Three Mammal Beginnings

Compare birth, development, and placental support.

ZOO.10.3 "Distinguish between monotremes, marsupials, and eutherians, and describe the importance and differences in the placenta in marsupials and eutherians."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline how each group's young enter the world, circle descriptions of placentas, and number the groups in this order: egg-laying, brief pregnancy, typically longer pregnancy.

A Different Start to Life

1 At a wildlife center, three newborn mammals need very different care. An echidna hatches from an egg, then drinks milk from its mother. Echidnas are monotremes, mammals that lay eggs rather than give birth to live young. An opossum, a marsupial, gives birth to tiny, underdeveloped young. Each newborn crawls to a teat and continues growing while attached to it, often inside a pouch. A deer, a eutherian mammal, gives birth to a more developed fawn. Both opossums and deer develop inside the mother's uterus before birth, but the time spent developing there typically differs.

2 During pregnancy, a placenta forms a working connection between a mother and her developing young. Across this organ, oxygen and nutrients pass toward the young, while carbon dioxide and other wastes pass toward the mother for removal. These materials cross between tissues; the mother's and young's blood do not normally flow together. Marsupials usually form a short-lived placenta mainly from the embryo's yolk sac and the uterine lining. This period of exchange supports early growth before birth. Monotremes develop in eggs instead of forming a placenta to support young inside a uterus.

3 In eutherians such as deer, a placenta formed from embryonic tissues, including the chorion and allantois, connects with the uterine lining. It generally functions during a longer pregnancy than the typical marsupial placenta, allowing more growth before birth. A fawn can stand soon after birth, whereas a newborn opossum must stay attached to a teat to keep developing. That contrast is useful, but birth size alone is not a foolproof way to classify mammals. Some marsupials also form a placenta using the chorion and allantois. Consider reproduction and placental structure together, rather than relying on a single clue.

2 ANSWER WITH EVIDENCE

Use the passage

1. How do an echidna and an opossum differ in how their young enter the world and receive support afterward?

2. How do the typical placentas of marsupials and eutherians differ in their embryonic tissues and how long they function?

3. Why can a deer usually develop more before birth than an opossum? Include what the placenta supplies or removes.

4. A classmate claims that any mammal with a placenta involving the chorion and allantois must be eutherian. Why does the passage show that this rule can fail?

3 YOUR TURN

Your own words

A rescue center receives three anonymous reports: A, young hatch from eggs and nurse; B, tiny young are born after a brief pregnancy and continue growing on a teat; C, young develop during a longer pregnancy while a placenta exchanges materials with the mother. Identify each mammal group, then explain how B's and C's placentas typically differ and why that matters for development before birth.

ANSWER KEY

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HIGH SCHOOL · ZOO.10.3

PART 1 · READ AND MARK

Underline how each group's young enter the world, circle descriptions of placentas, and number the groups in this order: egg-laying, brief pregnancy, typically longer pregnancy. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How do an echidna and an opossum differ in how their young enter the world and receive support afterward?	**An echidna hatches from an egg and then drinks milk. An opossum is born live and underdeveloped, then grows while attached to a teat.**
2	How do the typical placentas of marsupials and eutherians differ in their embryonic tissues and how long they function?	**A marsupial placenta is usually short-lived and forms mainly from the yolk sac. A eutherian placenta involves the chorion and allantois and generally functions during a longer pregnancy.**
3	Why can a deer usually develop more before birth than an opossum? Include what the placenta supplies or removes.	**A deer's placenta generally functions during a longer pregnancy, transferring oxygen and nutrients to the young and wastes toward the mother. An opossum has a shorter period of placental support and continues much of its growth after birth.**
4	A classmate claims that any mammal with a placenta involving the chorion and allantois must be eutherian. Why does the passage show that this rule can fail?	**Some marsupials also form a placenta using the chorion and allantois, so that feature alone does not prove a mammal is eutherian.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

A is a monotreme because its young hatch from eggs but drink milk. B is a marsupial because its young are born early and keep developing on a teat. C is a eutherian because its young develop during a longer pregnancy supported by a placenta. B typically has a short-lived placenta formed mainly from the yolk sac and uterine lining, so much growth happens after birth. C usually has a longer-functioning placenta involving the chorion and allantois, which transfers oxygen and nutrients and removes wastes as development continues before birth.

Accept descriptions of typical placental differences that acknowledge exceptions among marsupials. Students should connect the duration of placental exchange to development before birth, not claim that marsupials lack placentas.