Select a Course.

Embryology
Formation, Growth, Development & the Developmental Disorders
A comprehensive approach to the formation, early growth, development, and developmental disorders with a special focus on topics covered on the USMLE and COMLEX Exams.

- 67 tutorials (9 hours)
  - Academic Textbook Organization
  - 6-8 Minute Animated, Narrated Tutorials
  - Bulleted Notes & Final Drawings
- Web-based Drawing Pad
  - 130+ Drag/Drop Labels
  - Downloadable Starter Images
  - Precision Touch Sensitivity
- 450+ Quiz Questions
  - Rapid Review
- 130+ Clinical Correlations
  - Real-Life Correlations
- 300+ Scientific References
  - Sources You Trust

Course Description
Select a Subject and a Tutorial.

**Embryology**

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Expand All Subjects

- Eukaryotic Cells and Molecular Genetics
  - 12 tutorials
- Pre-Implantation Events
  - 7 tutorials

**Select Subject**

- Early Embryonic Development
  - 7 tutorials

**Early Embryonic Development**

- Implantation & Placentation Formation
- Cleavage & Implantation
- Early Placental Development
- Mature Placenta

**Select Tutorial**

- Early Development
  - The Germ Layers

- Embryonic Folding

- Take Subject Exam
THE GERM LAYERS

OVERVIEW
* Ectoderm lines the amniotic cavity.
* Endoderm lines the yolk sac.
* Mesoderm has both extraembryonic and intraembryonic portions.
* The connecting stalk connects the embryo to the uterus.
  - The embryo lies within the chorionic cavity, which coalesces from pools of extraembryonic cavities.

Within the mesoderm, lies the:
- The neural tube
- The neural crest cells (we use an arrow to signify their migration)
- Notochord

The mesoderm divides (from medial to lateral) into:
- The somites (paraxially)
- The intermediate mesoderm
- Lateral plate mesoderm.

THE GERM LAYERS
ECTODERM
- The skin, specifically the surface layer (meaning NOT the dermis, the underlying layer)
- The skin appendages (eg, the hair, nails, and other appendages).

The neural crest cell derivatives:
- Select cranial nerves the pharyngeal arch derivatives (which are cranial nerves 5, 7, 9, and 10).
- The dorsal root ganglia, which are the pseudounipolar sensory neurons.
- The sympathetic chain ganglia, which supply the sympathetic portion of the autonomic nervous systems, responsible for "Fight or Flight".
- The autonomic ganglia, which are activated along with the
The video player becomes a drawing pad with all the tools you need.
Starter canvas to provide guidance for your drawings.
Label exercise provides an additional engaging approach to learning.
Quiz questions are available as our pre-/post tutorials and as subject exams.

4. Which of the following primarily derives from the ectoderm?

A. The brain
B. The gut
C. The heart
D. The kidneys

Ectoderm derives the neural tube, which derives the brain.
Review and further explore concepts with our flashcards.

**Embryology**
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**Diffusion (Two Experiments)**
- **Diffusion**: The tendency of a substance to move from an area of high concentration to low concentration.
- **Solution**: A substance dissolved in another substance (water).

**Pathophysiological Disorders**
- **Meningitis**
- **Meningoencephalitis**
- **Encephalitis**

**Genetic Myopathies (Inherited)**
- **Duchenne & Becker Muscular Dystrophies (the Dystrophinopathies)**
  - **Overview**
    - Duchenne Muscular Dystrophy:
      - Inheritance: Autosomal recessive
      - Clinical presentation:
        - Muscular weakness, particularly in the pelvic girdle and shoulder muscles
    - Becker Muscular Dystrophy:
      - Inheritance: X-linked recessive
      - Clinical presentation:
        - Muscle weakness, particularly in the pelvic and shoulder muscles, and a later age of onset
  - **Clinical Features**
    - Duchenne Muscular Dystrophy:
      - Typically presents before age 5
      - eliminar the need for treatment in 10-15 years
    - Becker Muscular Dystrophy:
      - Typically presents after age 15

**Molecular Dystrophies**
- **Duchenne Muscular Dystrophy (DMD)**
- **Becker Muscular Dystrophy (BMD)**
- **Other Dystrophinopathies**
- **Review**
  - Duchenne Muscular Dystrophy:
    - Inheritance: X-linked recessive
    - Clinical presentation:
      - Progressive muscular weakness and a later age of onset
  - Becker Muscular Dystrophy:
    - Inheritance: Autosomal recessive
    - Clinical presentation:
      - Muscular weakness that progresses over time

**Embryology Flashcards**
- **Diffusion Experiment, #1**
  - In the leftmost box, small solute molecules are diffusing through the membrane. These move randomly from the area of high concentration to the area of low concentration.
  - In the middle box, random movement of solute molecules continues, with some moving to the right and some moving to the left.
  - In the rightmost box, equal amounts of solute are present.

**Flashcards**
- **Cellular Anatomy & Physiology**
  - Cellular Physiology
    - Diffusion: Two Experiments
      - Osmosis: Movement of water through a semipermeable membrane
      - Osmolarity: Measurement of solute concentration
  - Developmental Processes
    - Embryonic Development
Create a Study Plan.

Our Study Plan builder allows you to schedule your learning and track your progress.

Create as many plans as you want.

Create a New Study Plan

Name Your Study Plan.

Select/Deselect Tutorials

To save, click — Create Study Plan
View a Different Study Plan.

**Click** *Switch Study Plan.*

Select the Plan.

The Plan now appears.

**Click** View All Tutorials to see all tutorials.
Share your Study Plan with your institution.

Submit a request

Email us with the following at:
support@drawittoknowit.com
- Username
- Institution name
- Title at Institution

Only instructors are allowed to share study plans with an institution. Students are not granted this option.
Best use of *Draw it to Know it* for hybrid (online/in-class use)...

**Before Class**
Students prepare with our tutorials.

**During Class**
Students complete our exercises with instructor guidance and teaching.
Web Links — Share Individual Tutorials and/or Entire Study Plans

Copy a Link

Individual Tutorials

Study Plans

Select A Study Plan

+ Create a new study plan

Your study plans

https://www.drawittoknowit.com/course/embryology

Paste it directly into any LMS or your syllabus
Subject Completion Certificates

Select Take Subject Exam

Early Embryonic Development
- Implantation & Placental Formation
  - Cleavage & Implantation
  - Early Placental Development
  - Mature Placenta
- Early Development
  - The Germ Layers
  - Gastrulation
  - Neurulation
  - Embryonic Folding
- Take Subject Exam

4. Which of the following primarily derives from the ectoderm?

A. The brain
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C. The heart
D. The kidneys

Upon Successful completion of the Subject Exam (>70%), the student is awarded a Subject Exam Certificate, which is accessible in the My Account Page.

Account Settings
- Subscriptions
- Billing
- Profile
- Preferences
- Institutional Reporting
- Certificates

Certificates

Embryology
Early Embryonic Development

Draw it to Know it
MEDICAL & BIOLOGICAL SCIENCES

Formula for Success
Courses
Institutional Analytics
adam fishc

4/19/2017 4:17 pm

View
Subject Completion Certificate

Draw it to Know it, Medical & Biological Sciences certifies that on May 5th, 2016,

John Doe

successfully completed the Early Embryonic Development subject exam within the Draw it to Know it Embryology course.

Adam Fisch, MD, Founder & Editor-in-Chief
Draw it to Know it, Medical & Biological Sciences

Draw it to Know it, Medical & Biological Sciences confirms that this individual scored >70% on the Exam for this subject.
Course Completion Certificates

Upon Successful completion of all Subject Exams, the student is awarded a course completion certificate, visible in the My Account Page.

Course Completion Certificate

Account Settings

Subscriptions  Billing  Profile  Preferences  Institutional Reporting  Certificates

Draw it to Know it, Medical & Biological Sciences certifies that on May 5th, 2016,

John Doe

successfully completed the Draw it to Know it Embryology course.

Adam Fish, MD, Founder & Editor-in-Chief
Draw it to Know it, Medical & Biological Sciences

Draw it to Know it, Medical & Biological Sciences confirms that this individual scored >70% on the Exam for this subject.
Overview Page displays # of students who registered for individual accounts and the total number of tutorial views.
To track specific student groups, request a Group PIN.

Ideal for Instructors!

Submit a Request
Email us at support@drawittoknowit.com and provide:

- Your Full Name & Username
- Institution name
- Number of Students
- Draw it to Know it Course Name
- Start Date

Only instructors are allowed to create Group PINS. Students are not granted this option.

Invite Students to Join Your Group PIN
We provide an instructional document for you to give to your students.

[Image of registration form with fields for First Name, Last Name, Email, Password, Confirm Password, Select Institution, and Group PIN.]

Create a User Account & Join Your Instructor’s Classroom.

1. Complete the registration form found at: https://www.drawittoknowit.com/register
2. Select Your Institution.
3. Enter Group PIN: XXXXX

[Checkbox to Notify of updates or promotions.]

[Register button and login link.]
Track Student Performance

Log-in to your Account
Choose “Institutional Reporting”

Re-enter Username & Password
• Provides additional layer of security.
• Same information as you used to log into your main account.

Usage Overview - Institutional
• Overview of student registration and total tutorial views.

Example University
Institution Name

<table>
<thead>
<tr>
<th>Usage Overview</th>
<th>Usage Statistics (04/24/2016 - 04/24/2017)</th>
<th>Adjustable calendar to view specific time intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Student Registrations</td>
<td>Total Tutorial Views</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>322</td>
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<tr>
<td>User Registration (04/24/2016 - 04/24/2017)</td>
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</tr>
<tr>
<td>Name</td>
<td>Email</td>
<td>Date Registered</td>
</tr>
<tr>
<td>Amy Smith</td>
<td>a <a href="mailto:smith@drawitoknowit.com">smith@drawitoknowit.com</a></td>
<td>04/24/2017</td>
</tr>
<tr>
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<td><a href="mailto:examplestudent1@gmail.com">examplestudent1@gmail.com</a></td>
<td>04/24/2017</td>
</tr>
</tbody>
</table>

Export Student Data.
Track Student Performance

1. Select **Usage by Group** to see details for Your Group PIN Registrants.
2. Click **View Usage**
3. Select either...
   - **Tutorial Usage Students**

**Tutorial Usage**
Access Tutorial Views, Drawings, & Quiz Scores BY TUTORIAL

**Students**
Access Tutorial Views, Drawings, & Quiz Scores BY STUDENT
Draw it to Know it recognizes the need for excellent customer support. We are available for you via phone at 317-929-1984 during regular business hours and via email 24/7.