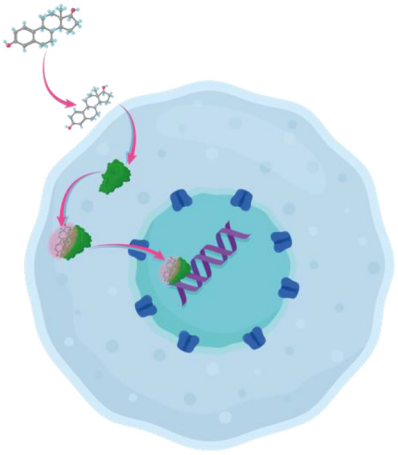
TOPIC: INTRACELLULAR RECEPTORS AND DIRECT GENE ACTION

Intracellular Receptors and Direct Gene Action

- *Recall*: Steroid hormones (& _____ hormone) can _____ the cell membrane.
- Receptor proteins are located _____ the cell.



1. Steroid hormone _____ through the membrane.
2. Hormone binds receptor protein.
3. **Receptor-Hormone Complex** enters the _____.
4. Complex binds to a _____ DNA region.
5. Triggers a cellular response.

EXAMPLE

Drawn below is a cell that responds to Hormone X and Hormone Y. The receptors for Hormone X are green, while those for Hormone Y are purple. Based on this image:

a) What can you conclude about the chemical structures of hormones X and Y?

X: _____

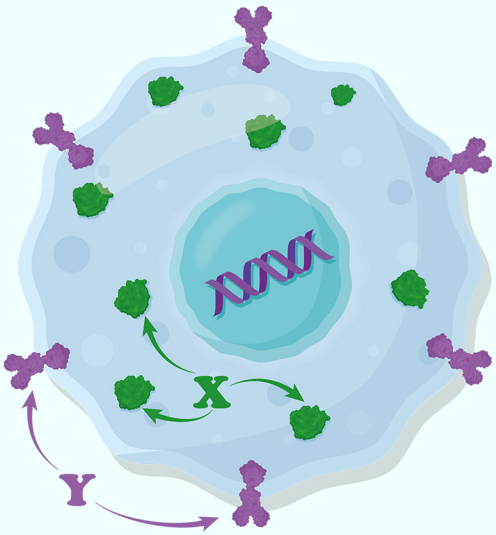
Y: _____

b) Which hormone is more likely to be affected by a molecule that inhibits adenylate cyclase?

_____

c) Which hormone would you expect to directly interact with the DNA of the cell via a receptor-hormone complex?

_____



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PRACTICE

True or False: if false, choose the answer that best corrects the statement.

Steroid hormones are the only hormones that interact with the DNA via a receptor-hormone complex.

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a) True.

b) False; all hormones can interact with DNA via a receptor-hormone complex; it depends on what type of receptor is used at the target cell.

c) False; thyroid hormone is an amino acid-based hormone that interacts with DNA via a receptor-hormone complex.

d) False; most peptide hormones interact with the DNA via a receptor-hormone complex, while most steroid hormones use second messenger systems.

PRACTICE

Which pair of terms below correctly matches the molecule with the pathway?

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a) Intracellular reception: receptor-hormone complex.

b) Second messenger system: G protein.

c) Intracellular reception: adenylate cyclase.

d) A & B are both correct.