

TeachMe

STUDY NOTES

CHAPTER 16 - INHERITANCE Gene Expression

Last update: June 19th 2026

Teach Me

teachmebio.org

GENE EXPRESSION

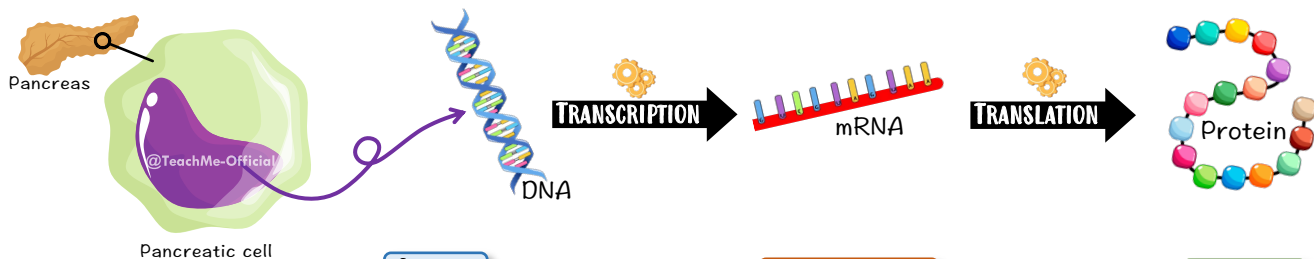
PROBLEM?

If each cell has the exact same DNA (instruction manual), then why do we have different cell types?

It is simple. Different cells will read a different segment of DNA and do what it says (GENE EXPRESSION). This way some cells read the instructions that allow them to become muscle cells, and other cells read the instruction that allow them to become nerve cells. The same concept applies to each different kind of cell.

GENE EXPRESSION

↳ The process of reading a gene and building a protein that will then be used by the organism.
A pancreatic cell will read only the DNA and EXPRESS the genes related to pancreatic cells.



IMPORTANT TERMS

GENOME

All the genetic information that an organism receives from its parents.

TRANSCRIPTOME

All the RNA that a cell makes. Pancreatic cells transcriptome differs from muscle cells.

PROTEOME

All proteins that a cell, a tissue or an organism can produce.

This process can be controlled (⚙️) at various stages of the process.
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KEY CONCEPTS

- Each cell in the body possess a **FULL COPY** of the persons **GENOME**.
- NO CELL** expresses **ALL** the genes in its genome. They only express those needed to perform their special function.
- Different cell types will have different **TRANSCRIPTOMES** and different **PROTEOMES** but will have the same **GENOME**.
- Different organisms have different **GENOTYPES** and therefor gene expression may result in different proteins (and hence **PHENOTYPES**).

GENOTYPE

The genetic information for a characteristic/trait.

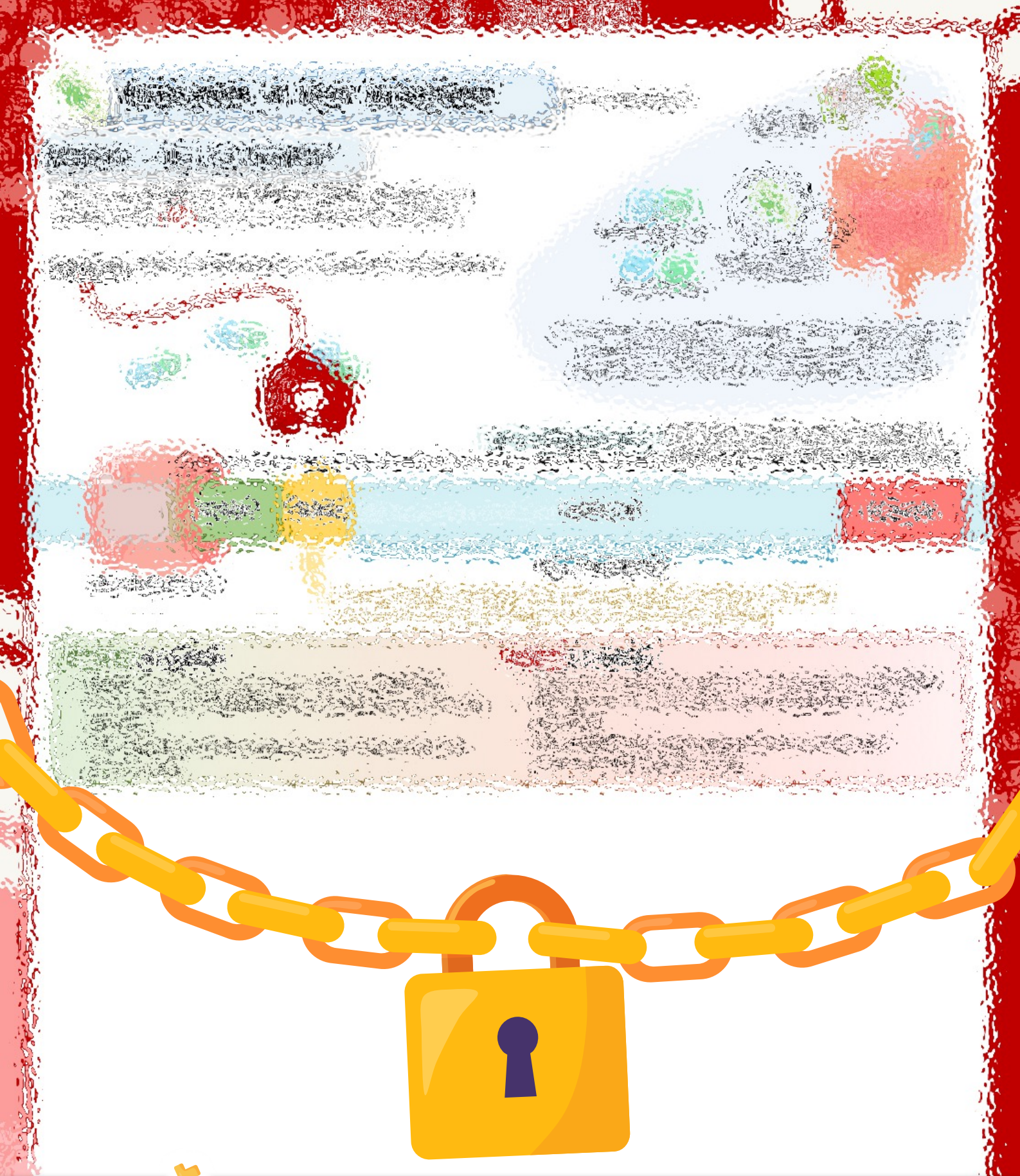
GENE EXPRESSION

PHENOTYPE

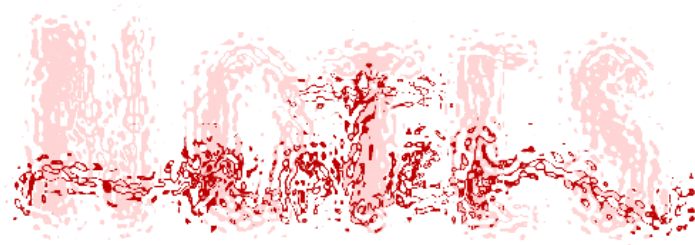
Set of observable traits or characteristics of an organism.



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