

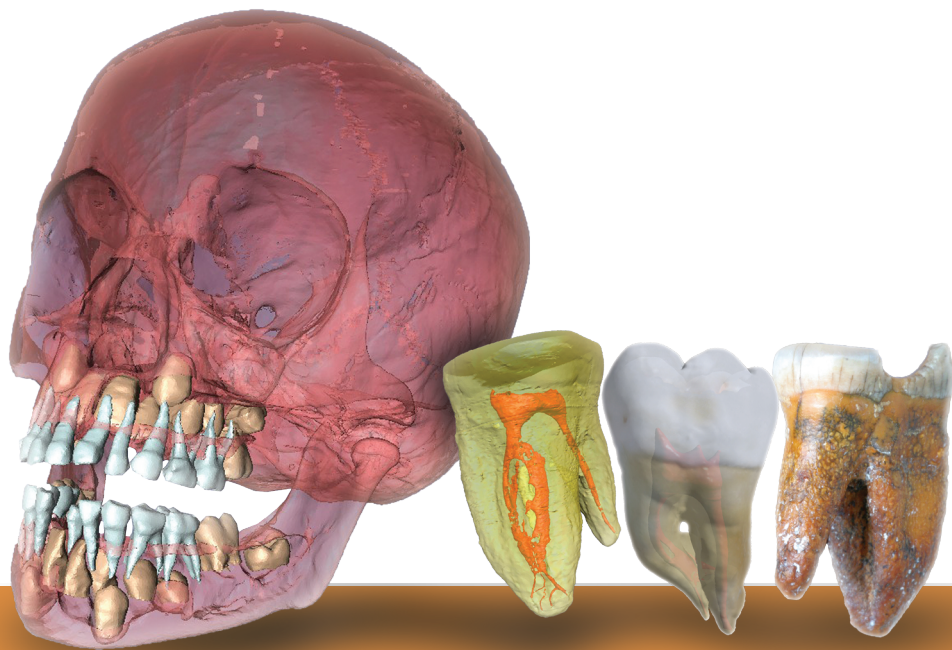


# Tooth Atlas

COURSE GUIDE



The information in this guide was prepared by eHuman  
with contributions from Dr. Eric Herbranson,  
Dr. Charles Goodacre, and Dr. Robert Hasel.



**eHuman**™  
DIGITAL ANATOMY

## ABOUT THIS GUIDE:

The eHuman Tooth Atlas Course Guide is designed to help you correlate the extensive Tooth Atlas content to your program's dental curriculum. Working with dental educators, every page of the Tooth Atlas has been associated with learning objectives for topics that are taught within specific courses. We have included examples for many of the learning objectives, and we encourage all educators to submit their own examples of activities or exercises. If you would like to contribute any of your examples, please email them to us at [courseguide@ehuman.com](mailto:courseguide@ehuman.com). A digital version of the guide is available at [www.ehuman.com/courseguide](http://www.ehuman.com/courseguide). We hope you'll find the Course Guide to be a useful tool to unlock the power of the Tooth Atlas.

## HOW TO USE THIS GUIDE:

The guide is divided by course, with the learning objectives specified for each course. Each page of the Tooth Atlas is represented, and may be relevant to one or more courses, and to one or more learning objectives. For each course objective, the guide identifies the relevant Tooth Atlas pages and lists the Section, Page and Topic contents on that page. Throughout the Guide, we provide examples of how to incorporate the content into your curriculum.

Navigation instructions are sometimes included to help you find the page. EXAMPLES will always begin at the Atlas Home Page (shortcut in upper right of program). They will be in parenthesis and successive clicks are indicated with an arrow (>). Section and Page references begin navigation from the pull down [Section] menu, [Page] refers to the buttons in the right menu, and the content is identified in [Topic].

### EXAMPLE

**Show the maxilla and mandible in detail.**

**(Click on Skull Osteology > Click on 3D Model > Click on Annotated Maxilla or Mandible)**

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.



# TOOTH ATLAS COURSE GUIDE

## ANTHROPOLOGY

4

Identify morphology, 4  
Relate growth and development, 5  
Use vocabulary, 6  
Use for assessments, 6  
Identify radiographic anatomy, 7  
Exam and National Board Study, 8  
Identify Osteology Landmarks, 8  
Identify Osteology Anatomy, 9  
Describe imaging systems used in Anthropology, 9  
Discuss histology, 10  
Discuss relationship of form and function, 10  
Understand history and significance, 10  
Recognize and compare differences in teeth, 10  
Discuss and describe differences in comparisons, 11  
Use as reference, 12  
Discuss human evolution, 12

## CARIOLOGY

13

Learn overview of caries, 13

## DENTAL ANATOMY

14

Identify morphology, 14  
Relate growth and development, 16  
Use vocabulary, 17  
Study for assessments, 18  
Understand embryology, 18  
Understand histology, 18  
Identify pulpal anatomy, 19  
Understand function, 20  
Identify radiographic anatomy, 21  
Exam and National Board study, 22  
Identify osteology landmarks, 22  
Identify osteology anatomy, 23

## EMBRYOLOGY

24

Relate growth and development, 24  
Review embryology, 24  
Review histology, 24

## ENDODONTICS

26

Review dynamics of endodontic filling materials, 26  
Review dynamics of endodontic instrumentation, 29  
Identify anatomy of access preparations, 31  
Review instrumentation mechanics, 31

## GERONTOLOGY

32

Understand age related changes in dentin, 32

## GROWTH & DEVELOPMENT

33

Relate growth and development, 33  
Understand embryology, 34  
Understand histology, 34

## HEAD & NECK ANATOMY

36

Identify morphology, 36  
Relate growth and development, 37  
Understand embryology, 37  
Understand histology, 37

## OCCLUSION & TMJ

38

Relate growth and development, 38  
Identify osteology landmarks, 38  
Identify osteology anatomy, 39  
Identify radiographic anatomy, 39

## OPERATIVE

40

Identify morphology, 40  
Relate growth and development, 42  
Use vocabulary, 43  
Study for assessments, 43  
Identify pulpal anatomy, 44  
Understand function, 45  
Identify radiographic anatomy, 46  
Study anatomy of periodontal tissues, 47  
Exam and National Board study, 48  
Learn overview of caries, 48  
Understand age related changes in dentin, 49

## PEDODONTICS

50

Identify morphology, 50  
Relate growth and development, 52  
Use vocabulary, 53  
Study for assessments, 53  
Identify pulpal anatomy, 54  
Understand function, 54  
Identify radiographic anatomy, 54  
Learn overview of caries, 55

## PERIODONTICS

56

Study anatomy of periodontal tissues, 56  
Exam and National Board study, 57

## RESTORATIVE

58

Identify morphology, 58  
Relate growth and development, 60  
Use vocabulary, 61  
Identify anatomy of periodontal tissues, 62  
Study for assessments, 63  
Identify pulpal anatomy, 63  
Review function, 64  
Identify radiographic anatomy, 65  
Study anatomy of periodontal tissues, 66  
Exam and National Board study, 66  
Learn overview of caries, 67  
Understand age related changes in dentin, 67

## LEARNING OBJECTIVES

- Identify morphology, 4
- Relate growth and development, 5
- Use vocabulary, 6
- Study for assessments, 6
- Identify radiographic anatomy, 7
- Exam and National Board study, 8
- Identify Osteology Landmarks, 8
- Identify Osteology Anatomy, 9
- Describe imaging systems used in anthropology, 9
- Discuss histology, 10
- Discuss relationship of form and function, 10
- Understand history and significance, 10
- Recognize and compare differences in teeth, 10
- Discuss and describe differences in comparisons, 10
- Use as reference, 10
- Discuss human evolution, 12

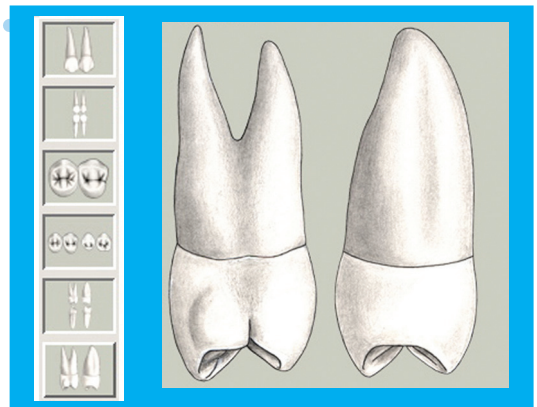
## IDENTIFY MORPHOLOGY

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.

### EXAMPLE

Using the transparency selector and slider with the 3D models, turn off the enamel and leave the dentin visible. With the dentin visible, discuss how the morphology of the dentin is important when replicating a natural tooth in porcelain. Show how a porcelain crown is built up in layers and how this mimics the layering of natural teeth.

(Click Tooth Morphology > Click on a Primary Tooth's image > Click 3D Teeth on the right bar > Select the tooth from the bottom of the right bar. Use the Enamel Opacity slider to turn off the enamel)



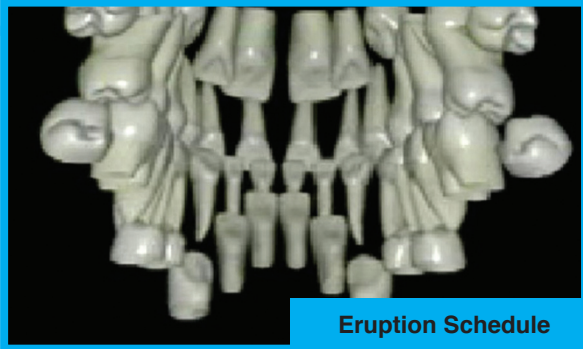
RELATE GROWTH AND DEVELOPMENT

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Skull Osteology	Child Mummy	Various Feature Groups: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.
Primary Teeth	Eruption Schedule	Position and sequence of transitional.
Primary Teeth	Primary Other > Odontogenesis	Animation of odontogenesis.
Skull Osteology	Stanford Skull	Cutaway identifies transitional dentition and surrounding structures.
Skull Osteology	Annotated Maxilla and Mandible	Cutaway identifies transitional dentition and surrounding structures.
Skull Osteology	Annotated Maxilla and Mandible	Cutaway identifies transitional dentition and surrounding structures.

EXAMPLE

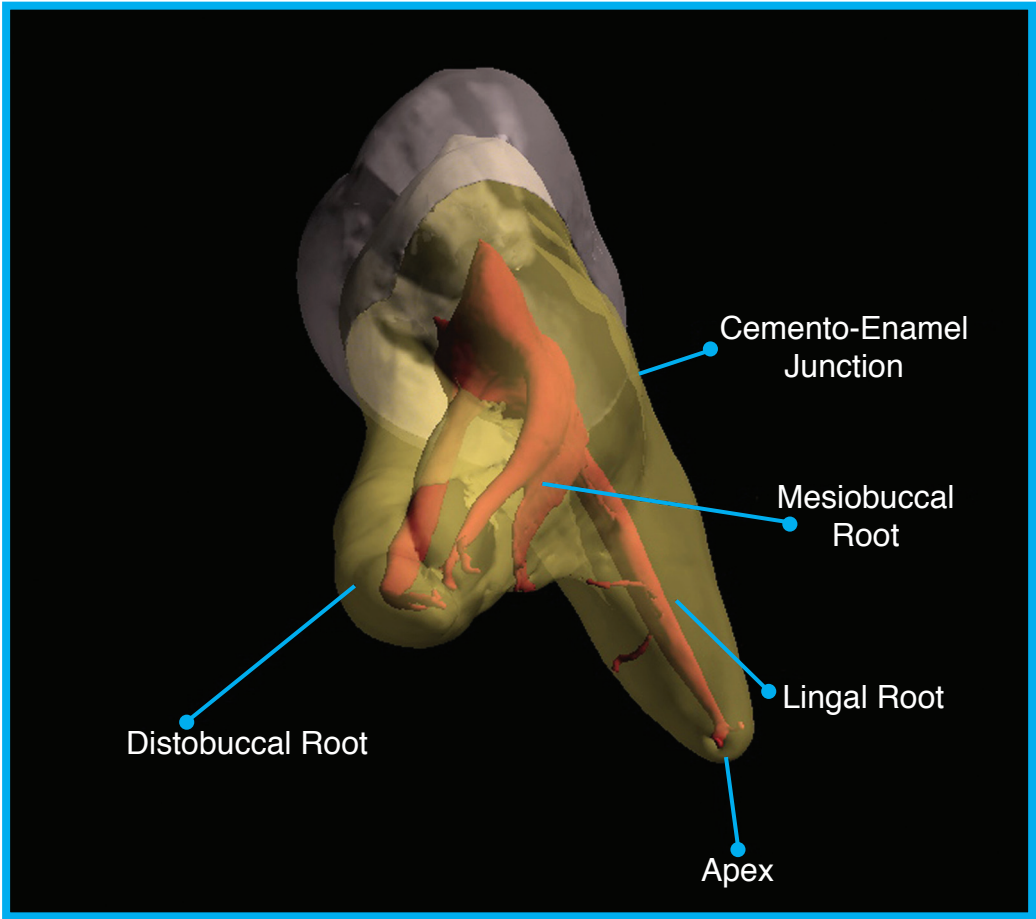
Use the Eruption Schedule interactive program in the Primary Dentition part of the Atlas. Move the slider bar to a certain point and point out the timeline at the bottom. This provides many opportunities for discussion and dialogue. Pick a specific age and have the students rotate their eruption schedule until it matches that age.

(Click on Primary Teeth > Click on Eruption Schedule)



USE VOCABULARY

Section	Page	Topic
Anthropology	Terminology	Anthropologists and other scientists have a different vocabulary for dental terms. This important and necessary information is included as a requirement for any educated dentist. Examples of all teeth are annotated for anthropological terminology.
Glossary	Glossary	Searchable terminology glossary from the American College of Prosthodontics.



STUDY FOR ASSESSMENTS

Section	Page	Topic
Skull Osteology	Child Mummy	3 Sections: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with questions and answers for name, calcification, eruption, exfoliation and relative position.

## IDENTIFY RADIOGRAPHIC ANATOMY

Section	Page	Topic
Skull Osteology	Child Skull	Rotation of superimposed photographs and X-rays.
X-Ray Database	X-Ray Database	660 X-rays with searchable database for conditions and variations X-Ray Database.
Secondary / Primary Dentition	Panorex	Rollover annotations of a panorex for structure identification.

## EXAMPLE

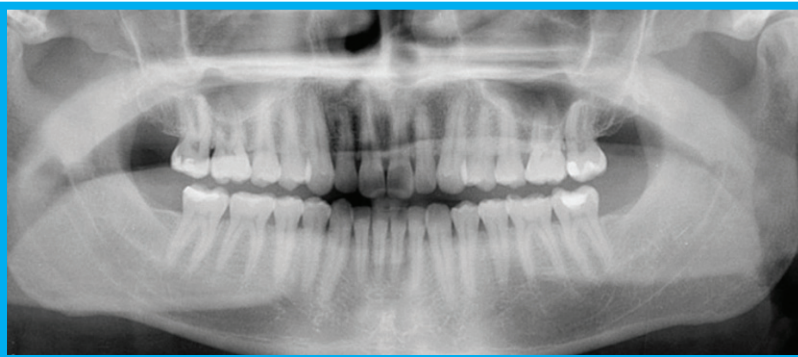
Use the radiograph tab at each secondary tooth to identify the landmarks present in the numbered left hand box. Roll the mouse over the image and use the “hide all” and “show all” buttons to complete self-assessment quizzes.

Show the inferior alveolar canal and discuss the anatomic variations in its position. Discuss the importance of knowing where the canal is located when placing implants in the posterior mandible. What are the best ways of determining precisely where the canal is located?

Identify the pterygomaxillary fissure on a radiograph. Discuss its location, boundaries, and its use as a landmark in cephalometrics. Discuss the importance of the fissure as an anatomic structure that leads into the pterygopalatine fossa that houses a number of key nerves and vessels that serve structures pertinent to dentistry.

Show the temporomandibular joint. Discuss the condyle, its form, dimensions, and its normal position in the fossa.

- Compare the condylar position on a panoramic radiograph with that of a tomogram.
- Show how the space between the condyle and fossa varies depending on the mediolateral location of the tomographic slice and how there are problems with making sweeping conclusions about joint space based on radiographs.
- Show histologic cross-sectional images of the temporomandibular joint at various mediolateral locations to support the discussion.



Click on Tooth Morphology > Choose a tooth from Secondary or Primary Dentition > Click on Panorex



Click Tooth Morphology > Click on a Primary Tooth's image > Click Radiograph



EXAM AND NATIONAL BOARD STUDY

Section	Page	Topic
Home Page	Sample Exam	100 Sample board exam questions.

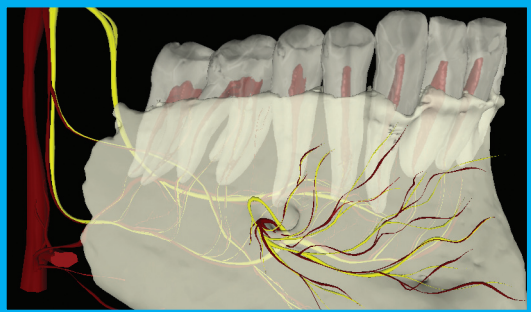
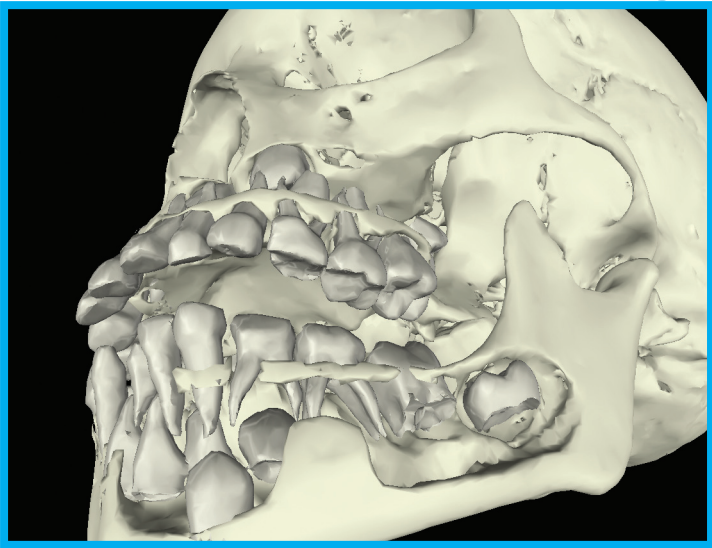
IDENTIFY OSTEOLOGY LANDMARKS

Section	Page	Topic
Skull Osteology	3D Models	3D models with annotated anatomical structures: 1) maxillary quadrant, 2) mandibular quadrant, 3) adult skull, 4) child skull, and 5) newborn skull.
Skull Osteology	Annotated Maxilla	Annotated photograph of dissected maxilla.
Skull Osteology	Annotated Mandible	Annotated photograph of dissected mandible.

EXAMPLE

Show the maxilla and mandible in detail.

(Click on Skull Atlas & Cranial Nerves > Click on 3D Models button located in the right column> Click on Maxilla anatomy or Mandible anatomy)



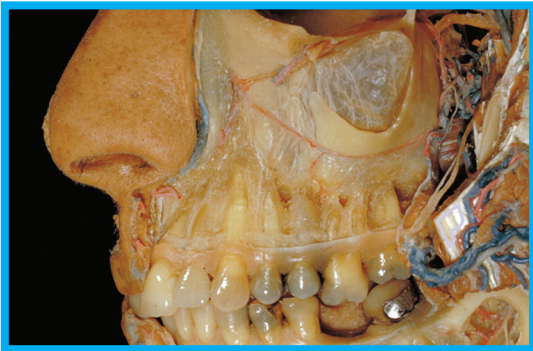
# IDENTIFY OSTEOLOGY ANATOMY

Section	Page	Topic
Skull Osteology	Stanford Skull	Rotation of superimposed photographs and X-rays.
Skull Osteology	Child Skull	Rotation of superimposed photographs and X-rays.
Skull Osteology	Stanford Skull	Cutaway identifies transitional dentition and surrounding structures.
Skull Osteology	Annotated Maxilla and Mandible	Cutaway identifies transitional dentition and surrounding structures.
Skull Osteology	Annotated Maxilla and Mandible	Cutaway identifies transitional dentition and surrounding structures.

## EXAMPLE

Identify the locations where the muscles of mastication attach to the skull.

Link the anatomy of the mandibular foramen to the inferior alveolar nerve injection.



Click on Skull Osteology > Click on Stanford Skull > Click on Annotated Maxilla or Mandible

# DESCRIBE IMAGING SYSTEMS USED IN ANTHROPOLOGY

Section	Page	Topic
Anthropology	Anthro Other / Virtual Dental Tissue	The PDF paper illustrates the importance of imaging systems and the information gleaned from those systems.





## DISCUSS HISTOLOGY

Section	Page	Topic
Anthropology	Anthro Other > Dental Hard Tissue Laboratory Overview	This article discusses information on the importance of tooth histology and human evolution.

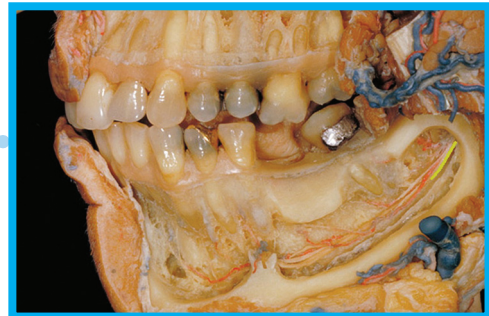
## DISCUSS RELATIONSHIP OF FORM AND FUNCTION

Section	Page	Topic
Anthropology	Anthro Other > Anthropological Investigation of Enamel Thickness and Tooth Development	This paper describes the anthropological relationship and importance between form and function.

### EXAMPLE

Identify the locations where the muscles of mastication attach to the skull.

Link the anatomy of the mandibular foramen to the inferior alveolar nerve injection.



## TRACE HISTORY AND SIGNIFICANCE

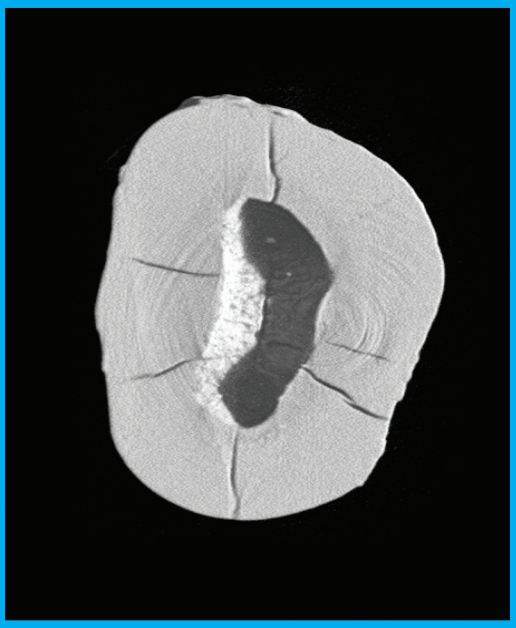
Section	Page	Topic
Anthropology	Anthro Other > Anthropology and Fossils Beaker Project	PDF document describes the history and significance of the teeth from 2000 BC.

## RECOGNIZE AND COMPARE DIFFERENCES IN TEETH

Section	Page	Topic
Anthropology	Anthro Other > Anthropology and Fossils Beaker Project 3D Teeth	Several of the 4000 year old teeth were scanned, reconstructed and segmented providing additional 3D interactive models.

DISCUSS AND DESCRIBE DIFFERENCES IN COMPARISONS

Section	Page	Topic
Anthropology	Human-Neanderthal Comparison	3D interactive reconstructions of a Neanderthal and a human molar are made available for anatomical comparisons.
Anthropology	Neanderthal Teeth	Photographs, CT scan data and 3D reconstructed data of Neanderthal teeth are presented along with annotations and descriptive text.

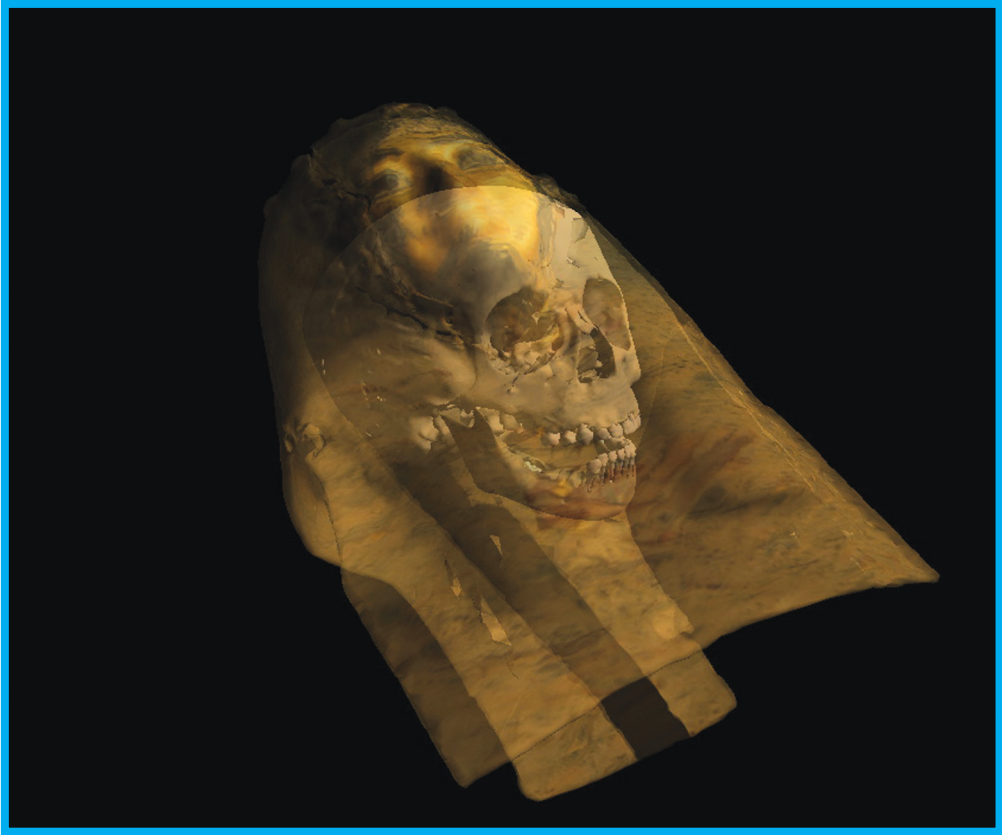


REVIEW AND CITE AS REFERENCE

Section	Page	Topic
Anthropology	Anthro Other / Tanya Smith Resource Link	An extensive bibliography by Tanya Smith, PhD (Max Planck Institute and Harvard University Department of Anthropology) for information on enamel and dentin.

DISCUSS HUMAN EVOLUTION

Section	Page	Topic
Anthropology	Anthro Other / Tanya Smith Resource Link	An extensive bibliography by Tanya Smith, PhD (Max Planck Institute and Harvard University Department of Anthropology) for information on enamel and dentin.



# LEARNING OBJECTIVES

- Learn overview of caries, 13

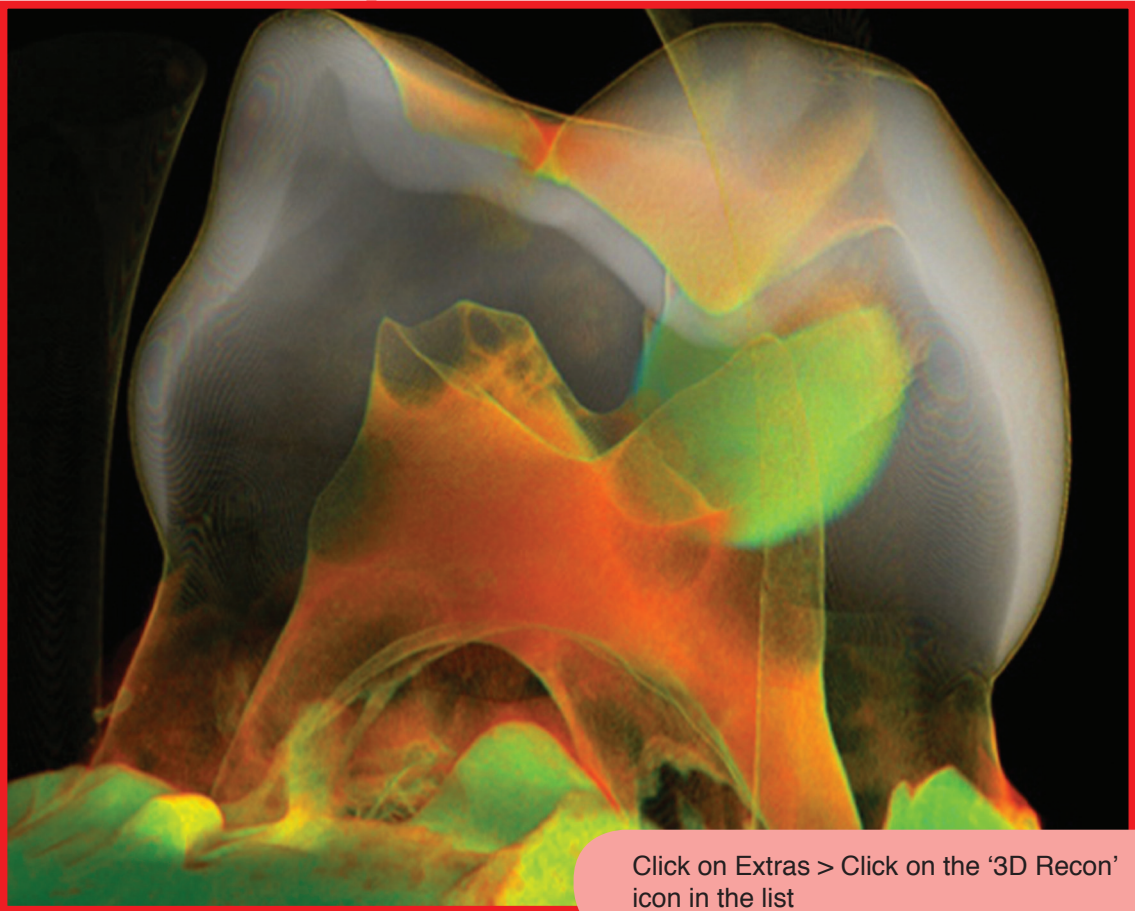
## LEARN OVERVIEW OF CARIES

Section	Page	Topic
Extras	Caries	Micro-CT scan 3D color-coded model of carious lesion along with histology and lesion description.

### EXAMPLE

Discuss caries risk assessment.

Discuss and describe the various models and the shape and penetration of the carious lesion.



Click on Extras > Click on the '3D Recon' icon in the list

## LEARNING OBJECTIVES

- Identify morphology, 14
- Relate growth and development, 16
- Use vocabulary, 17
- Study for assessments, 18
- Understand embryology, 18
- Understand histology, 18
- Identify pulpal anatomy, 19
- Review function, 20
- Identify radiographic anatomy, 21
- Exam and National Board study, 22
- Identify osteology landmarks, 22
- Identify osteology anatomy, 23

## IDENTIFY MORPHOLOGY

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Eruption Schedule	Position and sequence of transitional dentition.
Primary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model and 3) 3D X-ray and simultaneous view through CT and photograph slice data.
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. There are a few 3D models demonstrating the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Primary Teeth	Comparisons	Comparison reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Primary Teeth	Secondary Comparisons	Comparison reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Secondary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model and 3) 3D X-ray and simultaneous view through CT and photograph slice data.

Section	Page	Topic
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page introduces vocabulary; the 2nd illustrates information the ADA considers important and the 3rd is the 'Unique features' of each tooth. There are many 3D models demonstrating the anatomical variations of each tooth and pulp and the changes in the pulp with age.
Secondary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Secondary Teeth	Comparisons	Comparison reviews all 7 comparisons between teeth such as 1st, 2nd and 3rd molars to each other, maxillary to mandibular, occlusal surfaces and mesial views.

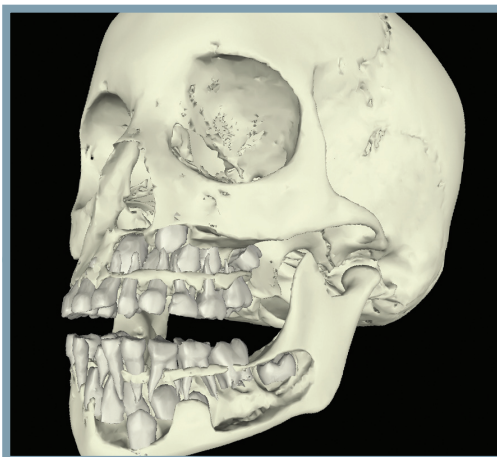
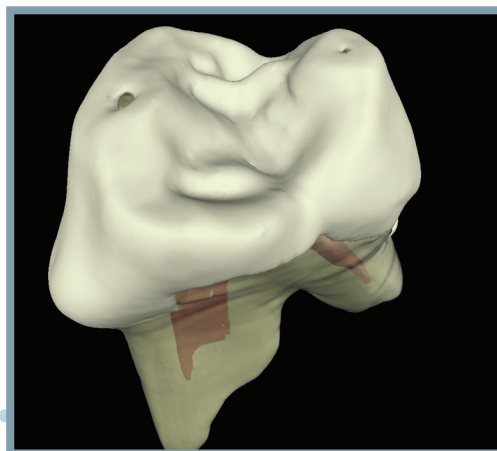
#### EXAMPLE

Ask students a question such as: On a maxillary first premolar, are the marginal ridges located farther occlusally than the highest point on the central developmental groove? Look at the 3D teeth in the Atlas to make a determination.

Where is the area of greatest convexity located on the \_\_\_\_\_ surface of the \_\_\_\_\_?

Learning activities may include drawing different views and include components such as dimensions, cusp size, contours, and so on.

Click Skull Atlas and Cranial Nerves >  
Click on 3D Models >  
Click on Child Skull on the bottom right column





## RELATE GROWTH AND DEVELOPMENT

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Eruption Schedule	Position and sequence of transitional dentition.
Skull Osteology	Child Mummy	3 Sections: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.
Primary Teeth	Primary other > Dental Embryology	3D PDF of embryological structures with their histology. Animation of odontogenesis.
Primary Teeth	Primary other > Odontogenesis	Cutaway identifies transitional dentition and surrounding structures.
Skull Osteology	Stanford Skull	Cutaway identifies transitional dentition and surrounding structures.
Skull Osteology	Annotated Maxilla and Mandible	Cutaway identifies transitional dentition and surrounding structures.

## EXAMPLE

Use the Eruption Schedule interactive program in the Primary Dentition part of the Atlas. Move the slider bar to a certain point and point out the timeline at the bottom. This provides many opportunities for discussion and dialogue. Pick a specific age and have the students rotate their eruption schedule until it matches that age. (Click on Primary Teeth > Click on Eruption Schedule)

Compare a child's skull with an adult skull and identify the areas where growth occurs in the maxilla and mandible. Discuss the vectors of growth. Also, discuss the consequences of placing implants in a growing child, since the implant will not erupt with the bone. Discuss the ages at which growth stops in females and males. Discuss the methods that can be used to determine when growth is complete. Is growth ever complete?



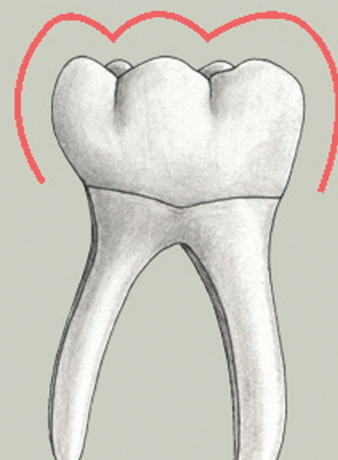
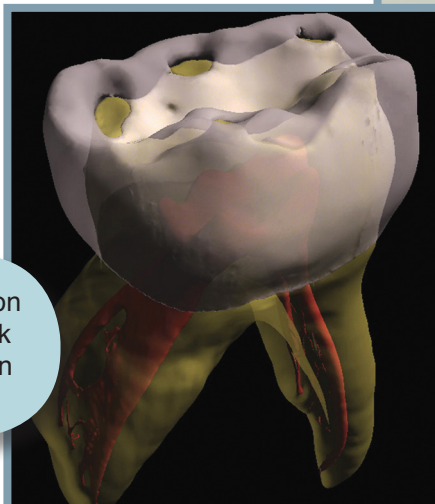
## USE VOCABULARY

Section	Page	Topic
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. A few 3D models demonstrate the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Glossary	Glossary	Searchable terminology glossary from the American College of Prosthodontics.
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page introduces vocabulary; the 2nd illustrates information the ADA considers important and the 3rd is the 'Unique features' of each tooth. Many 3D models demonstrate the anatomical variations of each tooth and pulp and the changes in the pulp with age.
Secondary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.

## EXAMPLE

Use vocabulary words from different sections, which pertain to individual lessons, vocabulary words from glossary, and words from quizzes.

Click on Tooth Morphology > Click on on Mandibular Second Molar > Click on Morphology > Click on the Crown Form Resemblance annotation



Crown form resemblance

## STUDY FOR ASSESSMENTS

Section	Page	Topic
Skull Osteology	Child Mummy	3 Sections: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.

## UNDERSTAND EMBRYOLOGY

Section	Page	Topic
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.
Primary Teeth	Primary Other > Odontogenesis	Animation of odontogenesis.

## EXAMPLE

**This information provides students more foundational knowledge of developing teeth in transitional dentition.**

## UNDERSTAND HISTOLOGY

Section	Page	Topic
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.
Primary Teeth	Primary Other > Odontogenesis	Animation of odontogenesis.

## EXAMPLE

**This information provides students more foundational knowledge of developing teeth in transitional dentition.**

## IDENTIFY PULPAL ANATOMY

Section	Page	Topic
Primary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model and 3) 3D X-ray and simultaneous view through CT and photograph slice data.
Primary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model and 3) 3D X-ray and simultaneous view through CT and photograph slice data.
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page is vocabulary; the 2nd illustrates the information the ADA considers important and the 3rd is the 'Unique features' of each tooth. There are many 3D models demonstrating the anatomical variations of each tooth and pulp and the changes in the pulp with age.

## EXAMPLE

Learning activities can include drawing various aspects of pulpal anatomy, comparing 2D and 3D models to gain special understanding of location of pulp, locating canal openings on various pulp 2D and 3D models, and so on.

Describe how to use the buttons to turn off the enamel and dentin, leaving only the pulp. (Click Tooth Morphology > Select a tooth by clicking on Primary Tooth's image > Use the Enamel Opacity slider to turn off the enamel)

Show how the pulp roughly simulates the external morphology of the tooth.

Discuss why the canine has more color intensity than the other anterior teeth based on the morphology of the pulp (lack of multiple pulp horns) and the resulting proportionally greater dentin thickness.

Describe the distance from the external surface of the tooth to the underlying pulp based on what is written in the literature about tooth structure thickness and discuss how deep cavity preparation should be.

Overlay various cavity preparations with dimensions on cross-sectional views of the teeth to show the areas particularly vulnerable to pulp exposure of close proximity.



REVIEW FUNCTION

Section	Page	Topic
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st to tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. There are a few 3D models demonstrating the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Primary Teeth	Comparisons	Comparison reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Primary Teeth	Secondary Comparisons	Comparison reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Secondary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Secondary Teeth	Comparisons	Comparison reviews all 7 comparisons between teeth such as 1st, 2nd and 3rd molars to each other, maxillary to mandibular, occlusal surfaces and mesial views.

EXAMPLE

Students can gather in groups for discussion of form and function relationship in various class, arch, and type traits, and how this may relate to root form and size.

## IDENTIFY RADIOGRAPHIC ANATOMY

Section	Page	Topic
Primary Teeth	Radiograph	An interactive annotated X-ray introduces the name and location of anatomical structures.
Primary Teeth	Image Library	Several radiographic examples of each tooth are shown to demonstrate anatomical variation.
Skull Osteology	Child Skull	Rotation of superimposed photographs and X-rays.
X-Ray Database	X-Ray Database	660 X-rays with searchable database for conditions and variations.
Secondary / Primary Dentition	Panorex	Rollover annotations of a panorex for structure identification.
Secondary Teeth	Radiograph	An interactive annotated X-ray introduces the name and location of anatomical structures.
Secondary Teeth	Image Library	Several radiographic examples of each tooth are shown to demonstrate anatomical variation.

## EXAMPLE

**You can design learning activities to compare and contrast differences in radiographic anatomy from primary to secondary teeth, and so on.**

**Use the radiograph tab at each secondary tooth to identify the landmarks present in the numbered left hand box. Roll the mouse over the image and use the “hide all” and “show all” buttons to complete self-assessment quizzes.**

**Show the inferior alveolar canal and discuss the anatomic variations in its position. Discuss the importance of knowing where the canal is located when placing implants in the posterior mandible. What are the best ways of determining precisely where the canal is located?**

**Identify the pterygomaxillary fissure on a radiograph. Discuss its location, boundaries, and its use as a landmark in cephalometrics. Discuss the importance of the fissure as an anatomic structure that leads into the pterygopalatine fossa that houses a number of key nerves and vessels that serve structures pertinent to dentistry.**

**Show the temporomandibular joint. Discuss the condyle, its form, dimensions, and its normal position in the fossa. Compare the condylar position on a panoramic radiograph with that of a tomogram. Show how the space between the condyle and fossa varies depending on the mediolateral location of the tomographic slice and how there are problems with making sweeping conclusions about joint space based on radiographs. Show histologic cross-sectional images of the temporomandibular joint at various mediolateral locations to support the discussion.**

## EXAM AND NATIONAL BOARD STUDY

Section	Page	Topic
Primary Teeth	Study Quiz	The 30-40 questions on each page illustrate the important information students should know about each tooth.
Home	Sample Exam	100 sample board exam questions.
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page introduces vocabulary; the 2nd illustrates the information the ADA considers important and the 3rd is the 'Unique features' of each tooth. There are many 3D models demonstrating the anatomical variations of each tooth and pulp and the changes in the pulp with age.

## EXAMPLE

**You can include questions from National Board study in weekly assignments, quizzes, and tests.**

## IDENTIFY OSTEOLOGY LANDMARKS

Section	Page	Topic
Skull Osteology	3D Models	3D models with annotated anatomical structures: 1) maxillary quadrant, 2) mandibular quadrant, 3) adult skull, 4) child skull, 5) newborn skull.
Skull Osteology	Annotated Maxilla	Annotated photograph of dissected maxilla.
Skull Osteology	Annotated Mandible	Annotated photograph of dissected mandible.

## EXAMPLE

**You can use screen shots for testing on anatomical landmarks. Give group discussion assignments to discuss the location and significance of various landmarks.**

**Show the maxilla and mandible in detail. (Click on Skull Atlas & Cranial Nerves > Click the Maxilla button located in the right column)**

**Show the 3 major fossae of the skull that relate to dental structures (temporal fossa, infratemporal fossa, and pterygopalatine fossa. Identify the boundaries of each fossa and the key structures located in each fossa.**

**Show the major components of the mandible. (Click on Skull Atlas & Cranial Nerves > Click the Annotated Mandible button located in the right column)**



## IDENTIFY OSTEOLOGY ANATOMY

Section	Page	Topic
Skull Osteology	Stanford Skull	Rotation of superimposed photographs and X-rays.
Skull Osteology	Child Skull	Rotation of superimposed photographs and X-rays .
Skull Osteology	Stanford Skull	Cutaway identifies transitional dentition and surrounding structures.
X-Ray Database	X-Ray Database	660 X-rays with searchable database for conditions and variations.
Skull Osteology	Annotated Maxilla and Mandible	Cutaway identifies transitional dentition and surrounding structures.
Skull Osteology	Annotated Maxilla and Mandible	Cutaway identifies transitional dentition and surrounding structures.

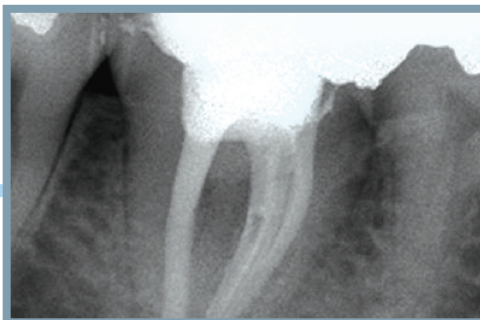
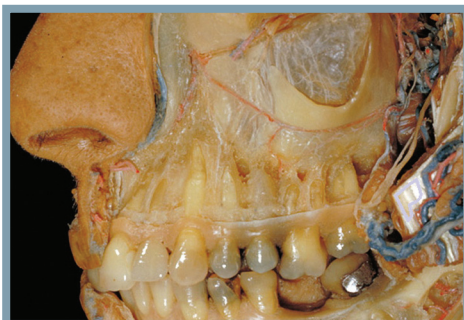
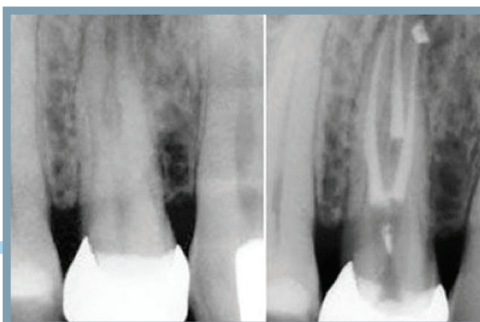
### EXAMPLE

**Identify the locations where the muscles of mastication attach to the skull**

**Link the anatomy of the mandibular foramen to the inferior alveolar nerve injection.**

**Assign activities to compare and contrast the difference between photograph and X-ray aspects of the skulls.**

**(Click on Skull Atlas & Cranial Nerves > Click on Stanford Skull > Click on Annotated Mandible button located in the right column)**





## LEARNING OBJECTIVES

- Relate growth and development, 24
- Review embryology, 24
- Review histology, 24

### RELATE GROWTH and DEVELOPMENT

Section	Page	Topic
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.

### REVIEW EMBRYOLOGY

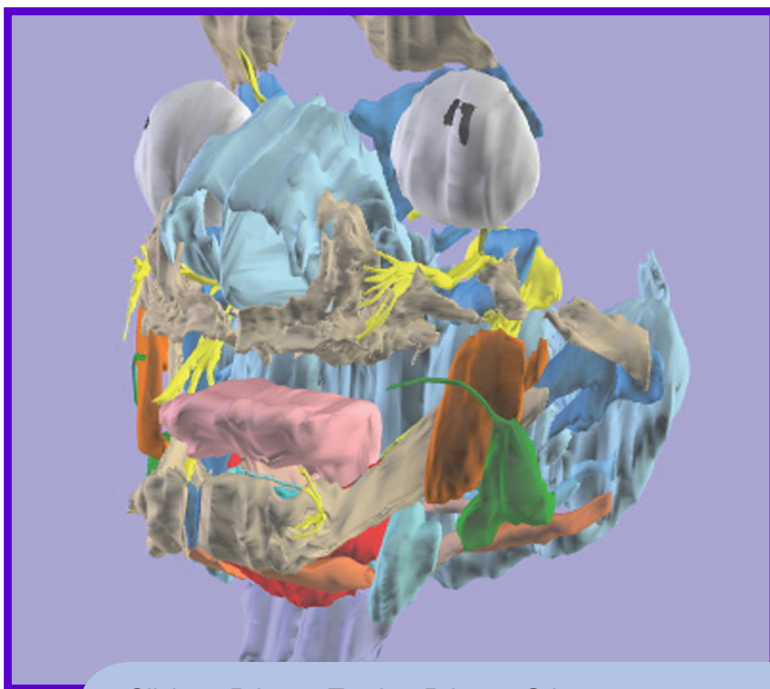
Section	Page	Topic
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.

### REVIEW HISTOLOGY

Section	Page	Topic
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.

EXAMPLE

Use this information to give students more foundational knowledge of developing teeth in transitional dentition.



Click on Primary Teeth > Primary Other >  
Click on Dental Embryology

## LEARNING OBJECTIVES

- Review dynamics of endodontic filling materials, 26
- Review dynamics of endodontic instrumentation, 29
- Identify anatomy of access preparations, 31
- Review instrumentation mechanics, 31

## REVIEW DYNAMICS OF ENDODONTIC FILLING MATERIALS

Section	Page	Topic
Endodontics	Fill Dynamics	Reconstructed 3D models from 5 Micron Synchrotron scans have been segmented to demonstrate the dynamics of endodontic fillings.
Endodontics	In Vivo Treated Teeth 3D Model	Reconstructed 3D models from 5 Micron Synchrotron scans have been segmented to demonstrate the dynamics of endodontic fillings.
Endodontics	In Vivo Treated Teeth CT Rotation	Reconstructed 3D models from 5 Micron Synchrotron scans have been segmented to demonstrate the dynamics of endodontic fillings.
Endodontics	In Vivo Treated Teeth CT Slices	Reconstructed 3D models from 5 Micron Synchrotron scans have been segmented to demonstrate the dynamics of endodontic fillings.
Endodontics	In Vitro Treated Teeth 3D Model	Reconstructed 3D models from 5 Micron Synchrotron scans have been segmented to demonstrate the dynamics of endodontic fillings.
Endodontics	In Vitro Treated Teeth CT Rotation	Reconstructed 3D models from 5 Micron Synchrotron scans have been segmented to demonstrate the dynamics of endodontic fillings.
Endodontics	In Vitro Treated Teeth CT Slices	Reconstructed 3D models from 5 Micron Synchrotron scans have been segmented to demonstrate the dynamics of endodontic fillings.
Endodontics	Previous Endo	Reconstructed 3D models from 5 Micron Synchrotron scans have been segmented to demonstrate the difficulties of endodontic treatment and the limitations of the instruments and filling materials.
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.



Section	Page	Topic
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Left Panel	This text explains the effects of root canal preparation on canal anatomy.
Endodontics	Resorption > Extra Canal invasive resorption lower left first molar	Two external resorption cases are shown in detail using 3D models reconstructed from high resolution scans as well as histologic data and photographs. These demonstrate the pattern and nature of the resorption.
Endodontics	Resorption > External invasive resorption left maxillary lateral	Two external resorption cases are shown in detail using 3D models reconstructed from high resolution scans as well as histologic data and photographs. These demonstrate the pattern and nature of the resorption.

## EXAMPLE

(Click on Specialized Resources > Click on Endodontics) Have the student re-view the Fill Dynamic section and identify teeth

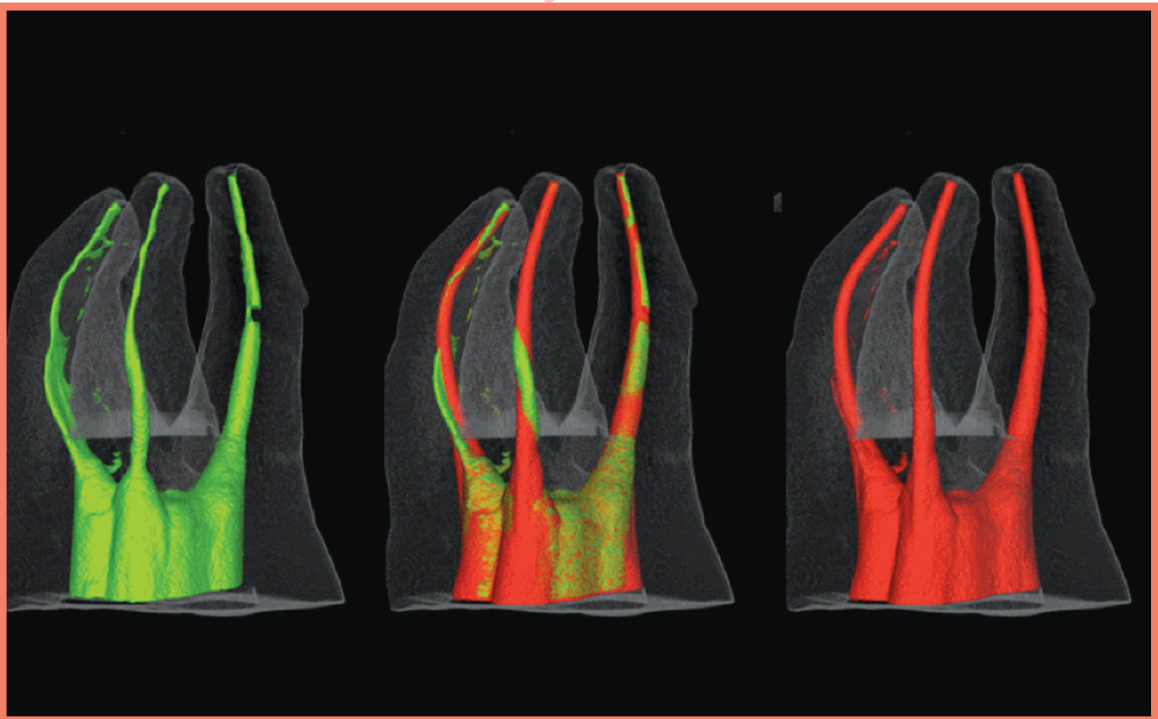
- 1) with missed anatomy
- 2) with unobturated anatomy
- 3) that demonstrate sealer hydraulics

(Click on Endodontics > Click on Canal Preparation) Discuss the fact that rotary files do not always engage the entire canal surface. What is the ramification of this to:

- 1) Debridement
- 2) Irrigation
- 3) Obturation

Notice the smoothing out the roughness of the canal wall. What is the ramification of this to the following obturation techniques:

- 1) Lateral condensation
- 2) Centered warm vertical condensation
- 3) Carrier based condensation



## REVIEW DYNAMICS OF ENDODONTIC INSTRUMENTATION

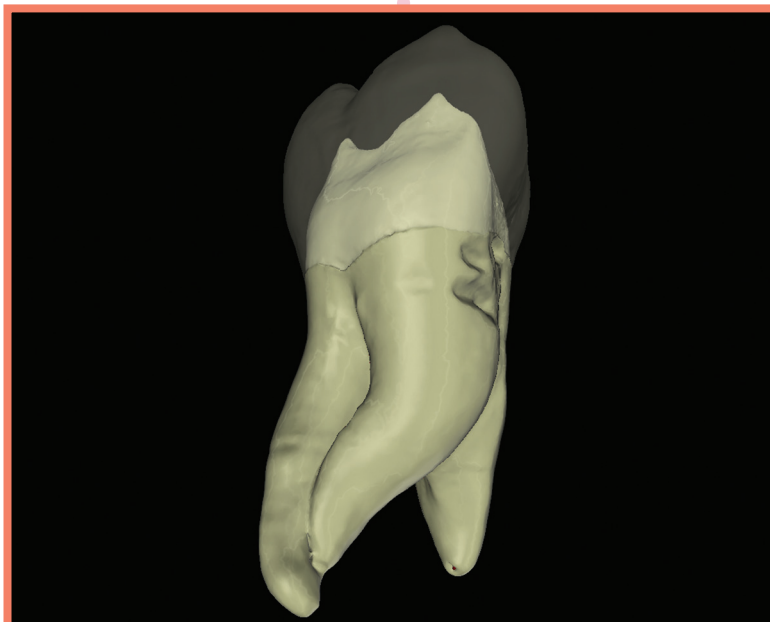
Section	Page	Topic
Endodontics	Previous Endo	Reconstructed 3D models from 5 Micron Synchrotron scans have been segmented to demonstrate the difficulties of endodontic treatment and the limitations of the instruments and filling materials.
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Canal Prep	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Left Panel Text	Dr. Ove Peters has reconstructed volume models from Micro CT scan data of root canal preparations. The scans taken before and after the use of endodontic instruments are superimposed to demonstrate the imperfect nature of canal preparations.
Endodontics	Resorption > Extra Canal invasive resorption lower left first molar	Two external resorption cases are shown in detail using 3D models reconstructed from high resolution scans as well as histologic data and photographs. These demonstrate the pattern and nature of the resorption.
Endodontics	Resorption > External invasive resorption left maxillary lateral	Two external resorption cases are shown in detail using 3D models reconstructed from high resolution scans as well as histologic data and photographs. These demonstrate the pattern and nature of the resorption.

Section	Page	Topic
Endodontics	Resorp 2	Two external resorption cases are shown in detail using 3D models reconstructed from high resolution scans as well as histologic data and photographs. These demonstrate the pattern and nature of the resorption.
Endodontics	Resorp 2 3D	Two external resorption cases are shown in detail using 3D models reconstructed from high resolution scans as well as histologic data and photographs. These demonstrate the pattern and nature of the resorption.

## EXAMPLE

Have students search through the Secondary Teeth 3D Models examples of:

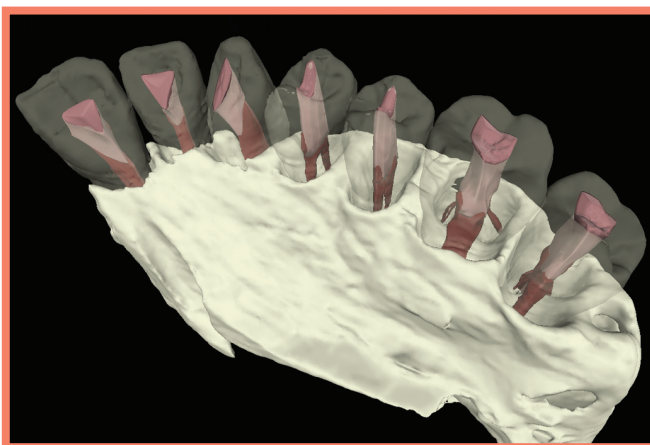
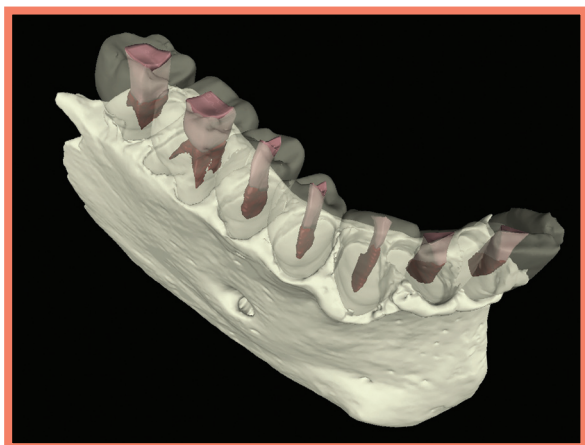
- 1) Extra canal
- 2) Canals with curves:
  - a. Smooth curves
  - b. Sharp curves
  - c. High curves
  - d. Discuss the strategies for detection and preparation.
- 3) Root concavities, especially in the:
  - a. Upper molars - MB roots
  - b. Upper premolars
  - c. Lower molars – mesial roots
  - d. Discuss the ramification of these concavities during canal preparation.
- 4) Delta formation where there is a canal joint. Discuss any ramifications to canal preparation.
  - a. Identify those deltas that could cause file breakage.





## IDENTIFY ANATOMY OF ACCESS PREPARATIONS

Section	Page	Topic
Endodontics	Access Preparation	Segmented 3D Maxillary and mandibular quadrants for describing: 1) tooth shapes, 2) pulp anatomy, 3) access cavities, 4) access preparation tips, 5) surrounding bone.



Click on Specialized Resources >  
Click on Endodontics > Click on Access Preparation >  
Click on Maxilla or Mandible

## REVIEW INSTRUMENTATION MECHANICS

Section	Page	Topic
Extras	Movies	Animated movies of how endodontic hand and rotary files work and filing techniques.

LEARNING OBJECTIVES

- Understand age related changes in dentin, 32

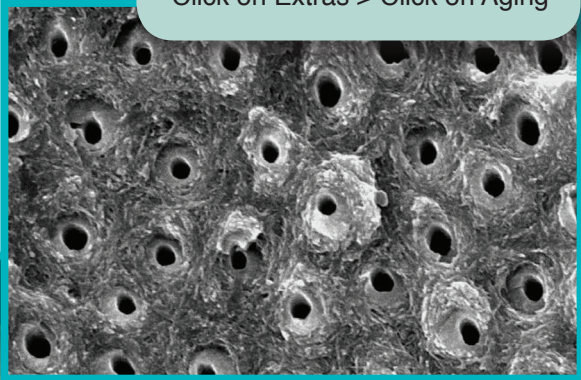
UNDERSTAND AGE RELATED CHANGES IN DENTIN

Section	Page	Topic
Extras	Aging	Information of age related changes in dentin.

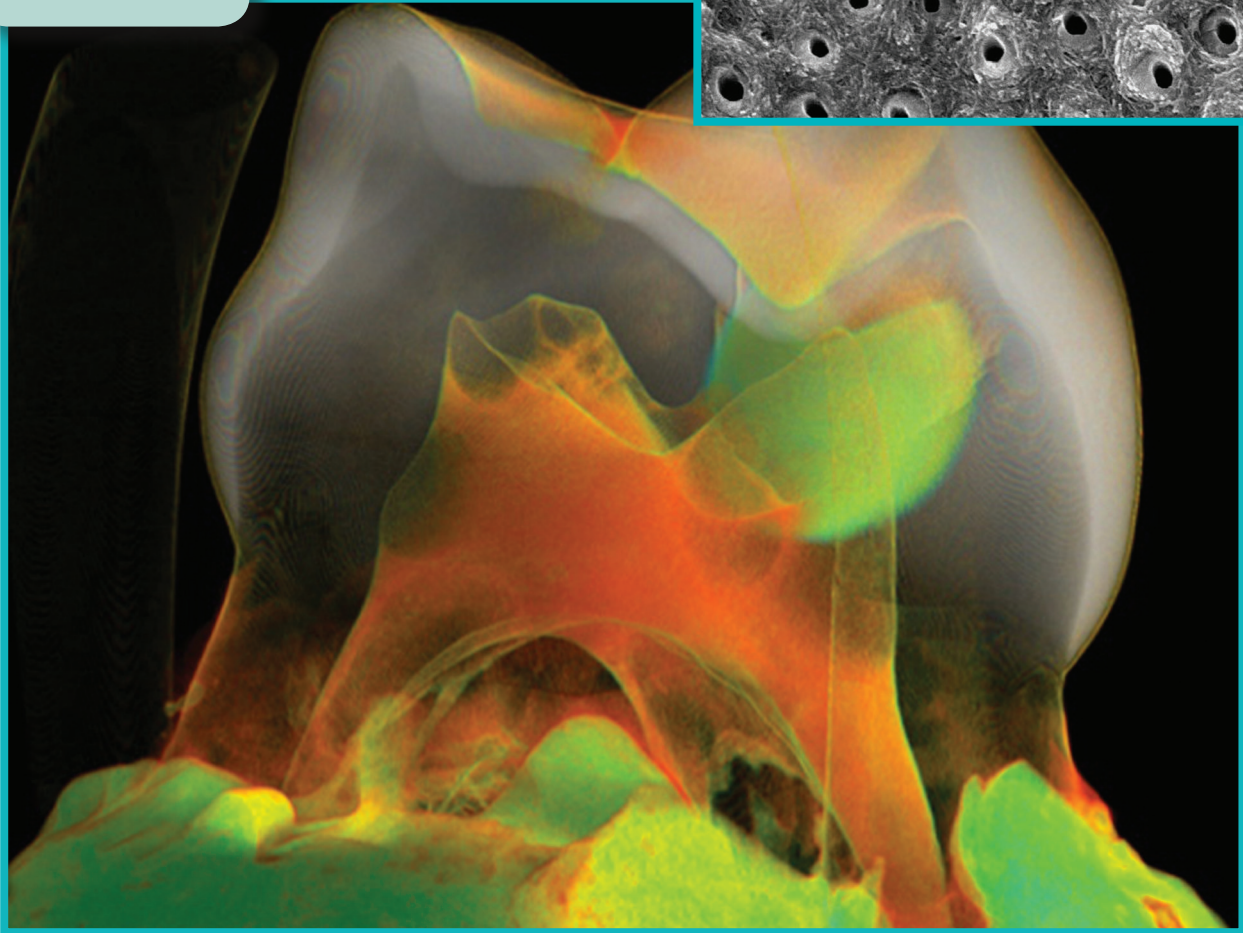
EXAMPLE

Have students suggest which types of bonding materials to use based on the changes and age of dentin.

Click on Extras > Click on Aging



Click on Extras



## LEARNING OBJECTIVES

- Relate growth and development, 33
- Understand histology, 34
- Understand embryology, 34

## RELATE GROWTH AND DEVELOPMENT

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.

### EXAMPLE

Use learning activities such as group discussions, drawing assignments, quizzes or tests to enhance foundational knowledge of growth and development.

- Compare a child's skull with an adult skull and identify the areas where growth occurs in the maxilla and mandible.
- Discuss the vectors of growth. Also, discuss the consequences of placing implants in a growing child, since the implant will not erupt with the bone.
- Discuss the ages at which growth stops in females and males.
- Discuss the methods that can be used to determine when growth is complete. Is growth ever complete?



Click on Skull Atlas & Cranial Nerves >  
Click on 3D Models > Click on Skull



Click on Skull Atlas & Cranial Nerves  
> Click on 3D Models  
> Click on Child Skull

UNDERSTAND EMBRYOLOGY

Section	Page	Topic
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.

EXAMPLE

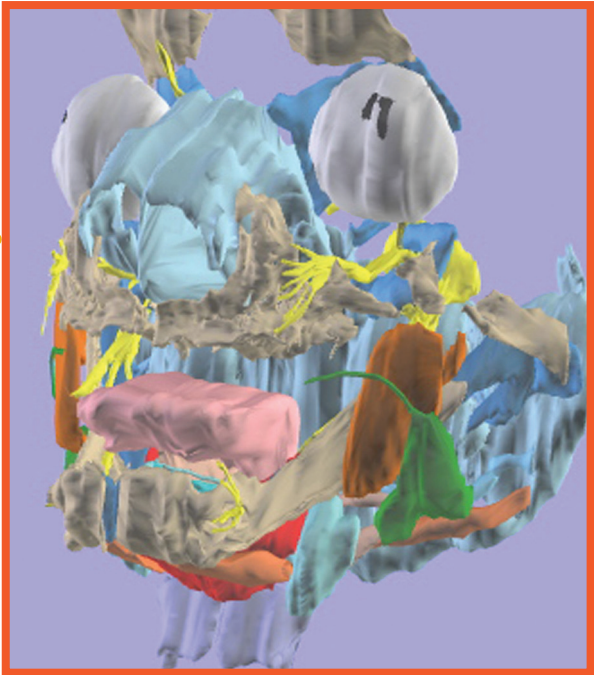
Use learning activities such as group discussions, drawing assignments, quizzes or tests to enhance foundational knowledge of growth and development.

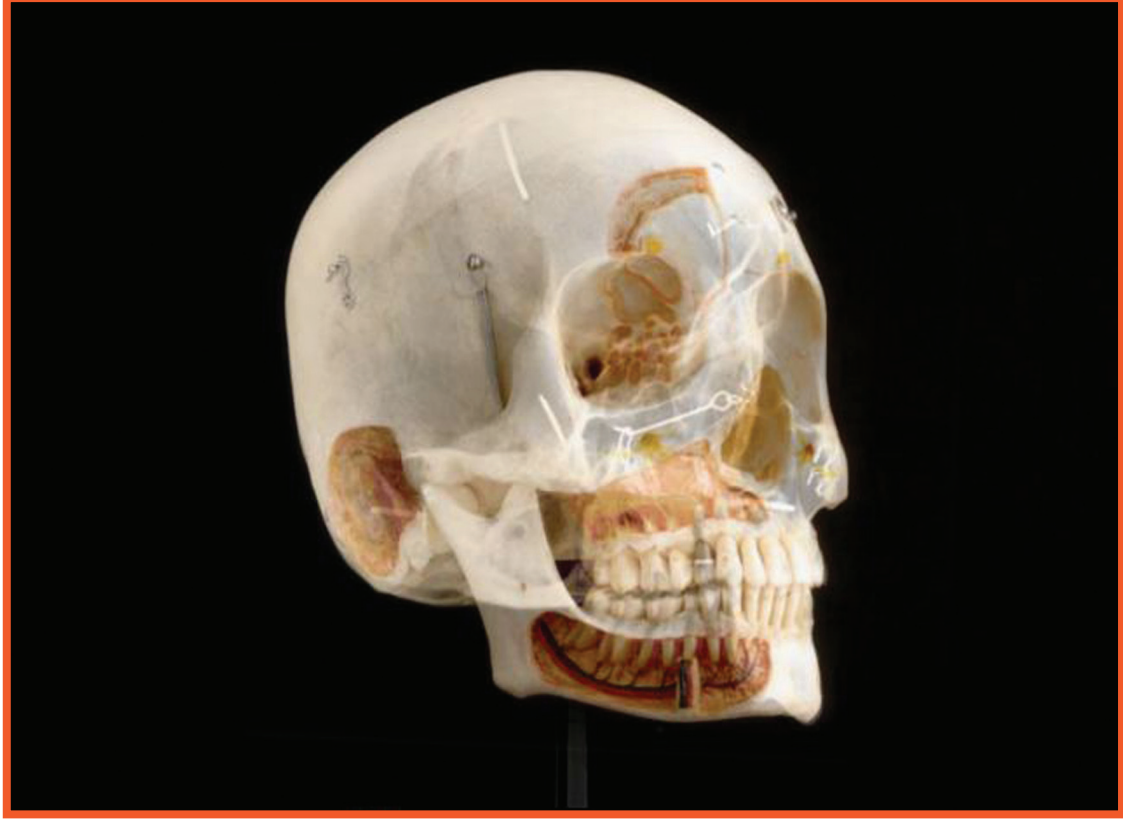
UNDERSTAND HISTOLOGY

Section	Page	Topic
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.

EXAMPLE

Use learning activities such as group discussions, drawing assignments, quizzes or tests to enhance foundational knowledge of growth and development.







LEARNING OBJECTIVES

- Identify morphology, 36
- Relate growth and development, 37
- Understand embryology, 37
- Understand histology, 37

IDENTIFY MORPHOLOGY

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model, 3) 3D X-ray and simultaneous view through CT and photograph slice data.
Skull Osteology	Cranial Nerves and Brainstem	Features in left panel identify the cranial nerves I-XII.

EXAMPLE

Have students navigate to Skull Atlas & Cranial Nerves > 3D Models > Cranial Nerves & Brainstem, click the features in the left panel to identify the various nerves, then use the cutting plane slider to view inside the skull and brain. Drag the mouse and view the nerves from various angles in 3D.

EXAMPLE

Use learning activities such as group discussions, drawing assignments, quizzes or tests to enhance foundational knowledge of growth and development.



Click on Skull Atlas & Cranial Nerves > Click on 3D Models > Click on Child Skull



Click on Tooth Morphology > Click on Primary Teeth > Click on 3D Child Skull



## RELATE GROWTH AND DEVELOPMENT

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model, 3) 3D X-ray and simultaneous view through CT and photograph slice data.

## UNDERSTAND EMBRYOLOGY

Section	Page	Topic
Primary Teeth	Primary Other > Odontogenesis	Animation of odontogenesis.

## UNDERSTAND HISTOLOGY

Section	Page	Topic
Primary Teeth	Primary Other > Odontogenesis	Animation of odontogenesis.

### EXAMPLE

Use learning activities such as group discussions, drawing assignments, quizzes or tests to enhance foundational knowledge of growth and development.

LEARNING OBJECTIVES

- Relate growth and development, 38
- Identify osteology landmarks, 38
- Identify osteology anatomy, 39
- Identify radiographic anatomy, 39

RELATE GROWTH AND DEVELOPMENT

Section	Page	Topic
Skull Osteology	Stanford Skull	Cutaway identifies transitional dentition and surrounding structures.
Skull Osteology	Stanford Skull Maxilla and Mandible	Cutaway identifies transitional dentition and surrounding structures.

EXAMPLE

Use learning activities such as group discussions, drawing assignments, quizzes or tests to enhance foundational knowledge of growth and development.

IDENTIFY OSTEOLOGY LANDMARKS

Section	Page	Topic
Skull Osteology	3D Models	3D models with annotated anatomical structures: 1) maxillary quadrant, 2) mandibular quadrant, 3) adult skull, 4) child skull, 5) newborn skull.
Skull Osteology	Annotated Mandible or Maxilla	Annotated photograph of dissected mandible / maxilla.

EXAMPLE

Use learning activities such as group discussions, drawing assignments, quizzes or tests to enhance foundational knowledge of growth and development.

## IDENTIFY OSTEOLOGY AND OCCLUSION ANATOMY

Section	Page	Topic
Skull Osteology	Stanford Skull	Rotation of superimposed photographs and X-rays.
Skull Osteology	Child Skull	Rotation of superimposed photographs and X-rays.
Skull Osteology	Annotated Maxilla and Mandible	Cutaway identifies transitional dentition and surrounding structures.
Occlusion	Class I, II, III	Class I, II, and III occlusion 3D models.
Occlusion	Arches Open	Identify the cusp relationships between the teeth in 3D
Occlusion	Points of Occlusal Contact	Identify the cusp relationships between the teeth in 2D

### EXAMPLE

Have students navigate to **Specialized Resources > Occlusion > Class I, II, III**. Drag the mouse to rotate the 3D models and study the differences in the cuspid and molar relationships.

### EXAMPLE

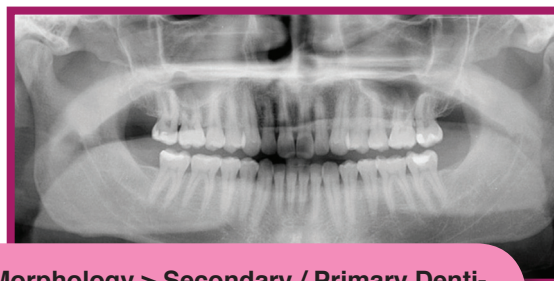
Compare and contrast the photo versus the radiographic image for learning and understanding radiographic anatomy of TMJ.

## IDENTIFY RADIOGRAPHIC ANATOMY

Section	Page	Topic
Skull Osteology	Child Skull	Rotation of superimposed photographs and X-rays.
X-Ray Database	X-Ray Database	660 X-rays with searchable database for conditions and variations.
Secondary / Primary Dentition	Panorex	Rollover annotations of a panorex for structure identification.

### EXAMPLE

Have students review and discuss salient points on Occlusion and TMJ concepts in this lesson.



Click on **Tooth Morphology > Secondary / Primary Dentition > Panorex**, to identify various anatomical structures

## LEARNING OBJECTIVES

- Identify morphology, 40
- Relate growth and development, 42
- Utilize vocabulary, 43
- Study for assessments, 44
- Identify pulpal anatomy, 44
- Understand function, 45
- Identify radiographic anatomy, 46
- Study anatomy of periodontal tissues, 47
- Exam and National Board study, 48
- Learn overview of caries, 48
- Understand age related changes in dentin, 49

## IDENTIFY MORPHOLOGY

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Eruption Schedule	Position and sequence of transitional dentition.
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st to tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. A few 3D models demonstrate the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Primary Teeth	Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Primary Teeth	Secondary Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Periodontology	Periodontology Morphology	Periodontal anatomy PPT series.
Secondary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model, 3) 3D X-ray and simultaneous view through CT and photograph slice data
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page introduces vocabulary; the 2nd illustrates information the ADA considers important and the 3rd is the 'Unique features' of each tooth. Many 3D models demonstrate the anatomical variations of each tooth and pulp and the changes in the pulp with age.

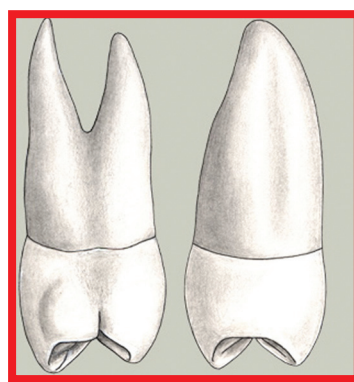
Section	Page	Topic
Secondary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Secondary Teeth	Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd and 3rd molars to each other, maxillary to mandibular, occlusal surfaces and mesial views.

### EXAMPLE

**Ask students a question such as: On a maxillary first premolar, are the marginal ridges located farther occlusally than the highest point on the central developmental groove? Look at the 3D teeth in the Atlas to make a determination.**

**Where is the area of greatest convexity located on the \_\_\_\_\_ surface of the \_\_\_\_\_?**

**All the Dental Anatomy lessons can be applied in conjunction with each lesson in Operative Dentistry to enhance student understanding of external and internal anatomy when prepping and restoring teeth.**



## RELATE GROWTH AND DEVELOPMENT

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Eruption Schedule	Position and sequence of transitional dentition.
Primary Teeth	Child Mummy	3 Sections: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.
Skull Osteology	Child Mummy	3 Sections: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.
Primary Teeth	Primary Other > Odontogenesis	Animation of odontogenesis.

### EXAMPLE

- Compare a child's skull with an adult skull and identify the areas where growth occurs in the maxilla and mandible.
- Discuss the vectors of growth. Also, discuss the consequences of placing implants in a growing child, since the implant will not erupt with the bone.
- Discuss the ages at which growth stops in females and males.
- Discuss the methods that can be used to determine when growth is complete. Is growth ever complete?

Growth and development review can be used along with exercises in decisions, design, and treatment of operative procedures.



[Click on Skull Atlas & Cranial Nerves](#) > [Click on 3D Child Skull](#)



## USE VOCABULARY

Section	Page	Topic
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. A few 3D models demonstrate the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Glossary	Glossary	Terminology / glossary from the American College of Prosthodontics.
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page introduces vocabulary; the 2nd illustrates information the ADA considers important and the 3rd is the 'Unique features' of each tooth. Many 3D models demonstrate the anatomical variations of each tooth and pulp and the changes in the pulp with age.
Secondary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.

### EXAMPLE

Use examples in these sections to accelerate students learning the nomenclature of preparation geometry and design.

## STUDY FOR ASSESSMENTS

Section	Page	Topic
Skull Osteology	Child Mummy	3 Sections: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.

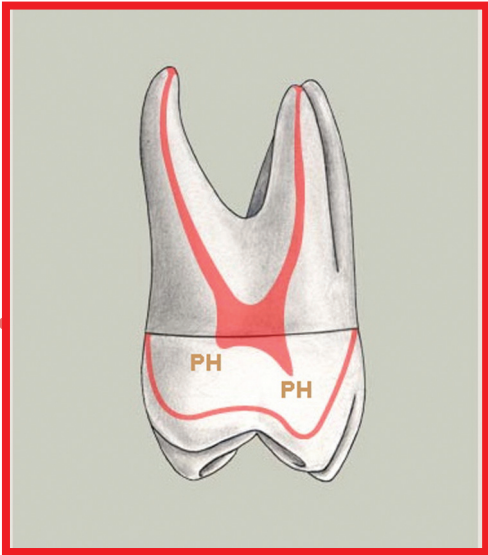
# IDENTIFY PULPAL ANATOMY

Section	Page	Topic
Secondary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model, 3) 3D X-ray and simultaneous view through CT and photograph slice data
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page is vocabulary; the 2nd illustrates the information the ADA considers important and the 3rd is the 'Unique features' of each tooth. Many 3D models demonstrate the anatomical variations of each tooth and pulp and the changes in the pulp with age.

## EXAMPLE

Students can use the tooth rotations along with activities of pre clinical and clinical preparations to gain knowledge of spatial relationships of the pulpal tissue.

Students can turn on and off the transparency slider bar to study the proximity of the pulp tissue to the preparation they are performing on the manniquin.



## UNDERSTAND FUNCTION

Section	Page	Topic
Skull Osteology	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. A few 3D models demonstrate the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Primary Teeth	Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Primary Teeth	Secondary Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Secondary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Secondary Teeth	Comparisons	Comparison reviews all 7 comparisons between teeth such as 1st, 2nd and 3rd molars to each other, maxillary to mandibular, occlusal surfaces and mesial views.

### EXAMPLE

**Discuss the form of the anterior wall of the temporomandibular joint (the anterior eminence) that determines the angle of the eminentia.**

**Using these sections, students will enhance fundamental knowledge of function for restorative procedures.**

# IDENTIFY RADIOGRAPHIC ANATOMY

Section	Page	Topic
Primary Teeth	Radiograph	An interactive annotated X-ray introduces the name and location of anatomical structures.
Primary Teeth	Image Library	Several radiographic examples of each tooth are shown to demonstrate anatomical variation.
Secondary Teeth	Radiograph	An interactive annotated X-ray introduces the name and location of anatomical structures.
Secondary Teeth	Image Library	Several radiographic examples of each tooth are shown to demonstrate anatomical variation.

## EXAMPLE

Use the radiograph tab at each secondary tooth to identify the landmarks present in the numbered left hand box. Roll the mouse over the image and use the “hide all” and “show all” buttons to complete self-assessment quizzes.

Show the inferior alveolar canal and discuss the anatomic variations in its position. Discuss the importance of knowing where the canal is located when placing implants in the posterior mandible. What are the best ways of determining precisely where the canal is located?

These sections can be up on the student’s laptop for radiographic references during pre clinical and clinical procedures.

## STUDY ANATOMY OF PERIODONTAL TISSUES

Section	Page	Topic
Periodontology	3D Model: Simple	3D model with: 1) user controlled transparency of teeth and their supporting structures, 2) normal and pathological conditions, 3) perioprobng demo.
Periodontology	3D Model: Complex	3D model with: 1) user controlled transparency of teeth and their supporting structures, 2) normal and pathological conditions, 3) perioprobng demo.
Periodontology	Perio Morphology	Periodontal anatomy PPT series.

### EXAMPLE

**This area can provide valuable knowledge of the interrelationship of periodontal structures and teeth for students studying design and treatment of various restorative procedures.**

**Have students go to a 3-D model and turn off the teeth and gingiva and discuss the type of restorations to treatment plan around various stages of bone loss.**

## EXAM AND NATIONAL BOARD STUDY

Section	Page	Topic
Periodontology	Quiz	Board question samples.
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page introduces vocabulary; the 2nd illustrates the information the ADA considers important and the 3rd is the 'Unique features' of each tooth. Many 3D models demonstrate the anatomical variations of each tooth and pulp and the changes in the pulp with age.
Secondary Teeth	Study Quiz	The 30-40 questions on each page illustrate the important information students should know about each tooth.

### EXAMPLE

You can select Board questions and add them to quizzes.

## LEARN OVERVIEW OF CARIES

Section	Page	Topic
Extras	Caries	Micro-CT scan 3D color-coded model of carious lesion along with histology and lesion description.

### EXAMPLE

Background knowledge of caries can enhance simulated caries procedures.

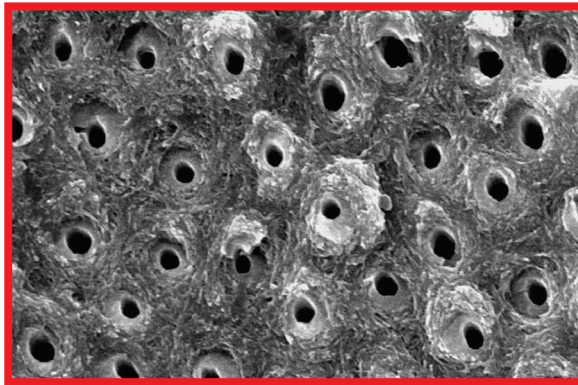


## UNDERSTAND AGE RELATED CHANGES IN DENTIN

Section	Page	Topic
Extras	Aging	Information of age related changes in dentin.

### EXAMPLE

Aids in decisions of type of bonding materials for specific dentin age.



LEARNING OBJECTIVES

- Identify morphology, 50
- Relate growth and development, 52
- Use vocabulary, 53
- Study for assessments, 53
- Identify pulpal anatomy, 54
- Understand function, 54
- Identify radiographic anatomy, 54
- Learn overview of caries, 55

IDENTIFY MORPHOLOGY

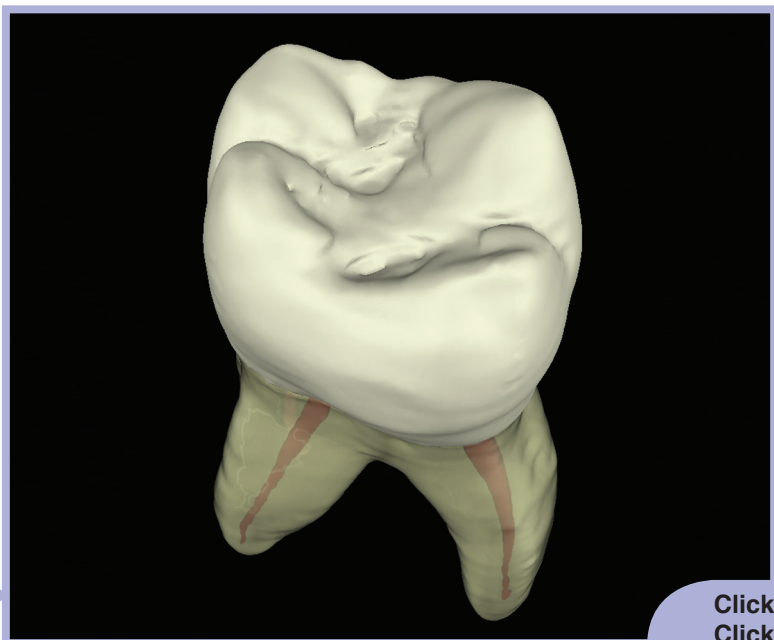
Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Eruption Schedule	Position and sequence of transitional dentition.
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. A few 3D models demonstrate the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Primary Teeth	Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Primary Teeth	Secondary Comparisons	Comparison reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.

EXAMPLE

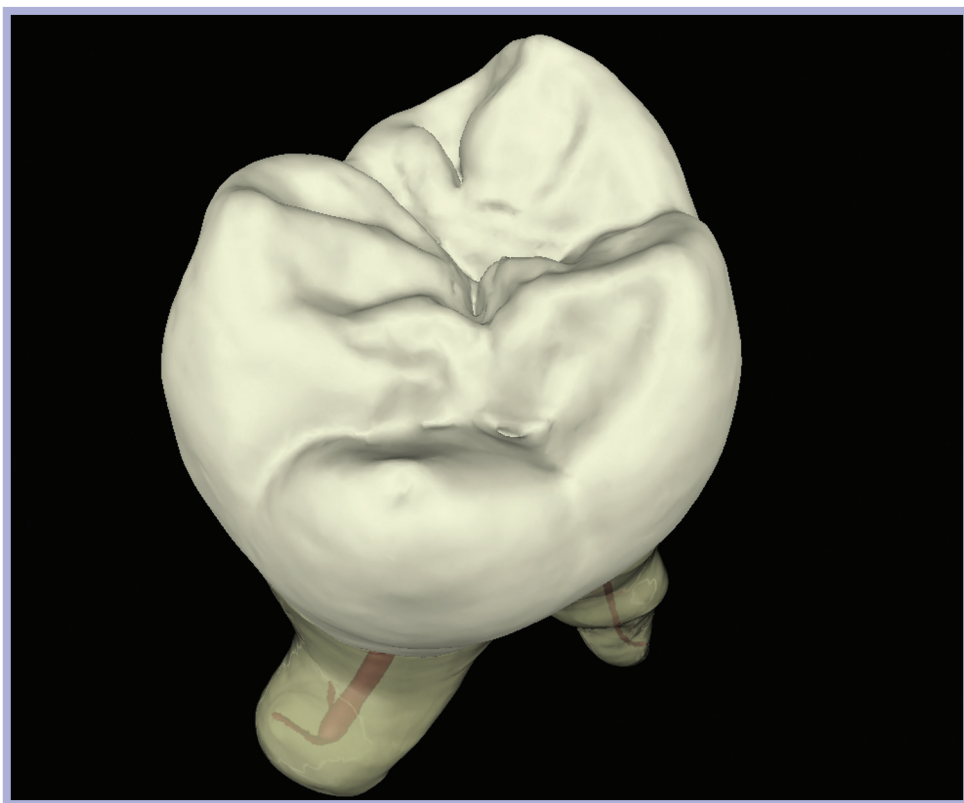
Ask students a question such as: On a maxillary first and second primary molar, what are the differences in the occlusal outlines and anatomical landmarks? Look at the 3D teeth in the Atlas to make a determination.

Use for background review and reinforcement of overall knowledge of dental anatomy.

Use the comparisons to discuss distinguishing characteristics of primary molars.



Click on Primary Teeth >  
Click on  
Mandibular Second Molar >  
Click on 3D Models



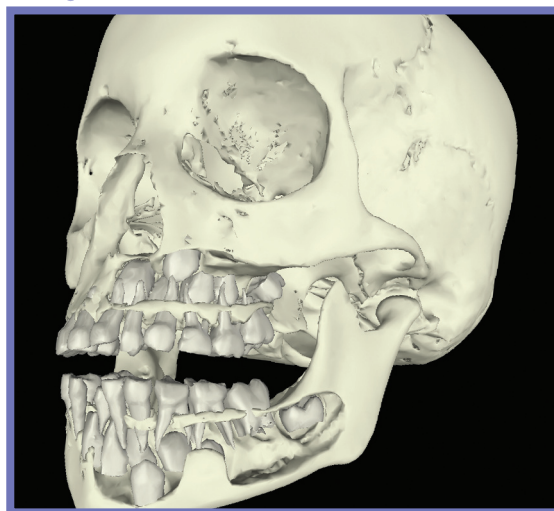
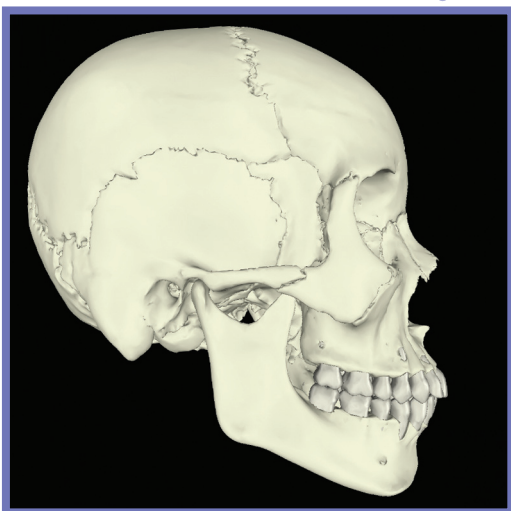
## RELATE GROWTH AND DEVELOPMENT

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Eruption Schedule	Position and sequence of transitional dentition.
Skull Osteology	Child Mummy	1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.
Primary Teeth	Primary Other > Odontogenesis	Animation of odontogenesis.

### EXAMPLE

- Compare a child's skull with an adult skull and identify the areas where growth occurs in the maxilla and mandible.
- Discuss the vectors of growth. Also, discuss the consequences of placing implants in a growing child, since the implant will not erupt with the bone.
- Discuss the ages at which growth stops in females and males.
- Discuss the methods that can be used to determine when growth is complete. Is growth ever complete?

(Click on Skull Osteology > Click on 3D Models > Compare Newborn Skull, Child Skull, Skull (Adult))



## USE VOCABULARY

Section	Page	Topic
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. A few 3D models demonstrate the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Glossary	Glossary	Searchable terminology glossary from the American College of Prosthodontics.

## STUDY FOR ASSESSMENTS

Section	Page	Topic
Skull Osteology	Child Mummy	Reconstruction of hundreds of high-res CT scans of teeth: the 1st to tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. There are a few 3D models demonstrating the anatomical variations of each tooth and pulp.



Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. The information is available by selecting the 2D image of interest and either highlighting the text annotation or by rolling the mouse over the image.

Searchable terminology glossary from the American College of Prosthodontics.

### EXAMPLE

**A valuable resource for assessment questions. (Click Skull Atlas and Cranial Nerves > Click on Mummy Head to load the model > Choose the Sarcophagus Opacity Slider from the Transparency Slider)**

## IDENTIFY PULPAL ANATOMY

Section	Page	Topic
Primary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model, 3) 3D X-ray and simultaneous view through CT and photograph slice data.

## UNDERSTAND FUNCTION

Section	Page	Topic
Primary Teeth	3D Models	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model, 3) 3D X-ray and simultaneous view through CT and photograph slice data.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Primary Teeth	Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Primary Teeth	Secondary Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.

## IDENTIFY RADIOGRAPHIC ANATOMY

Section	Page	Topic
Primary Teeth	Radiograph	An interactive annotated X-ray introduces the name and location of anatomical structures.
Primary Teeth	Image Library	Several radiographic examples of each tooth are shown to demonstrate anatomical variation.

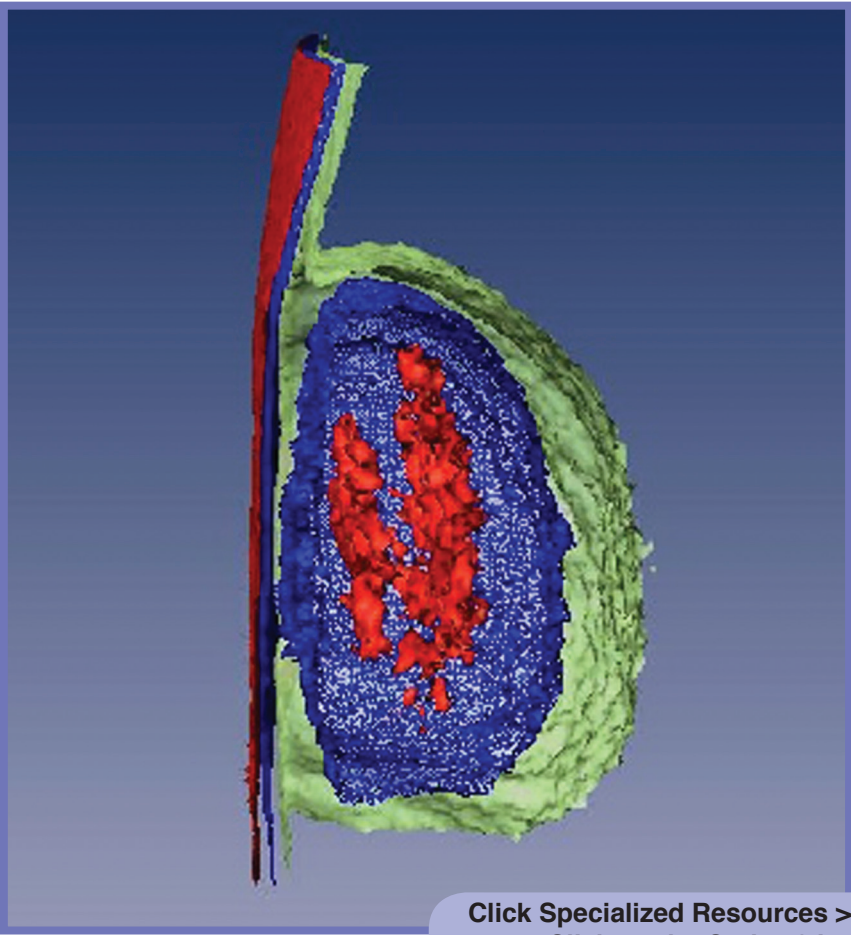
### EXAMPLE

**Design learning activities to compare and contrast differences in radiographic anatomy related to periodontal conditions.**



LEARN OVERVIEW OF CARIES

Section	Page	Topic
Extras	Caries	Micro-CT scan 3D color-coded model of carious lesion along with histology and lesion description.



Click Specialized Resources > Click on Extras > Click on the Caries 8 in the list

LEARNING OBJECTIVES

- Identify anatomy of periodontal tissues, 56
- Exam and National Board study, 57

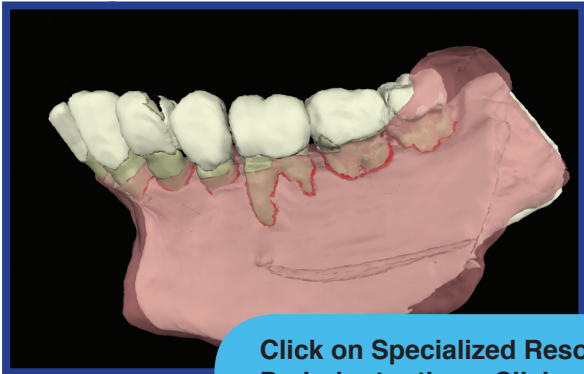
IDENTIFY ANATOMY OF PERIODONTAL TISSUES

Section	Page	Topic
Periodontics	3D Model: Simple	3D model with: 1) user controlled transparency of teeth and their supporting structures, 2) normal and pathological conditions, and 3) perioprobng demo.
Periodontics	3D Model: Complex	3D model with: 1) user controlled transparency of teeth and their supporting structures, 2) normal and pathological conditions, and 3) perioprobng demo.
Periodontics	Perio Morphology	Periodontal anatomy PPT series.

EXAMPLE

This is an excellent area for developing learning activities that highlight periodontal disease situations such as the anatomy of a boney pocket.

Compare and contrast pulpal considerations for periodontal treatment. This is a great section to teach the student about differential diagnosis for pulpal abcess vs. periodontal abcess.



Click on Specialized Resources > Click on Periodontontics > Click on Lower-Left Quadrant

## EXAM AND NATIONAL BOARD STUDY

### Section

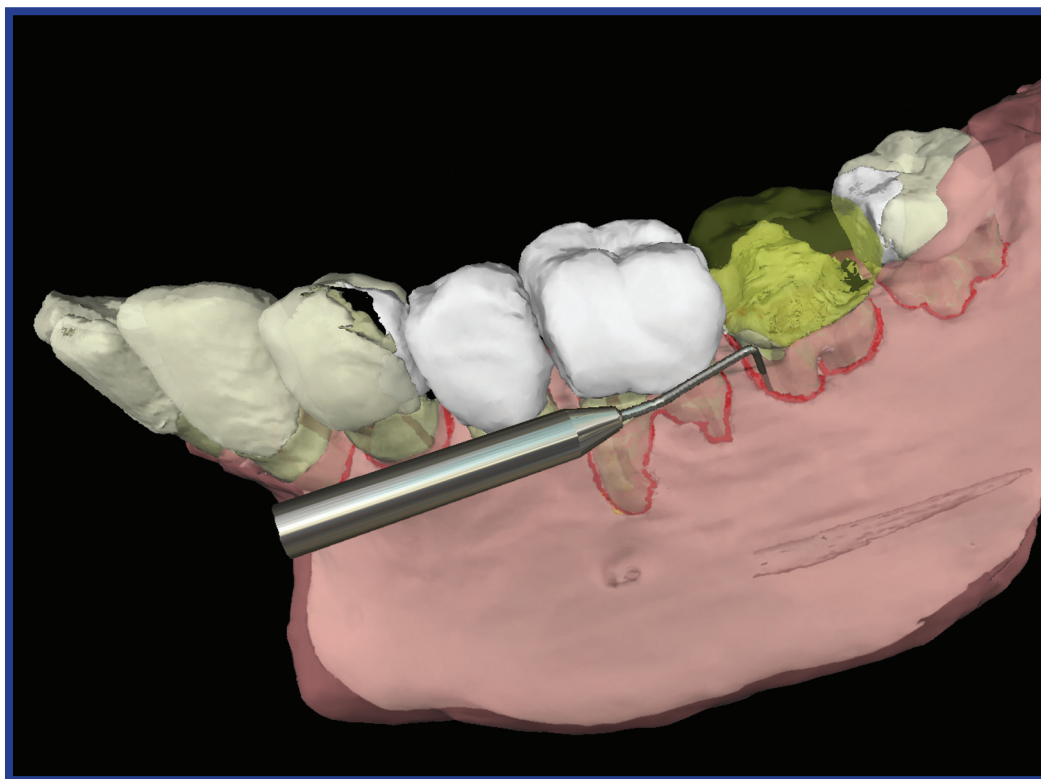
Periodontology

### Page

Quiz

### Topic

Board question samples.



## LEARNING OBJECTIVES

- Identify morphology, 58
- Relate growth and development, 60
- Use vocabulary, 61
- Identify anatomy of periodontal tissues, 62
- Study for assessments, 62
- Identify pulpal anatomy, 63
- Review function, 64
- Identify radiographic anatomy, 65
- Study anatomy of periodontal tissues, 66
- Exam and National Board study, 66
- Learn overview of caries, 67
- Understand age related changes in dentin, 67

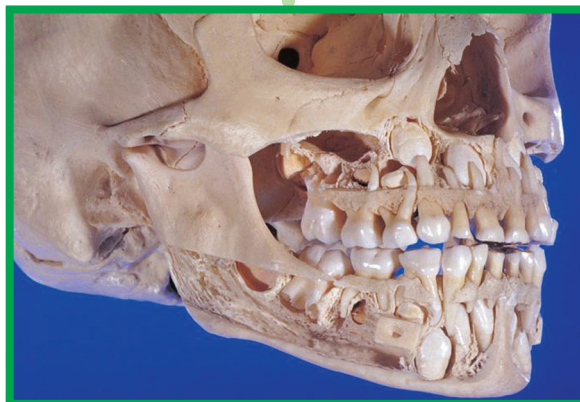
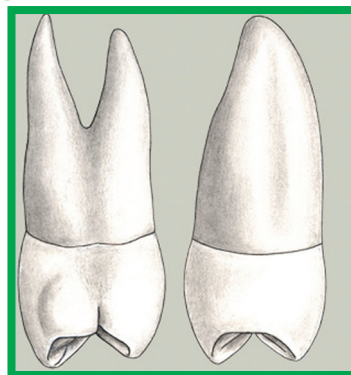
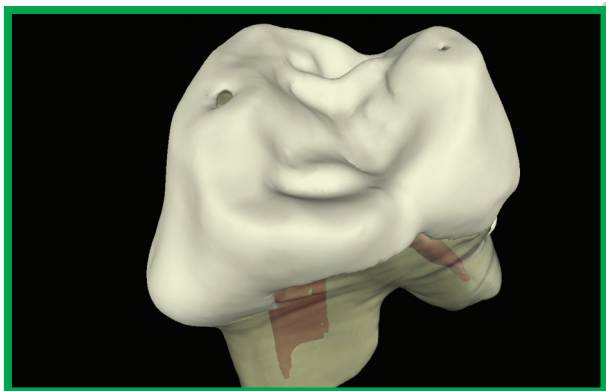
## IDENTIFY MORPHOLOGY

Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Eruption Schedule	Position and sequence of transitional dentition.
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. A few 3D models demonstrating the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every text-book on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Primary Teeth	Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Primary Teeth	Secondary Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Periodontology	Perio Morphology	Periodontal anatomy PPT series.
Secondary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model, 3) 3D X-ray and simultaneous view through CT and photograph slice data
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page introduces vocabulary; the 2nd illustrates information the ADA considers important and the 3rd is the 'Unique features' of each tooth. Many 3D models demonstrating the anatomical variations of each tooth and pulp and the changes in the pulp with age.

## EXAMPLE

Ask students a question such as: On a maxillary first premolar, are the marginal ridges located farther occlusally than the highest point on the central developmental groove? Look at the 3D teeth in the Atlas to make a determination. (Click on Maxillary First Premolar > Click on 3D Models)

Describe how to use the Atlas to turn off the enamel and leave the dentin visible. With the dentin visible, discuss how the morphology of the dentin is important when replicating a natural tooth in porcelain. Show how a porcelain crown is built up in layers and how this mimics the layering of natural teeth. (Click on Maxillary First Premolar > Click on 3D Models > Select Enamel from the Transparency Dropdown menu > Adjust the Transparency Slider)



## RELATE GROWTH AND DEVELOPMENT

Section	Page	Topic
Skull Osteology	3D Child Skull	Cutaway identifies transitional dentition and surrounding structures.
Primary Teeth	Eruption Schedule	Position and sequence of transitional dentition.
Skull Osteology	Child Mummy	3 Sections: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.
Skull Osteology	Child Mummy	3 Sections: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.
Primary Teeth	Primary Other > Dental Embryology	3D PDF of embryological structures along with their histology.
Primary Teeth	Primary Other > Odontogenesis	Animation of odontogenesis.

## EXAMPLE

Compare a child's skull with an adult skull and identify the areas where growth occurs in the maxilla and mandible.

- Discuss the vectors of growth. Also, discuss the consequences of placing implants in a growing child, since the implant will not erupt with the bone.
- Discuss the ages at which growth stops in females and males.
- Discuss the methods that can be used to determine when growth is complete. Is growth ever complete? (Click on Skull Osteology > Click on 3D Models > Click on Child Skull or Skull (Adult))

Review growth and development along with exercises in decisions, design, and treatment of operative procedures



USE VOCABULARY

Section	Page	Topic
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. A few 3D models demonstrate the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Glossary	Glossary	Terminology / glossary from the American College of Prosthodontics.
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page is vocabulary; the 2nd illustrates information the ADA considers important and the 3rd is the 'Unique features' of each tooth. Many 3D models demonstrate the anatomical variations of each tooth and pulp and the changes in the pulp with age.
Secondary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.

EXAMPLE

Use examples in these sections to accelerate students learning the nomenclature of preparation design.



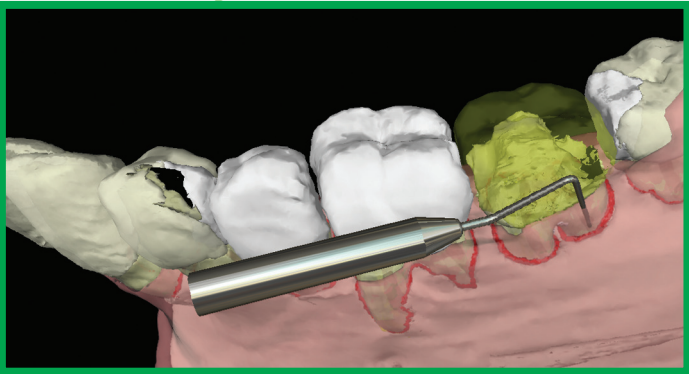
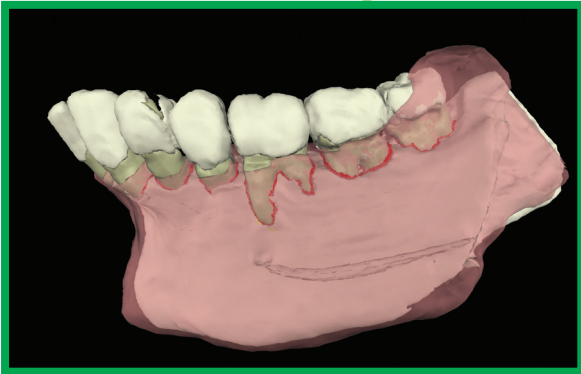
IDENTIFY ANATOMY OF PERIODONTAL TISSUES

Section	Page	Topic
Periodontology	3D Model: Simple	3D model with: 1) user controlled transparency of teeth and their supporting structures, 2) normal and pathological conditions, 3) perioprobing demo.
Periodontology	3D Model: Complex	3D model with: 1) user controlled transparency of teeth and their supporting structures, 2) normal and pathological conditions, 3) perioprobing demo.
Periodontology	Perio Morphology	Periodontal anatomy PPT series.

EXAMPLE

This area can provide valuable knowledge of the interrelationship of periodontal structures and teeth for the student who is studying design and treatment of various Fixed Prosthodontic procedures.

(Click on Specialized Resources > Click on Periodontology > Click on 3D Model: Simple or 3D Model: Complex > Use the Transparency tools to enable viewing of different layers)



## STUDY FOR ASSESSMENTS

Section	Page	Topic
Skull Osteology	Child Mummy	3 Sections: 1) Egyptology - describes cartonnage. 2) Anthropology - introduces dental terminology used in anthropology. 3) Dentistry - introduces vocabulary for primary and secondary teeth, with quizzes and answers for name, calcification, eruption, exfoliation and relative position.

## IDENTIFY PULPUL ANATOMY

Section	Page	Topic
Secondary Teeth	Rotations and Slices	User-controlled simultaneous rotation of a tooth: 1) Photograph, 2) 3D surface model, 3) 3D X-ray and simultaneous view through CT and photograph slice data
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page introduces vocabulary; the 2nd illustrates the information the ADA considers important and the 3rd is the 'Unique features' of each tooth. Many 3D models demonstrate the anatomical variations of each tooth and pulp and the changes in the pulp with age.

## EXAMPLE

Students can use the tooth rotations along with activities of pre-clinical and clinical preparations to gain knowledge of spatial relationships of the pulpal tissue.

REVIEW FUNCTION

Section	Page	Topic
Primary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page demonstrates general characteristics; the 2nd illustrates dental anatomy and terminology. There are a few 3D models demonstrating the anatomical variations of each tooth and pulp.
Primary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Primary Teeth	Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Primary Teeth	Secondary Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd primary molars to each other, primary vs. secondary molars and maxillary to mandibular, occlusal surfaces and mesial views.
Secondary Teeth	Morphology	Morphology contains a synopsis of every anatomical landmark of each tooth and the comments of every textbook on each anatomical landmark. To see this information, select the 2D image of interest and highlight the text annotation or roll the mouse over the image.
Secondary Teeth	Comparisons	Reviews all 7 comparisons between teeth such as 1st, 2nd and 3rd molars to each other, maxillary to mandibular, occlusal surfaces and mesial views.

EXAMPLE

Students will enhance fundamental knowledge of function for restorative procedures.

Show the temporomandibular joint. Discuss the condyle, its form, dimensions, and its normal position in the fossa. Compare the condylar position on a panoramic radiograph with that of a tomogram. Show how the space between the condyle and fossa varies depending on the mediolateral location of the tomographic slice and how there are problems with making sweeping conclusions about joint space based on radiographs. Show histologic cross-sectional images of the temporomandibular joint at various mediolateral locations to support the discussion.

Discuss implications of TMJ problems with different types of malocclusion created by restorative procedures.

Discuss the form of the anterior wall of the temporomandibular joint (the anterior eminence) that determines the angle of the eminentia.

## IDENTIFY RADIOGRAPHIC ANATOMY

Section	Page	Topic
Primary Teeth	Radiograph	An interactive annotated X-ray introduces the name and location of anatomical structures.
Primary Teeth	Image Library	Several radiographic examples of each tooth are shown to demonstrate anatomical variation.
Secondary Teeth	Radiograph	An interactive annotated X-ray introduces the name and location of anatomical structures.
Secondary Teeth	Image Library	Several radiographic examples of each tooth are shown to demonstrate anatomical variation.

## EXAMPLE

These sections can be up on the student's laptop for radiographic references during pre clinical and clinical procedures.

Use the radiograph tab at each secondary tooth to identify the landmarks present in the numbered left hand box. Roll the mouse over the image and use the "hide all" and "show all" buttons to complete self-assessment quizzes.

Show the inferior alveolar canal and discuss the anatomic variations in its position. Discuss the importance of knowing where the canal is located when placing implants in the posterior mandible. What are the best ways of determining precisely where the canal is located?

Identify the pterygomaxillary fissure on a radiograph. Discuss its location, boundaries, and its use as a landmark in cephalometrics. Discuss the importance of the fissure as an anatomic structure that as a landmark leads into the pterygopalatine fossa that houses a number of key nerves and vessels that serve structures pertinent to dentistry.



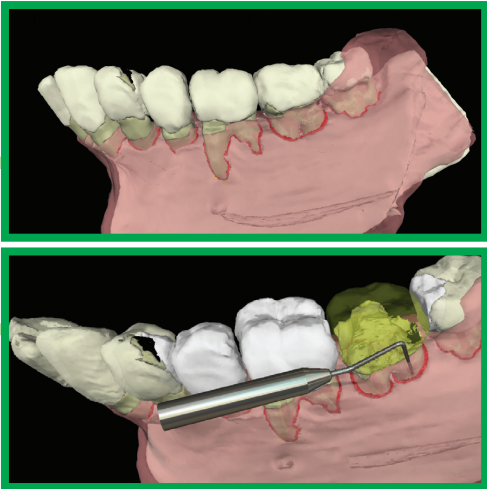
STUDY ANATOMY OF PERIODONTAL TISSUES

Section	Page	Topic
Periodontology	3D Model: Simple	3D model with: 1) user controlled transparency of teeth and their supporting structures, 2) normal and pathological conditions, 3) perioprobng demo.
Periodontology	3D Model: Complex	3D model with: 1) user controlled transparency of teeth and their supporting structures, 2) normal and pathological conditions, 3) perioprobng demo.
Periodontology	Perio Morphology	Periodontal anatomy PPT series.

EXAMPLE

This area can provide valuable knowledge of the interrelationship of periodontal structures and teeth for the student who is studying design and treatment of various Fixed Pros procedures.

(Click on Specialized Resources > Click on Periodontology > Click on 3D Model: Simple or 3D Model: Complex > Use the Transparency tools to enable viewing of different layers)



EXAM AND NATIONAL BOARD STUDY

Section	Page	Topic
Periodontology	Quiz	Board question samples.
Secondary Teeth	3D Models	Reconstruction of hundreds of high-res CT scans of teeth: the 1st tooth in each 3D model page introduces vocabulary; the 2nd illustrates the information the ADA considers important and the 3rd is the 'Unique features' of each tooth. There are many 3D models demonstrating the anatomical variations of each tooth and pulp and the changes in the pulp with age.
Secondary Teeth	Study Quiz	The 30-40 questions on each page illustrate the important information students should know about each tooth.

EXAMPLE

You can select Board questions and add them to quizzes and tests.

LEARN OVERVIEW OF CARIES

Section	Page	Topic
Extras	Caries	Micro-CT scan 3D color-coded model of carious lesion along with histology and lesion description.

EXAMPLE

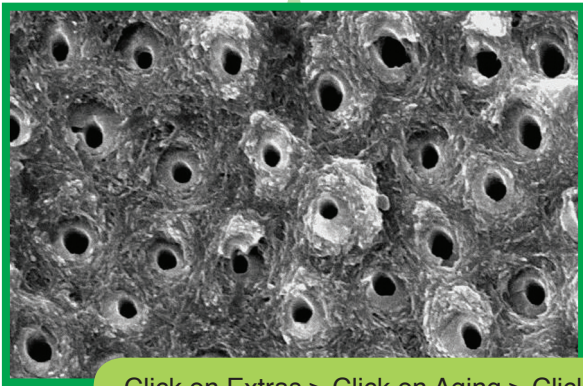
Background knowledge of caries can enhance simulated caries procedures.

UNDERSTAND AGE RELATED CHANGES IN DENTIN

Section	Page	Topic
Extras	Aging	Information on age related changes in dentin.

EXAMPLE

Aids in decisions about type of bonding materials for specific dentin age.



Click on Extras > Click on Aging > Click on image from list