Topic :

P- ELEMENT

PIONEER

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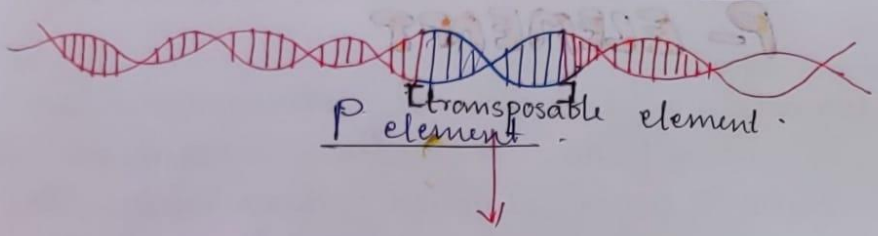
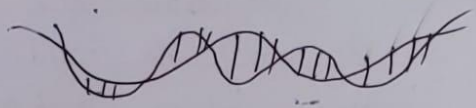
P element are transposable elements that were discovered in Drosophila as the causative agents of genetic traits called hybrid dysgenesis. The transposon is responsible for P trait of P element and it is found only in wild flies. They are also found in many other eukaryotes.

class - II Transposable Element

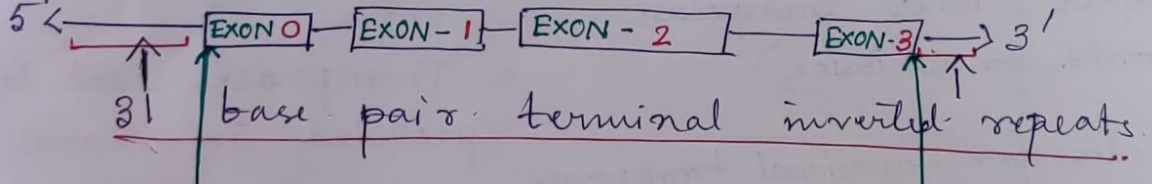


P element.



transfer of transposable element.

P - Element Structure.



Diversity of P-Element

Autonomous

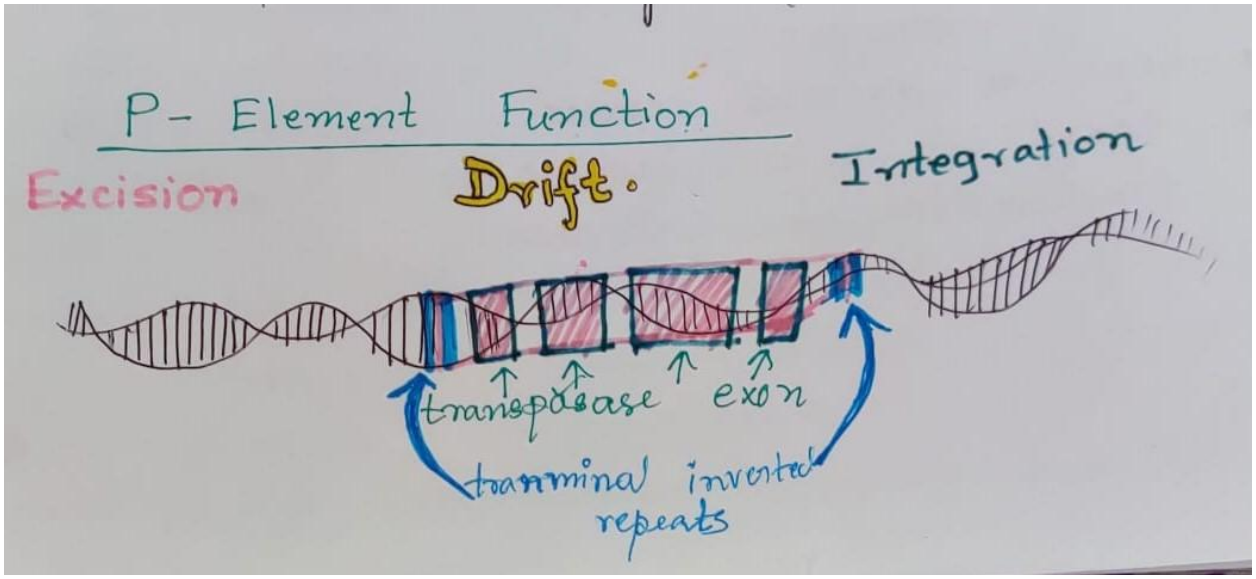
- Intact terminal inverted repeats (where transposase binds for excission)
- codes for functional transposase
- can move without

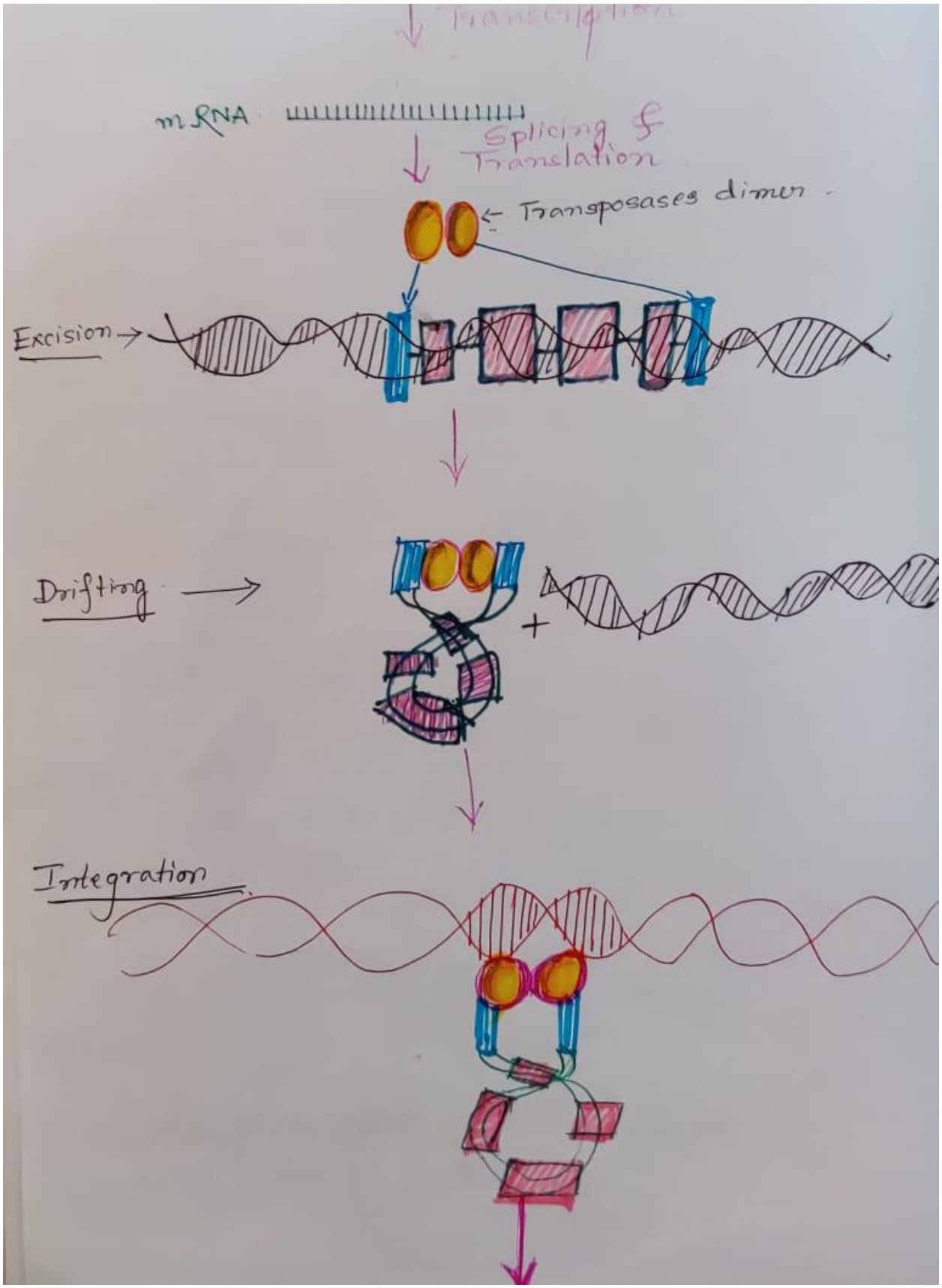
Non-Autonomous

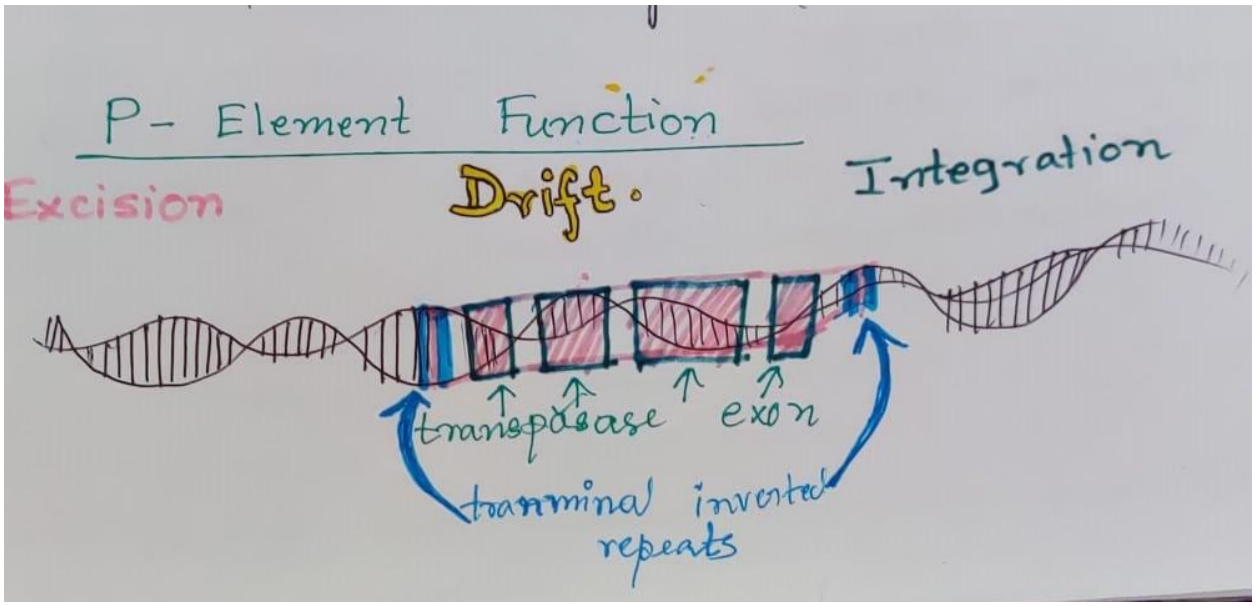
- deletion in transposase gene
- Transposases need to be provided in trans to excise this element.

Immobile

- degraded - inverted repeats
- locked in place because transposases can not excise.


P- Element Function
Excision
Drift.
Integration
transposase
exon
terminal inverted repeats


Transcription
mRNA
Splicing &
Translation
Transposases dimer
Excision
Drifting
+
Integration


P- Element Function
Excision
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Strains of Drosophila.

M Strain	P strain
• No P element in genome.	• Genome contains P - element.

P - strain :-

- no - p element in somatic cells → active transposase not created.
- Transposition occur in only germline cells (cells that give rise to - egg and sperm)

Hybrid Dysgenesis.

Phenomenon resulting from p- element movement in germline cells.

♀ M × ♂ M	♀ M × ♂ P	♀ P × ♂ M
• No p-elements in parents No hybrid • dysgenesis in offspring.	• P -elements given to-offspring via sperm. • Hybrid Dysgenesis.	• P- element repressor active in P strain eggs • No hybrid dysgenesis in offspring.

Using P- element in Research.

Enhancer Trapping.

Modified- P- element inserts in range of an enhancer and- has an expression pattern dictated by the enhancer.