

# HAFTA II

## EKTOPIK GEN İFADESİNİN REGÜLASYONU

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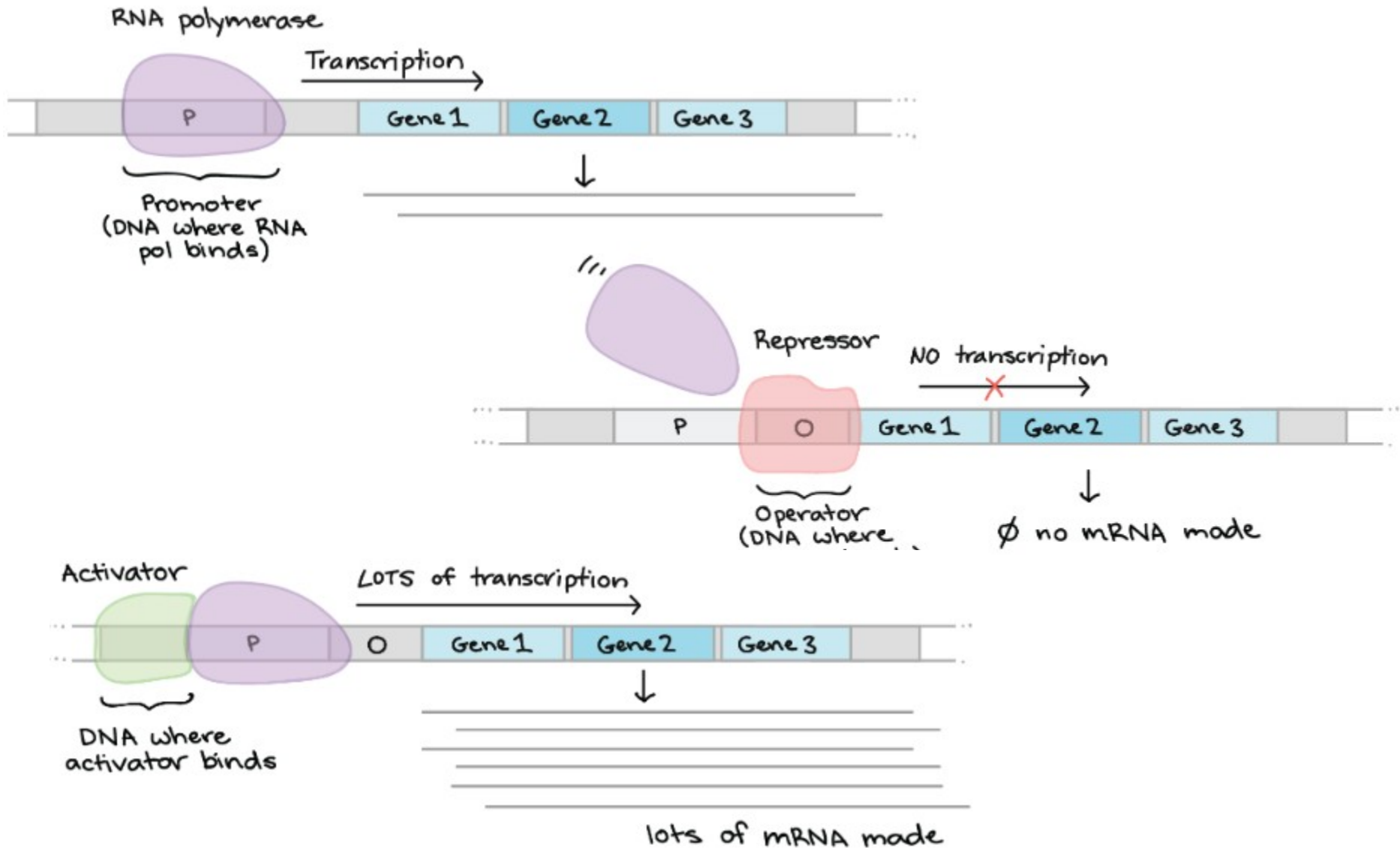
# Ektopik Gen İfadesi

- Gen ürünleri, bir hücrenin hayat döngüsünün herhangi bir aşamasında geri döndürülebilen mekanizmalarla manipüle edilebilir.
- Ektopik olarak kontrol edilen gen ürününün ilgili hücredeki ifade miktarında azalma/baskılama ya da artma/indüklenme veya ifade edilme zamanında değişiklikler oluşturulabilir.  
(Ektopik: Normalde olması gereken yerde olmayan)

# Bakteriyel İfade Sistemleri

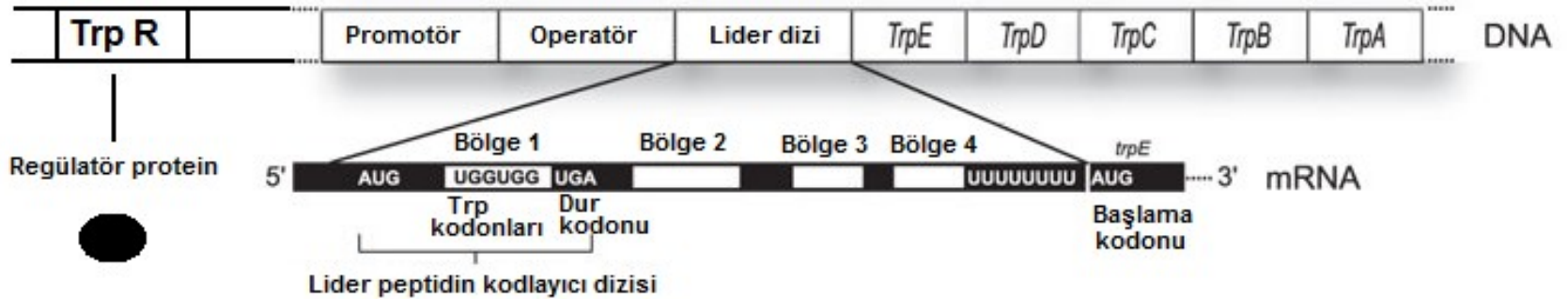
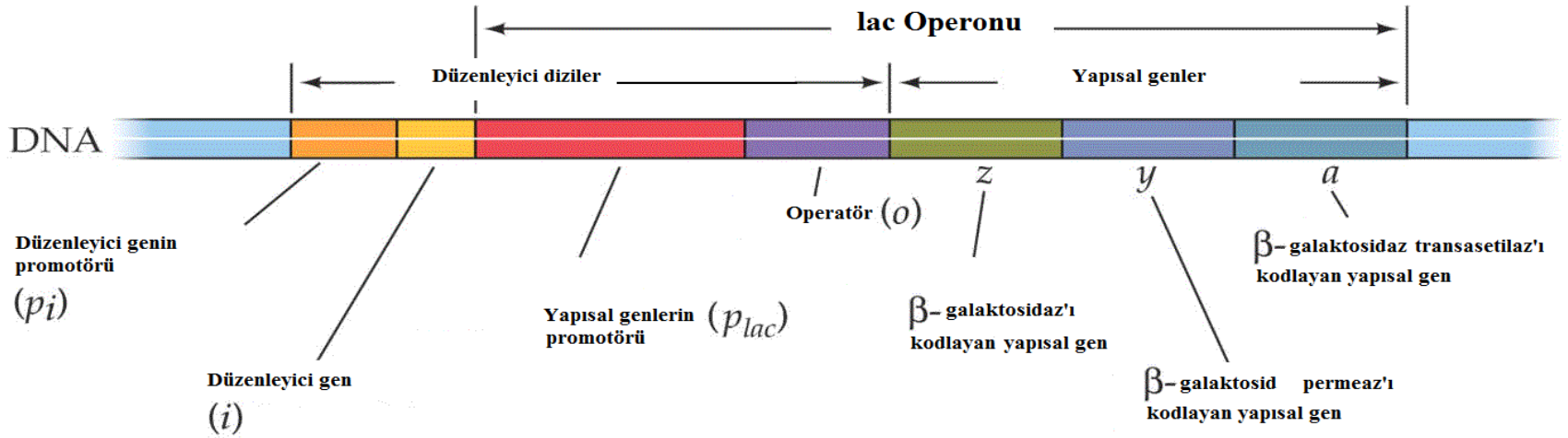
- Bakterilerin basit canlılar olduğunu düşünülse de, söz konusu olan gen regülasyonu olduğunda karşımıza kompleks bir tablo çıkmaktadır.
- Bakteriyel gen ifadeleri operon ve regülatör elementler tarafından kontrol edilirler.
- Bakteriyel genler sıklıkla grup halinde transkripsiyona uğradıkları ve tek promotera sahip oldukları operonlar içinde yer alırlar.
- Her operon regülatör DNA dizileri içerir. Regülatör proteinler bu dizilere bağlanarak transkripsiyonun başlamasını tetikler ya da engeller.

# Bakteriyel ifade sistemleri



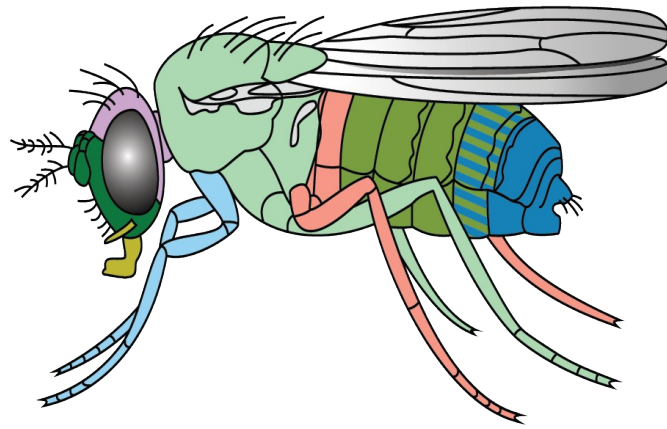
# Bakterilerde İfade Sistemleri

- İndüklenebilen Sistemler



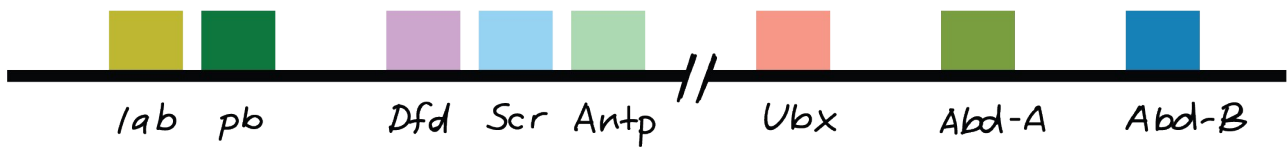
# Böcek İfade Sistemleri

HOX GENES in the FLY

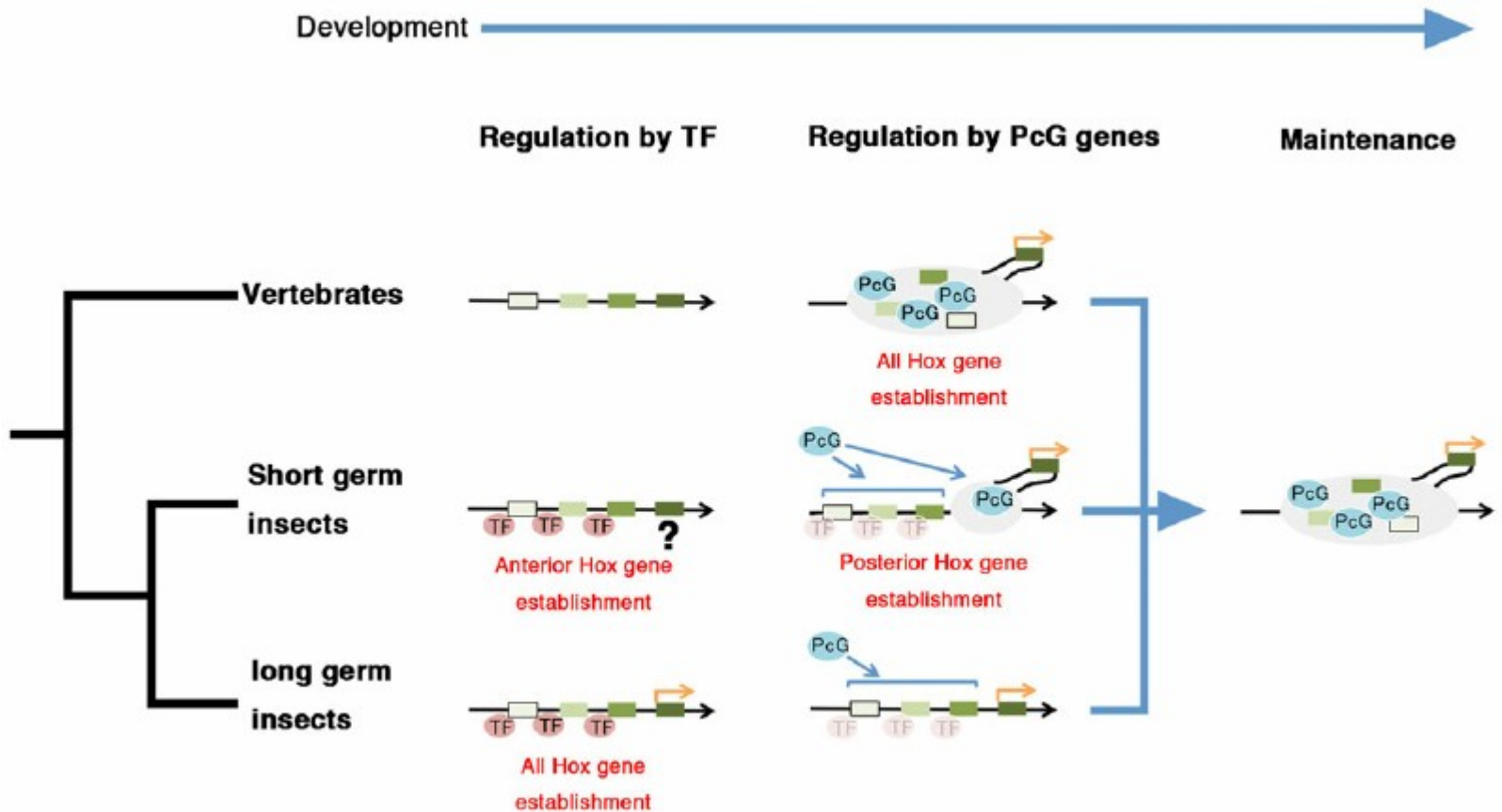


where each gene is expressed

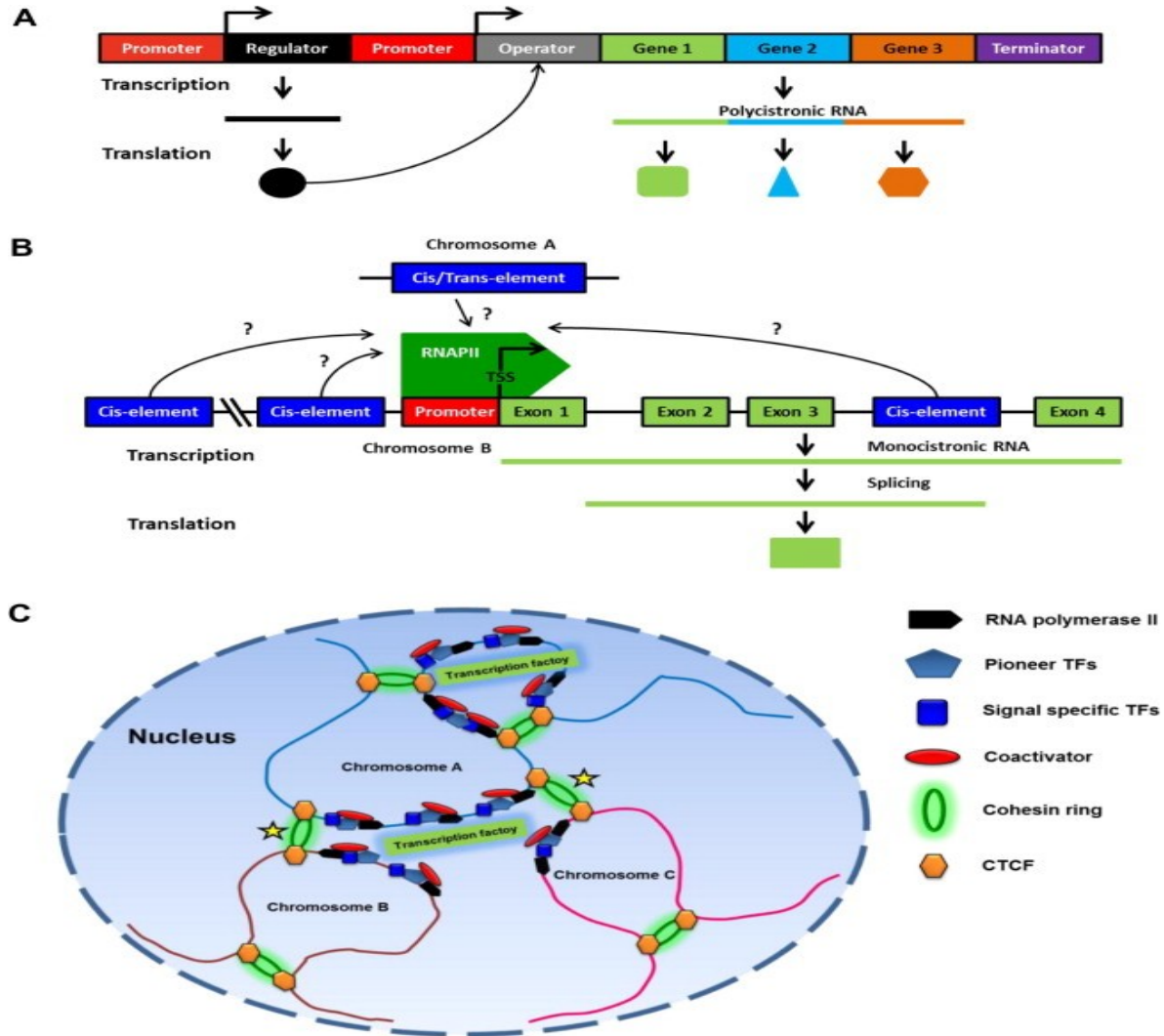
where each gene is positioned on the chromosome



# Böcek İfade Sistemleri



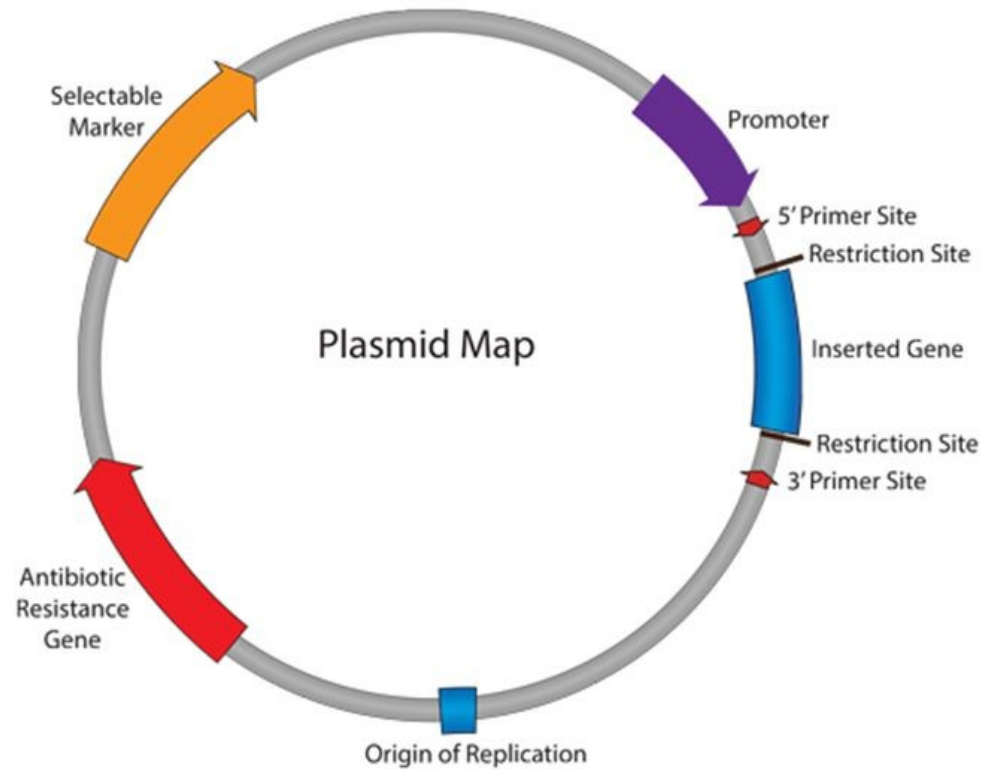
# Memeli İfade Sistemleri





# Plazmid Yapısı

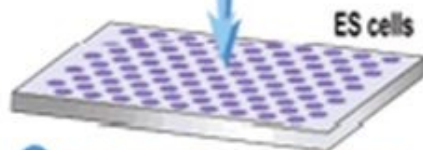
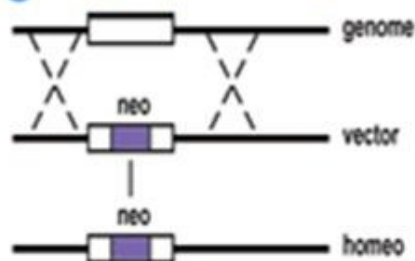
## Plazmid



# Gene knockout

## Method

### 1 Targeting vector design



### 2 Selection for recombination

### 3 Determination of homologous recombinants



### 4 Injection into E3.5 host blastocyst



### 5 Transfer into pseudo-pregnant foster mother, birth of chimeras



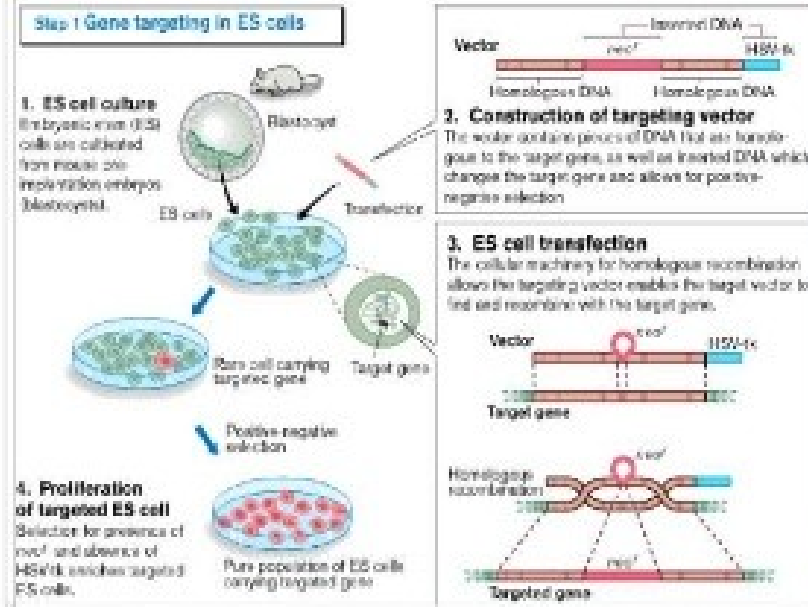
### 6 Breed for germline transmission



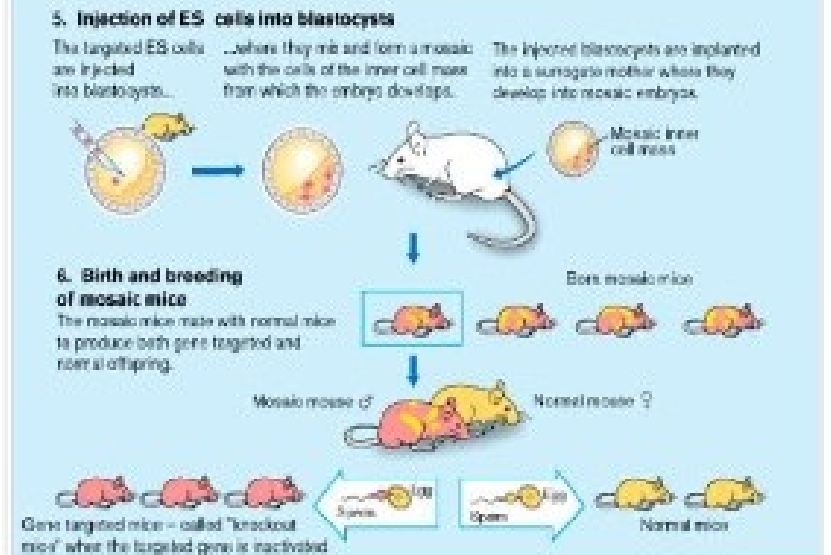
# Gen Knock-out

## OVERALL PROCESS

### General strategy for gene targeting in mice

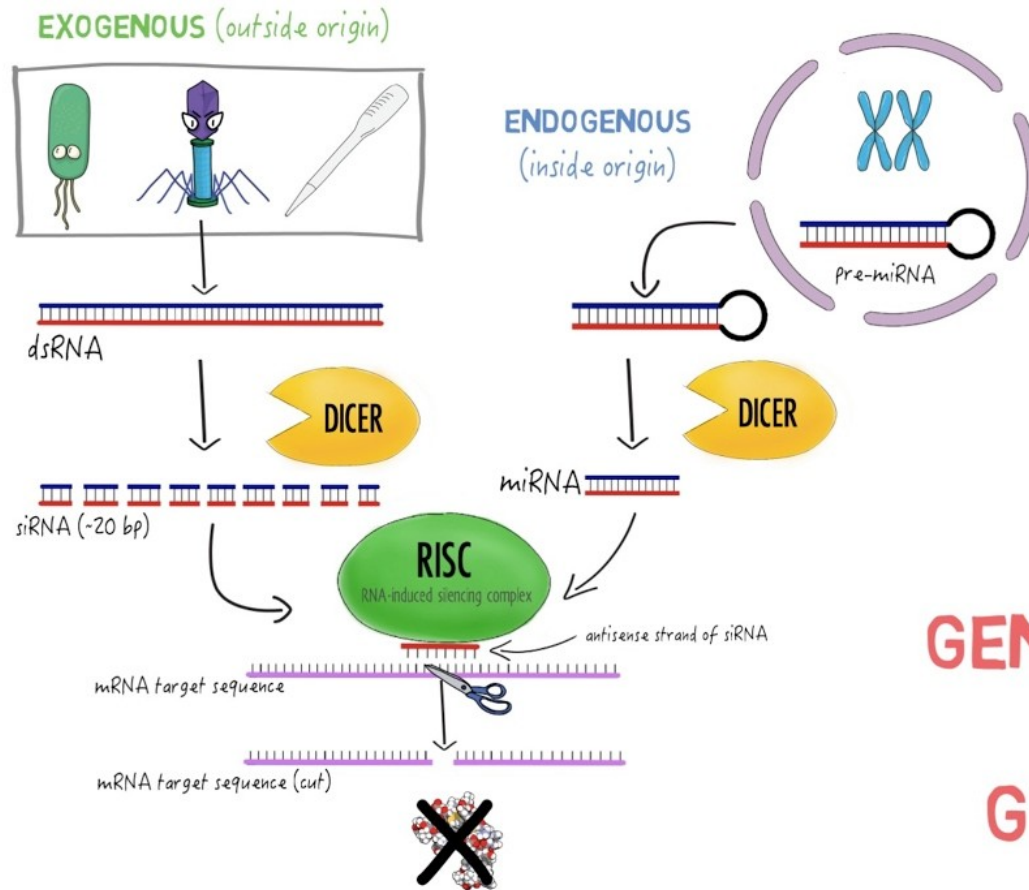


### Step 2: From gene targeted ES cells to gene targeted mice



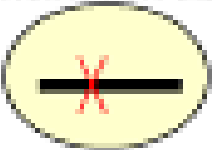
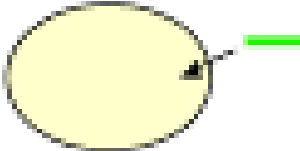
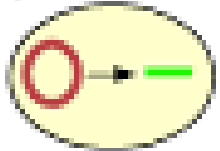
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# Knock- Down/ Knock-in



**GENE KNOCK-DOWN  
OR  
GENE SILENCING**

# Knock- Down/ Knock-in

	Procedures	Advantages and disadvantages
Gene knockout	Exploiting host's recombination ability 	<ul style="list-style-type: none"> <li>- Gene expression is typically removed completely</li> <li>- Difficult with essential genes</li> <li>- Time-consuming</li> </ul>
Gene silencing	Synthetic antisense nucleic acids (or analogs) 	<ul style="list-style-type: none"> <li>- High-throughput</li> <li>- Too expensive for large scale culture</li> </ul>
	Expressing antisense RNAs from expression vectors 	<ul style="list-style-type: none"> <li>- High-throughput</li> <li>- Suitable for large scale culture</li> <li>- Considered less effective</li> </ul>