

Investigation 14.A: Examining Gonads and Gametes

Question: How do the structures of testicular and ovarian tissues relate to their biological functions?

Safety Precautions

Handle microscopes and microscope slides with care.

Materials

- blank paper
- prepared slides of testicular tissue
- prepared slides of ovarian tissue
- microscope
- pencil

Procedure

Part 1: Testicular Tissue

1. Mount the prepared slide of testicular tissue on the microscope stage.
2. Under low power, examine the specimen. Look for several circular structures. These are the seminiferous tubules.
3. Draw and label a diagram of the specimen as it appears under low power.

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4. Switch to medium and then high power to examine one seminiferous tubule. Try to identify developing sperm cells, mature sperm cells, and interstitial cells. You may want to refer to the descriptions on pages 479–480 of your textbook to help you identify these structures.
5. Draw and label a diagram of the specimen as it appears under high power.

Part 2: Ovarian Tissue

1. Mount the prepared slide of ovarian tissue on the microscope stage.
2. Under low power, examine the specimen. Look for developing follicles near the outer edge of the ovary. Try to identify immature ova within the developing follicles.
3. A mature follicle will appear as a large, fluid-filled structure that contains an ovum. How many mature follicles can you find in the specimen?

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Analysis

1. How does the number of sperm cells that are visible in the testicular tissue specimen compare with the number of ova that are visible in the ovarian tissue specimen?

2. How does the size of the sperm cells in the testicular tissue specimen compare with the size of the ova in the ovarian tissue specimen?

Conclusion

3. Explain how the differences in the size and quantity of the gametes in the male and female gonads contribute to their reproductive functions.