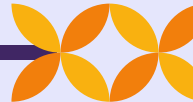




MODEL ORGANISMS

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Objectives:



1. Define model organisms.



2. List the model organisms used in scientific research.



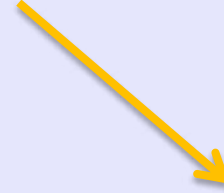
3. Mention the characteristics of a Good Model Organism.



4. List the ethical guidelines used for model organisms in research.



What Are Model Organisms



**Non-human species
widely studied to
understand human
disease.**

**Used by researchers
to study specific
biological processes.**

**They have similar genetic
characteristics to humans
and are commonly used in
research areas such as
genetics, and
neuroscience**



Model organisms used in scientific research



1. The House Mouse (*Mus musculus*)

- ✓ is the most preferred mammalian model organism of many researchers.
- ✓ have short generation time.
- ✓ the time between being giving birth and born - of about ten weeks, and adult mice often reproduce as every three weeks.
- ✓ Used to study all kind of diseases.





2. The Fruit Fly (*Drosophila Melanogaster*)

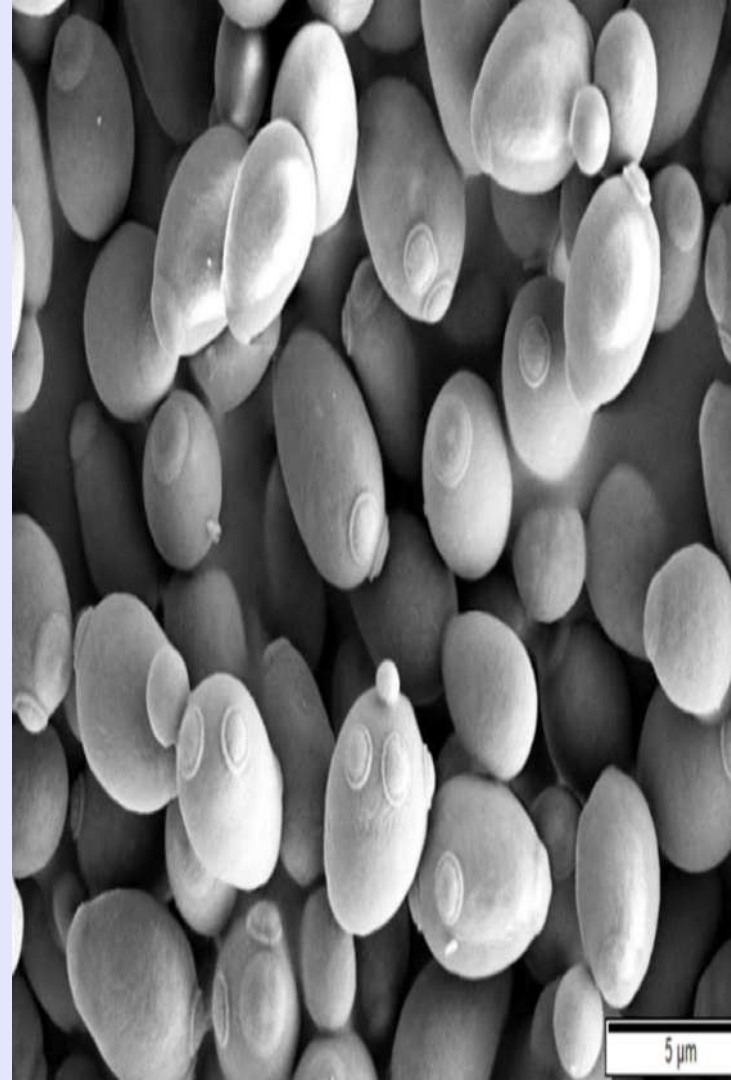
- ✓ It was taken to the forefront by Thomas Hunt Morgan, the "father" of *Drosophila* research.
- ✓ Morgan discovered that the genes were found within chromosomes by using the *Drosophila melanogaster* .
- ✓ Used to study function of genes and genetic mutations.





3. Yeast (*Saccharomyces Cerevisiae*)

- ✓ is the simplest eukaryotic organisms.
- ✓ Yeast is simple, cheap, and easy to work with as they can survive in different environmental conditions. and gets doubled every 2 hours. so they are being **used to study genetics and cell biology.**
- ✓ The cell cycle in yeast is similar to the cell cycle in humans.





4. Zebrafish (*Danio Rerio*)

- ✓ Are recently chosen as a model organism.
- ✓ All the developmental stages can be easily seen and observed under the microscope.
- ✓ They share up to 70% of their genes with humans.
- ✓ Used for the study of developmental biology.



Characteristics of a Good Model Organism



1. A mating produces a large number of offspring.
2. Easy to handle. (For example, hundreds of fruit flies can be kept easily in small bottles).



Ethical guidelines used for model organisms in research



1. Any animal suffering should be avoided, respect for animals dignity.
2. Researchers are responsible for studying whether there are alternatives to experiments on animals.
3. The principle of proportionality: responsibility for considering and balancing suffering and benefit.
4. Requirement of expertise on animals : Researchers a who handle live animals must have adequately.



Summary



Model organism is a species used by researchers to study specific biological processes



study all kind of diseases



study function of genes and mutations genes



study genetics and cell biology



study of developmental biology



References

- [*https://www.vedantu.com/biology/model-organism*](https://www.vedantu.com/biology/model-organism)
- [*https://www.yourgenome.org/facts/what-are-model-organisms*](https://www.yourgenome.org/facts/what-are-model-organisms)
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Thank You

For listening

