Yale SCHOOL OF MEDICINE

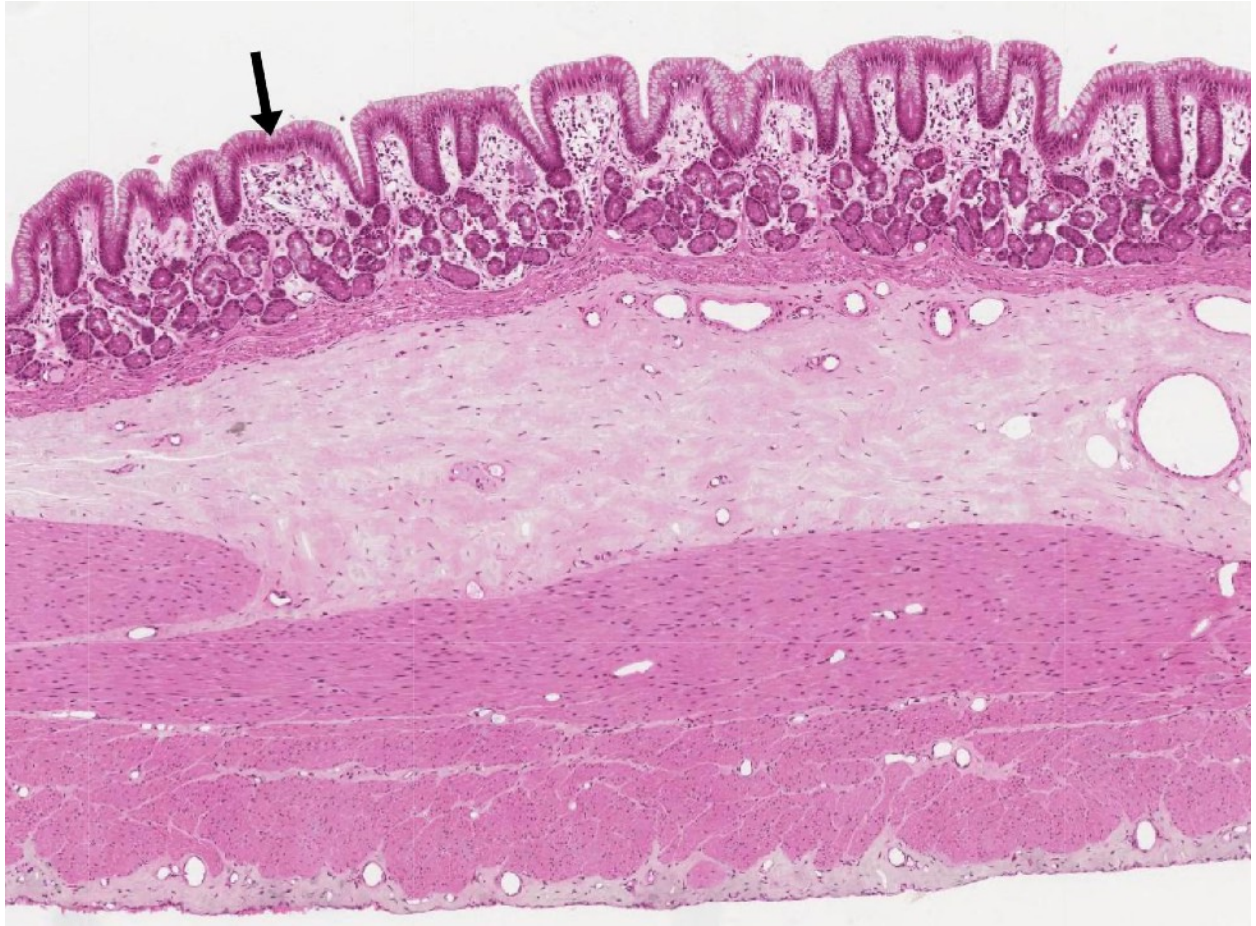
MD CURRICULUM

Readiness Assessment Questions

Readiness Assessment Question 1

In this biopsy from the stomach, what is the embryological origin of the tissue indicated by the arrow?

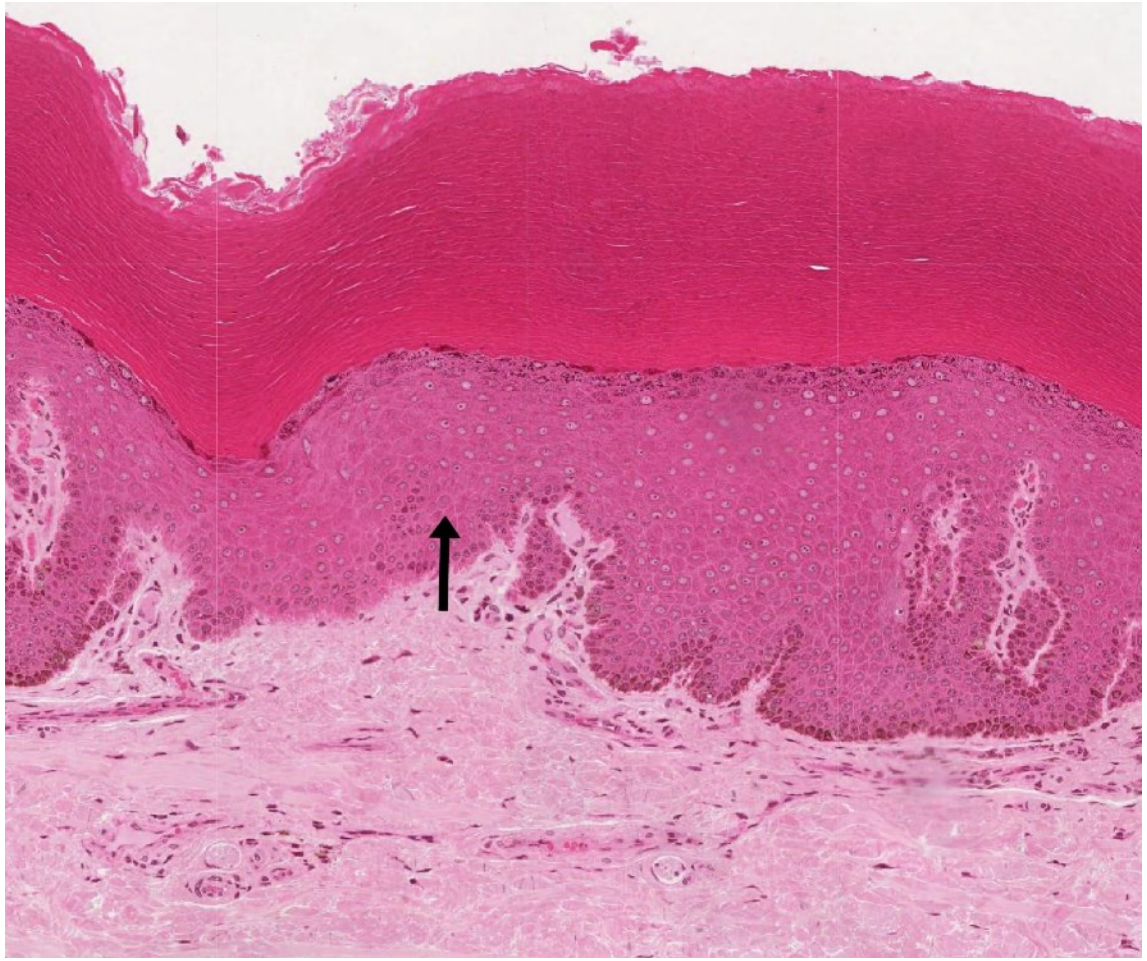
- Ectoderm
- Mesoderm
- Endoderm
- Extraembryonic



Readiness Assessment Question 2

What is the embryological origin of the tissue indicated by the arrow?

- Ectoderm
- Mesoderm
- Endoderm
- Neural tube



Readiness Assessment Question 3

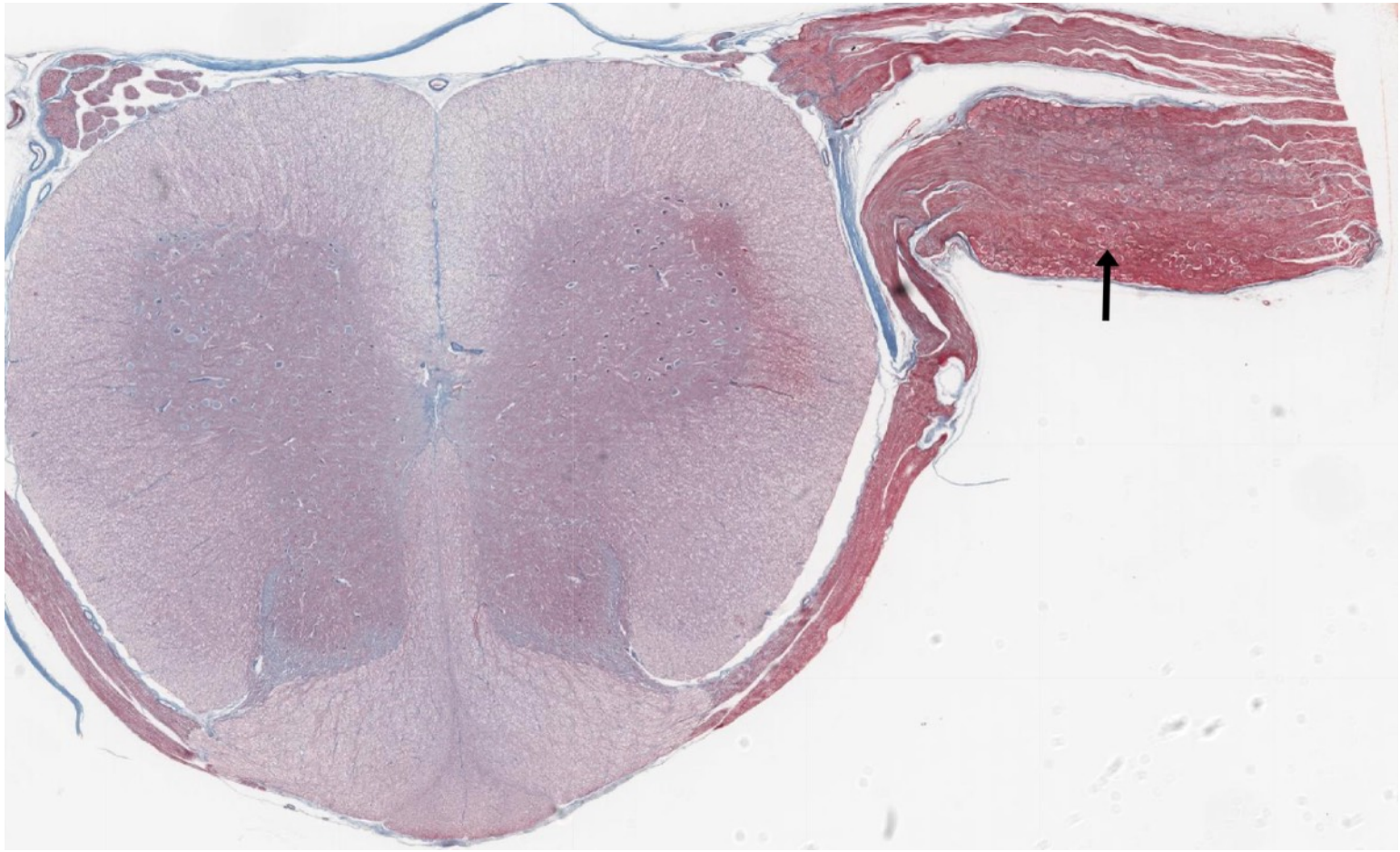
What is the embryological origin of the cell indicated by the arrow?

- Ectoderm
- Mesoderm
- Endoderm
- Neural tube

Readiness Assessment Question 4

What is the embryological origin of the cells indicated by the arrow?

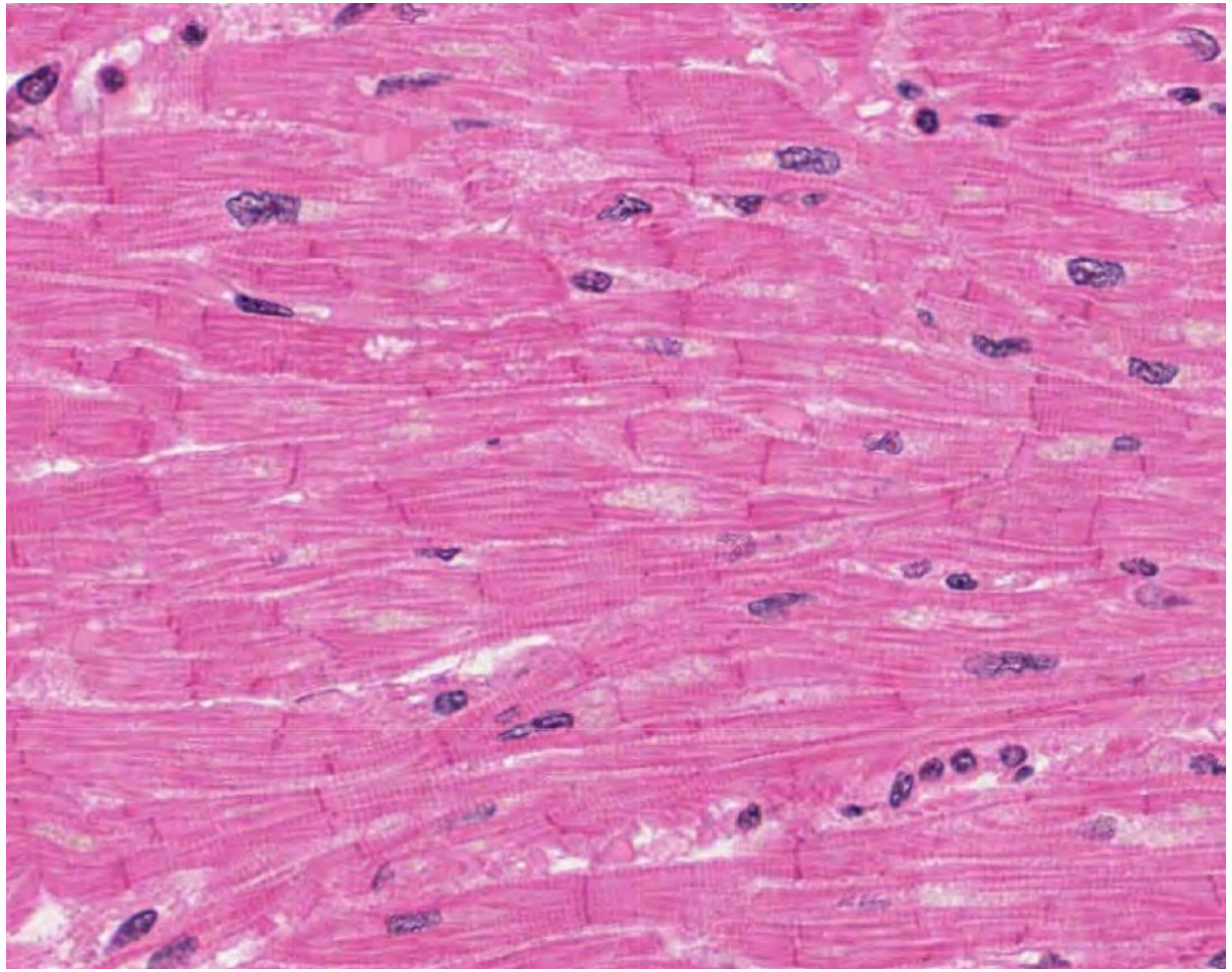
- Ectoderm
- Mesoderm
- Endoderm
- Neural tube



Readiness Assessment Question 5

What is the embryological origin of this tissues?

- Ectoderm
- Mesoderm
- Endoderm
- Neural tube



Readiness Assessment Question 6

Over production of which molecule would most likely affect development of somites?

- Sonic hedgehog
- Fibroblast growth factor (FGF)
- Bone morphogenic hormone (BMP)
- Nodal

Readiness Assessment Question 7

Fever during early pregnancy would increase the risk of which condition?

- Ectopic pregnancy
- Fused somites
- Spina bifida
- Cleft palate

Readiness Assessment Question 8

Polycyclic aromatic hydrocarbons (PAHs) are released during combustion of fossil fuels. Recent studies have found an increased incidence of spina bifida and anencephaly in females with high serum levels of PAHs. Which process do PAHs most likely affect?

- Convergent extension
- Neural crest cell migration
- Notochord formation
- Neural tube closure

Readiness Assessment Question 9

Vertebrae derive from which embryological structure?

- Somites
- Rhombomeres
- Notochord
- Neural crest

Application Questions

Application Question 1

A one-day-old, term male neonate was brought to NICU for evaluation of malformation of ear. The baby's birth was unremarkable, and he weighed 7 lbs 8 oz at birth. The mother is 24 years old and she was nulliparous (this is her first birth).. Her chart showed she was 10 weeks pregnant when she first visited the hospital. Her history reveals she had been using an interuterine device for contraception. Which of the following would you most likely find in the patient's chart?

A. Self-reported moderate alcohol consumption

B. Prescription for Accutane (Isotretinoin or 13-cis-retinoic acid) to treat severe acne

C. Prescription for Nitrofurantoin (an antibiotic) to treat a urinary tract infection

D. Positive test for human papillomavirus (HPV)

Application Question 2

A 28 year old female presents at an outpatient clinic with a positive result from a home pregnancy test. She has a history of amenorrhea and reports her last period was 14 weeks ago. A pregnancy test performed in the clinic is also positive. Her blood pressure is 128/86 mm Hg and her heart rate is 90 bpm. Her temperature is 36.8˚ C and SpO_2 is 99%. Her medical history shows a diagnosis of rheumatoid arthritis, for which she was prescribed a combination therapy of methotrexate and hydroxychloroquine. The fetus measures 5.5 cm by ultrasound (normal 5.3 to 6.4 cm). Which of these conditions is of greatest concern?

A. Cleft lip

B. Lack of GI tract innervation

C. Anencephaly

D. Fused cervical vertebrae

Application Question 3

A 3-year-old male patient was assessed in the pediatric emergency department for a 3-day history of fever and shortness of breath and a 2-day history of productive cough. His parents said that he had a history of frequent colds and repeated respiratory infections. He also suffered repeated pneumonic infections. No family history of asthma was present. In the emergency department (ED), the patient was reported to be in severe respiratory distress. Vital signs revealed temperature of 38°C, respiratory rate of 50 breaths per minute, heart rate of 120 beats per minute, blood pressure of 110/60 mm Hg, and oxygen saturations of 75% on room air. Heart sounds were best audible on the right side of his chest. On chest auscultation, there was diminished air movement in both lungs. Genome sequencing would most likely identify a mutation in which gene? (Bonus question: what condition would the patient experience later in life?

A. Dynein

B. Non-muscle myosin

C. E-Cadherin

D. Type IV collagen