

## Fertilization Quiz Answer Key PDF

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**What is the primary site of fertilization in humans?**

- A. Uterus
- B. Fallopian tubes ✓**
- C. Ovaries
- D. Cervix

**Discuss the significance of genetic variation introduced during fertilization.**

**Genetic variation is crucial for evolution and adaptation, as it increases the genetic diversity within a population, allowing for better survival and adaptation to changing environments.**

**What are the initial stages of zygote development following fertilization?**

**The initial stages include cleavage (rapid cell division), formation of a morula, and then a blastocyst, which eventually implants in the uterine wall to continue development.**

**What factors can affect fertilization success? (Select all that apply)**

- A. pH levels ✓**
- B. Temperature ✓**
- C. Blood pressure
- D. Health of gametes ✓**

**Which structure in the sperm contains enzymes necessary for penetrating the egg?**

- A. Nucleus
- B. Midpiece
- C. Tail

**D. Acrosome ✓**

**What is the term for the initial cell divisions of a zygote?**

- A. Meiosis
- B. Cleavage ✓**
- C. Differentiation
- D. Fertilization

**What is the result of fertilization in terms of cell formation?**

- A. Gamete
- B. Embryo
- C. Zygote ✓**
- D. Blastocyst

**Which of the following contribute to genetic variation during fertilization? (Select all that apply)**

- A. Random fertilization ✓**
- B. Identical twins
- C. Crossing over during meiosis ✓**
- D. Independent assortment of chromosomes ✓**

**What prevents polyspermy after the first sperm enters the egg?**

- A. Chemotaxis
- B. Acrosome reaction
- C. Cortical reaction ✓**
- D. Sperm capacitation

**Explain the role of the cortical reaction in preventing polyspermy.**

**The cortical reaction involves the release of enzymes from cortical granules in the egg, which modify the zona pellucid to prevent additional sperm from binding and penetrating the egg.**

**Describe the process of sperm capacitation and its importance in fertilization.**

**Sperm capacitation is a series of physiological changes that sperm undergo to become capable of penetrating and fertilizing an egg. It involves changes in the sperm membrane and increased motility.**

**What are the key differences between internal and external fertilization? Provide examples of organisms for each type.**

**Internal fertilization occurs inside the body (e.g., mammals), while external fertilization occurs outside the body (e.g., fish and amphibians). Internal fertilization often involves direct transfer of sperm, whereas external fertilization involves releasing gametes into the environment.**

**How does in vitro fertilization (IVF) assist in human reproduction?**

**IVF involves extracting eggs and sperm, fertilizing them outside the body in a lab, and then implanting the resulting embryos into the uterus, assisting individuals with fertility issues.**

**Which mechanisms prevent polyspermy? (Select all that apply)**

- A. Fast block ✓**
- B. Slow block ✓**
- C. Chemotaxis
- D. Acrosome reaction

**Which of the following are stages of fertilization? (Select all that apply)**

- A. Sperm capacitation ✓**
- B. Gastrulation
- C. Acrosome reaction ✓**
- D. Cortical reaction ✓**

**In which organisms does external fertilization commonly occur? (Select all that apply)**

- A. Fish ✓**
- B. Birds
- C. Amphibians ✓**
- D. Mammals

**How many chromosomes does a human zygote have?**

- A. 23
- B. 46 ✓**
- C. 69
- D. 92

**Which term describes the movement of sperm towards the egg guided by chemical signals?**

- A. Chemotaxis ✓**
- B. Phototaxis
- C. Geotaxis
- D. Thermotaxis

**Which process involves the release of enzymes from the sperm to penetrate the egg?**

- A. Capacitation
- B. Acrosome reaction ✓**
- C. Cortical reaction
- D. Implantation

**Which processes are involved in plant fertilization? (Select all that apply)**

- A. Pollination ✓**
- B. Fertilization ✓**
- C. Germination
- D. Photosynthesis