Today's Goals

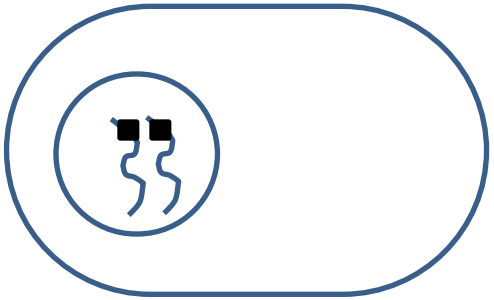
- Use a model to illustrate how DNA determines the structure of proteins which, in turn, determine an organism's traits.

Information flow in cells

DNA ⇢ protein ⇢ traits

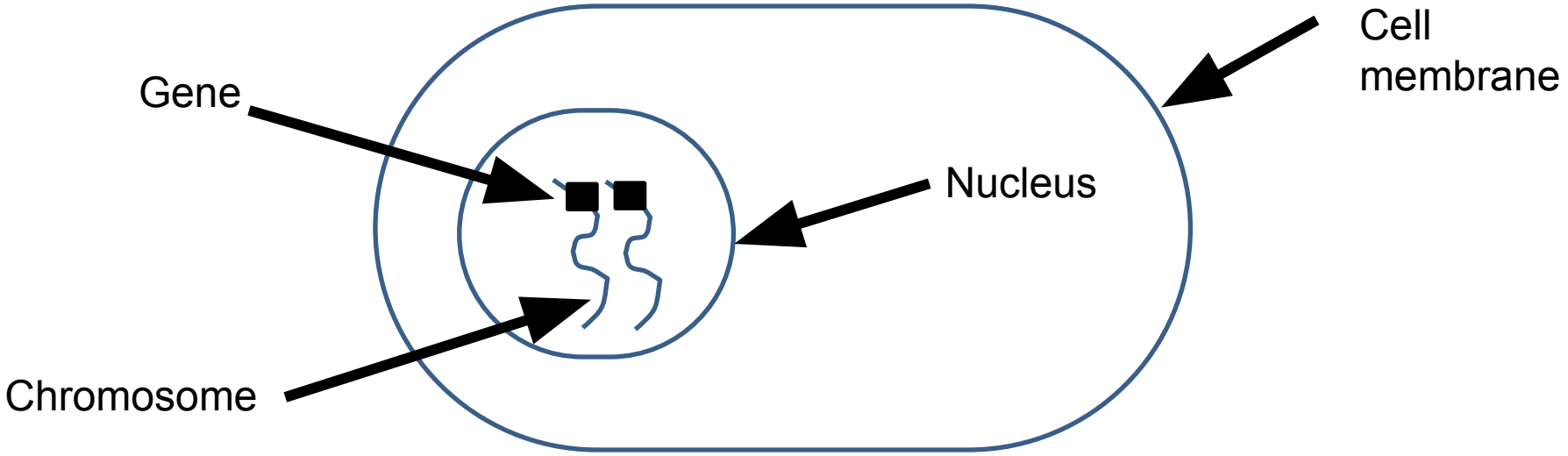
Information flow in cells

DNA (gene)

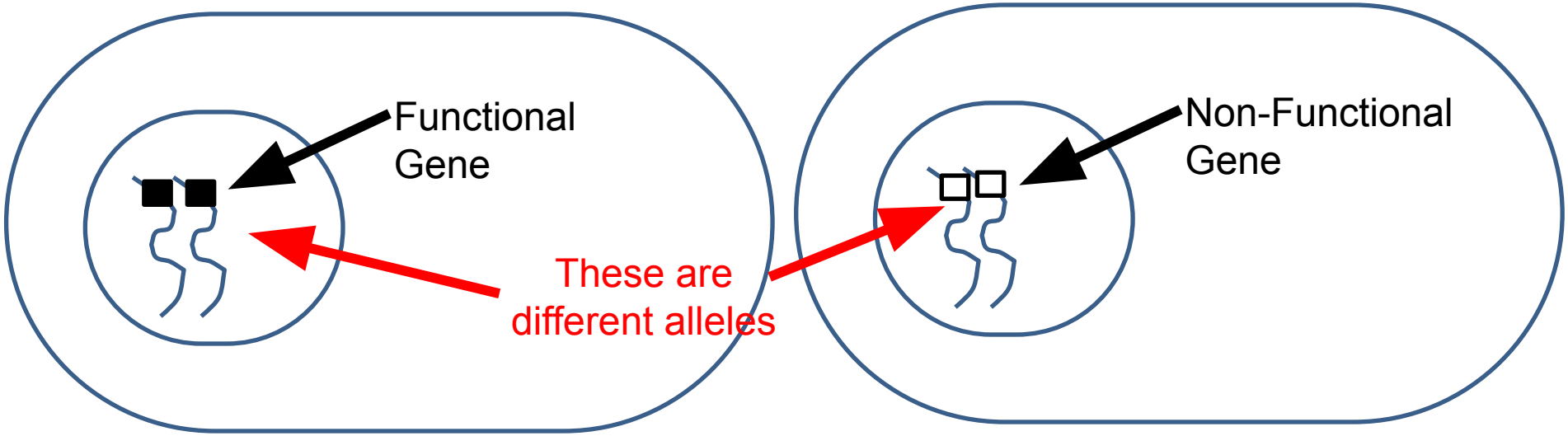


protein

traits



Genes are specific sections of DNA that code for specific proteins
Different versions of genes are called alleles



How does this fit with how we have been explaining the relationship between proteins and traits?

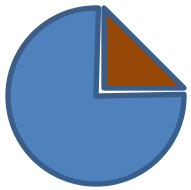
Example: Albinism

Human Skin Color- No Albinism

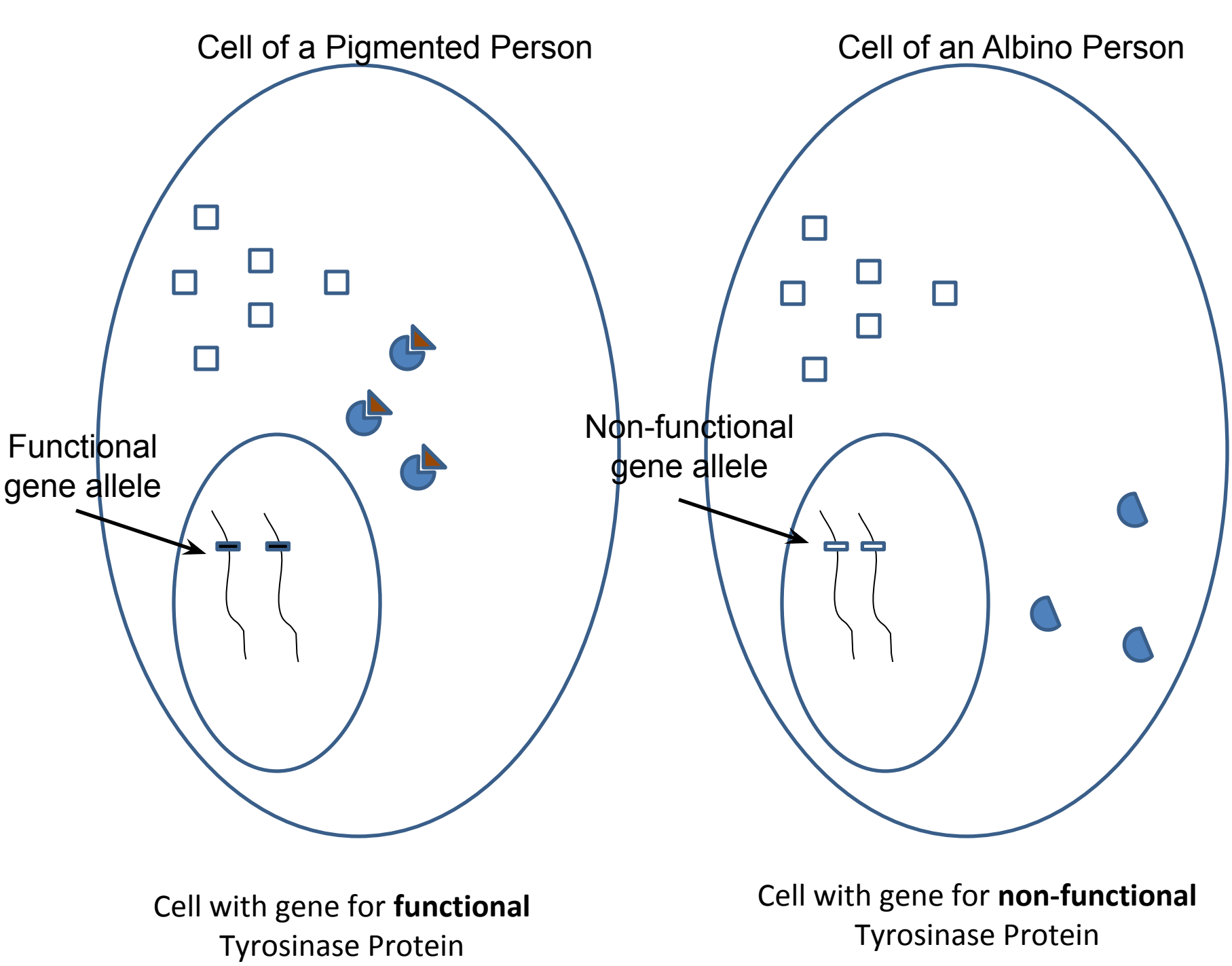
colorless (white) molecule → Tyrosinase Protein → Melanin Pigment molecule

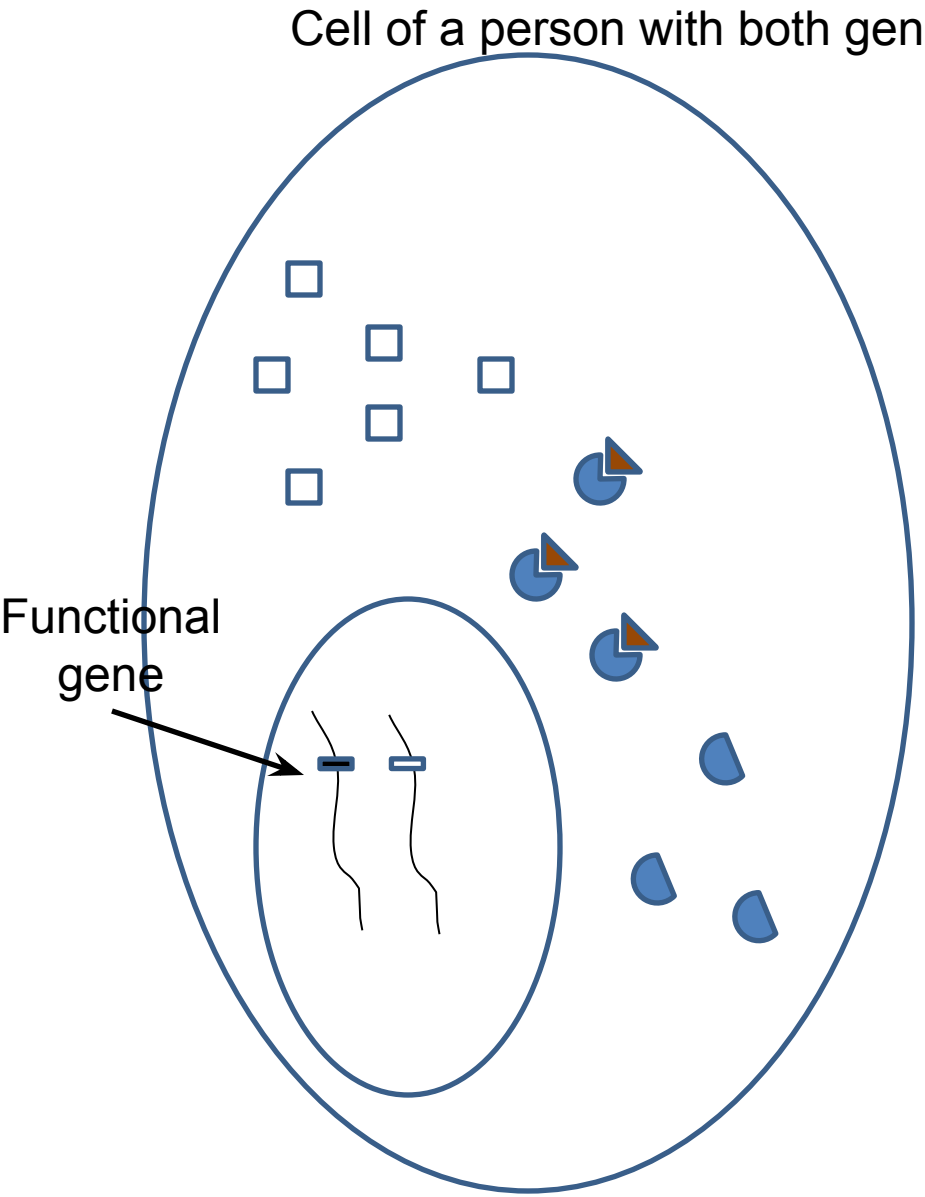
White molecule

Melanin pigment molecule



Tyrosinase Protein

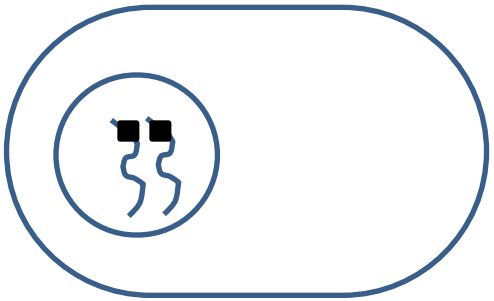

Cell of a Pigmented Person
Cell of an Albino Person
Functional gene allele
Non-functional gene allele
Cell with gene for **functional** Tyrosinase Protein
Cell with gene for **non-functional** Tyrosinase Protein



What happens if a person has one albinism gene allele that is functional and one that is not?

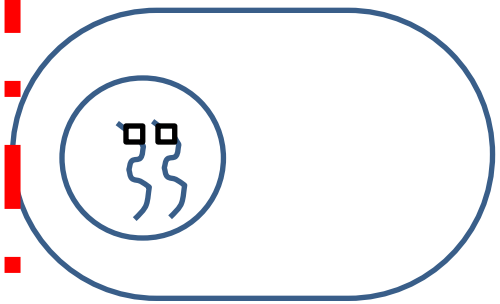
How does DNA change the shape of a protein?

DNA (gene) ⇢ protein ⇢ traits

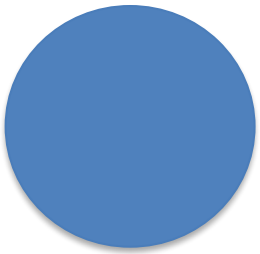


How does DNA change the shape of a protein?

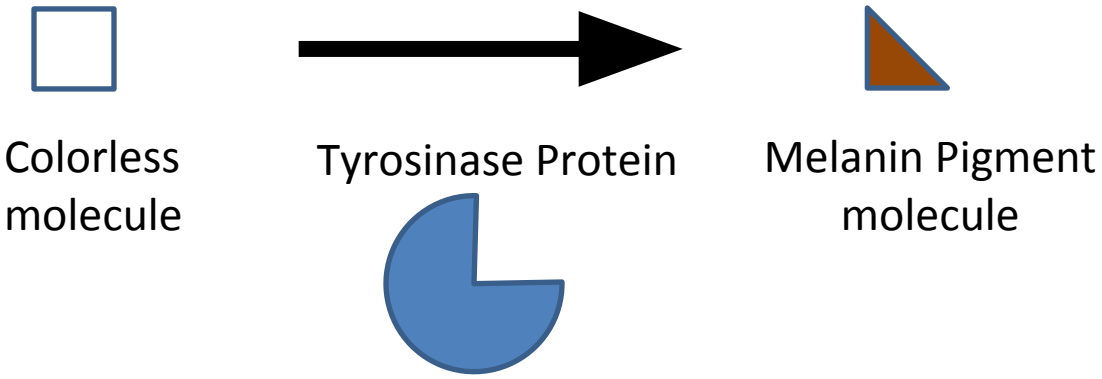
DNA (gene)

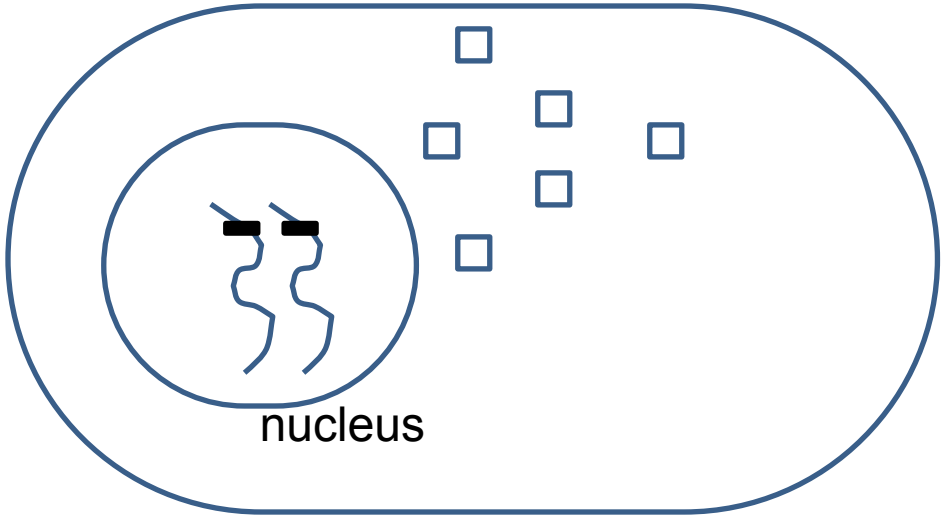


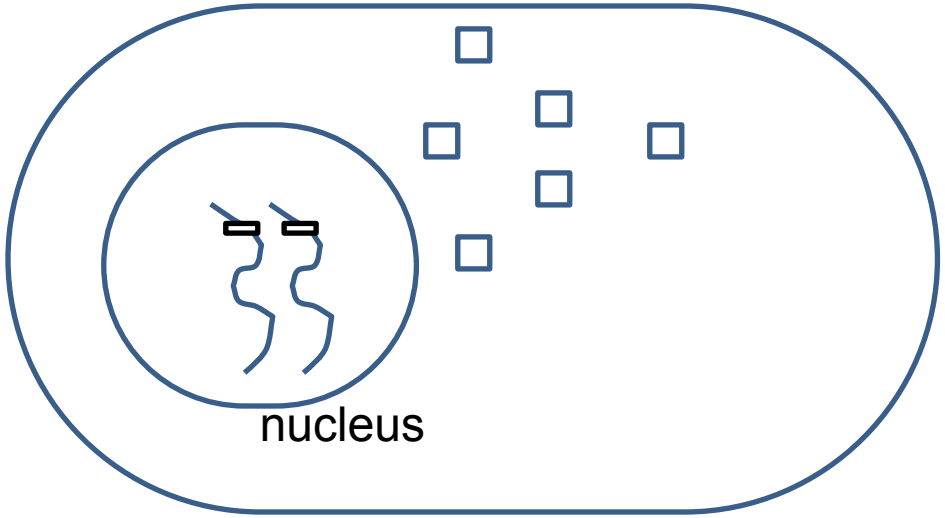
protein

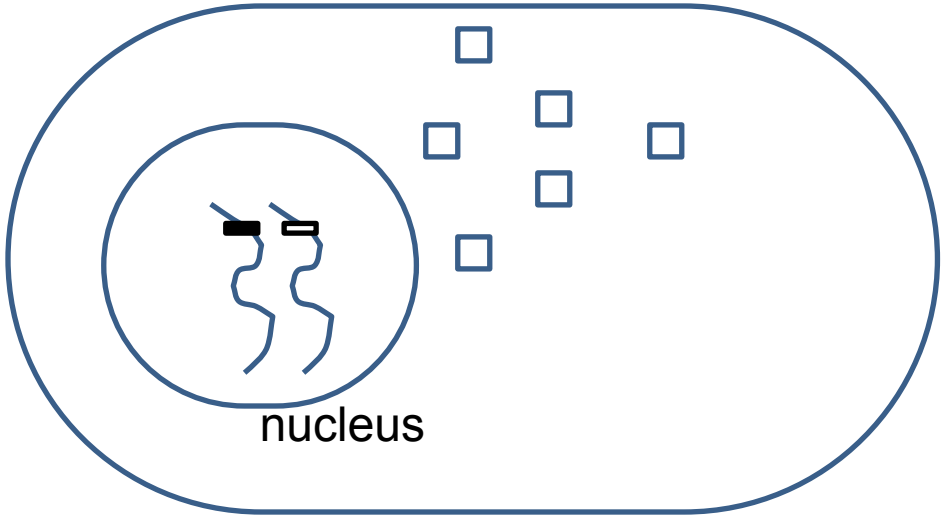


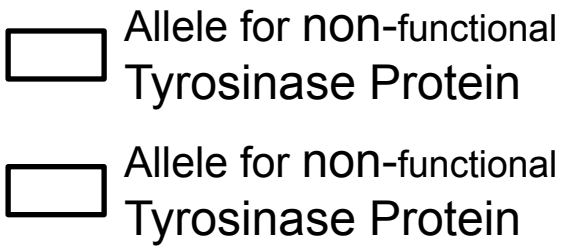
traits

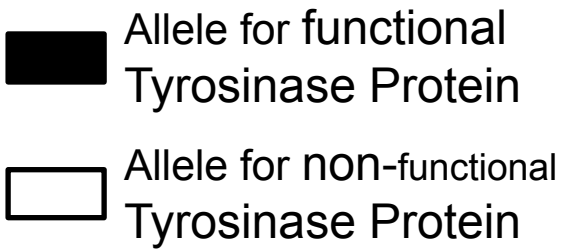

Colorless molecule
Tyrosinase Protein
Melanin Pigment molecule

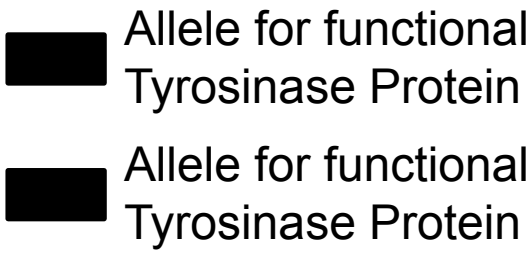

nucleus


nucleus


nucleus


Allele for non-functional
Tyrosinase Protein
Allele for non-functional
Tyrosinase Protein


Allele for functional
Tyrosinase Protein
Allele for non-functional
Tyrosinase Protein


Allele for functional
Tyrosinase Protein
Allele for functional
Tyrosinase Protein