/sisa/))

### Web Resources

[www.eskeletons.org/](http://www.eskeletons.org/) (The e-Skeletons Project, which compares human bones to non-human primates)

[www.nabt.org/sup/resources/](http://www.nabt.org/sup/resources/) (National Association of Biology Teachers)

[www.galeschools.com/sci\\_try/bones.htm](http://www.galeschools.com/sci_try/bones.htm)  
(Thomson Gale Publishers educational site)



Falcon.jmu.edu/~ramseyil/vertebrates.htm (Internet School Library Media Center information on vertebrates in general)

[www.csuchico.edu/anth/Module/skull.html](http://www.csuchico.edu/anth/Module/skull.html) (An interactive guide to the human skull developed by California State University, Chico)

[www.earthlife.net/mammals/skeleton.html](http://www.earthlife.net/mammals/skeleton.html) (Earthlife Web Productions site on mammal skeletons and biomechanics)

[www.uic.edu/classes/orla/orla312/correlated\\_images\\_skulls.htm](http://www.uic.edu/classes/orla/orla312/correlated_images_skulls.htm) (University of Illinois at Chicago site with illustrations on dental development)

<http://www.bartleby.com/107/> (Gray's Anatomy online)

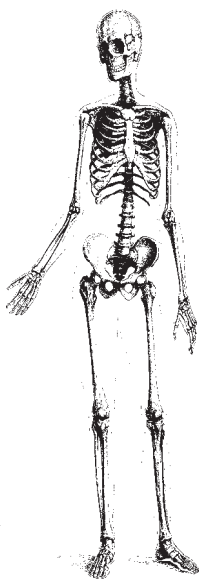
[www.kidzone.ws/science/egg.htm](http://www.kidzone.ws/science/egg.htm). (KidsZone Fun Facts for Kids)

### Cast Resources

Anatomical Chart Company  
4711 Golf  
Suite 650  
Skokie, IL 60076  
Phone: (847) 679-4700  
Fax: (847) 674-0211  
<http://anatomical.com/>  
Anatomical charts and casts

University of Pennsylvania  
Casting Program  
University of PA University Museum  
University of Pennsylvania  
33rd & Spruce Sts.  
Philadelphia, PA 19104-6398  
[www.sas.upenn.edu/~jmonge](http://www.sas.upenn.edu/~jmonge)  
email: [jmonge@sas.upenn.edu](mailto:jmonge@sas.upenn.edu)  
Catalogues of fossil reproductions are searchable online

France Casting  
Diane L. France, Ph.D.  
1713 Willox Ct. Unit A  
Fort Collins, CO 80524  
(970) 221-4044  
Fax: (970) 482-4766  
[info@francecasts.com](mailto:info@francecasts.com)  
[www.francecasts.com](http://www.francecasts.com)



Casts of human cranial and postcranial bones, with features demonstrating age, sex, trauma, and pathological conditions. Also a primate series including gibbon and siamang crania, not commonly available. Some stone tool reproductions and animal bone casts are available.

### Career Information

[www.aafs.org/](http://www.aafs.org/) (American Academy of Forensic Sciences)

[www.physanth.org/](http://www.physanth.org/) (American Association of Physical Anthropologists)

[www.csuch.co.edu/anth/ABFA/](http://www.csuch.co.edu/anth/ABFA/) (American Board of Forensic Anthropology)

Omohundro, John T. 2002. *Careers in Anthropology*. 2<sup>nd</sup> ed. Mayfield Publishing Company.

Ryan, Alan S. (ed.). 2002. *A Guide to Careers in Physical Anthropology*. Bergin & Garvey.

### References

#### General

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Brothwell, D. R. *Digging Up Bones*. 1981. 3<sup>rd</sup> ed. Cornell University Press.

Gordon, Kathleen D. 2004. Stories Bones Tell. In Ruth Osterweis Selig, Marilyn R. London, and P. Ann Kaupp, eds., pp. 101-114. *Anthropology Explored, the Best of Smithsonian AnthroNotes*. Revised and Expanded. Smithsonian Books.

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Iscan, Mehmet Yasar, and K. A. R. Kennedy. 1989. *Reconstruction of Life from the Skeleton*. Alan Liss. (Includes a chapter on how occupations can affect the skeleton.)

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McGowan, Christopher. 1997. *Make your own Dinosaur out of Chicken Bones: Foolproof Instructions for Budding Paleontologists*. Perennial Books.

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Prag, John, and Richard Neave. 1999. *Making Faces: Using Forensic and Archaeological Evidence*. British Museum Press. (On facial reconstructions)

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Stewart, Thomas Dale. 1979. *Essentials of Forensic Anthropology*. Forward by Ellis R. Kerley. Charles C. Thomas.

Taylor, Karen. 2001. *Forensic Art and Illustration*. CRC Press.

Ubelaker, Douglas H. 1999. *Human Skeletal Remains: Excavation, Analysis, and Interpretation*. 3<sup>rd</sup> ed. Taraxacum.

### Case Studies

Benedict, Jeff. 2003. *No Bone Unturned: The Adventures of a Top Smithsonian Forensic Scientist and the Legal Battle for America's Oldest Skeletons*. 1<sup>st</sup> ed. HarperCollins.

Manhein, Mary H. 1999. *The Bone Lady: Life as a Forensic Anthropologist*. Louisiana State University Press.

Manhein, Mary H. 2005. *Trail of Bones: More Cases from the Files of a Forensic Anthropologist*. Louisiana State University Press.

Maples, William R. and Michael Browning. 1994. *Dead Men Do Tell Tales: The Strange and Fascinating Cases of a Forensic Anthropologist*. Doubleday.

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Rhine, Stanley. 1998. *Bone Voyage: A Journey in Forensic Anthropology*. University of New Mexico Press.

Ubelaker, Douglas H., and Henry Scammell. 1992. *Bones: A Forensic Detective's Casebook*. Harper-Collins.

### Forensic Archaeology/Recovery

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Rowe, W. F. Psychic Detectives: A Critical Examination. *Skeptical Inquirer* 17: 159-165.

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A comprehensive glossary on skeletal biology with terms used by osteologists in their analysis and reporting can be obtained by emailing the Smithsonian's Anthropology Outreach Office at [anthroureach@si.edu](mailto:anthroureach@si.edu)

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