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Crash Course BIOLOGY (2012 SERIES) 40 Episode Series Bundle

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Crash Course Biology (2012) #17: Evolutionary Development

Name: _____ Date: _____

You can access the video here → https://youtu.be/9jjsfxQ_6LZ?si=4Q19T1U4ghJd0

1. In Evo-devo, scientists study how _____ control when and where body parts form.
2. The early hollow ball of cells is the _____, where patterning begins.
3. _____ genes act like head architects, assigning identities like "leg here" and "tail there."
4. Rather than building parts, regulatory genes decide _____ or if structural genes should act.
5. In the embryo, _____ genes tell the blastula where to make a mouth versus an anus.
6. A rigid gene _____ means lower-tier regulators take orders from higher-tier ones.
7. Humans and _____ are about 85% genetically identical.
8. Much DNA once labeled _____ actually contains regulatory instructions.
9. Some regulatory _____ are preloaded in the egg before fertilization to get development started.
10. Within a species, regulatory genes often lack multiple _____; their sequences are essentially the same.
11. When a mouse eye-specifying gene was activated in a fly's future leg, the fly formed a _____ next to the leg (not a mouse eye).
12. Birds still have genes for teeth, but regulatory changes shut down _____ and dentin while boosting keratin to make a beak.
13. Small tweaks in high-tier _____ genes can cause big, rapid body-plan changes.
14. Teeth in mutant chicken embryos are an example of an ancestral trait reappearing when silenced genes are _____.
15. Evo-devo helps explain why different species can be very _____ in their regulatory toolkits despite looking different.

Crash Course Biology (2012) #17: Evolutionary Development - KEY

1. In Evo-devo, scientists study how **developmental regulatory genes** control when and where body parts form.
2. The early hollow ball of cells is the **blastula**, where patterning begins.
3. **Homeobox (Hox)** genes act like head architects, assigning identities like "leg here" and "tail there."
4. Rather than building parts, regulatory genes decide **when** or if structural genes should act.
5. In the embryo, **gap** genes tell the blastula where to make a mouth versus an anus.
6. A rigid gene **hierarchy** means lower-tier regulators take orders from higher-tier ones.
7. Humans and **mice** are about 85% genetically identical.
8. Much DNA once labeled **junk DNA** actually contains regulatory instructions.
9. Some regulatory **gene products** are preloaded in the egg before fertilization to get development started.
10. Within a species, regulatory genes often lack multiple **alleles**; their sequences are essentially the same.
11. When a mouse eye-specifying gene was activated in a fly's future leg, the fly formed a **fruit fly eye** next to the leg (not a mouse eye).
12. Birds still have genes for teeth, but regulatory changes shut down **enamel** and dentin while boosting keratin to make a **beak**.
13. Small tweaks in high-tier **regulatory** genes can cause big, rapid body-plan changes.
14. Teeth in mutant chicken embryos are an example of an ancestral trait reappearing when silenced genes are **re-activated**.
15. Evo-devo helps explain why different species can be very **similar** in their regulatory toolkits despite looking different.

15 Questions

Answer Key Included

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