

# 3-D Printing Fossils at the University of Alabama

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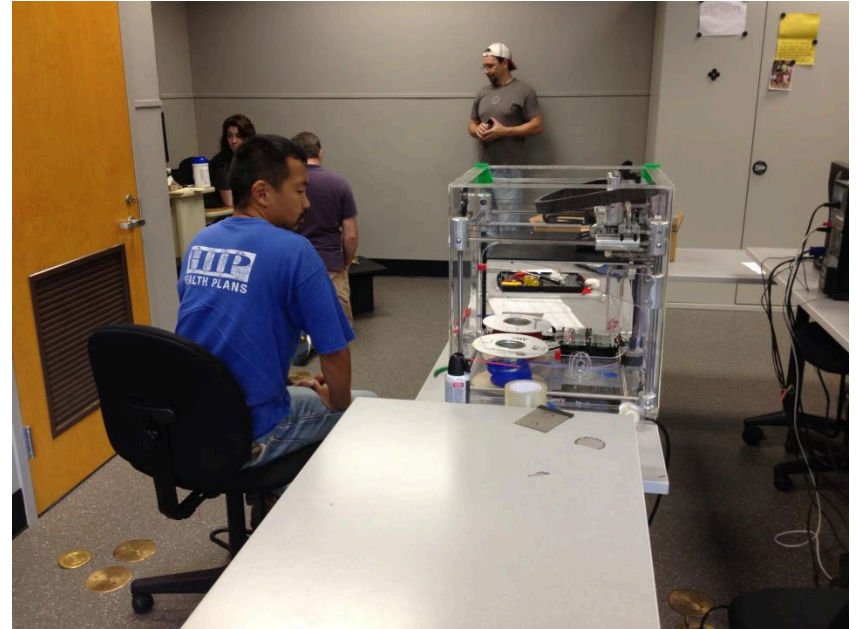
THE UNIVERSITY OF  
**ALABAMA**

  
**ALABAMA**  
*Museum of Natural History*  
THE UNIVERSITY OF ALABAMA

# Background

- UA College of Engineering
  - Paid for equipment
  - Set up 3D printing lab to make students more marketable
- UA Libraries
  - Satellite 3D printing lab for students
- UA Dept. of Art and Art History
  - Started using the 3D printing lab for sculpture classes
  - Jamey Grimes, Instructor, also interested in fossils and approached me

# Humble Beginnings



# What Equipment Are We Using?



- 3DS ProJet 460 plus
  - Color 3D Printer
  - Uses composite materials
  - Prints 450 dpi resolution



- Z Corporation Spectrum 510
  - Composite materials
  - Build size 10" x 14" x 8"



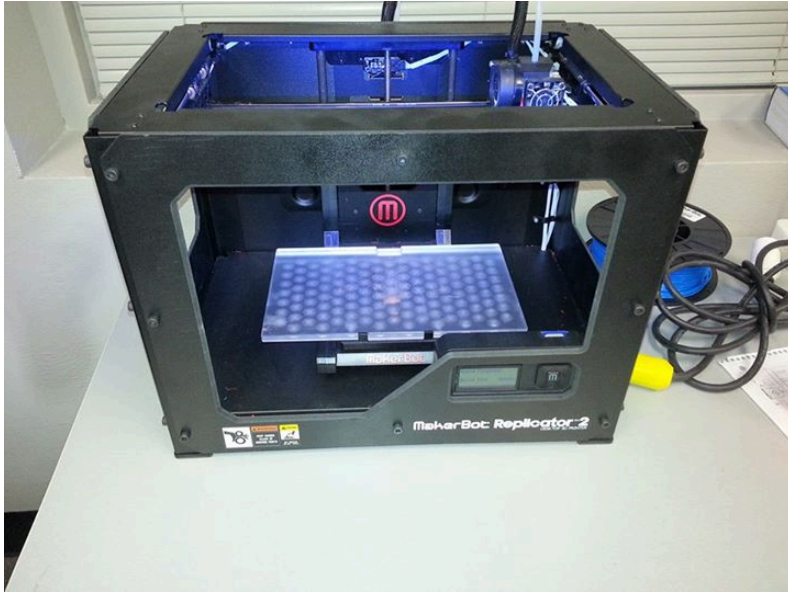
# Printers



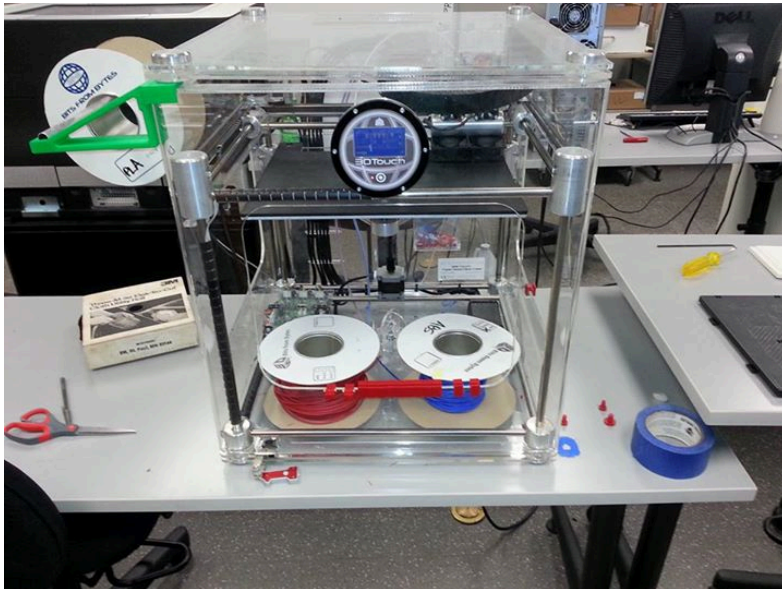
- Stratasys  
Dimension 1200 es
  - ABSplus thermoplastic
  - Resolution: 0.254 mm
- Objet 30 Pro
  - Eight different 3D printing materials,
    - Polypropylene
  - Print size: 12" × 8" × 6"



# Printers



- Makerbot Replicator 2 & 2A
  - Fused Filament Fabrication (PLA/ABS)
  - Build Volume: 11.2" X 6.0" X 6.1"
  - Resolution: 100 Microns



- BFB 3D Touch
  - PLA/ABS plastics
  - Resolution: 125 Microns

# Scanners



- Artec 3D Scanner
  - Working distance up to 1 meter
  - 1.3 mp resolution
  - 16 frames per sec.



- Lidar
  - Remote Sensing equipment for large scale objects

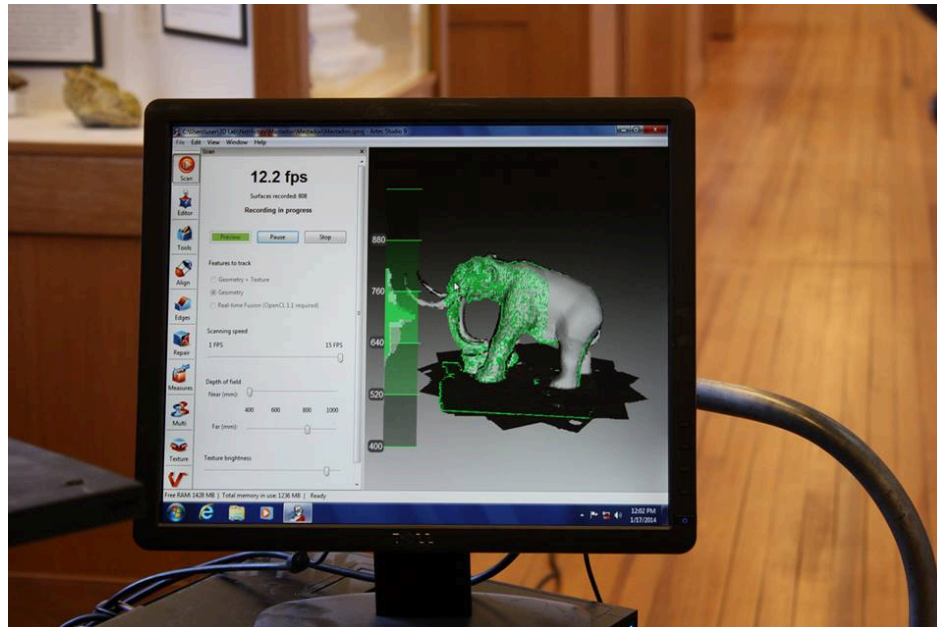
# Goals

- Teaching students how to use equipment
- Outreach opportunities
  - Teaching students about evolution and technology
  - Encourage donations
- Digitizing collections
  - For catalogue
  - For collaboration





# Student Education



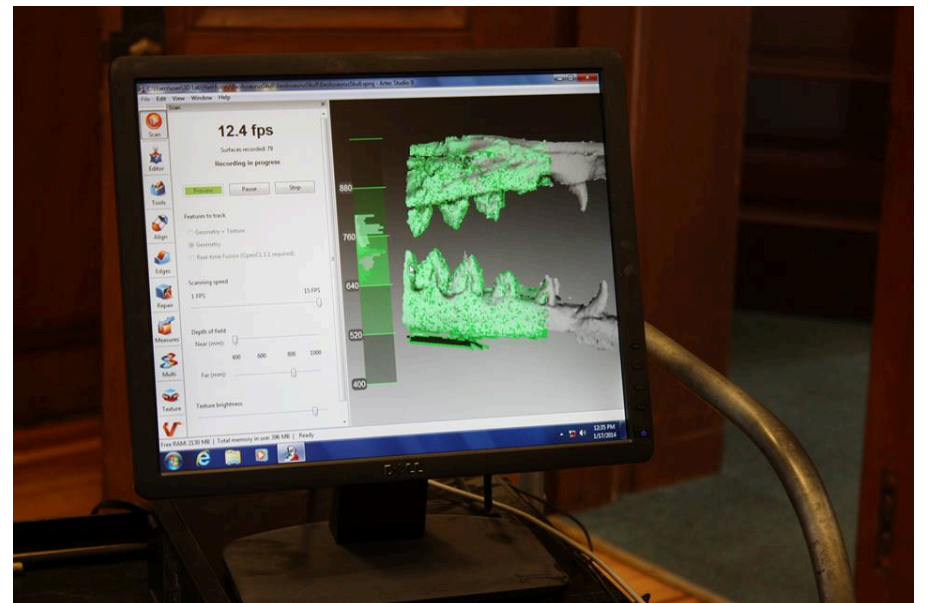
# Teaching and Outreach



Randy Mecredy with visitors



Jay Cannon



# Outreach

- National Fossil Day  
– October 16, 2013



**NATIONAL FOSSIL DAY**

**ALABAMA**  
Museum of Natural History  
THE UNIVERSITY OF ALABAMA

Meet Dr. Jim Lacefield, author of *Lost Worlds in Alabama Rocks: A Guide to the State's Ancient Life and Landscape*. Dr. Lacefield's presentation will begin at 6:00pm in room 205, Smith Hall.

DISCOVERY • SCIENCE • PREHISTORIC LIFE  
OCTOBER 16, 2013

SMITH HALL • GRAND GALLERY  
4:00 - 6:00 PM

# Outreach

- Science Sunday  
– January 26,  
2014

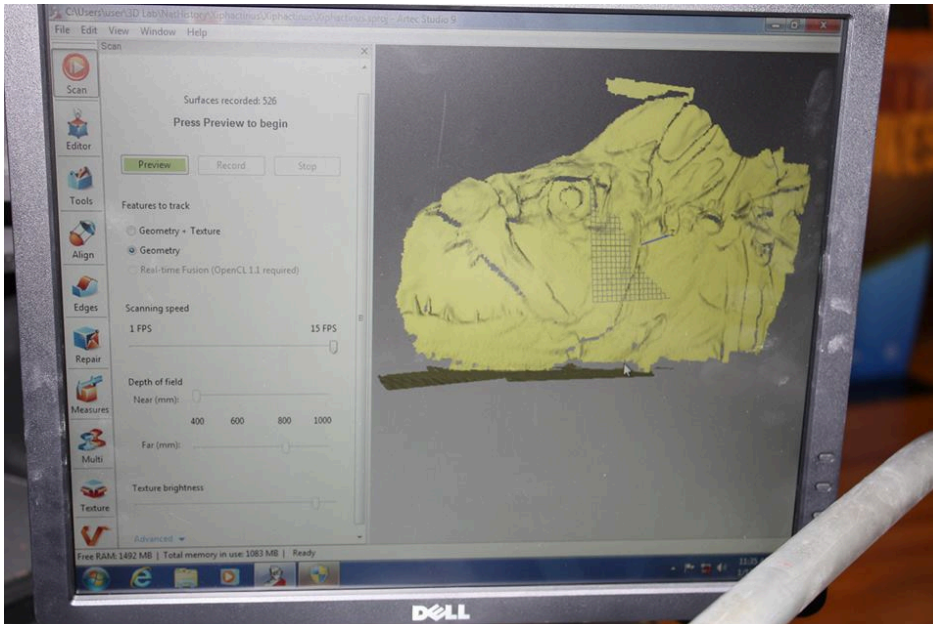


# Outreach

- Facilitation of Donations
  - Offer donors a 3D print of their fossils
  - Increase potential donations



Mr. Del O'neal



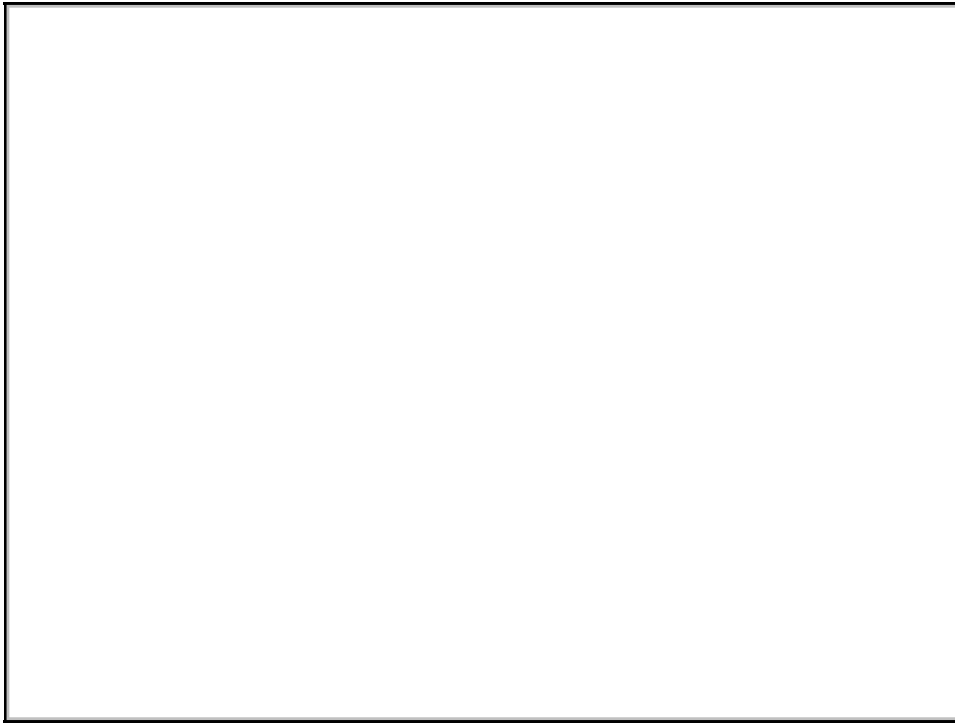
*Xiphactinus* scan



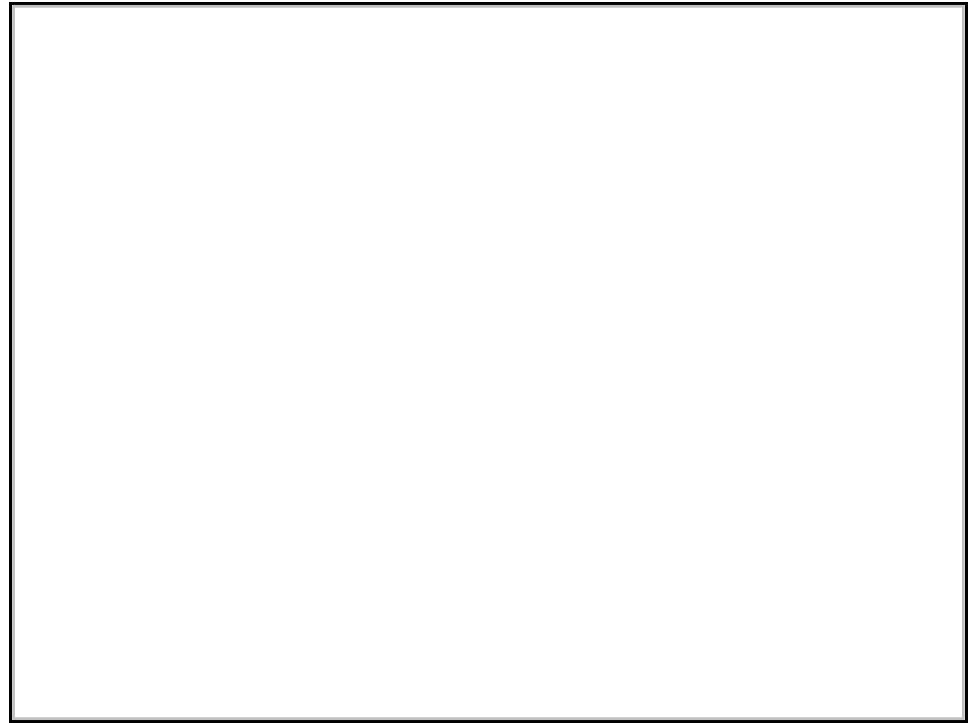
*Xiphactinus* mandible

# Digitizing Collections

- Priority given to rare or damaged specimens
  - Currently photographing collections, hope to start scanning in the future



Dr. Bing Blewitt

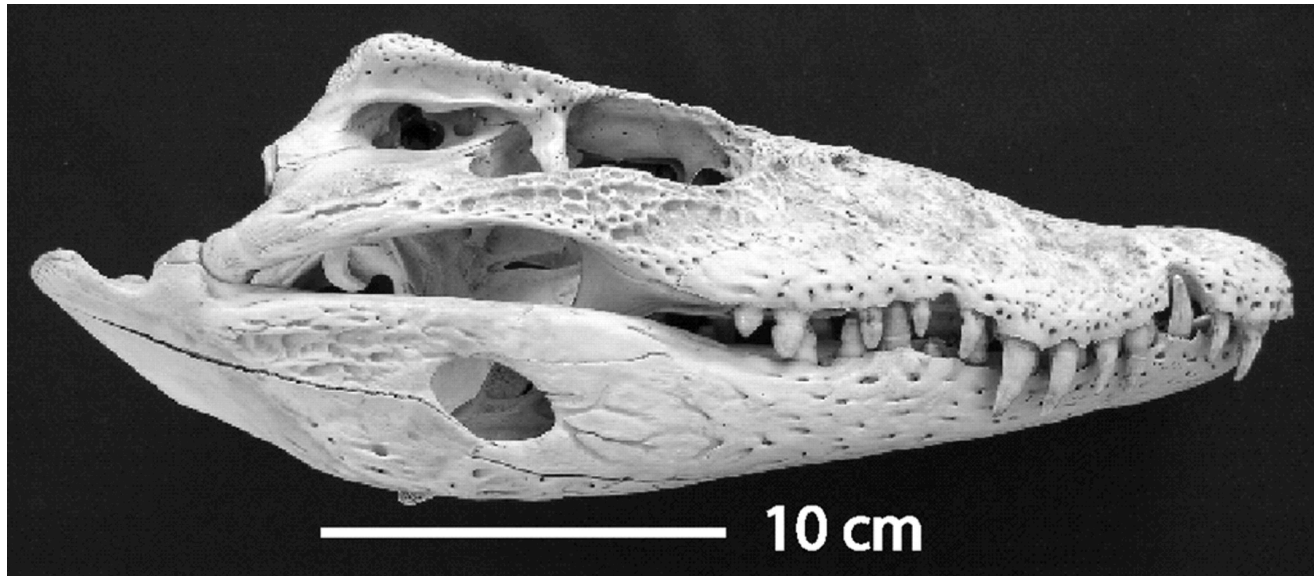
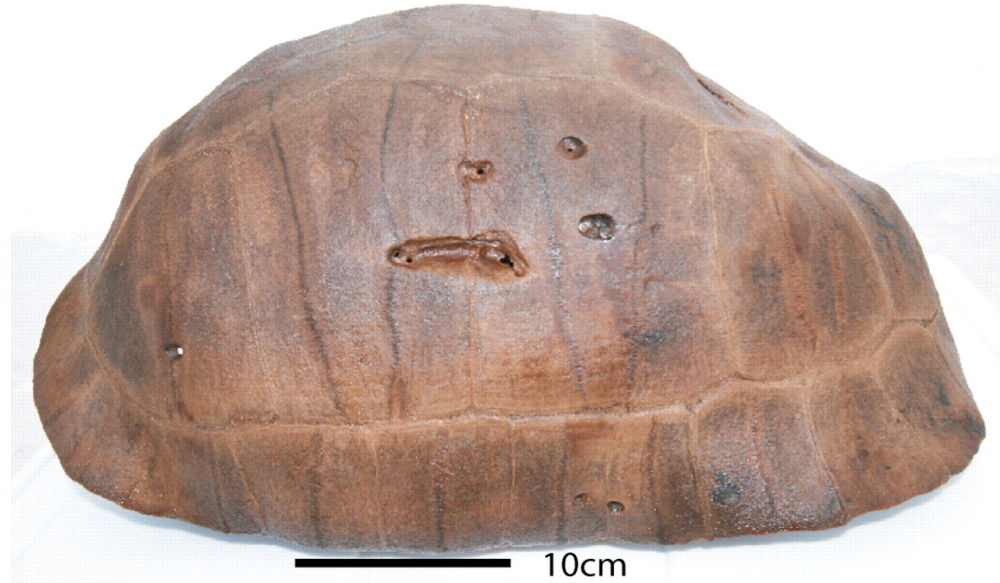


Damaged Elasmosaur vertebrae  
that also have pyrite's disease

# Digitizing Collections

- Collaborative Projects:
  - Bahamas Sawmill Sink specimens
    - Fossil tortoise shell and fossil crocodile skull CT scanned at UT Austin
    - Nancy Albury and Dave Steadman want 3D copies for teaching paleontology in Bahamas, but costs too high
    - Allows UA students opportunity to manipulate CT data, provides copies of specimens for outreach

# Digitizing Collections





# Acknowledgements

- UA College of Engineering
- Jamey Grimes, Dept. of Art & Art History
- Doug Cannon, College of Engineering
- Jay Cannon, Engineering
- Randy Mecredy, Lydia Ellington, Allie Sorlie, Alabama Museum of Natural History

