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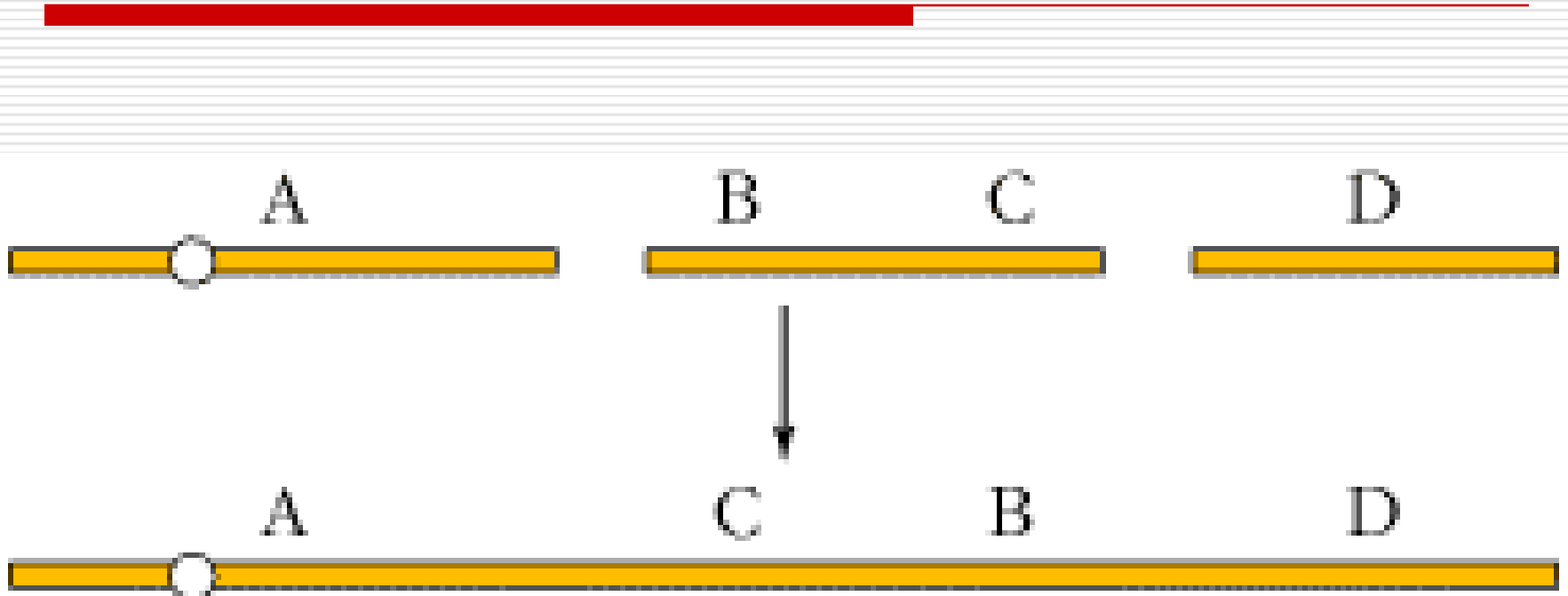
## 第三节

## 倒位 (Inversion)

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倒位：染色体在自然或处理后发生断裂，个别染色体节段发生位置上的**前后倒置**，而后重复愈合。

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# 一、类别

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臂内倒位 (paracentric)

臂间倒位 (pericentric)

● A B C D E

● A D C B E

臂内倒位

A D C B E ●

臂间倒位

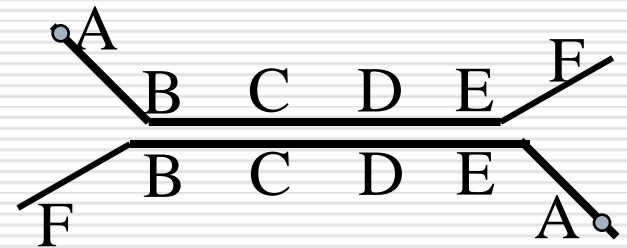
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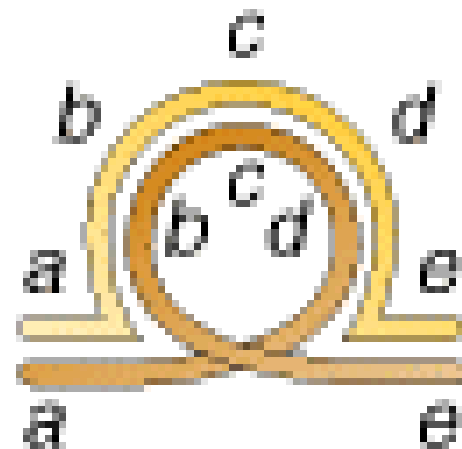
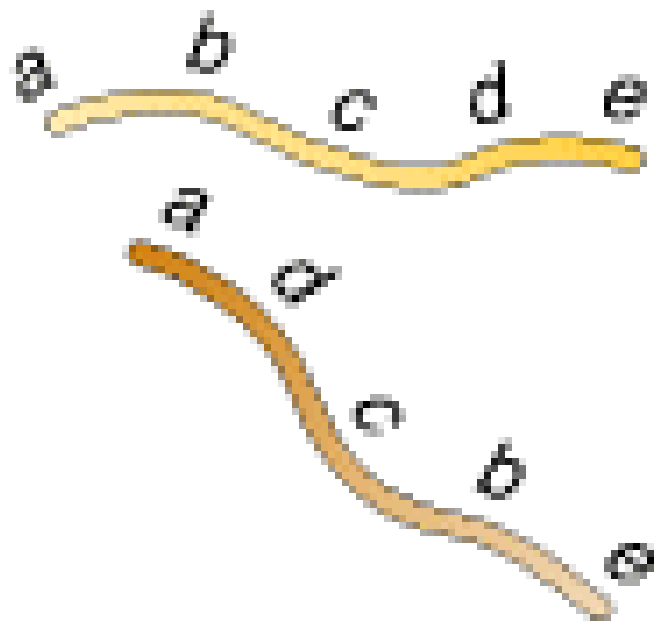
## 二、细胞学鉴定

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倒位杂合体



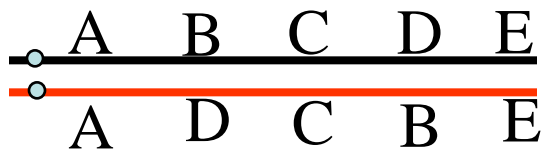


(a)

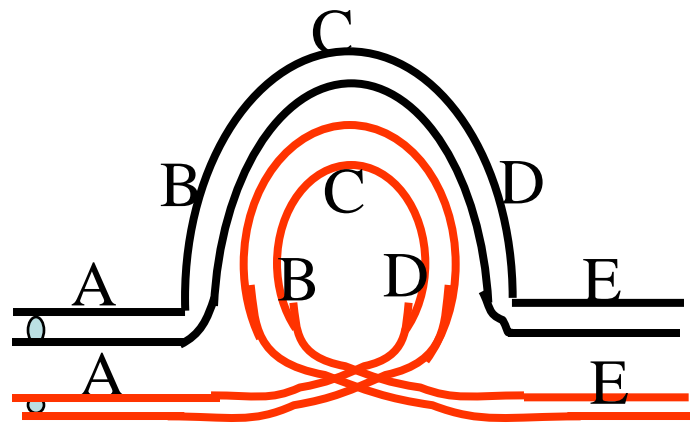
# 多线染色体倒位环光镜照片



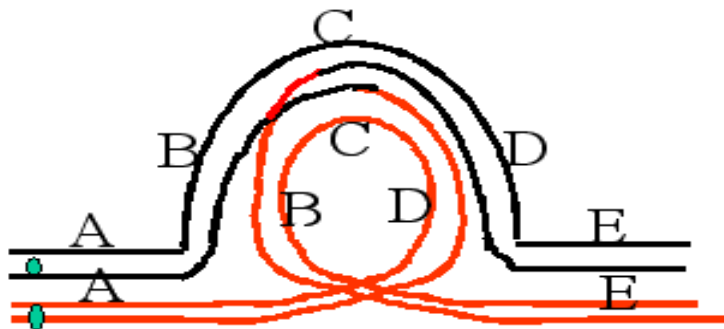
# 臂内倒位



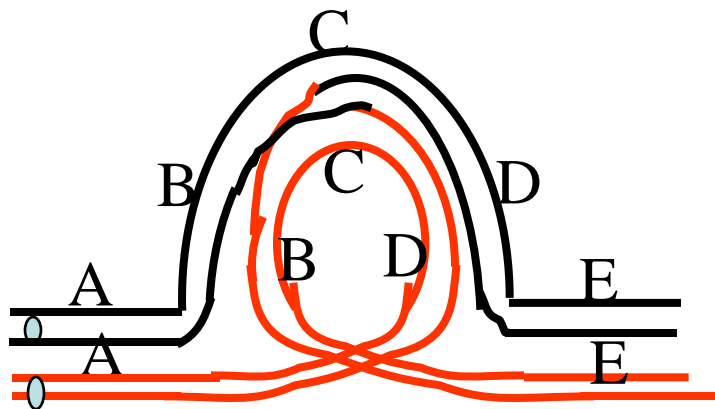
倒位杂合体



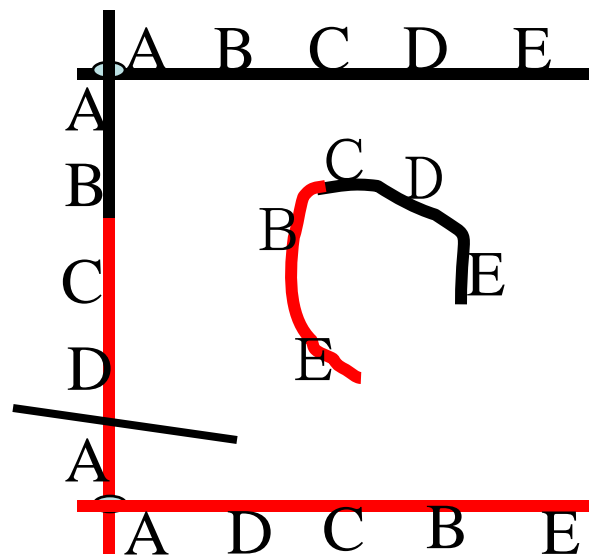
配对



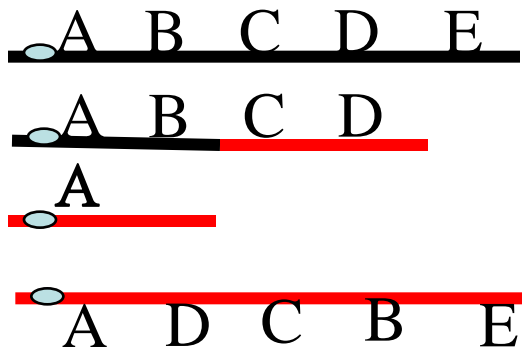




交换



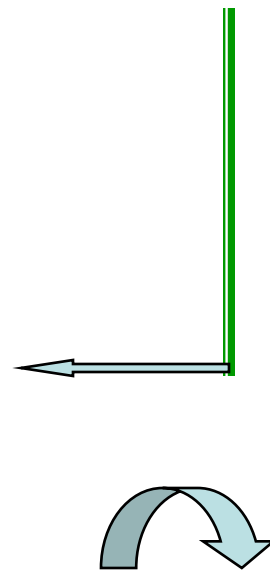
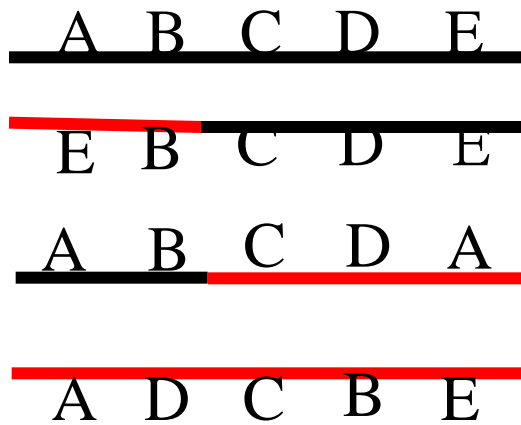
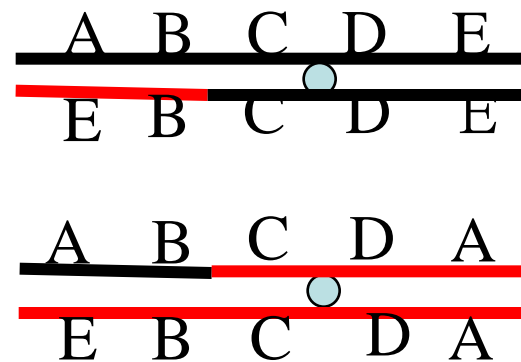
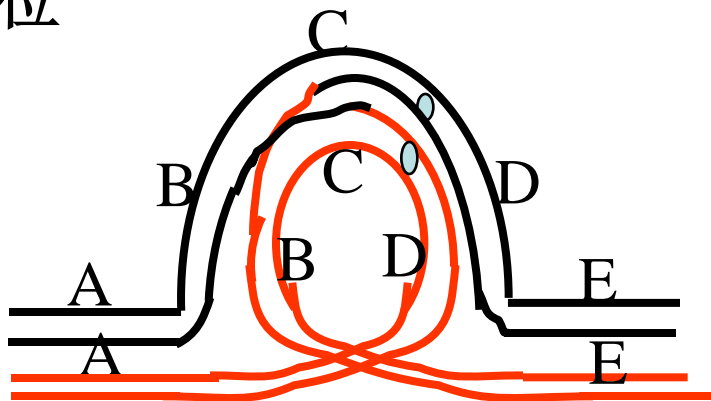
桥和断片图像

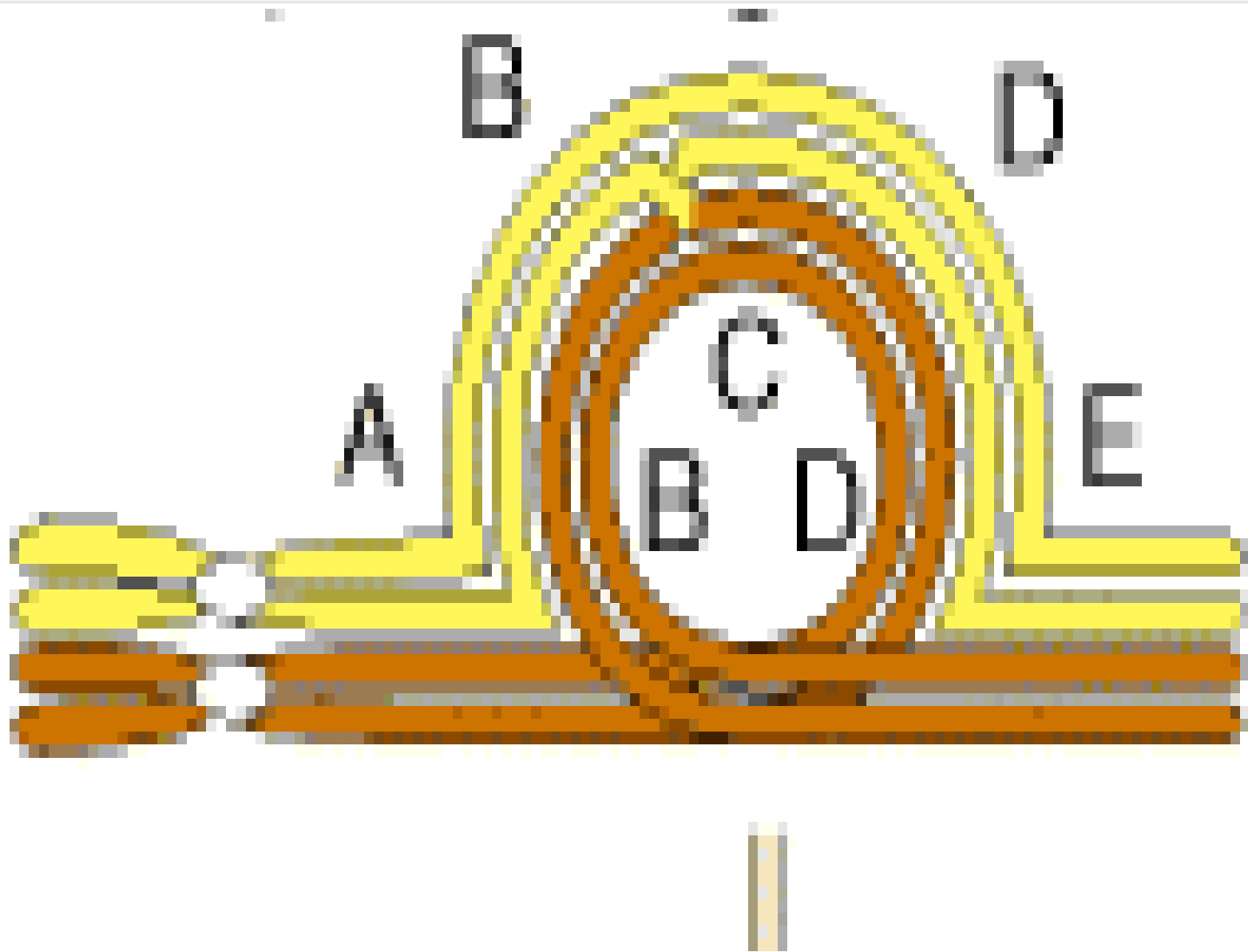


配子

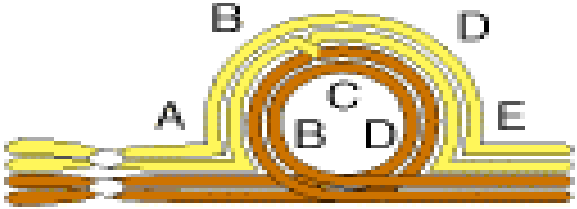


# 臂间倒位

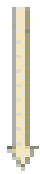
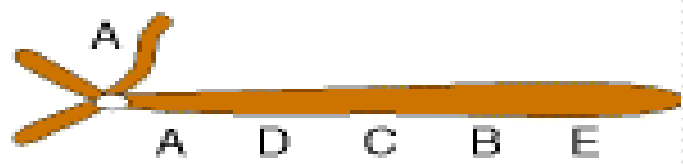
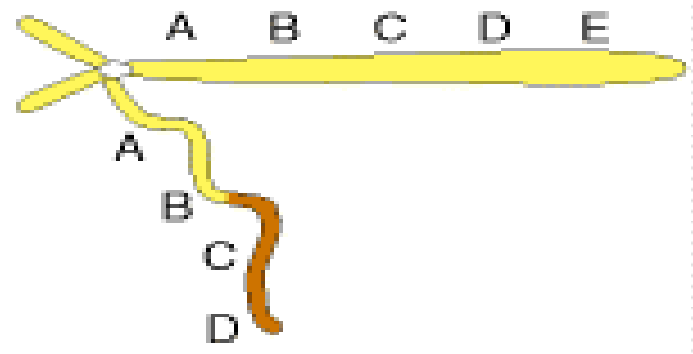
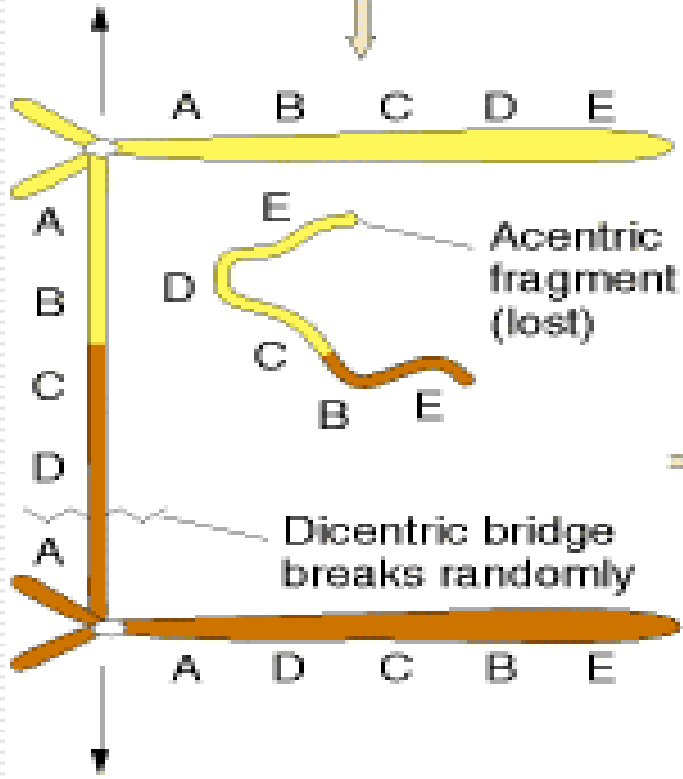


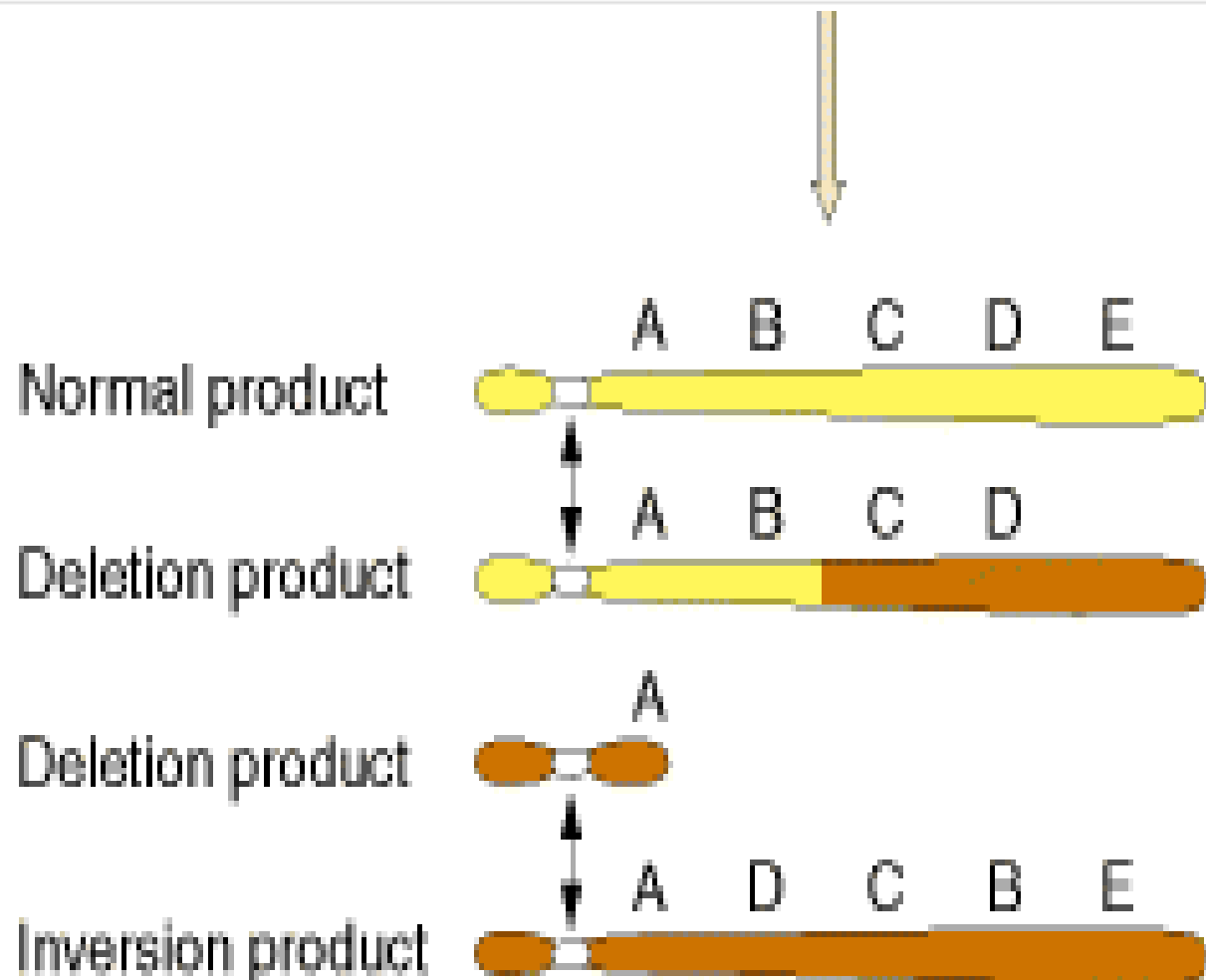


Crossover  
in loop



Segregation





# 三、倒位的遗传学效应

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■ 交换的抑制作用

■ 部分配子不育性

■ 推动物种进化形成的因素之一

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# 四、倒位的应用

例：D 展翅基因

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**D/ +** × **D/ +**



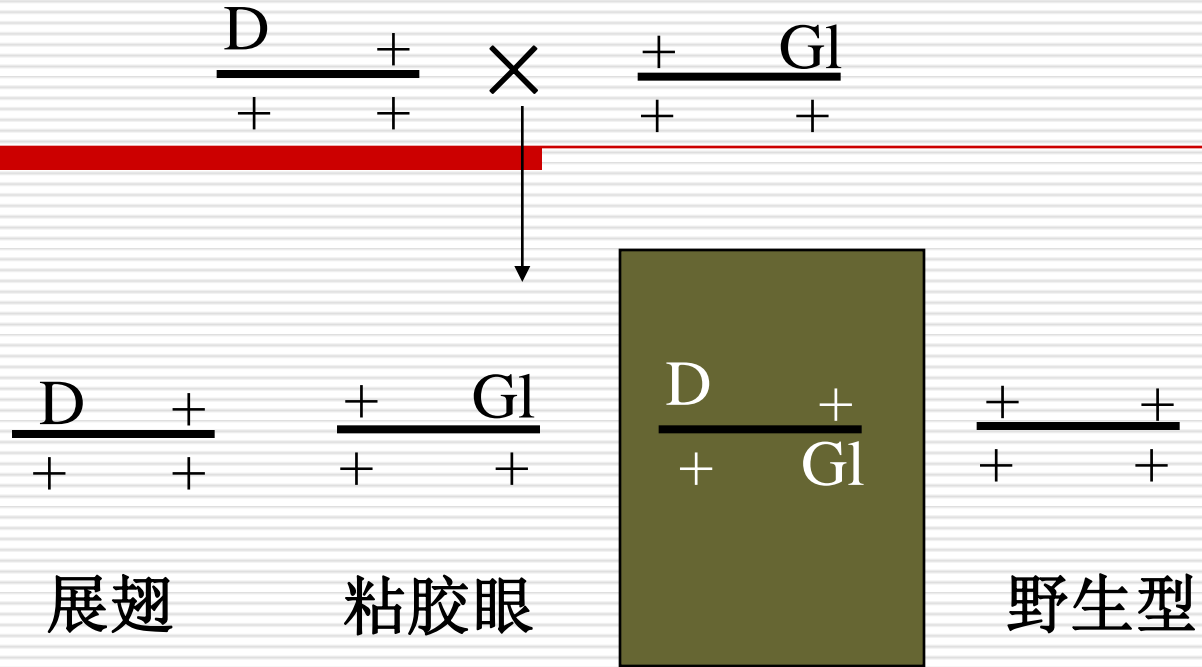
**D/D**      **D/+**      **+/+**

死亡

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# G1 粘胶眼

❖ 利用连锁



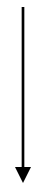
永久以杂和状态存在，同时保存两个致死基因的品系称为永久杂种或平衡致死品系



❖ 利用交换抑制



$$\frac{\text{Cy}}{+} \frac{+}{\mathbf{L}} \times \frac{\text{Cy}}{+} \frac{+}{\mathbf{L}}$$



$$\frac{\text{Cy}}{\text{Cy}} \frac{+}{+}$$

$$\frac{+}{+} \frac{\mathbf{L}}{\mathbf{L}}$$

A red rectangular box containing the genotype  $\frac{\text{Cy}}{+} \frac{+}{\mathbf{L}}$ .