

INTRODUCTION to PALEONTOLOGY

Display Installation Guide

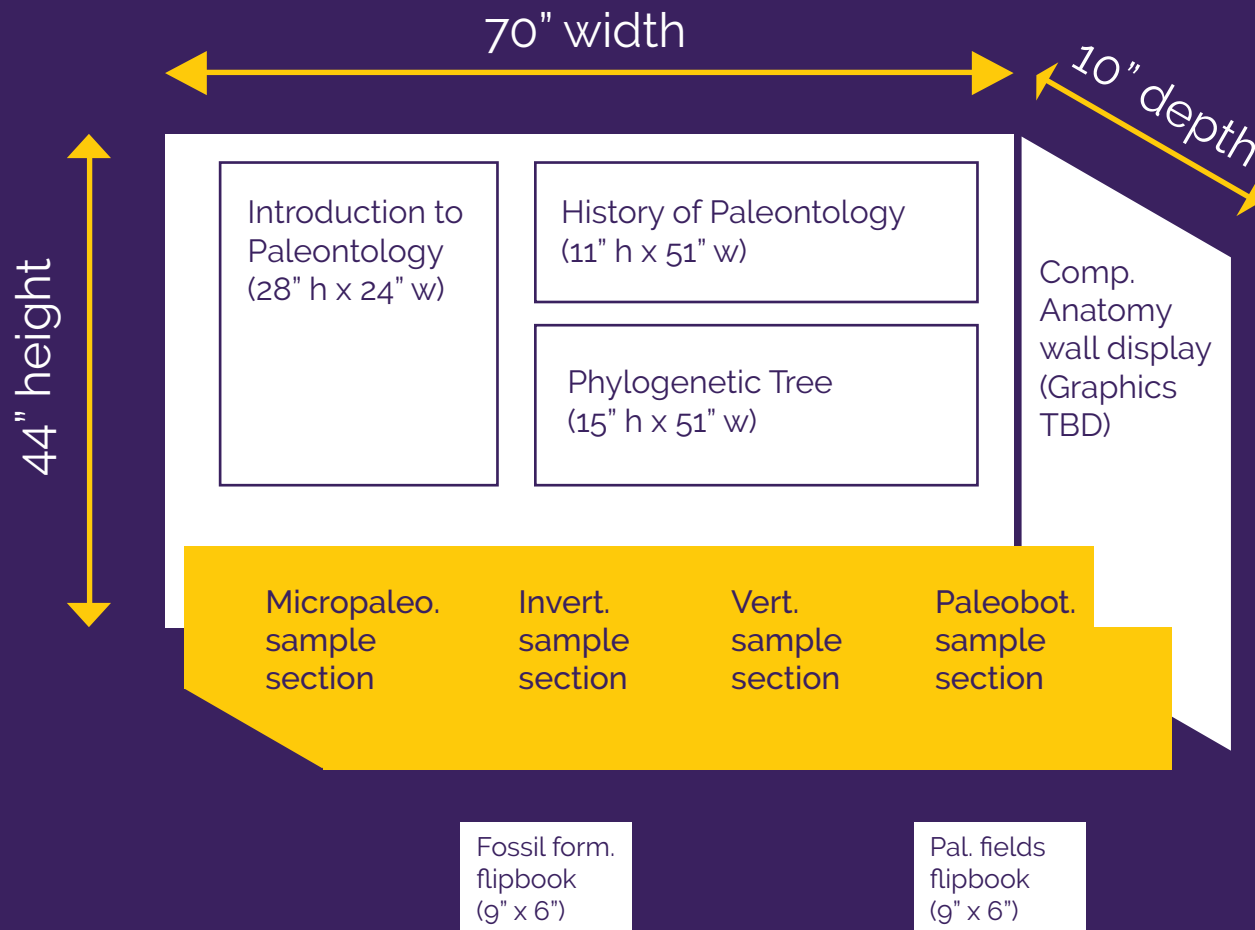
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PRINT FILE PREP

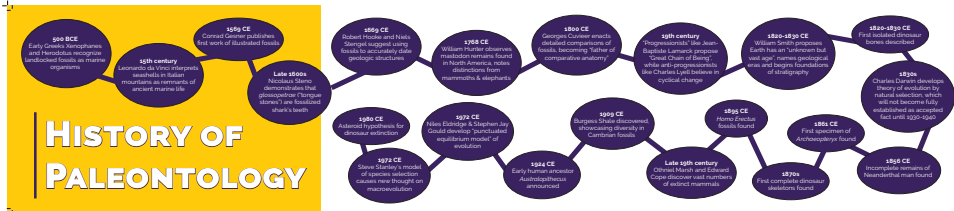
INTRODUCTION to PALEONTOLOGY

Though popularized in the public consciousness by the likes of *Jurassic Park*, there is so much more to the field of paleontology than dig sites and dinosaurs alone. This interdisciplinary science uses everything from microscopic remains to massive mineralized skulls to puzzle out the history of life on our planet - where it originated, how it diversified, what has changed over millions of years, and what the geologic past can tell us about our planet's future.

In this display, we hope to provide a glimpse at the sheer breadth of paleontology. Displayed below is a collection of original and reproduction fossil samples, representing microfossils, vertebrate & invertebrate fauna, and fossilized flora. Discover the evolutionary and scientific history alike of these diverse species, how the fossils are formed, how paleontologists use comparative anatomy to identify them, and what specializations and sub-fields work together within the world of paleontology to make these amazing discoveries about extinct life of all kinds.

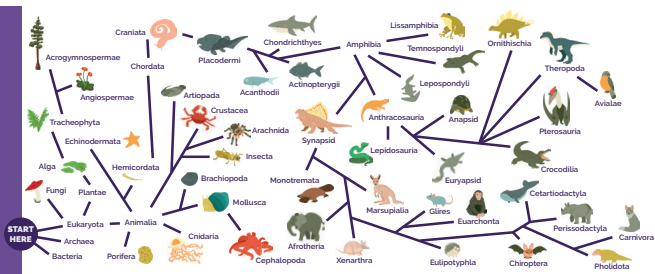
Display designed by
S. Mackenzie Eastman
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HISTORY OF PALEONTOLOGY



PHYLOGENETIC TREE OF LIFE

Phylogeny refers to the evolutionary relationships between all living and extinct species on Earth. Using DNA evidence, comparative anatomy, and more, biologists and paleontologists can determine where and how new species came to be, giving us new insight on evolutionary history and the diversity of life on our planet.



The *Introduction to Paleontology*, *History of Paleontology*, and *Phylogenetic Tree of Life* graphics are all print-ready PDF files. The *Introduction* and *History* graphics are prepared with a quarter-inch bleed which should be cropped by print services.

Fossil Formation

- Taphonomy** - the study of processes occurring after death
 - Decay influenced by oxygen supplies, temperature, pH, and nature of organic carbon in remains
- Necrolysis** ("death breakup") divided into biological agents (predators, scavengers, mechanical agents (wind, waves, currents, & diagenetic agents (metamorphosis))
- Shape, density, thickness and chemical makeup of remains can influence resistance to decay factors

- Diastrophism** - separation of multi-part skeletons into component parts due to scavenging or decay
- Fragmentation** - individual parts of remains breaking along lines of weakness
- Abolition** - grinding of remains against each other or sedimentary clays

- Biocorrosion** - removal of original material by boring organisms
- Chemical / Dissolution** - chemical action removing original materials

The two flipbooks can be printed from a single PDF. The layout has been made so four 5" x 8" cards can be printed on a single 11" x 17" sheet. The document should be printed double-sided so that even-numbered pages will appear on the back of odd-pages.

Once printed, cards will need to be trimmed to remove blue borders, hole-punched where marked in blue, and sorted into *Fossil Formation* and *Fields of Paleontology*.

ORIGINAL FOSSIL SELECTION

CLU's pre-existing fossil collection contains samples sufficient for the micropaleontology (in the form of scaled-up replicas) and invertebrate sections of this display, and may contain some paleobotany samples as well. One sample should be selected to represent each major taxonomic group, and should be chosen with consideration to visual appeal, how representative it is of the group, and if its absence from storage will have a significant negative impact on CLU's geology and paleontology labs.

Once selected, each sample should be labeled using the following format:

Scientific name

Original / replica fossil

Locality, date range (if known)

Courtesy of the CLU fossil collection

REPLICA FOSSIL SELECTION

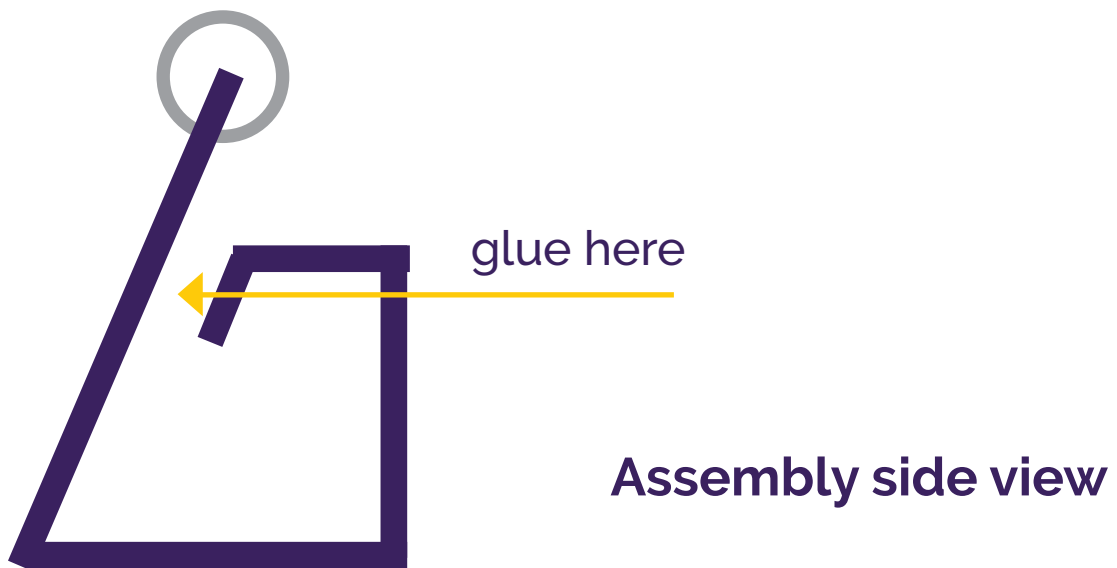
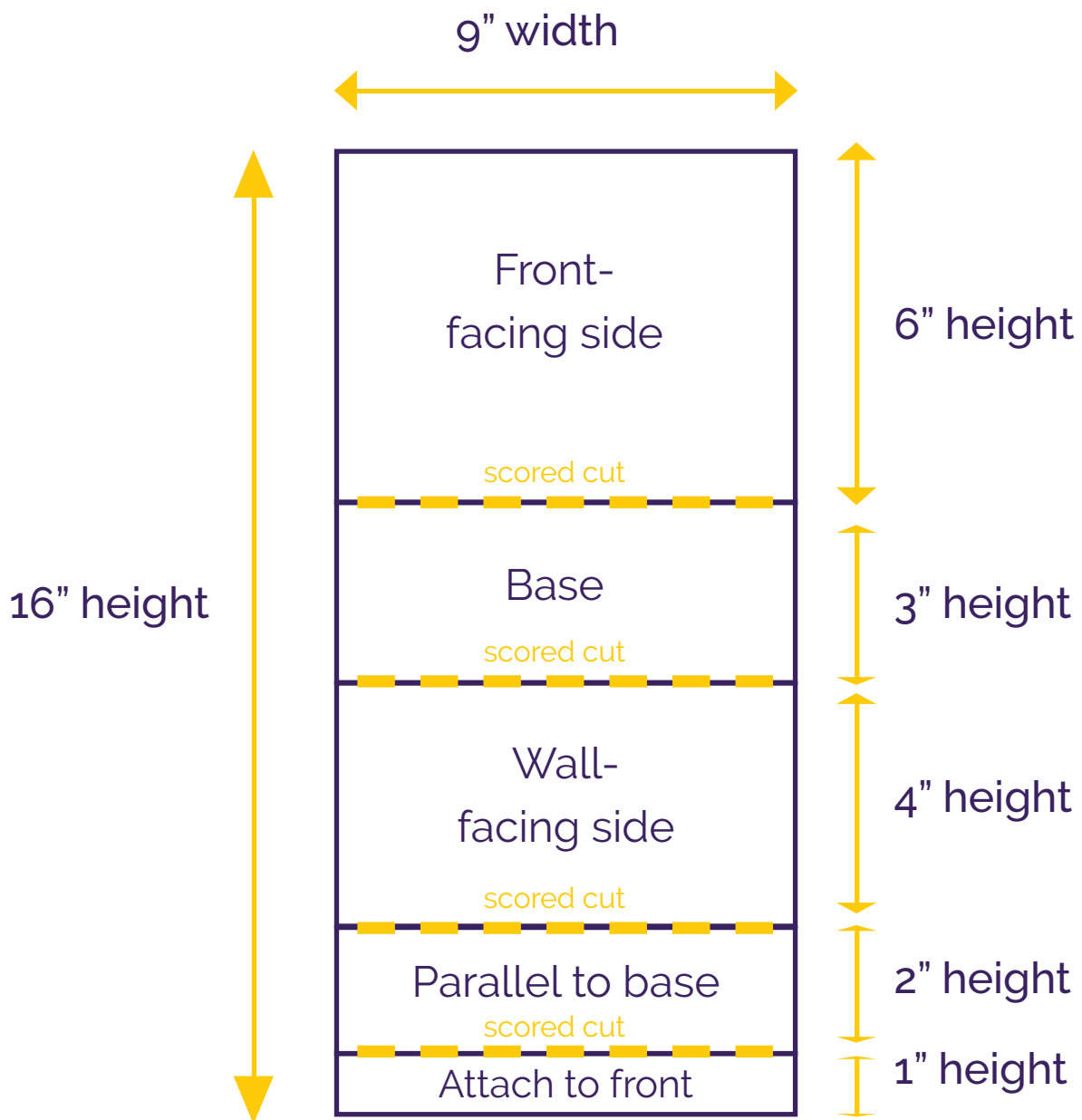
To populate the other sections of the display (particularly the vertebrate section), 3-D printed replicas selected from the digital archive [MorphoSource](#) will be utilized. As with original fossils, one should be selected to represent each major taxonomic group, with consideration to visual appeal and how representative it is of the group. CLU's Allies in STEM group will need to be consulted with prior to sample selection in order to determine any restrictions on size, filetype, and so on as pertains to their 3-D printer. Samples should be labeled using the same format as original fossils, with the source institution noted if possible.

In addition, replica fossils will need to be selected for the display on comparative anatomy. We recommend using samples of teeth from various carnivorous species (ie. modern crocodile, *Tyrannosaurus rex*, and *Mosasaurus*), as these will be relatively easy to wall-mount, and a good example of how physical features correlate with creatures' lifestyles. Once these samples are selected, a corresponding graphic will be created based on measurements of the replicas.

FLIPBOOK CONSTRUCTION

Mounts for the flipbooks can be created using cardboard or foamcore (we recommend one of a heavier weight for stability), loose binder rings (available at the CLU campus store), hot glue, an X-Acto blade, a ruler or straight-edge, a hole punch, and Command picture-hanging velcro strips. For the sake of visual appeal, we recommend using cardboard/foamcore either already colored, or having been given a unified color using spray paint or adhesive-applied paper.

To begin, two 9" x 16" rectangles of cardboard/foamcore (one for each of the two flipbooks) should be cut out. Scoring (a cut that goes through part but not all of the material, to allow easier folding) should then be applied at the points indicated in the diagram at right. This will allow the cardboard/foamcore to be folded in the manner depicted at right, with hot glue attaching the innermost "tab" to the front-facing side. Three holes should be punched in the front side to match those on the flipbook pages, and the loose binder rings can then be threaded through. Two Command strips minimum should then be attached to the wall-facing side to hang up the mount.

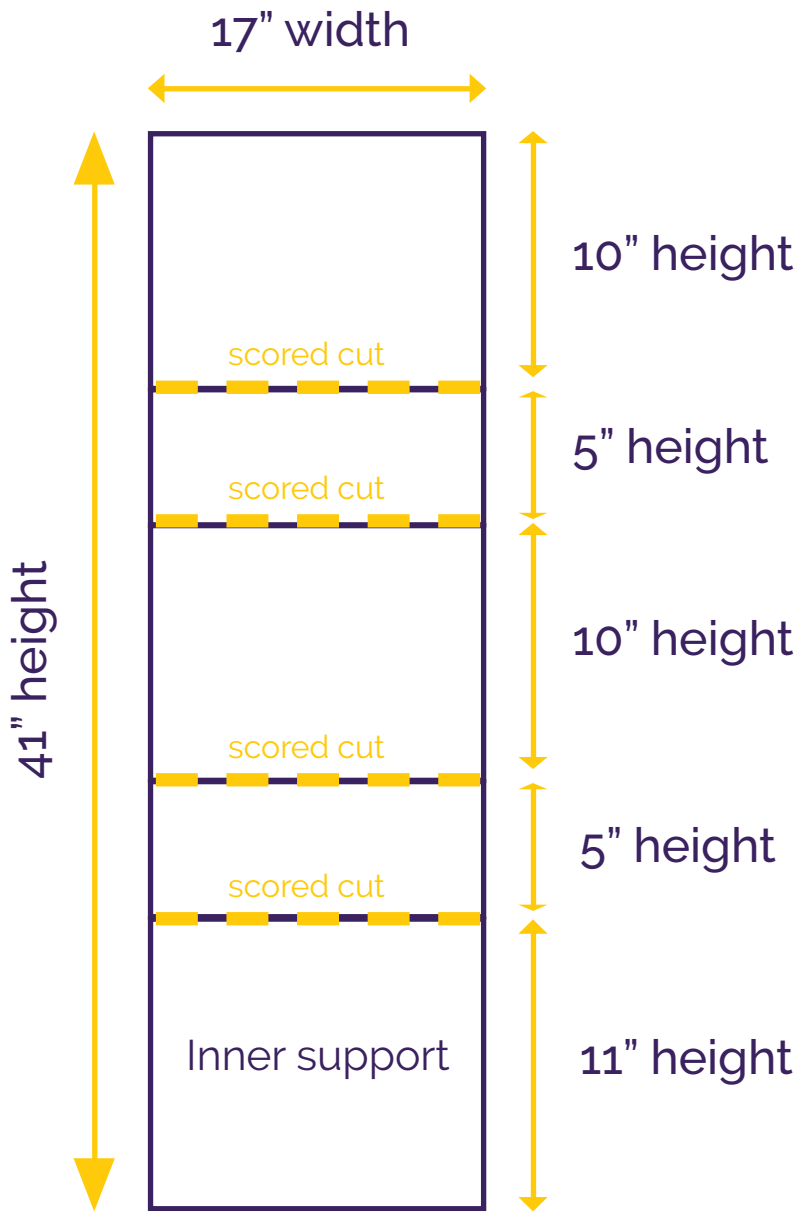


DISPLAY SHELF CONSTRUCTION

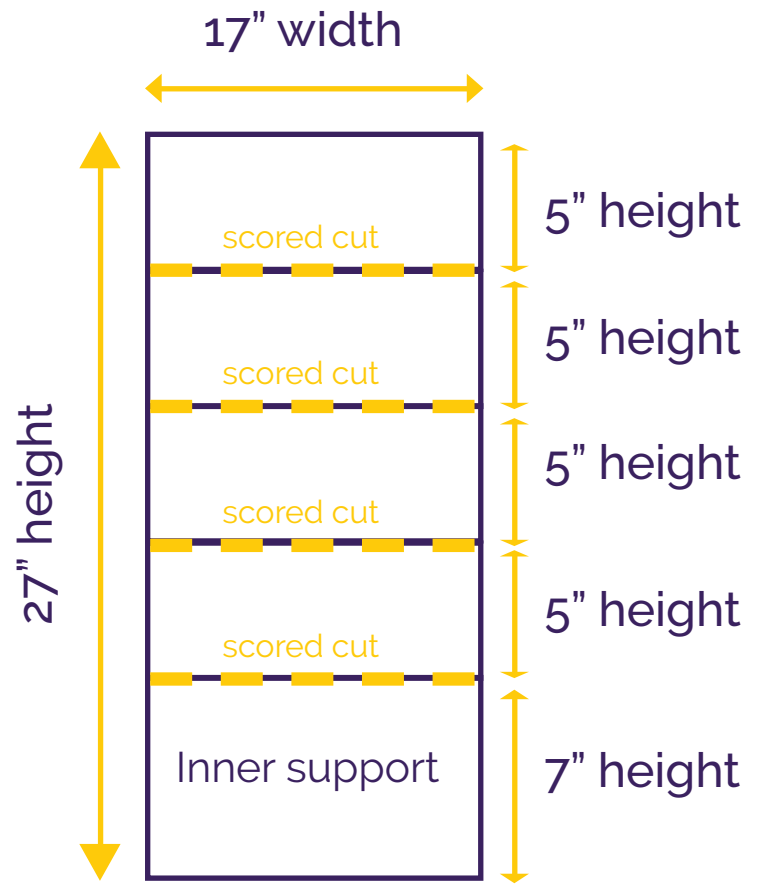
The display shelves can be constructed using the same materials as the flipbook mounts. Just as with those, for the sake of visual appeal, we recommend using cardboard/foamcore either already colored, or having been given a unified color using spray paint or adhesive-applied paper.

Because the shelf spans nearly the full 70" width of the display window, we recommend constructing four separate 17" wide sections for the sake of stability, then attaching them to appear as one continuous display shelf. We also recommend constructing the top and bottom steps separately for the same reason.

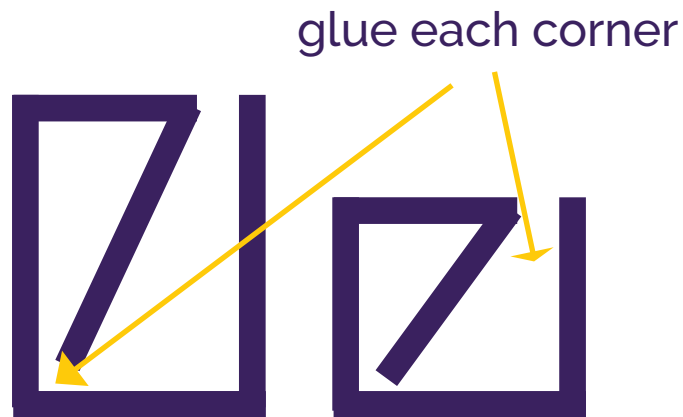
For each section of the "top step" (measuring 10" high), cut a 17" x 41" rectangle of cardboard/foamcore and score at the points indicated in the diagram at right. This will produce a four-sided box with an internal, diagonal support. The "bottom step" (measuring 5" high) will be cut into a 17" x 27" rectangle and assembled in the same way. All eight sections can then be assembled into a two-tier display, and scrap cardboard/foamcore can be traced and cut to cover edges.



Top step



Bottom step



Assembly side view

ASSEMBLING FINAL INSTALLATION

For clean yet sturdy display, we recommend using finishing nails (available at most hardware stores) for all wall-hanging portions of the display. The nails are small and thin yet extremely durable, so they will be unobtrusive while still holding strong. For posters, a minimum of one in each corner should be used, and an additional nail at the center of each long edge can help further secure them. For wall-mounted replica fossils, two nails should be placed under the sample to create a “shelf” it can rest on securely, then a final nail should be placed over it to fasten it securely in place (see diagram below).



Approximately 1"-2" of clearance should be given between edges of posters and walls. Up to 5" clearance should be given between top of display shelf and bottom of lowest poster. Finally, flipbooks should be mounted using Command strips, and centered underneath each window.