HAFTA II

EKTOPİK GEN İFADESİNİN REGÜLASYONU

1

Ektopik Gen İfadesi

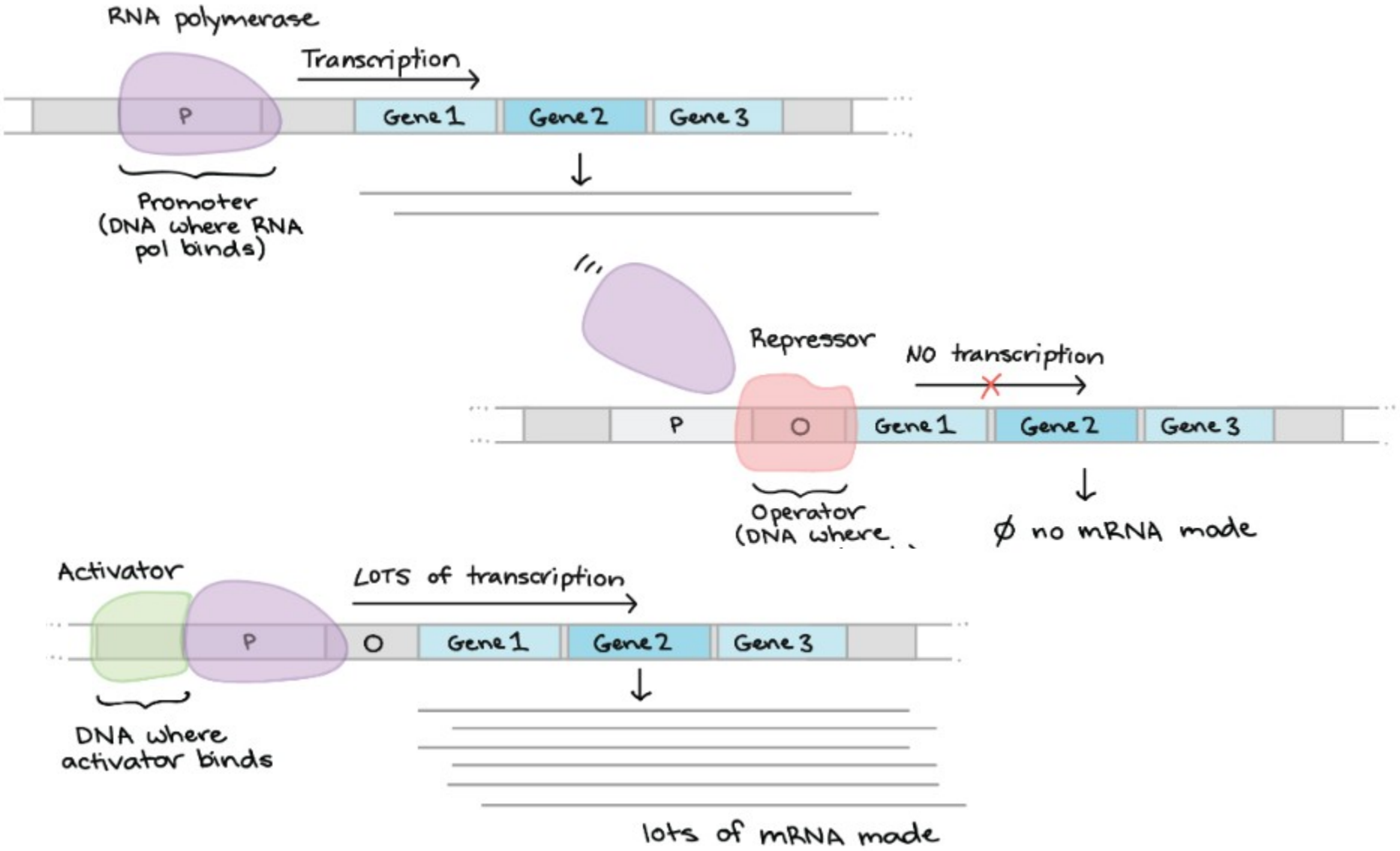
- Gen ürünleri, bir hücrenin hayat döngüsünün herhangi bir aşamasında geri döndürülebilen mekanizmalarla manipüle edilebilir.
- Ektopik olarak kontrol edilen gen ürününün ilgili hücredeki ifade miktarında azalma/baskılama ya da artma/indükleme veya ifade edilme zamanında değişiklikler oluşturulabilir.

(Ektopik: Normalde olması gereken yerde olmayan)

Bakteriyel İfade Sistemleri

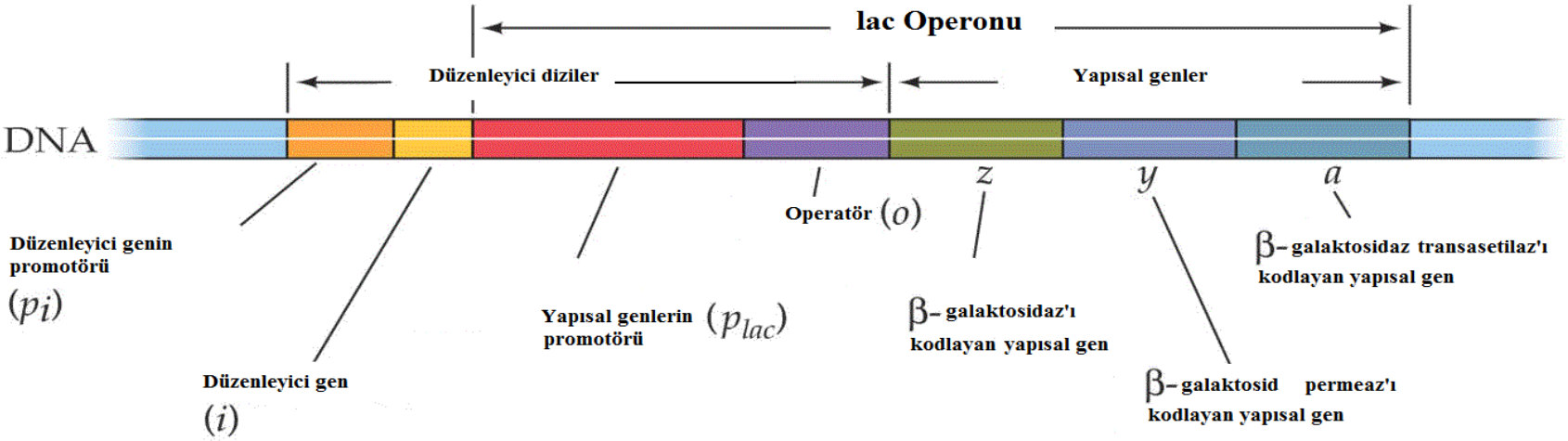
- Bakterilerin basit canlılar olduğunu düşünülse de, söz konusu olan gen regülasyonu olduğunda karşımıza kompleks bir tablo çıkmaktadır.
- Bakteriyel gen ifadeleri operon ve regülatör elementler tarafından kontrol edilirler.
- Bakteriyel genler sıklıkla grup halinde transkripsiyona uğradıkları ve tek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

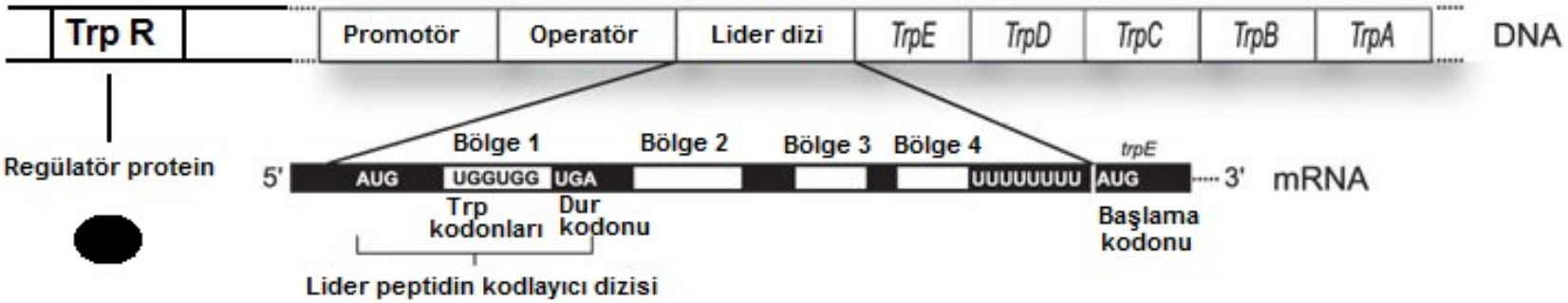
Bakteriyel ifade sistemleri



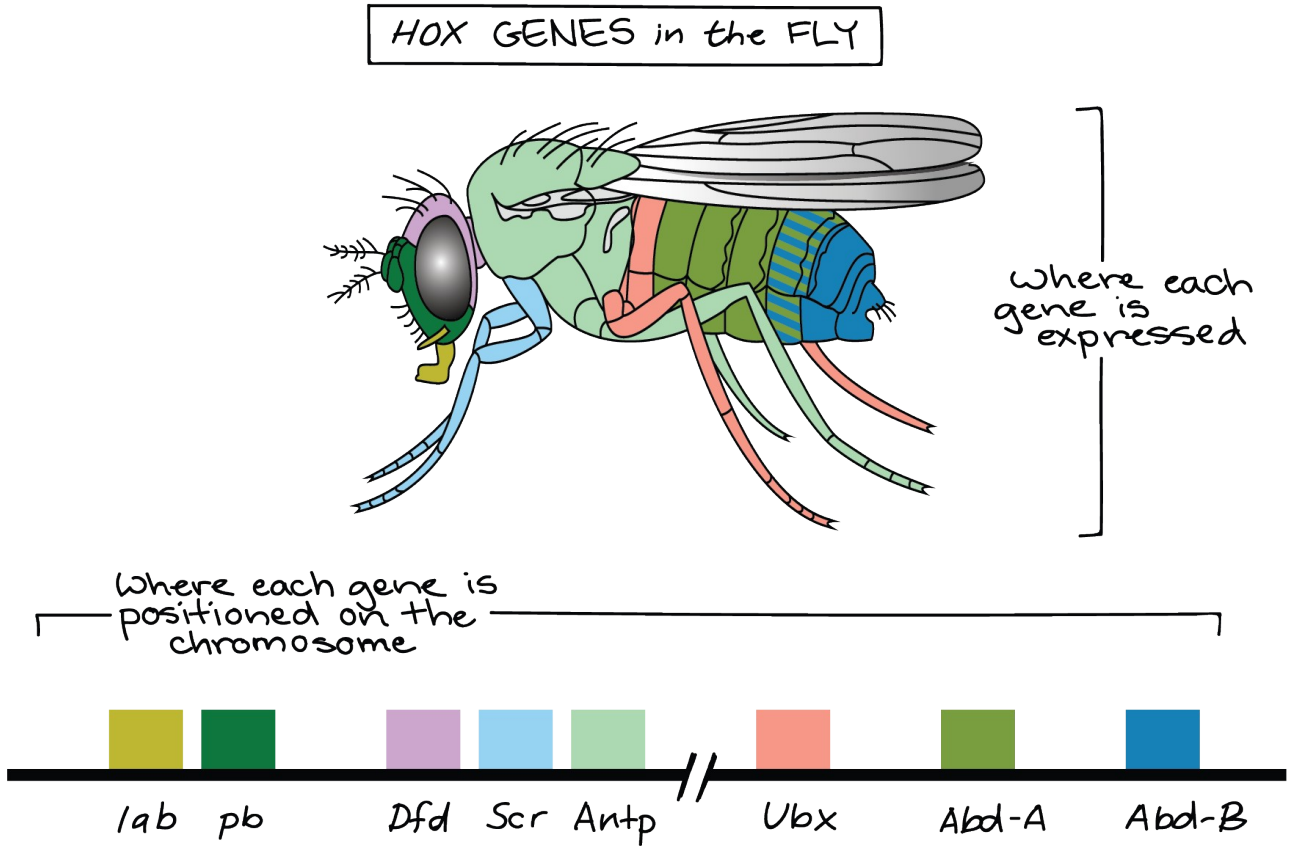
Bakterilerde İfade Sistemleri

- İndüklenebilen Sistemler





Böcek İfade Sistemleri



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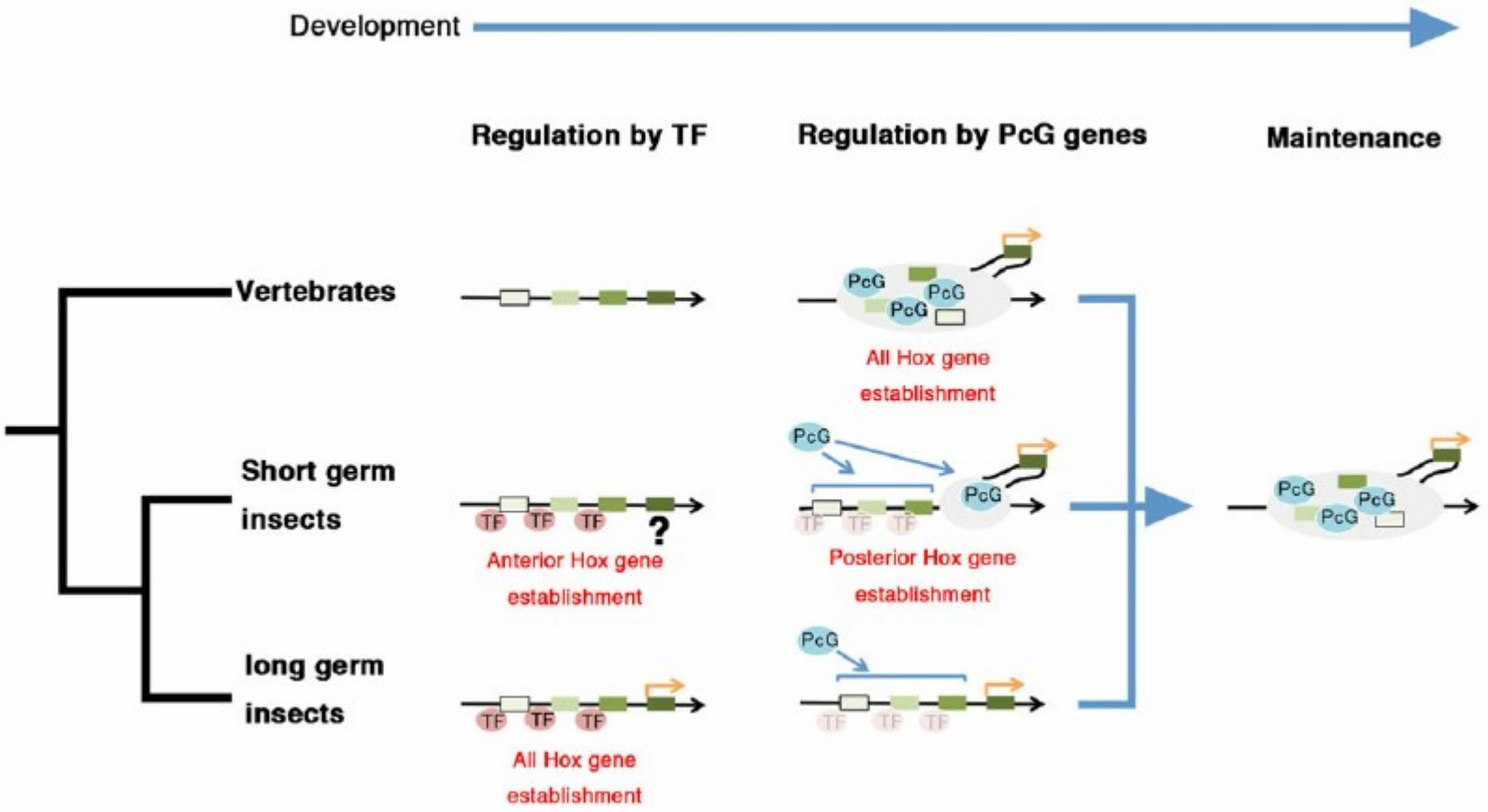
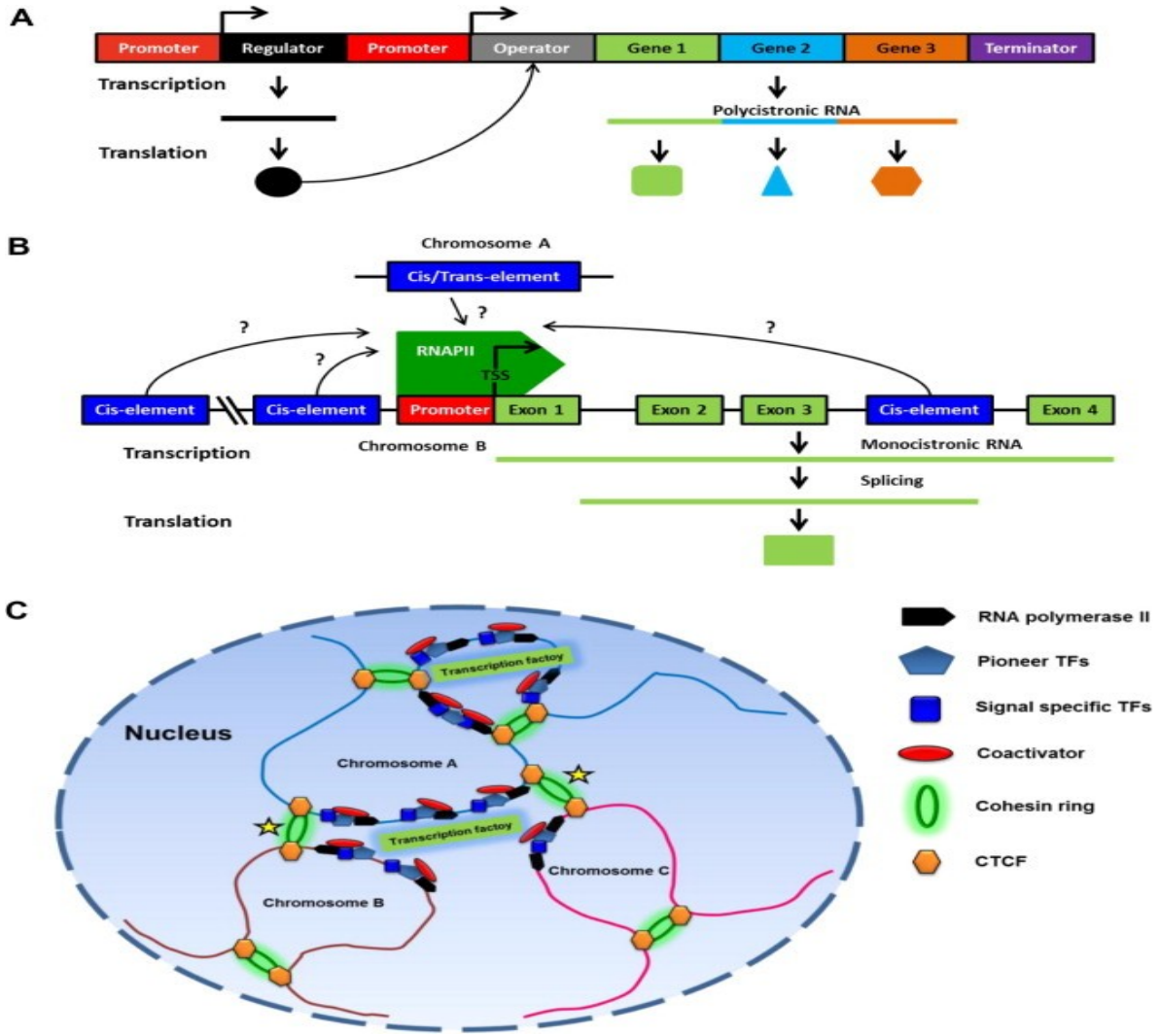
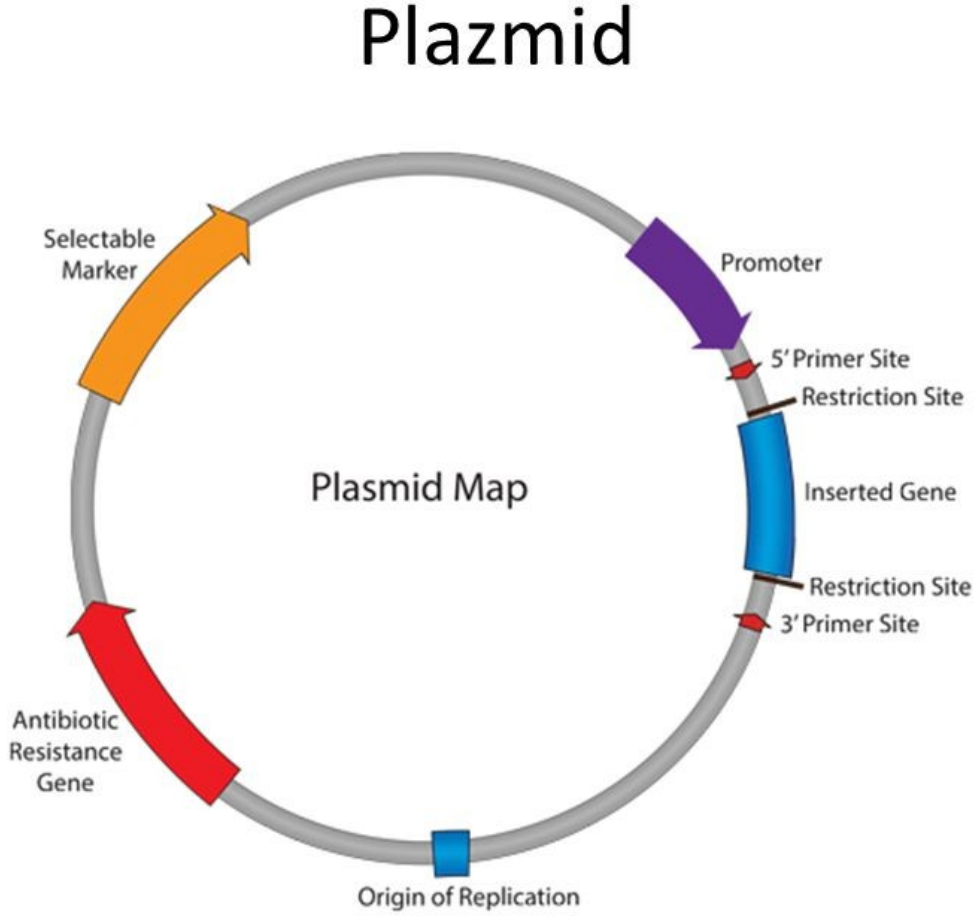


Memeli İfade Sistemleri

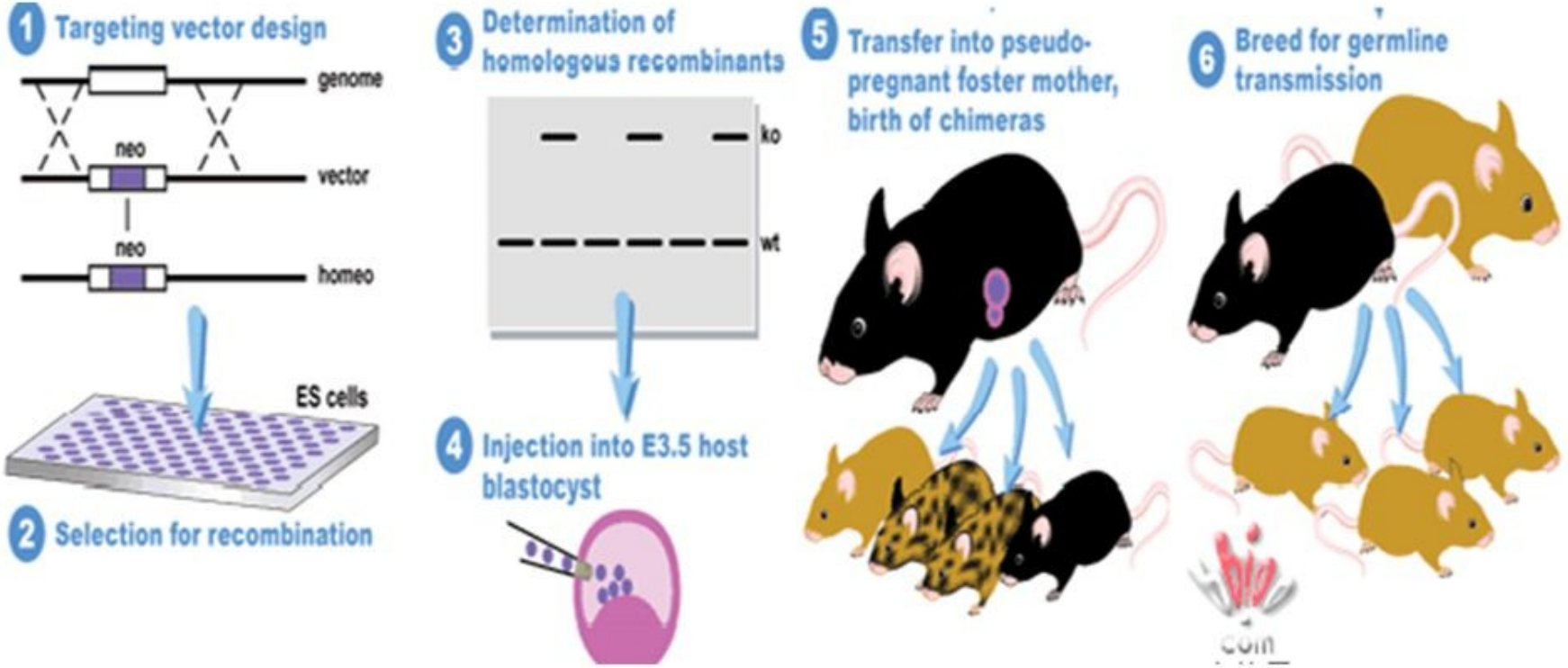


Plazmid Yapısı



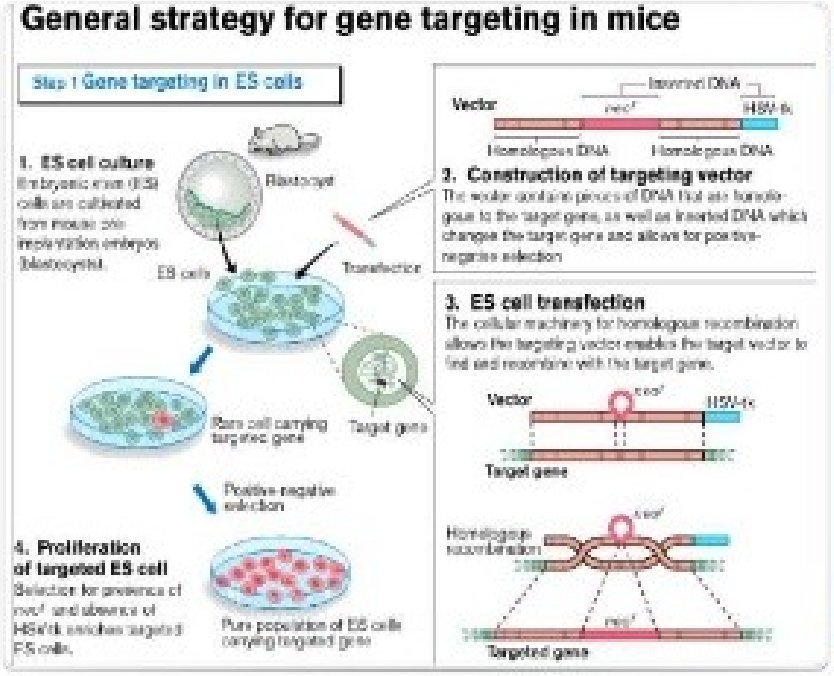
Gene knockout

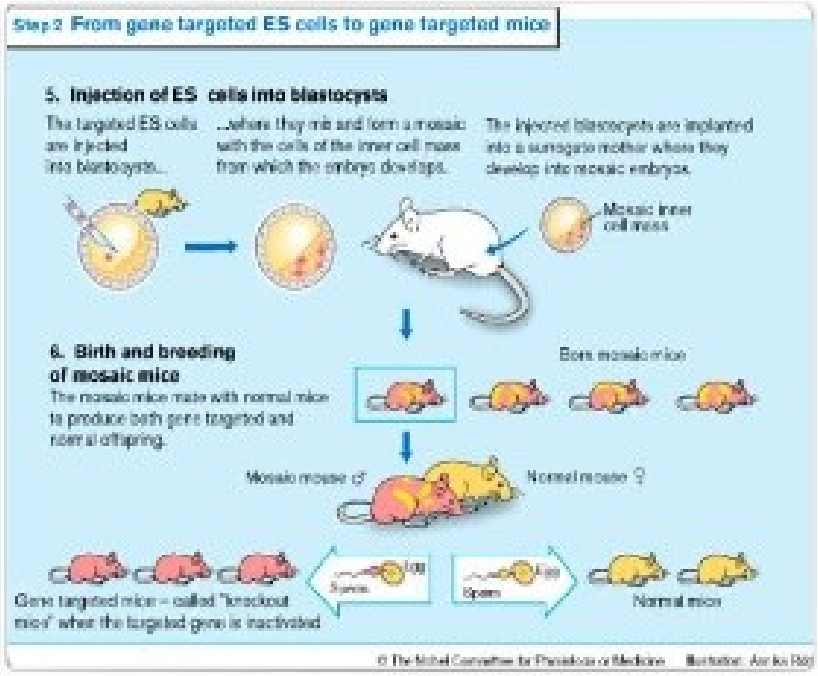
Method



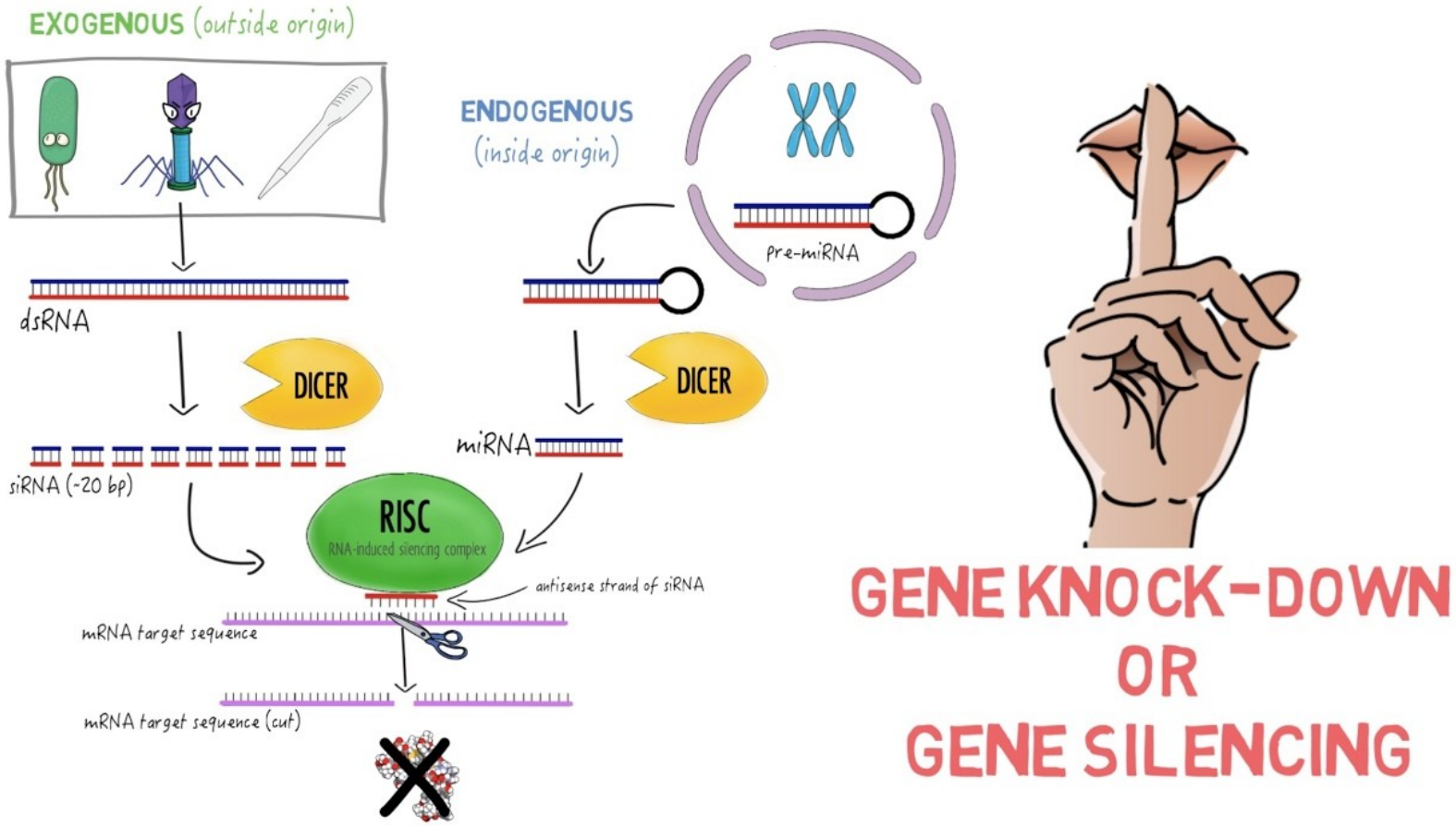
Gen Knock-out

OVERALL PROCESS

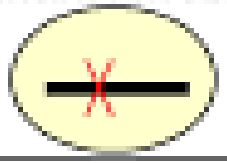
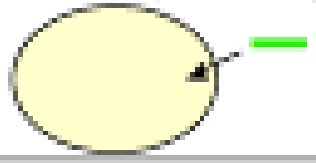
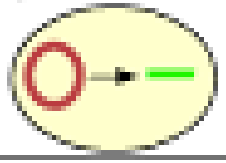




Knock- Down/Knock-in



Knock- Down/Knock-in

	Procedures	Advantages and disadvantages
Gene knockout	Exploiting host's recombination ability 	- Gene expression is typically removed completely - Difficult with essential genes - Time-consuming
Gene silencing	Synthetic antisense nucleic acids (or analogs) 	- High-throughput -Too expensive for large scale culture
	Expressing antisense RNAs from expression vectors 	- High-throughput - Suitable for large scale culture - Considered less effective