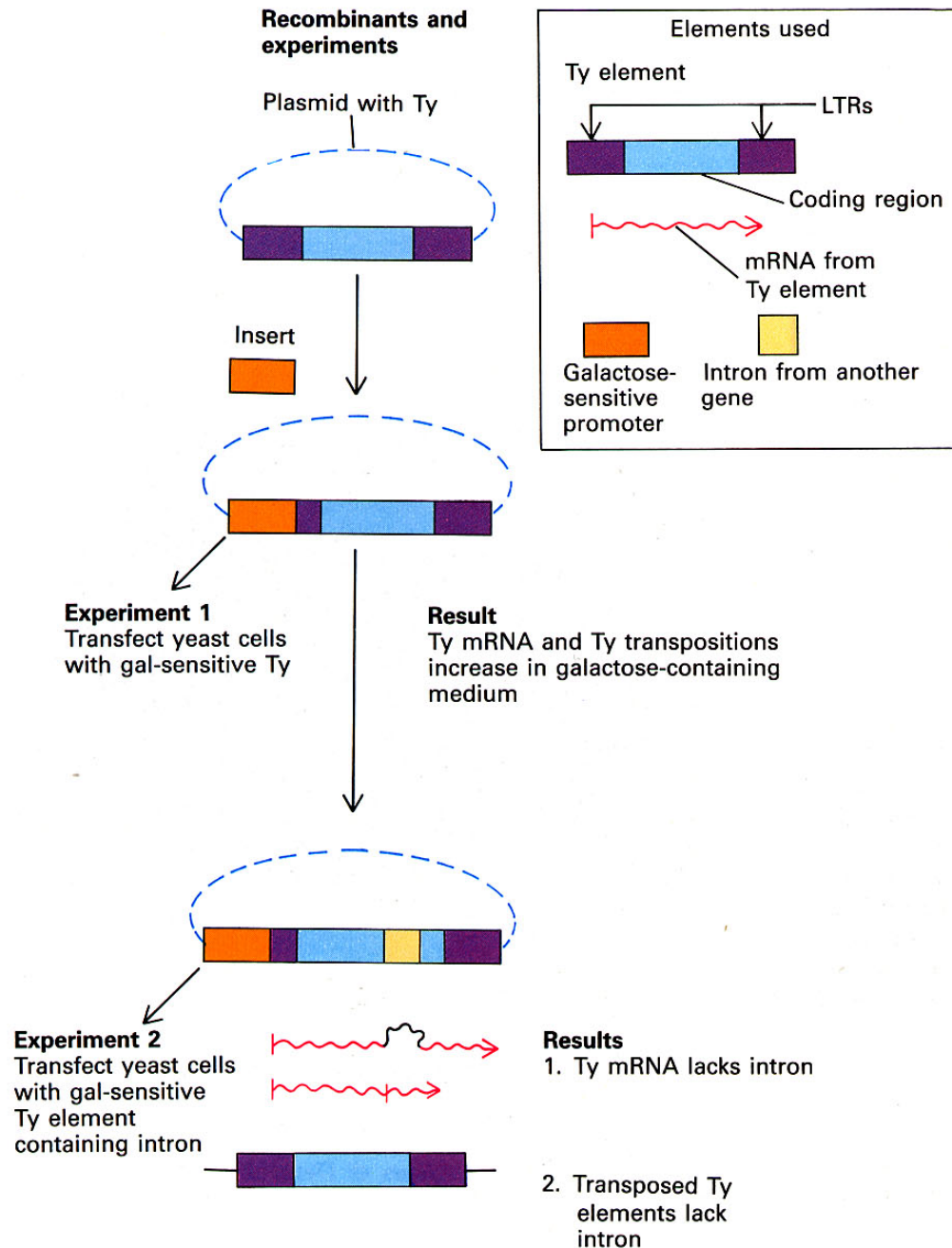
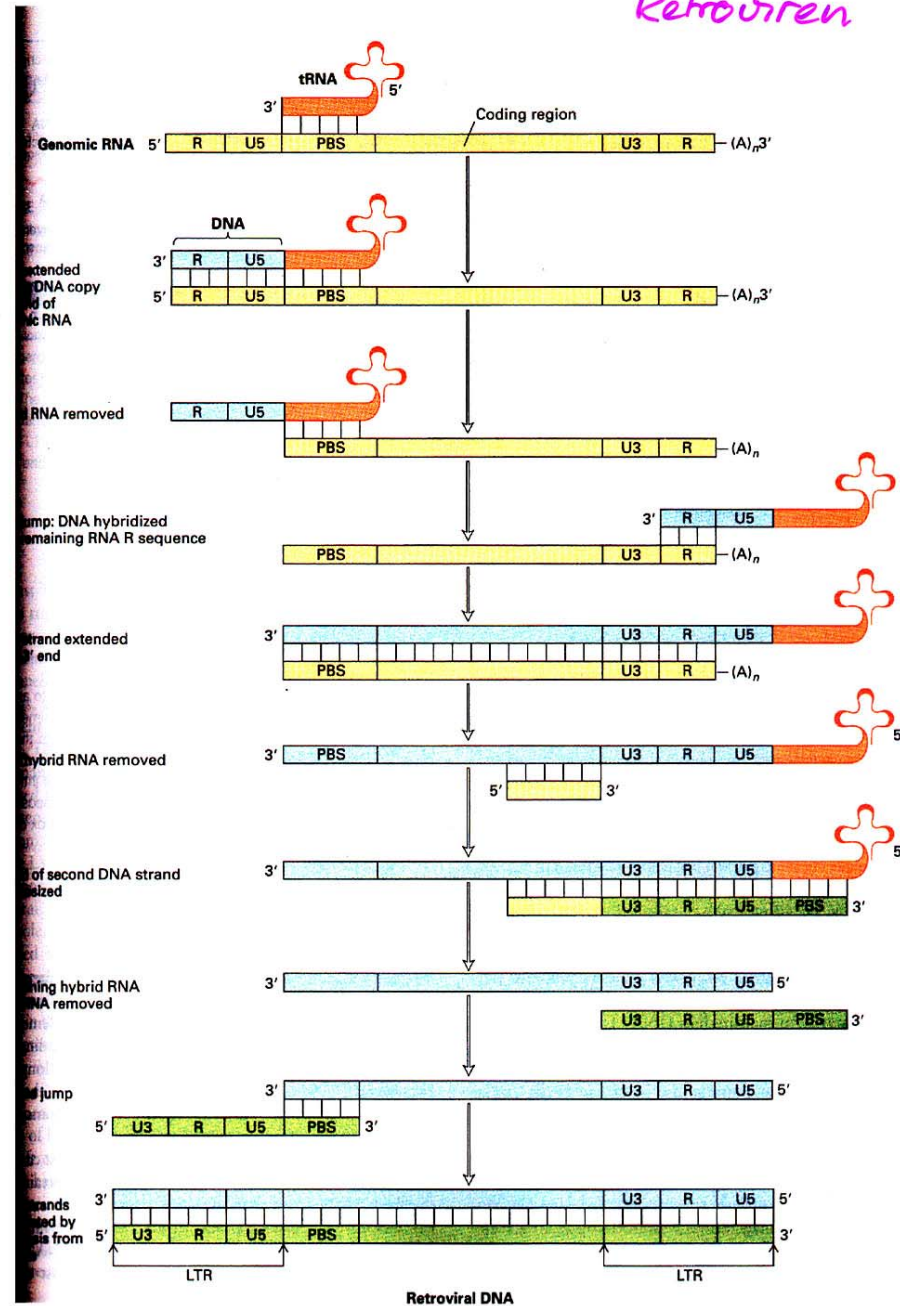


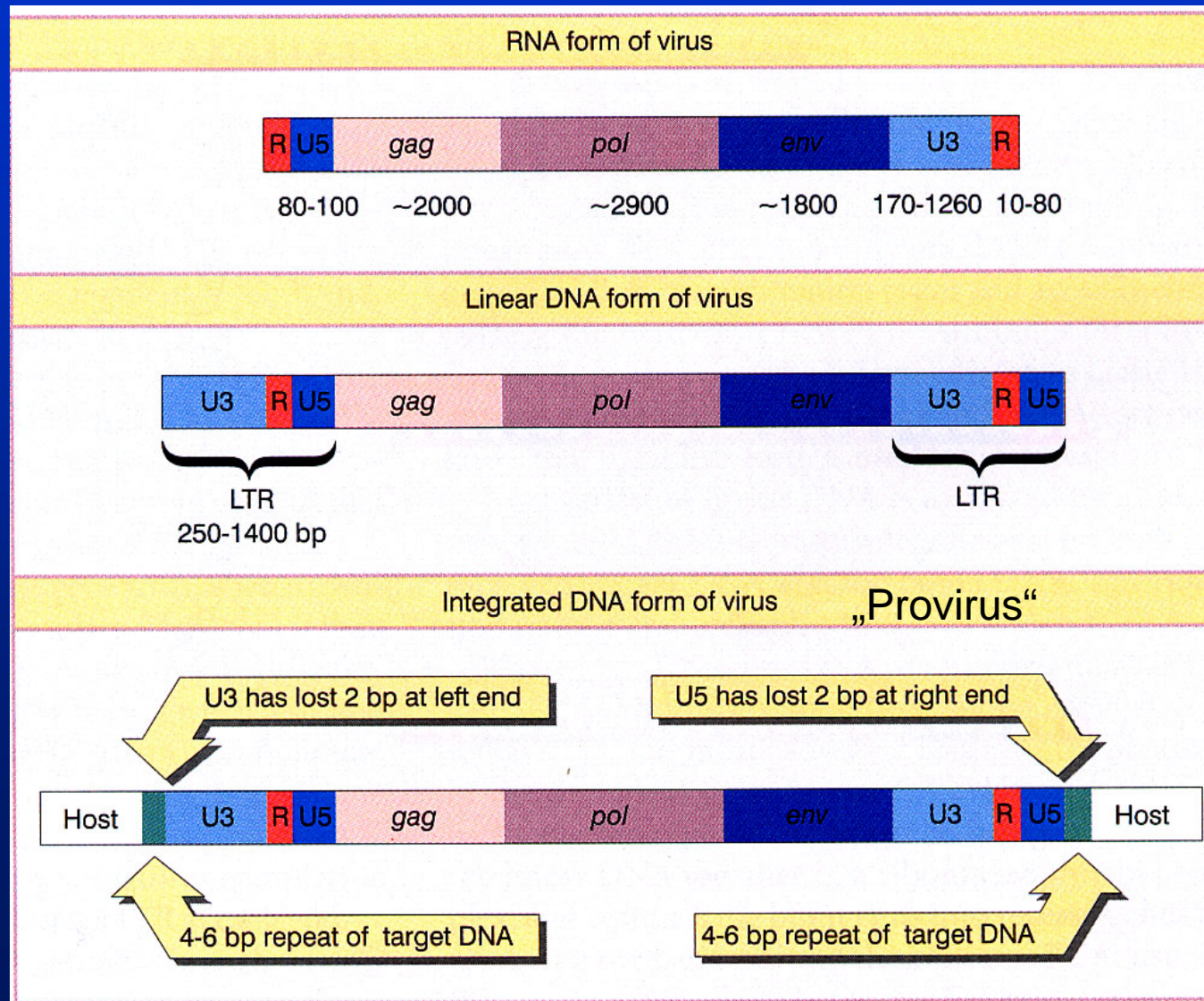
Beweis für Retro- transposition



Replikation und LTR-Entstehung bei Retroviren

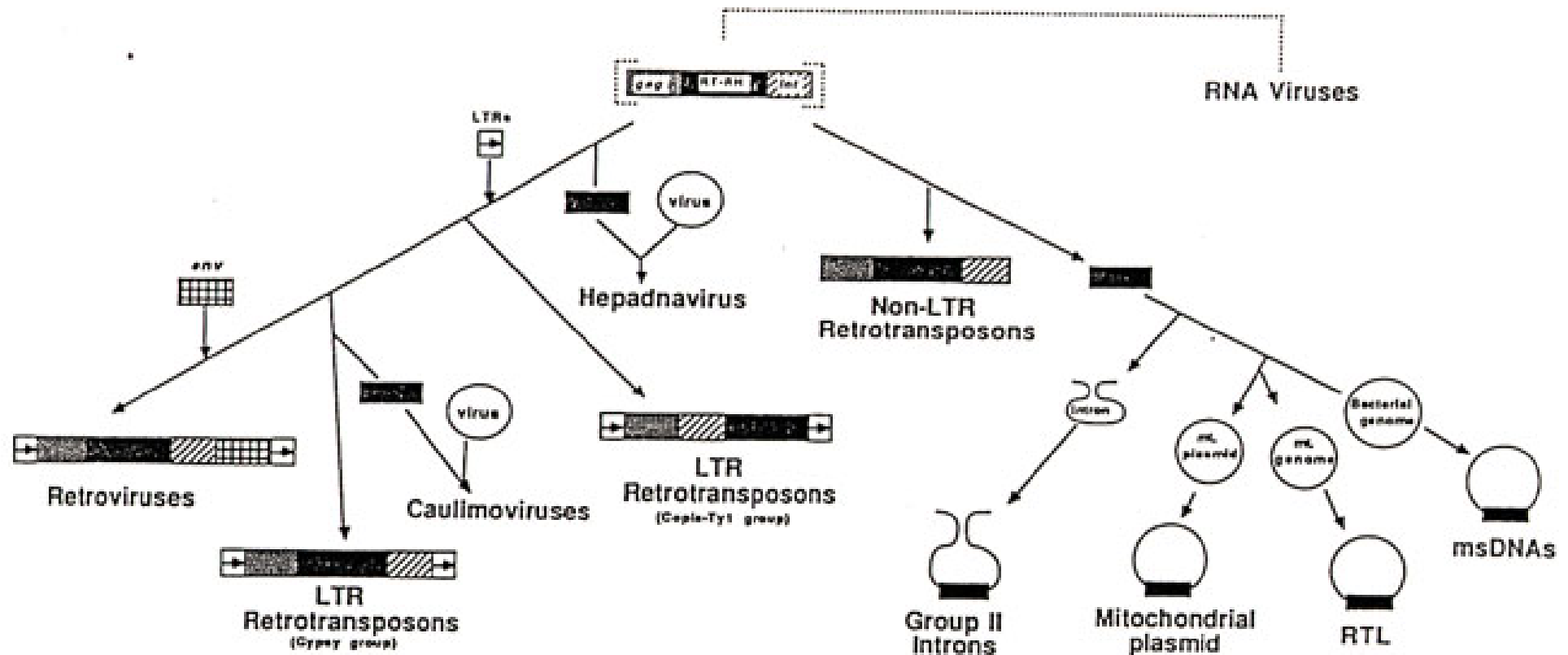


Retroviren unterscheiden sich in der DNA- und RNA-Form

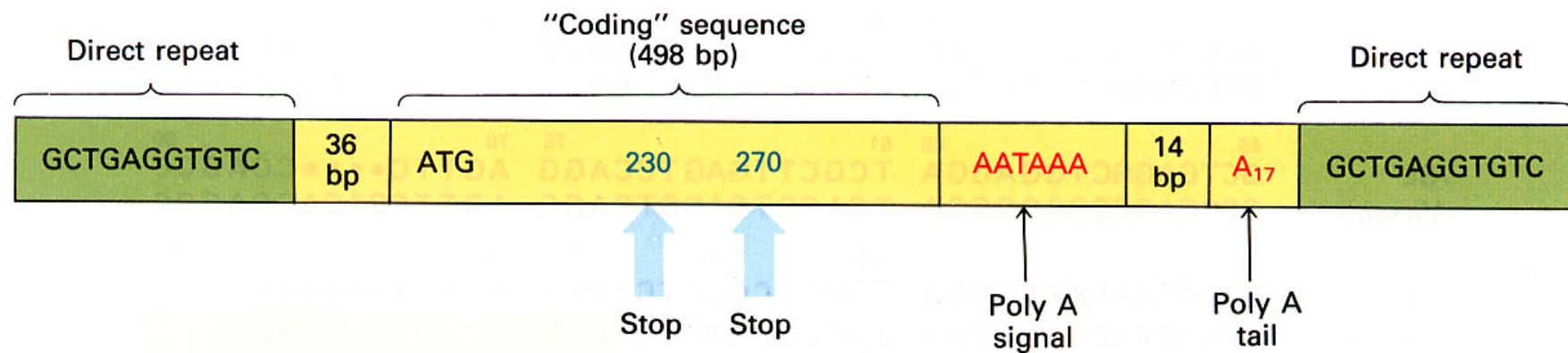


Evolution von Retroelementen: sind alle Retroelemente phylogenetisch verwandt?

J. Xiong and T.H. Eickbush



Prozessierte Pseudogene



DNA-Transposons



Bz

Normal form



bz

Point mutation



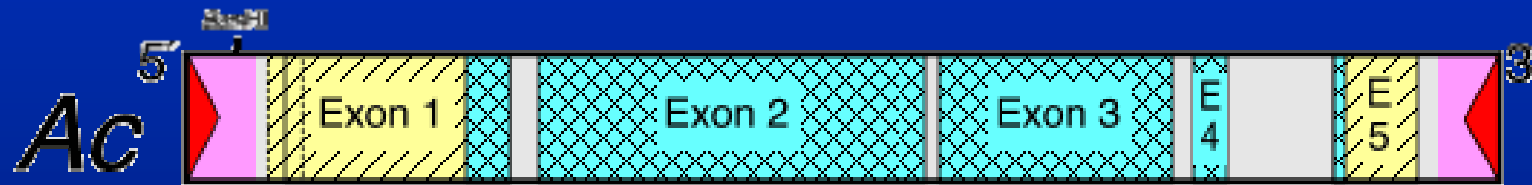
bz-m

Transposable element insertion

DNA-Transposons: Körnerfarbe bei Mais



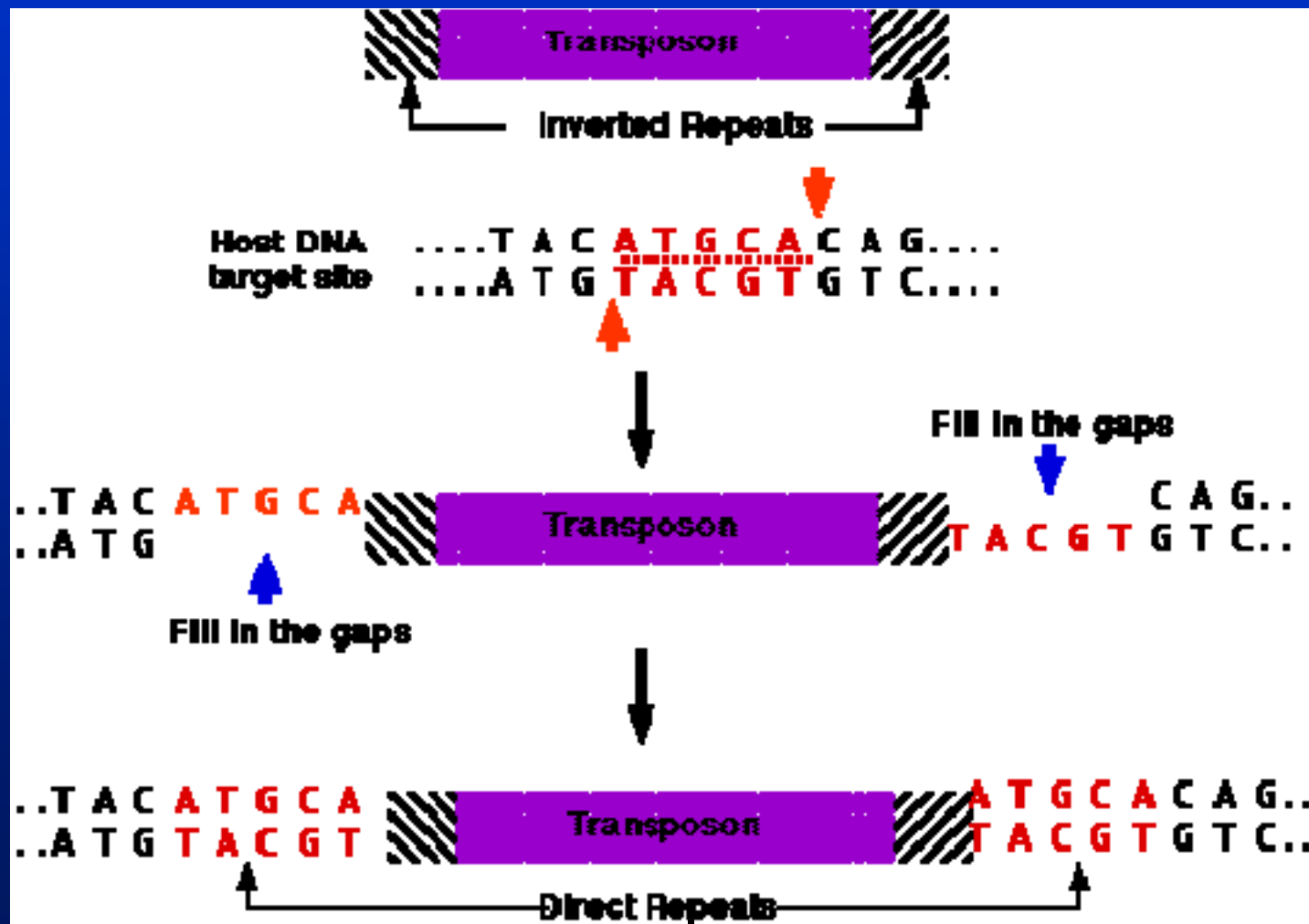
Activator Element „Ac“ bei Mais



Das „Ac“-Element ist durch
kurze „direct repeats“ flankiert

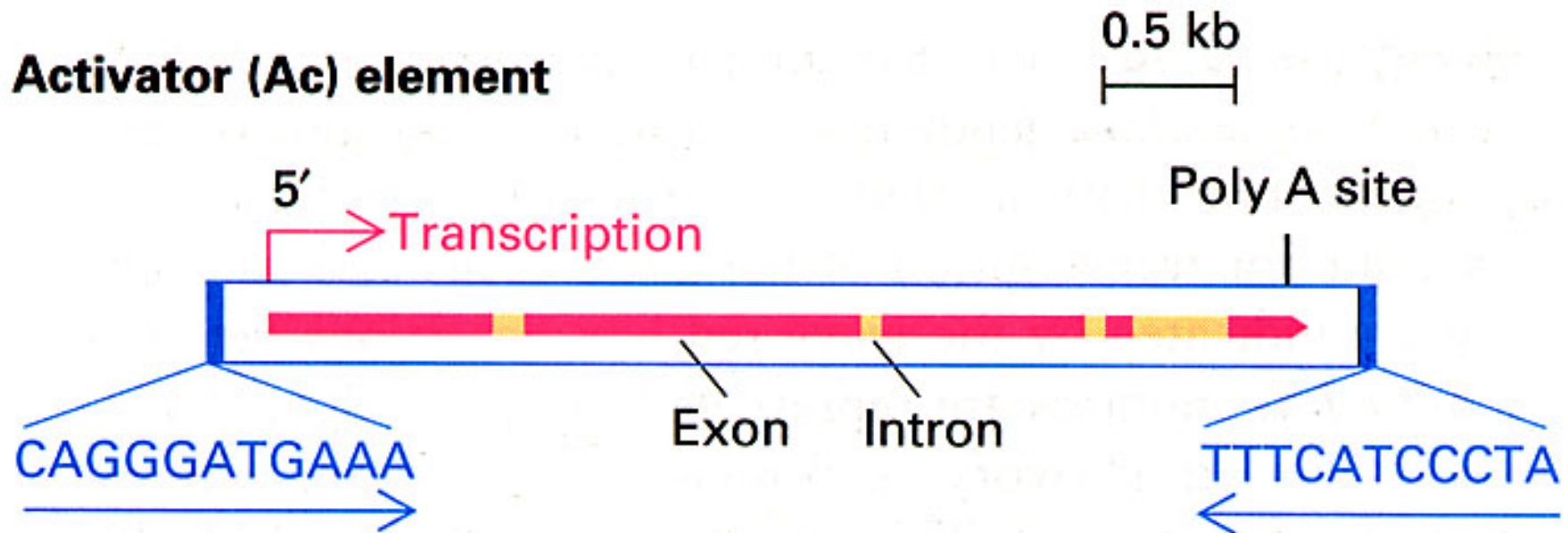


DNA-Transposons erzeugen „target site duplications“

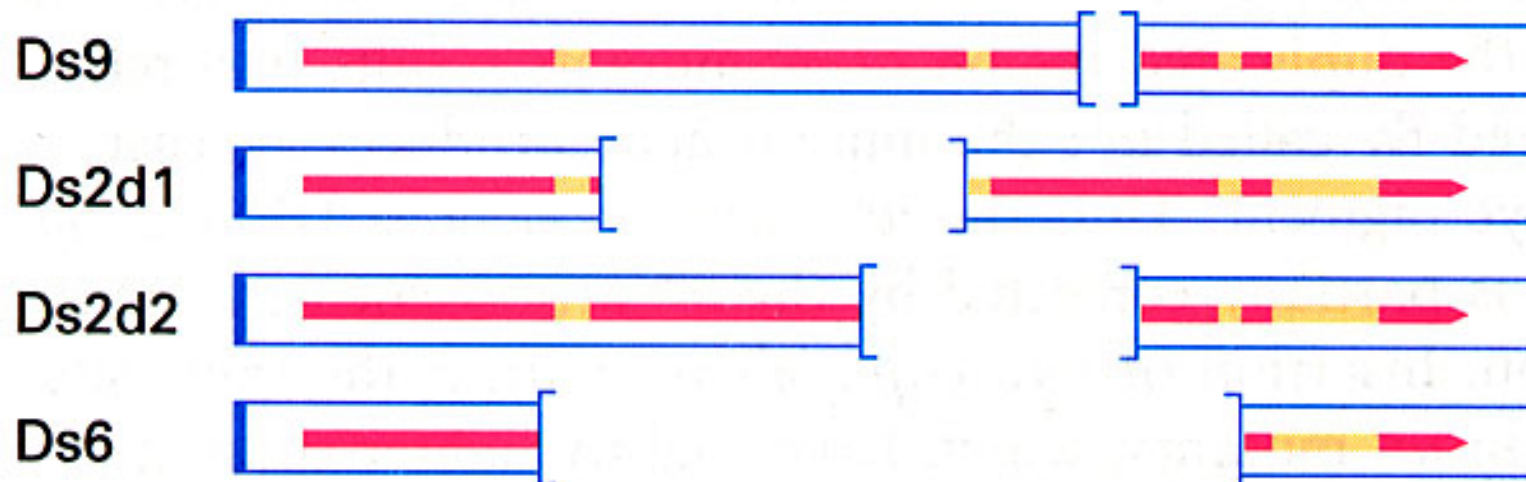


Das AC-Element besitzt eine aktive Transposase, Ds Elemente sind „nicht-autonom“

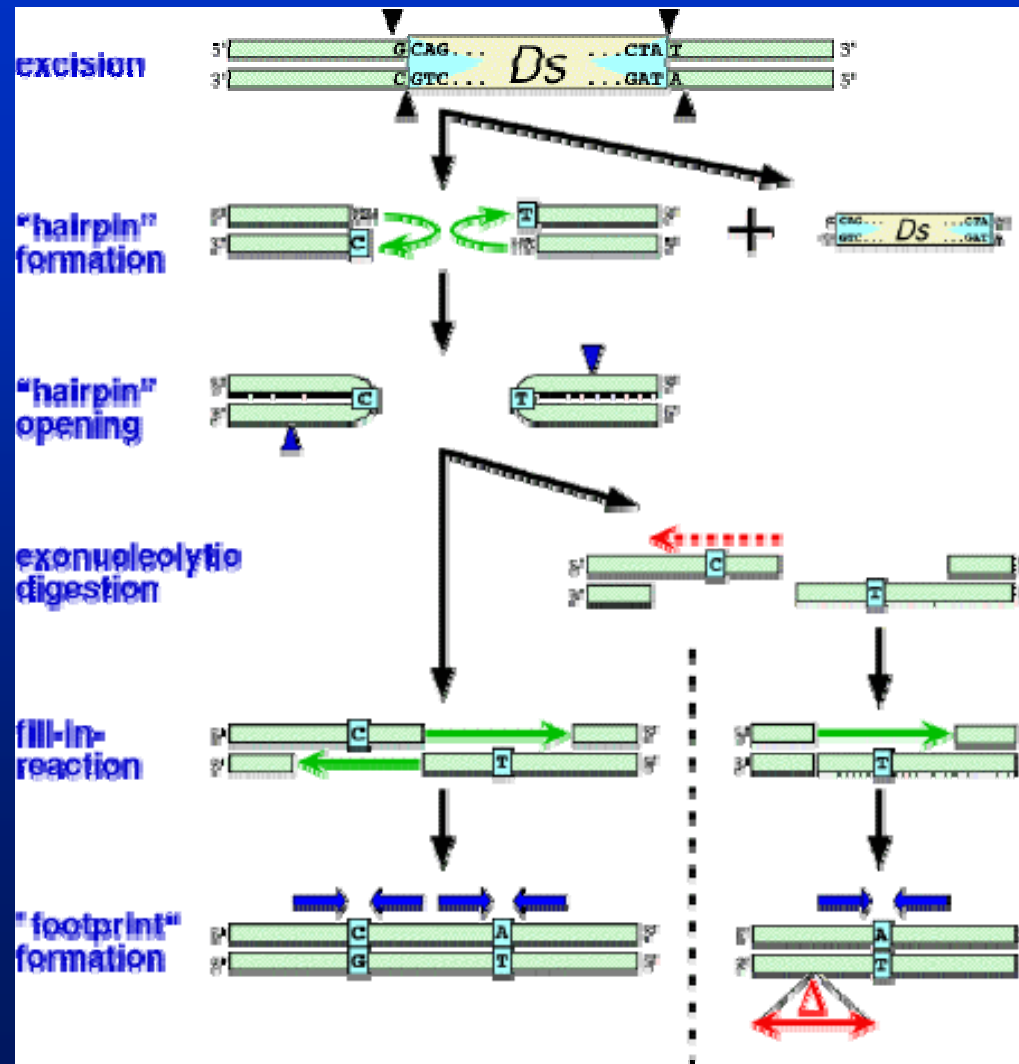
Activator (Ac) element



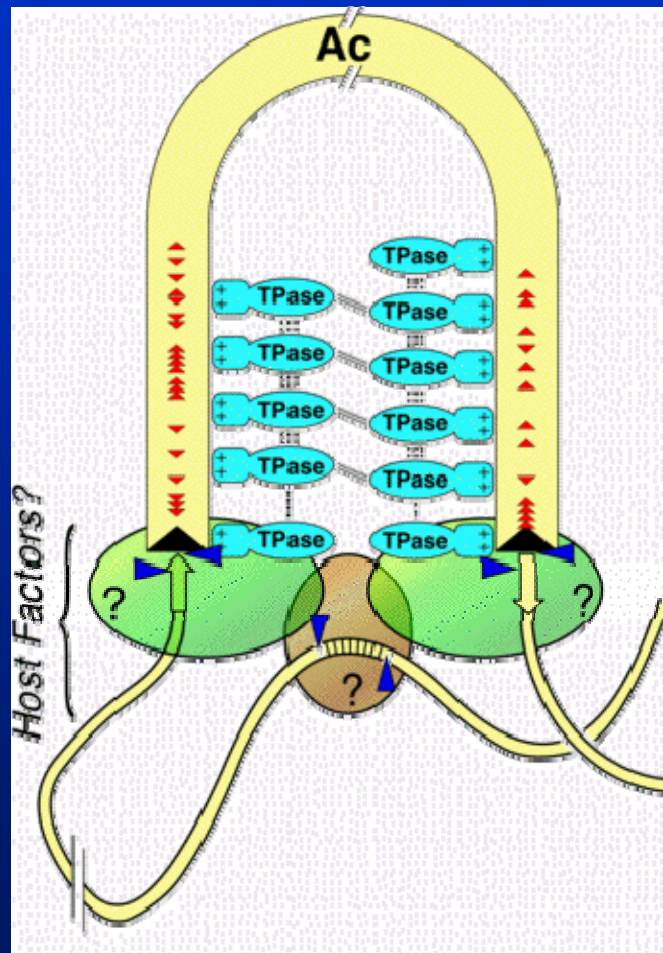
Dissociation (Ds) elements



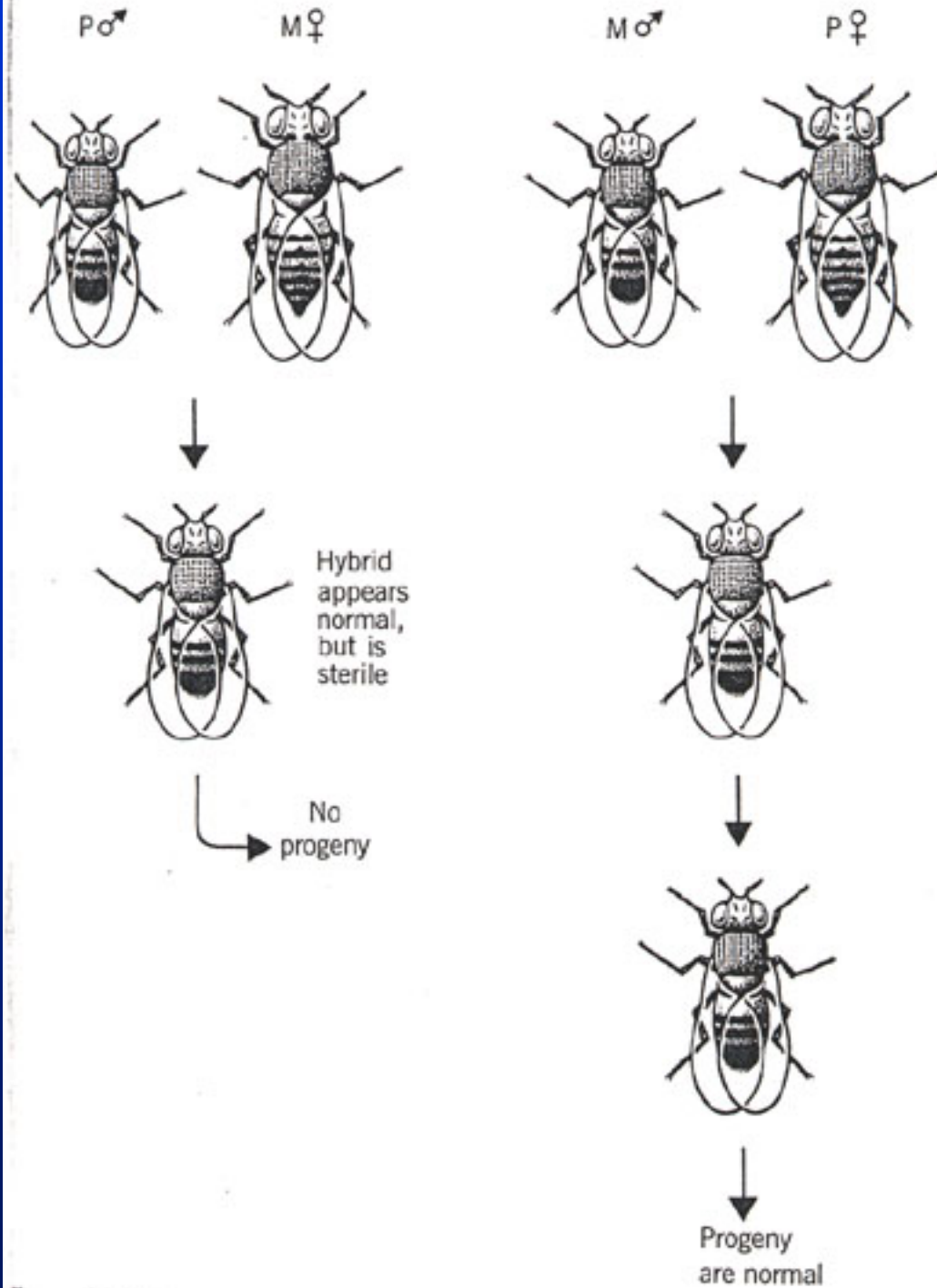
Bei der Exzision entstehen „footprints“



Bei der Transposition spielen die „inverted repeats“ eine große Rolle

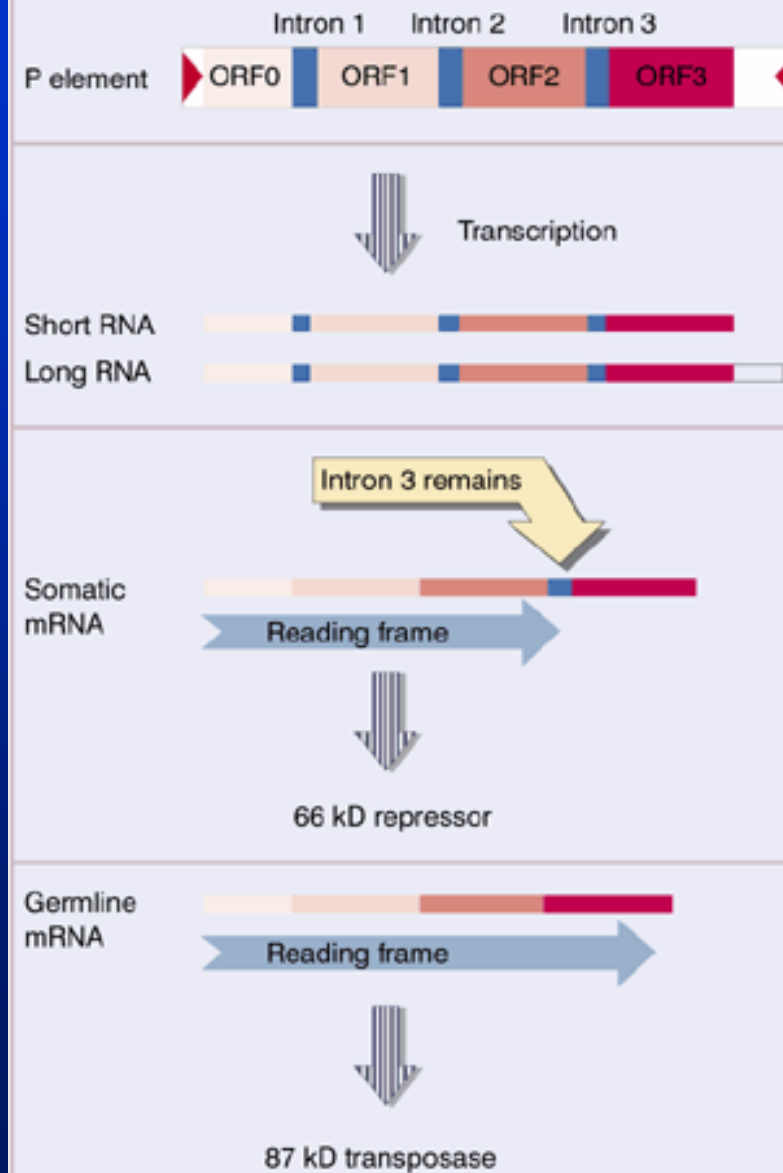


Die P-Elemente von
Drosophila erzeugen
„hybrid dysgenesis“



Die P- Elemente von Drosophila:

Figure 15.26 The P element has four exons. The first three are spliced together in somatic expression; all four are spliced together in germline expression.



Die P-Elemente von Drosophila:

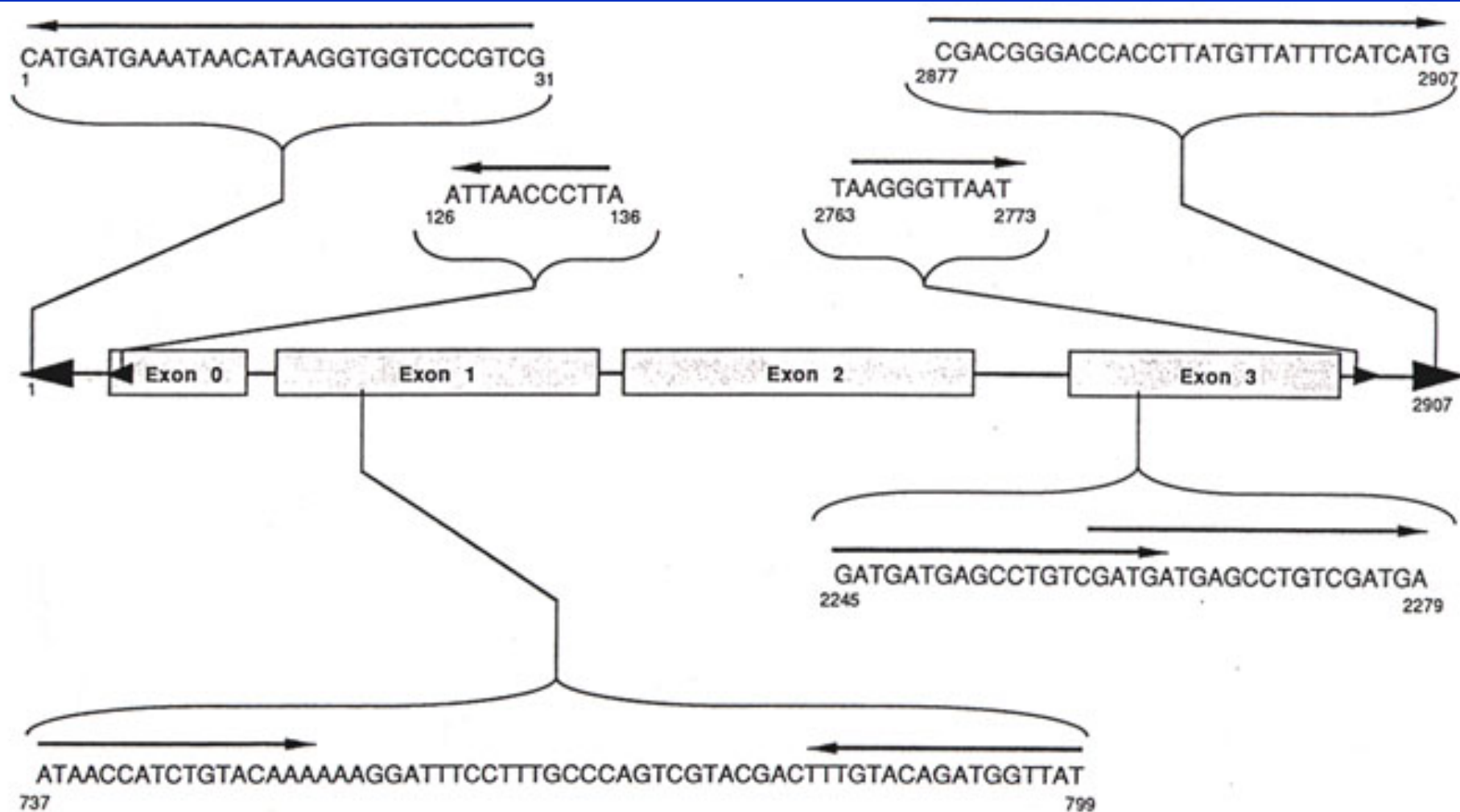
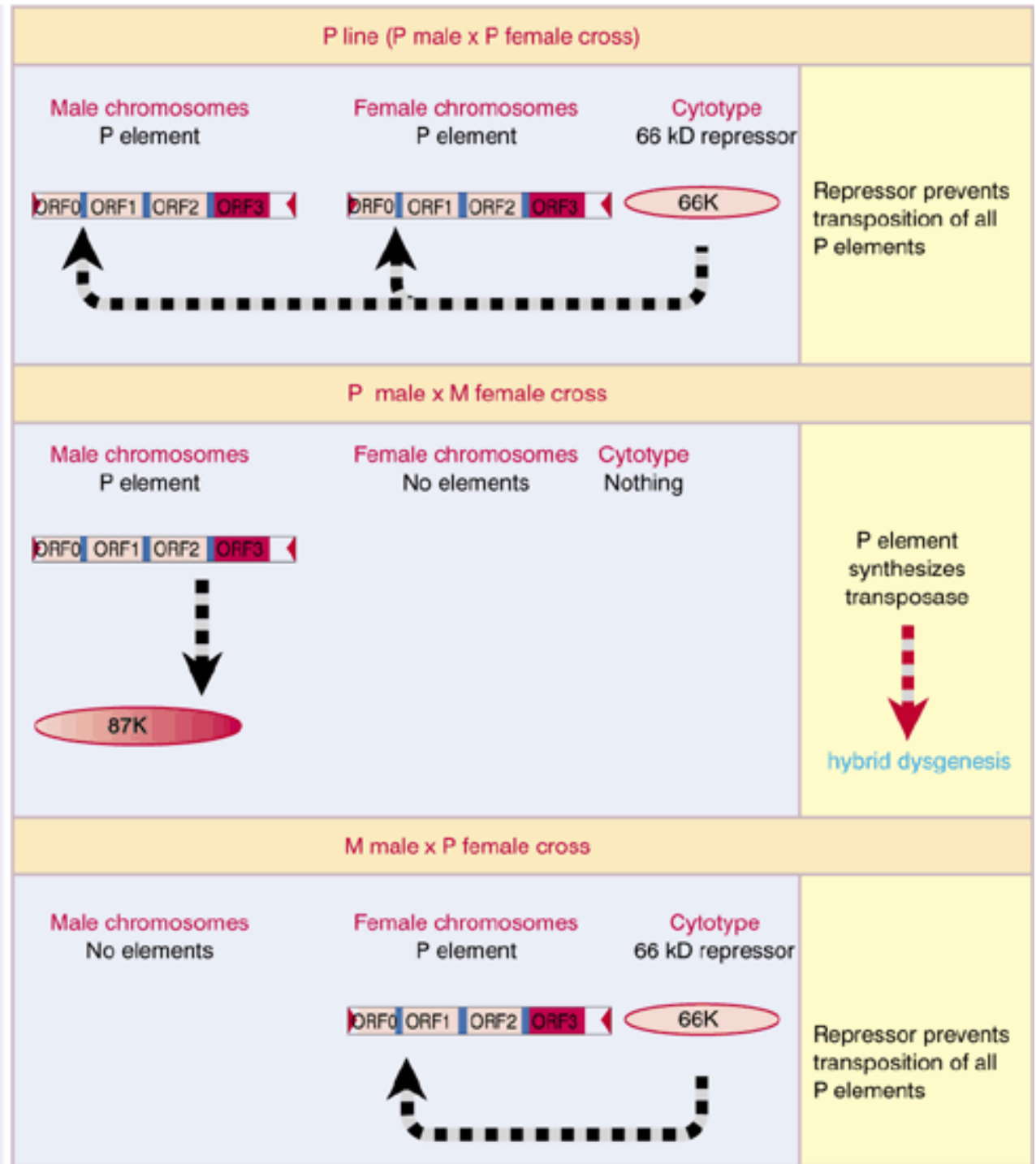


Figure 3. The complete P element and its repeat structures. The sequence was obtained by O'Hare and Rubin (155).

Figure 15.27 Hybrid dysgenesis is determined by the interactions between P elements in the genome and 66 kD repressor in the cytotype.

Die „hybrid dysgenesis“ ist die Folge von einem Wechselspiel von aktiver Transposase in Keimzellen von P-freien Tieren und dem Repressor in P-haltigen Tieren.



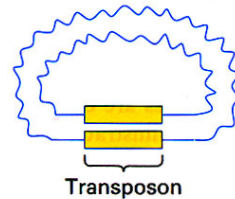
DNA-Transposons beim Menschen

Table 11 Number of copies and fraction of genome for classes of interspersed repeat

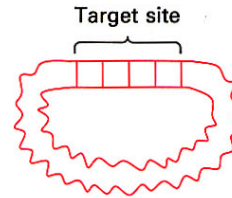
	Number of copies (× 1,000)	Total number of bases in the draft genome	Fraction of the draft genome sequence (%)	Number of families (subfamilies)
DNA elements	294	77.6	2.84	
hAT group				
MER1-Charlie	182	38.1	1.39	25 (50)
Zaphod	13	4.3	0.16	4 (10)
Tc-1 group				
MER2-Tigger	57	28.0	1.02	12 (28)
Tc2	4	0.9	0.03	1 (5)
Mariner	14	2.6	0.10	4 (5)
PiggyBac-like	2	0.5	0.02	10 (20)
Unclassified	22	3.2	0.12	7 (7)

Mechanismus der replikativen Transposition

Circular plasmid
with transposon

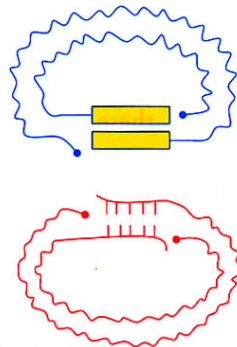


Target DNA
(bacterial chromosome)

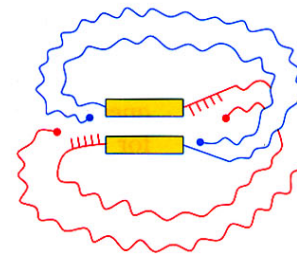


◀ **Figure 10-24** Proposed model for duplication and integration of a bacterial transposon and a circular recipient chromosome (*top*). This process results in two copies of the transposon, one inserted at the target site in the recipient chromosome with a target site duplication of five bases. [See J. Shapiro, 1979, *Proc. Nat'l Acad. Sci. USA* 76:1933; K. Mizuuchi, 1983, *Cell* 35:785.]

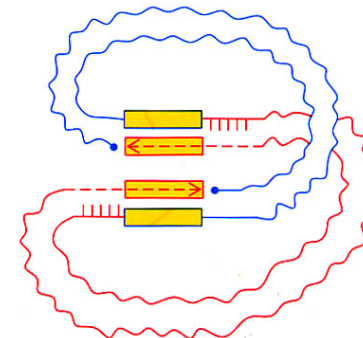
(a) Staggered cuts are made at ends of transposon and target site



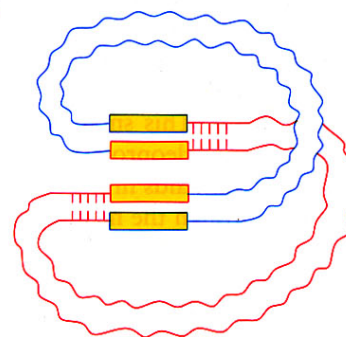
(b) Strand transfer occurs between 3' ends of transposon and 5' ends of target DNA



(c) Copying of transposon begins at free 3' ends of target DNA, beginning with duplication of target site

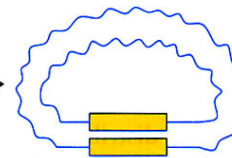


(d) Completion of replication yields cointegrate containing plasmid DNA, target DNA, and two copies of transposon. Cointegrate is resolved by site-specific recombination.



Yields

Circular plasmid
with transposon



and

Target DNA with copy
of transposon inserted
between duplicated
target sites

