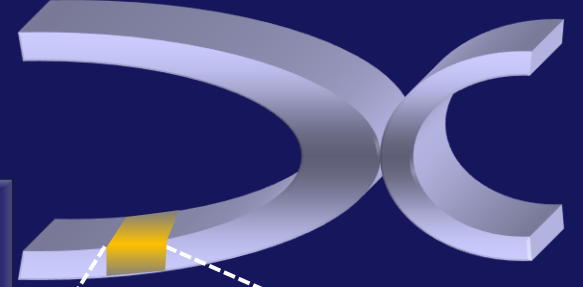
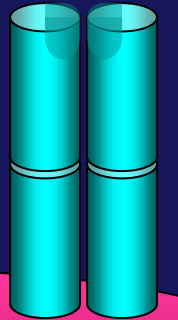
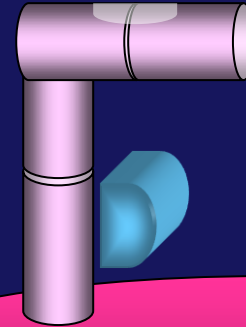
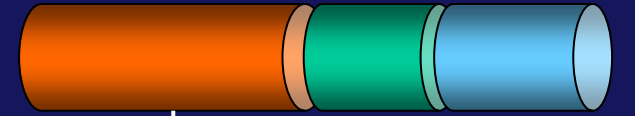


# DOKU UYUŞUM SİSTEMİ

Doku Uyuşum Kompleksi-MHC  
(Major Histocompatibility Complex)

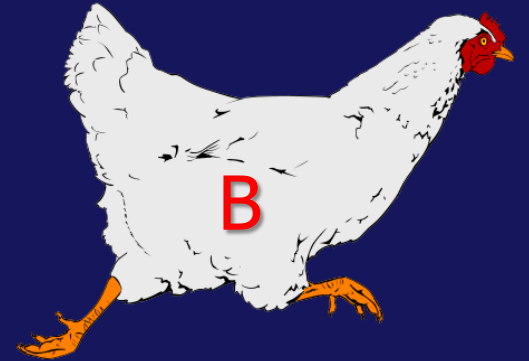
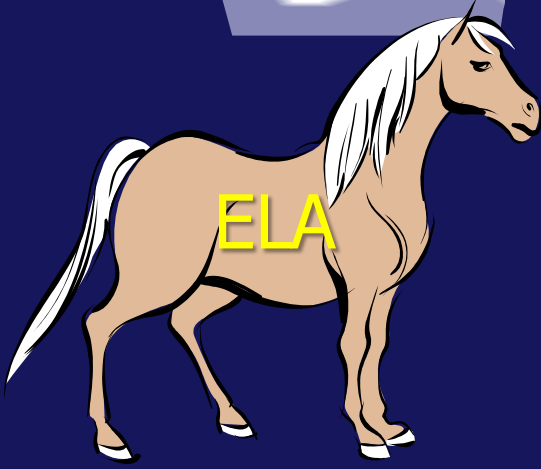


Doku Uyuşum Molekülleri  
(Dokum Uyuşum Antijenleri)

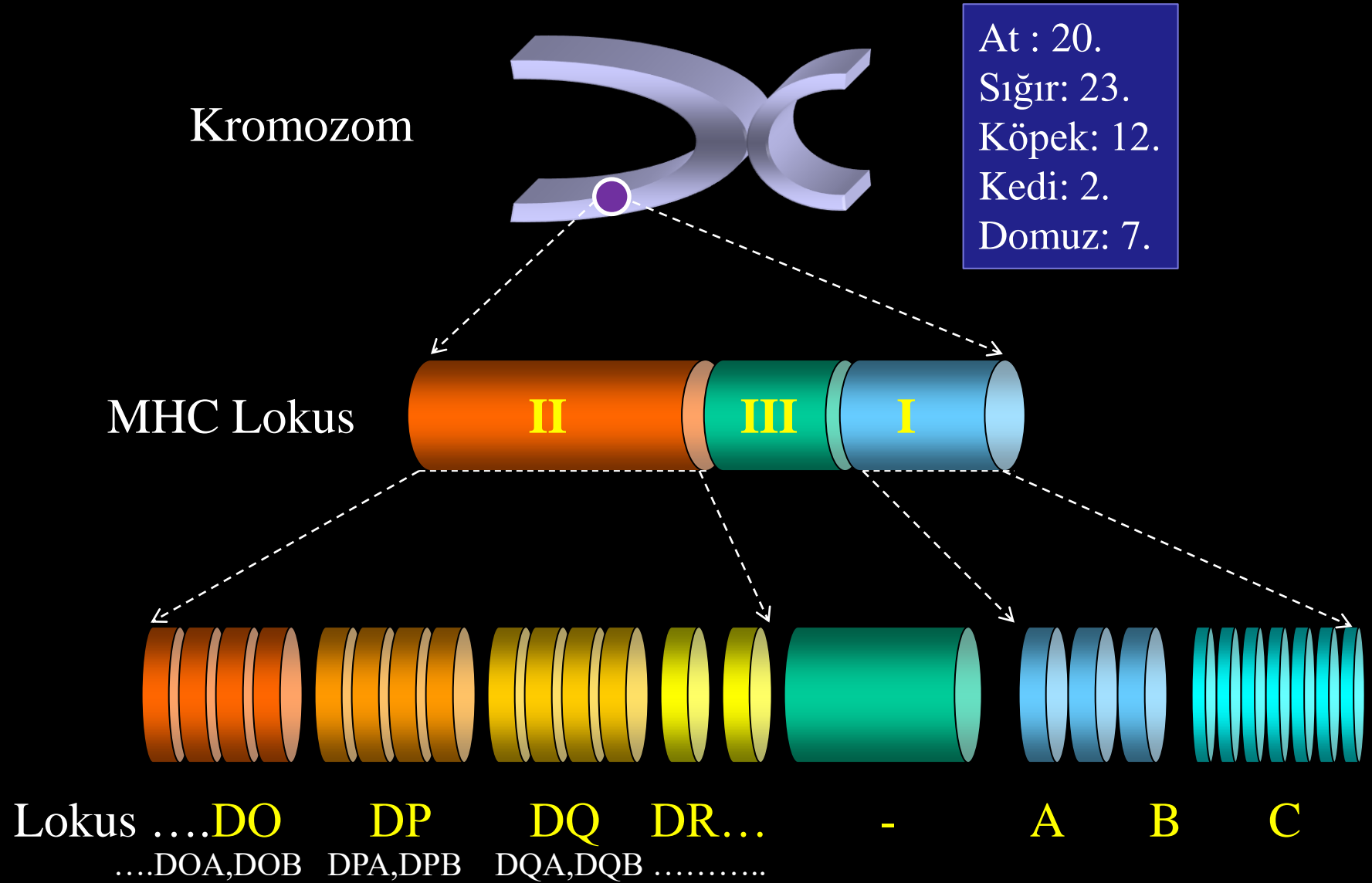


# DOKU UYUŞUM SİSTEMİ

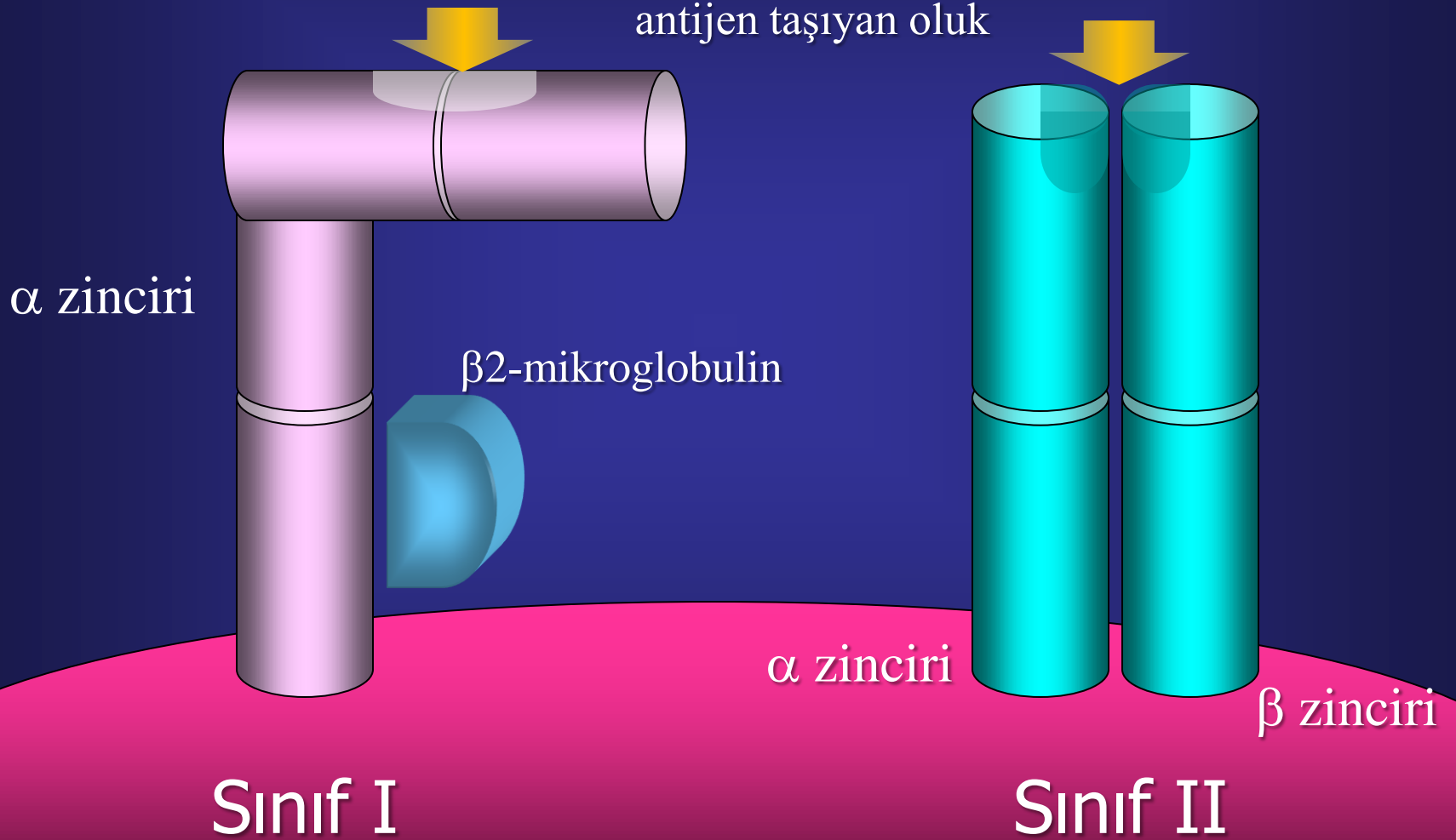
HLA (Human Leucocyte Antigen)



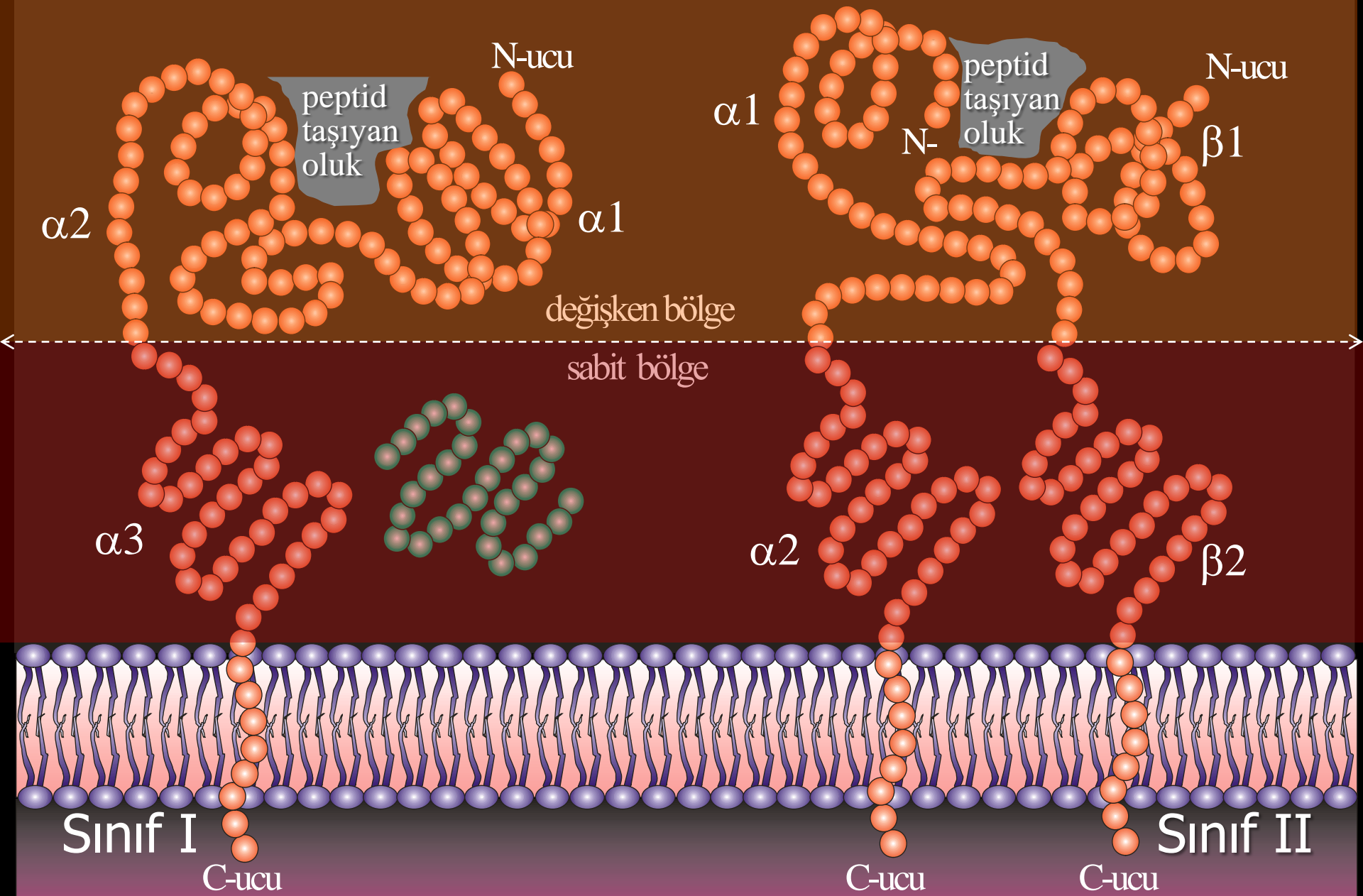
# Doku Uyuşum Kompleksi-MHC Genleri



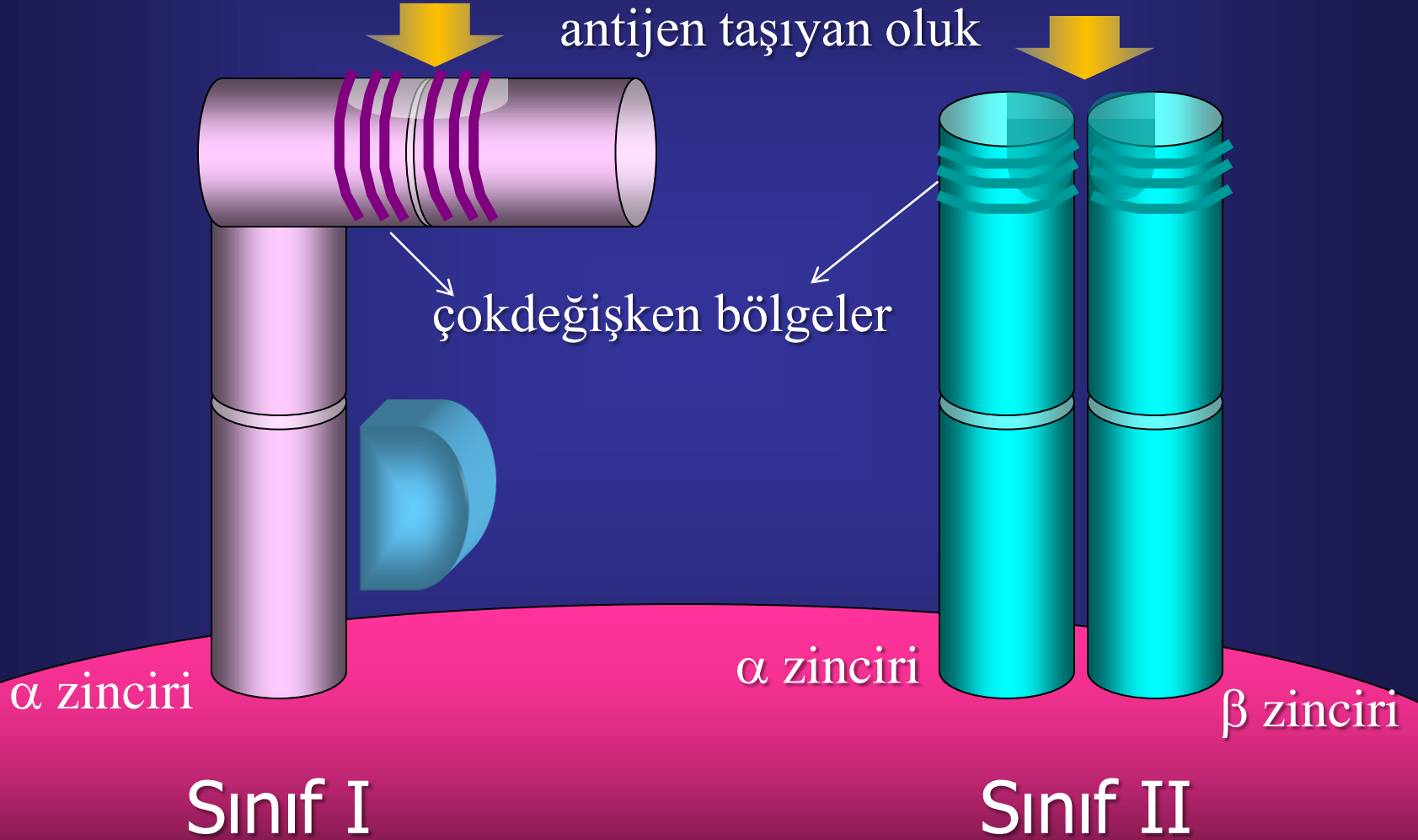
# Doku Uyuşum Molekülleri (Dokum Uyuşum Antijenleri)



# Doku Uyuşum Molekülleri

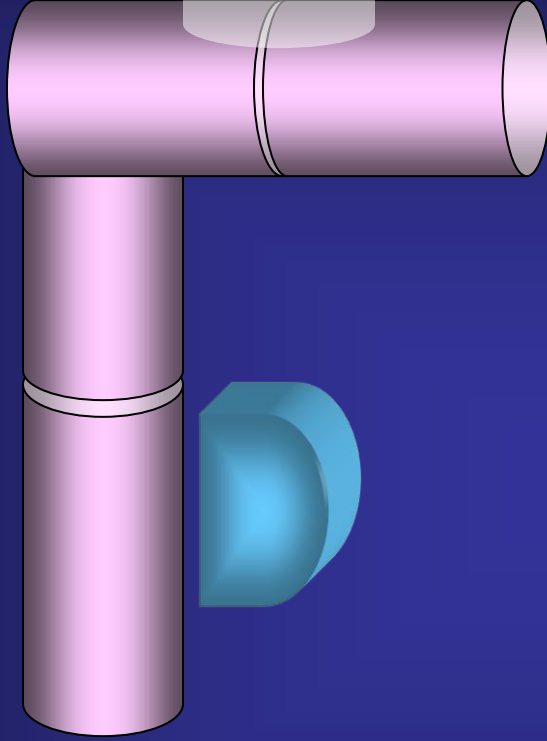


# Doku Uyuşum Molekülleri (Dokum Uyuşum Antijenleri)

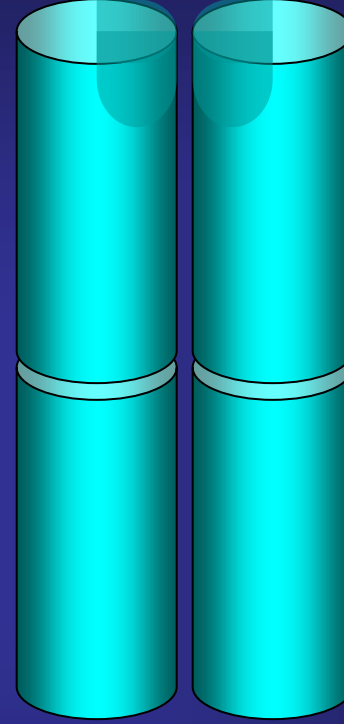


# Doku Uyuşum Molekülleri

Sınıf I



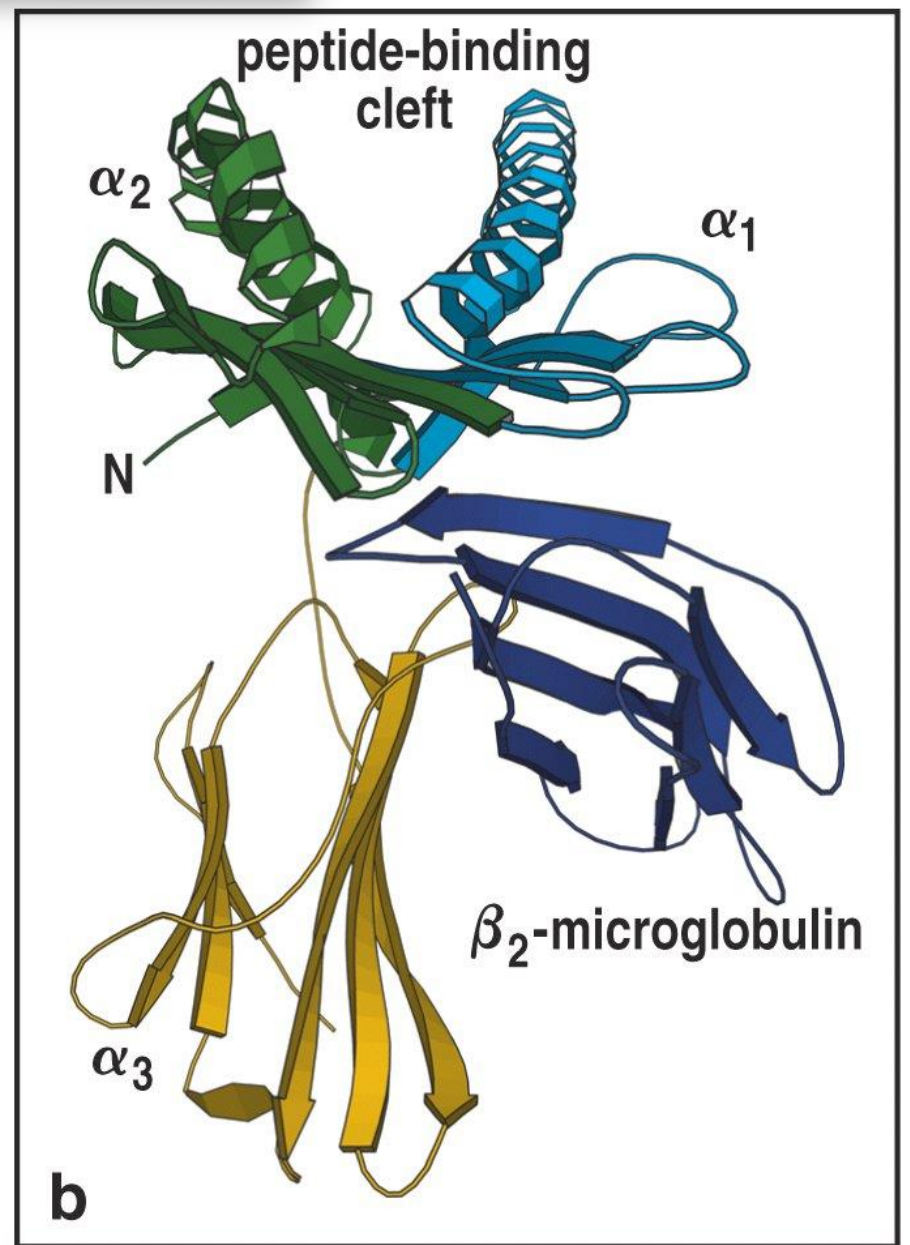
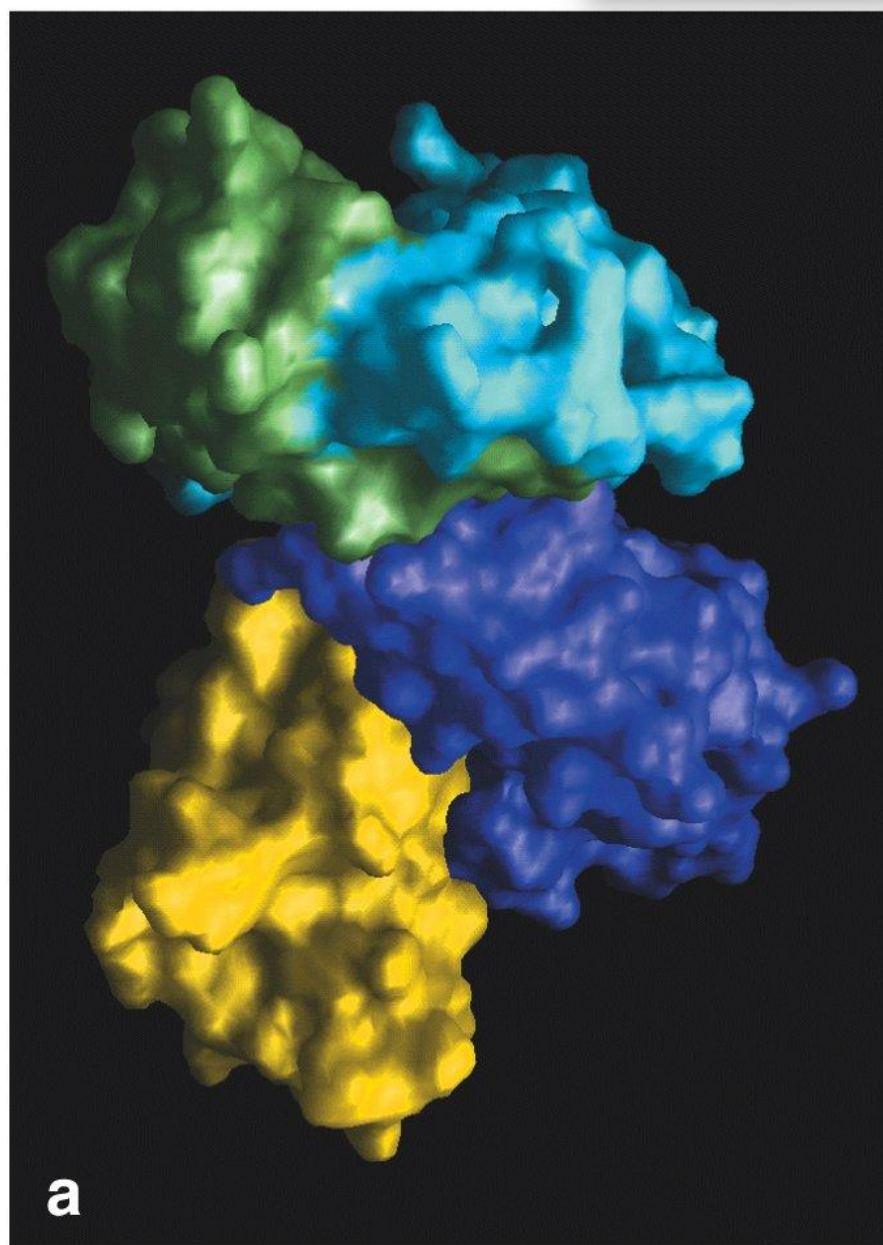
Sınıf II



Çekirdekli hücreler

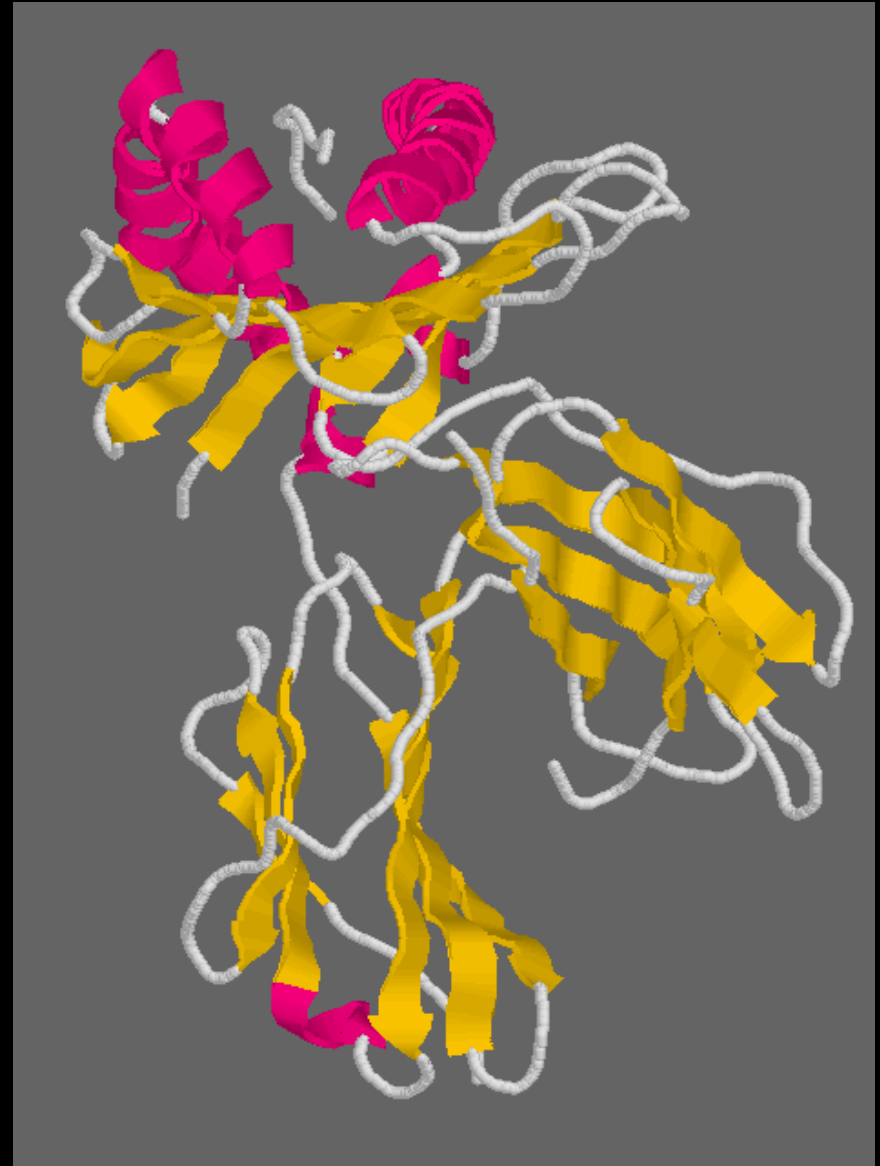
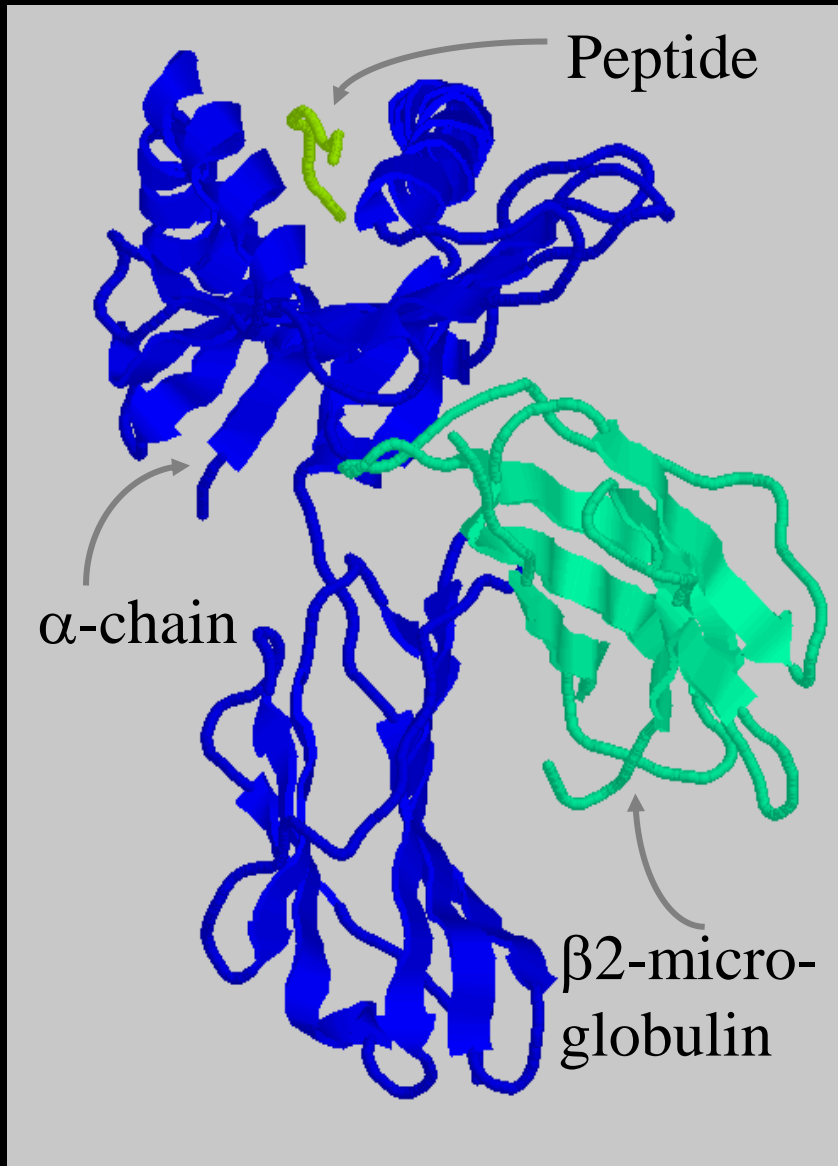
Makrofaj  
Dendritik hücre  
B-hücre

# MHC Sınıf I molekülü





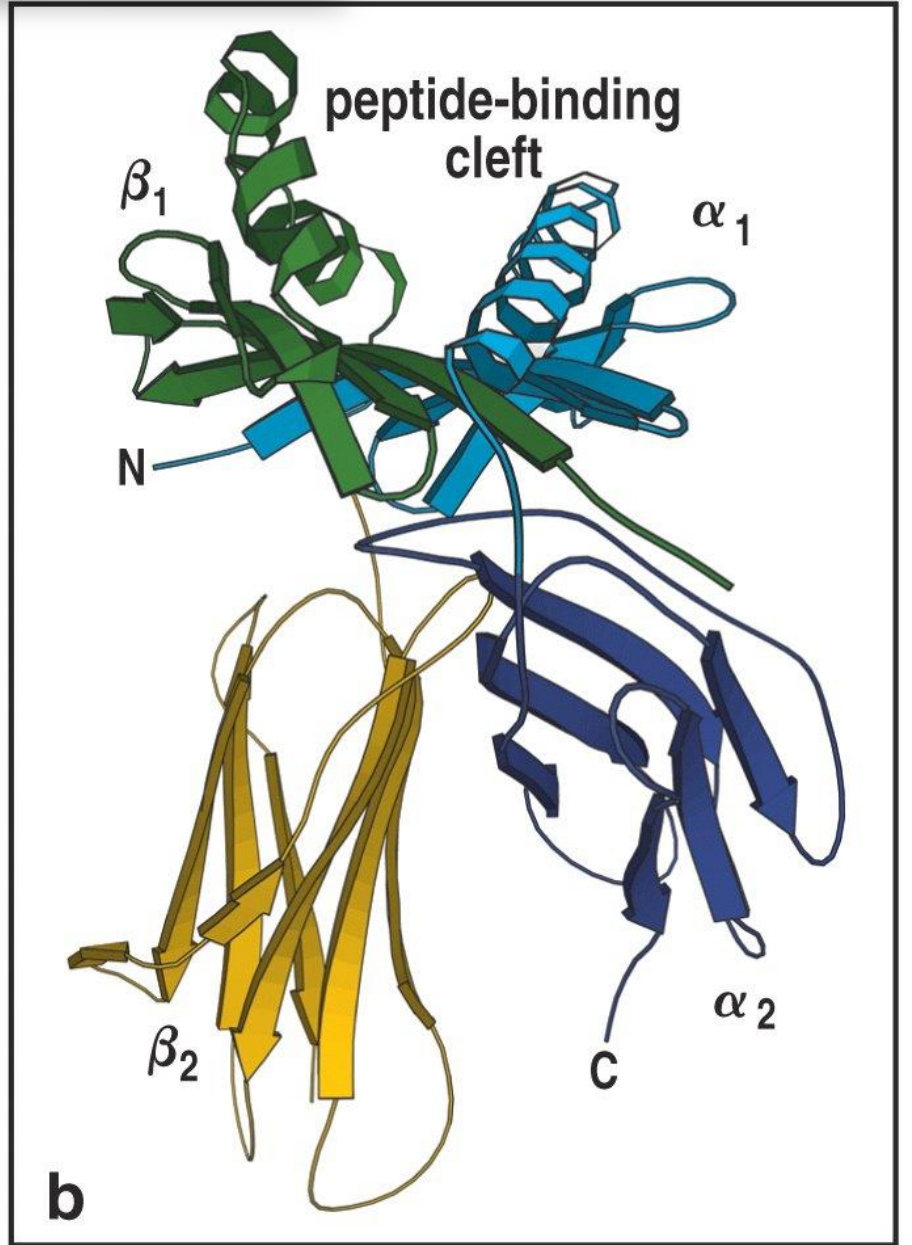
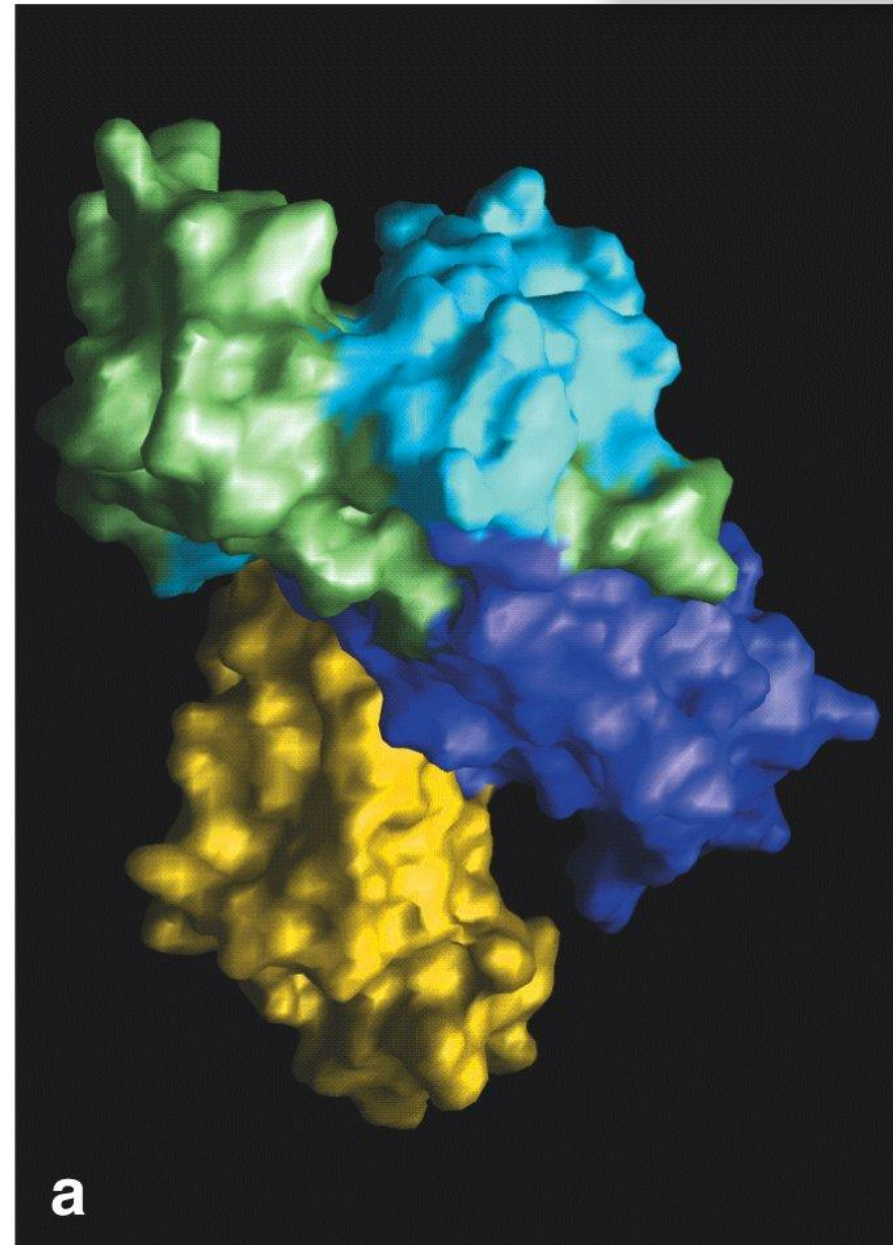
# MHC Sınıf I molekülü



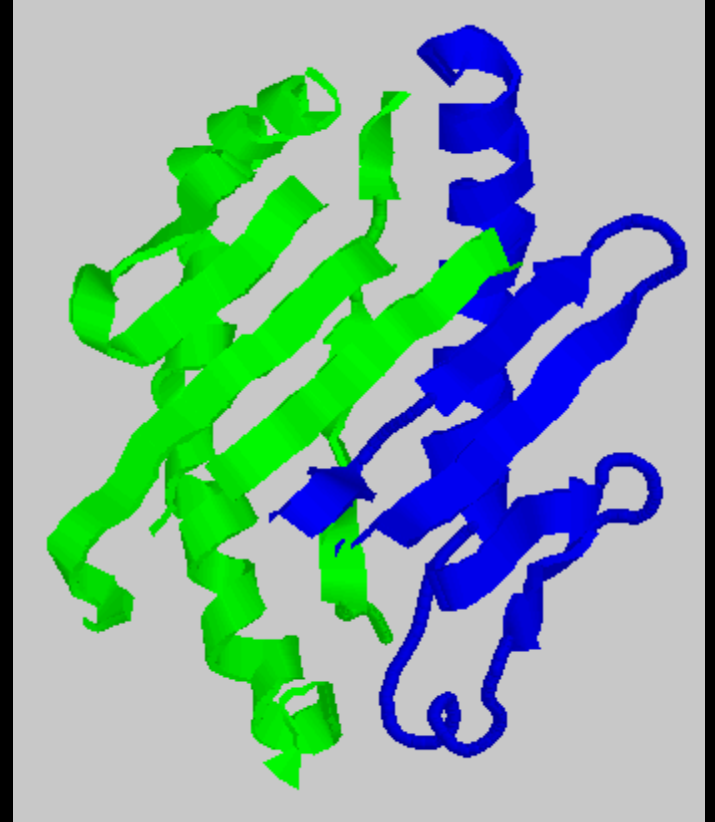
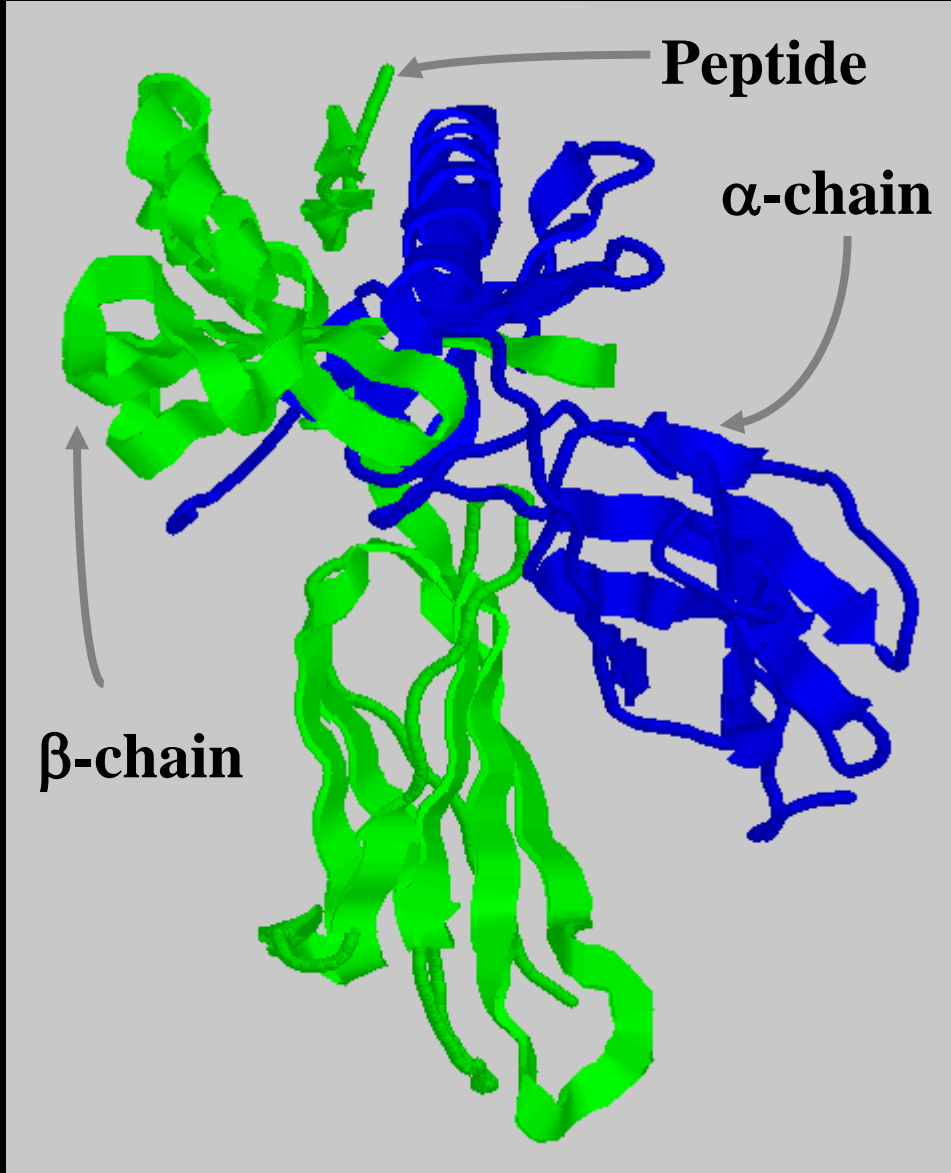
## MHC Sınıf I molekül yoğunluğu



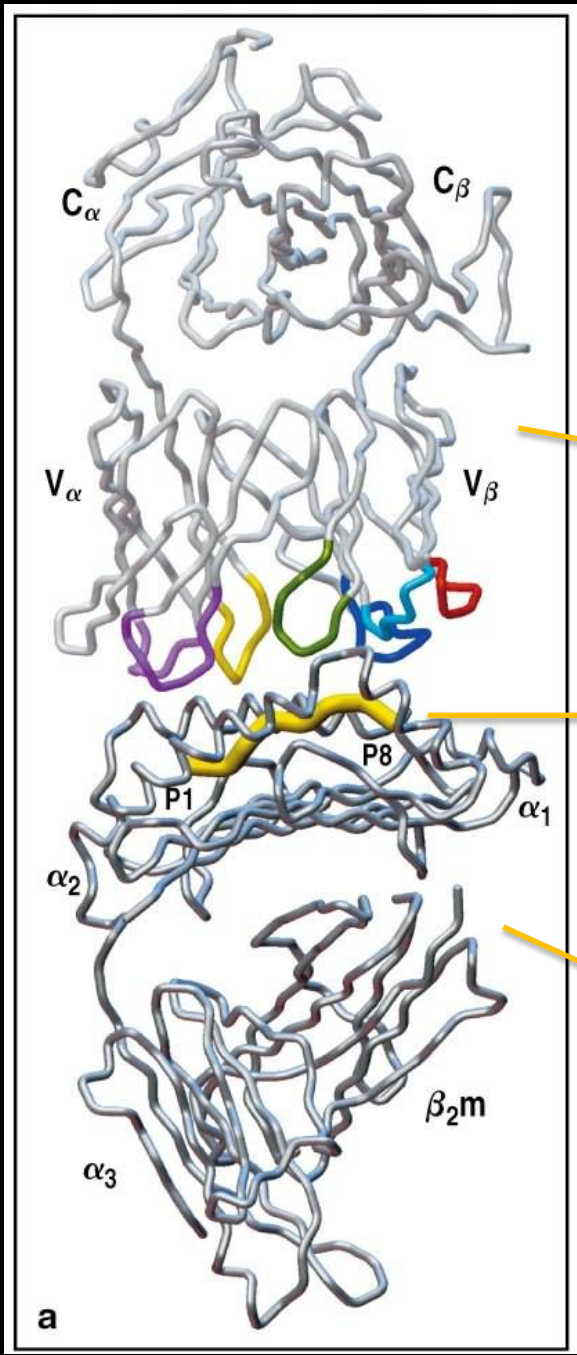
# MHC Sınıf II molekülü



# MHC Sınıf II molekülü



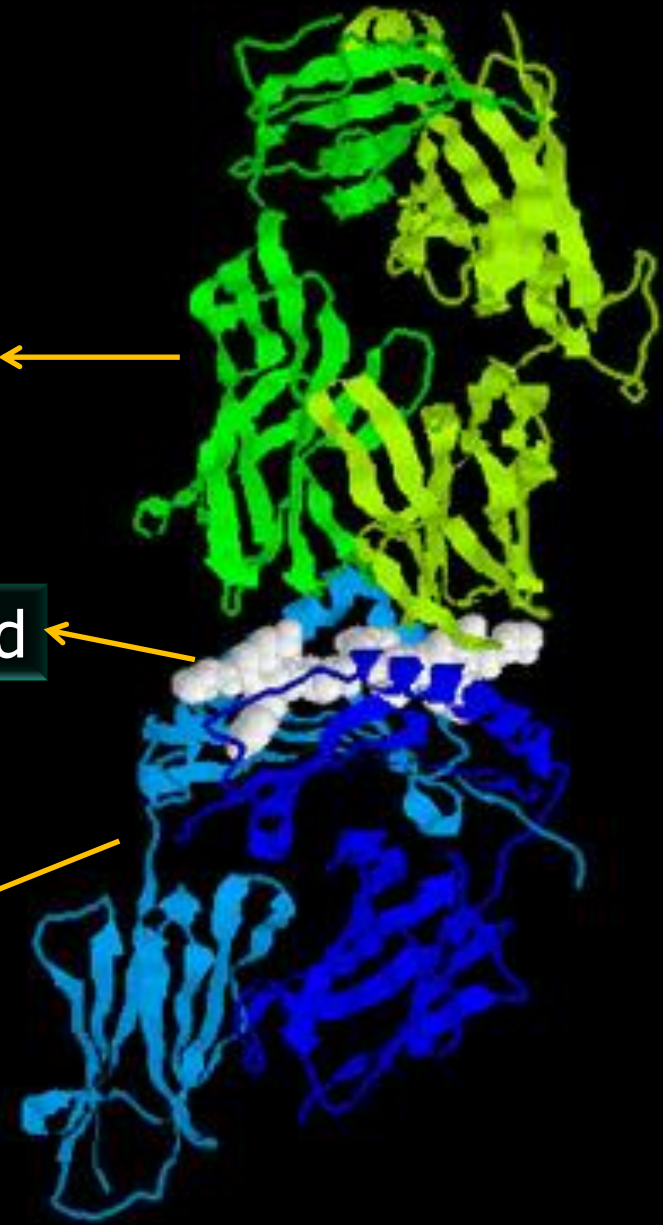
# MHC-TCR: Antijen Sunma



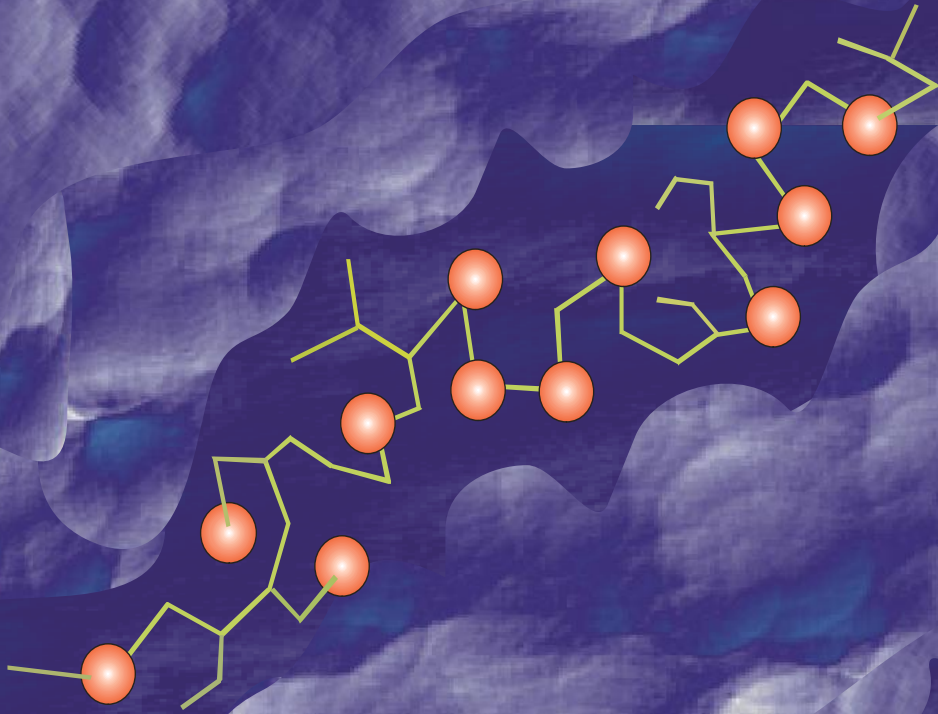
TCR

peptid

MHC

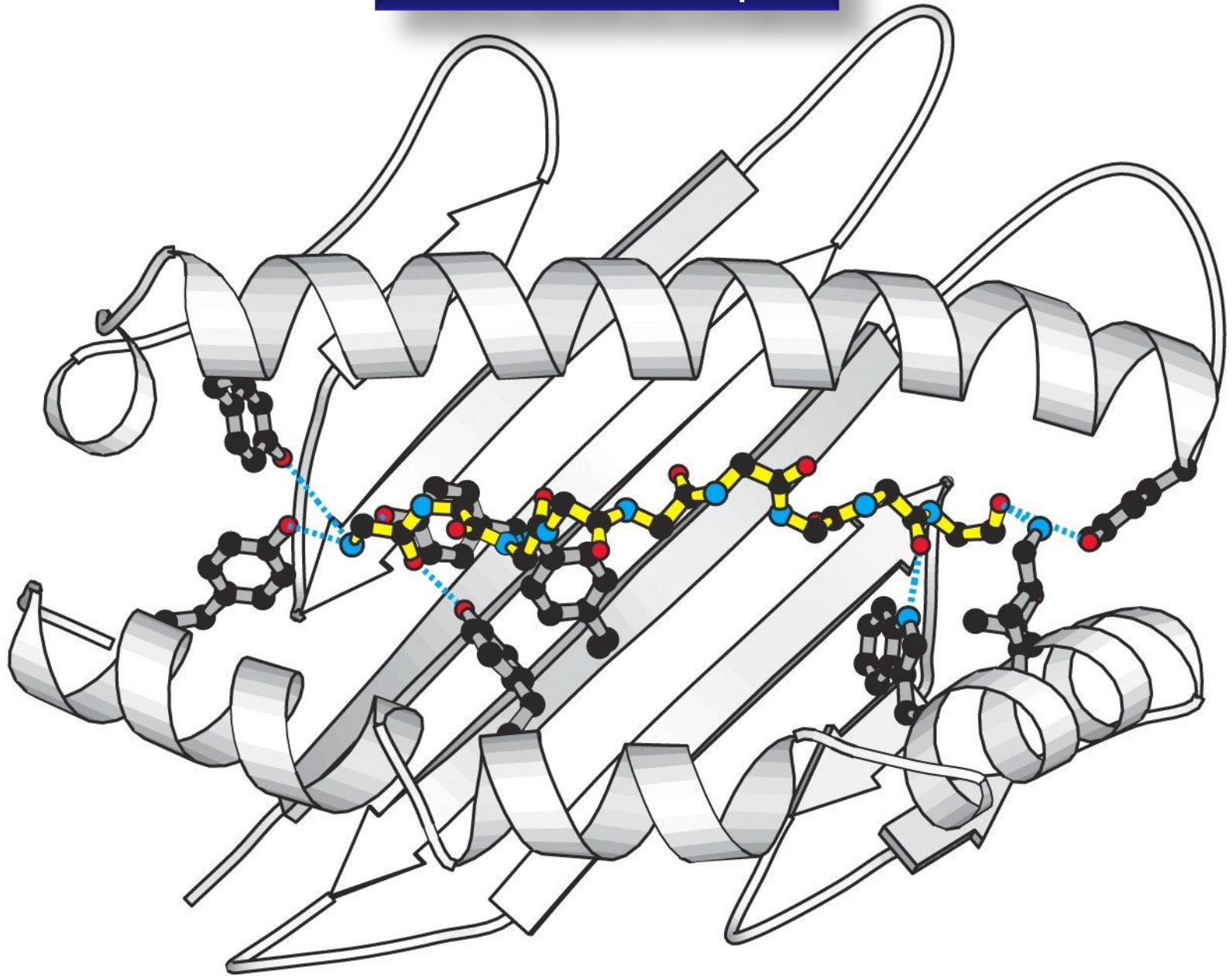


# MHC - Peptid Taşıyan Oluk

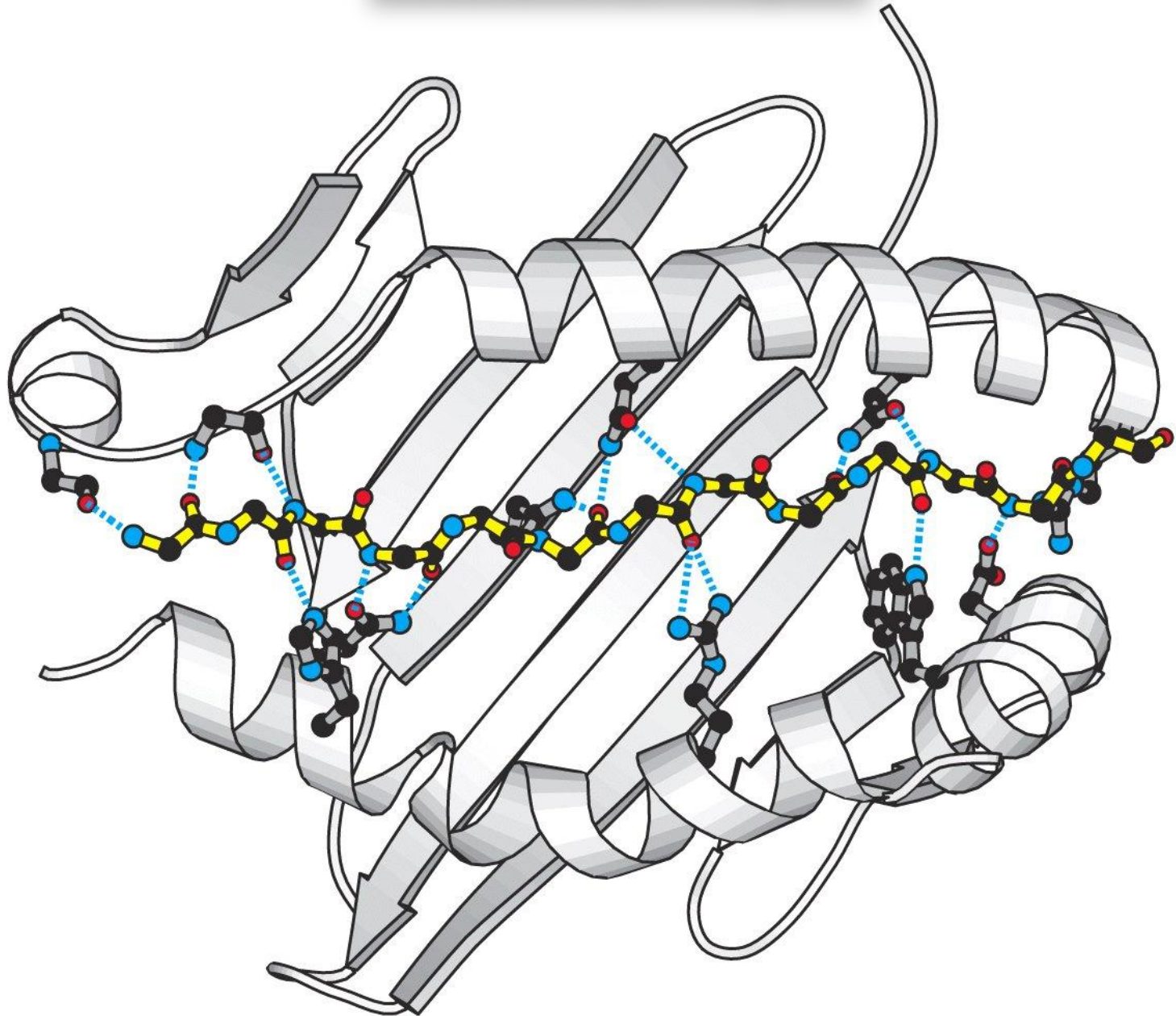


\*üstten görünüm

# MHC Sinf I - Peptid

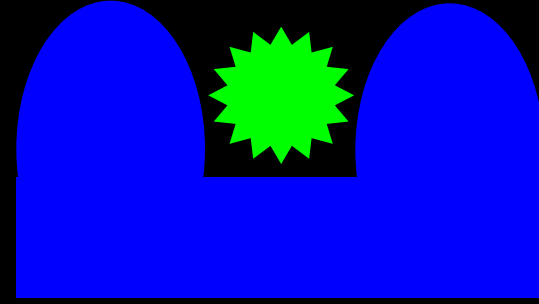
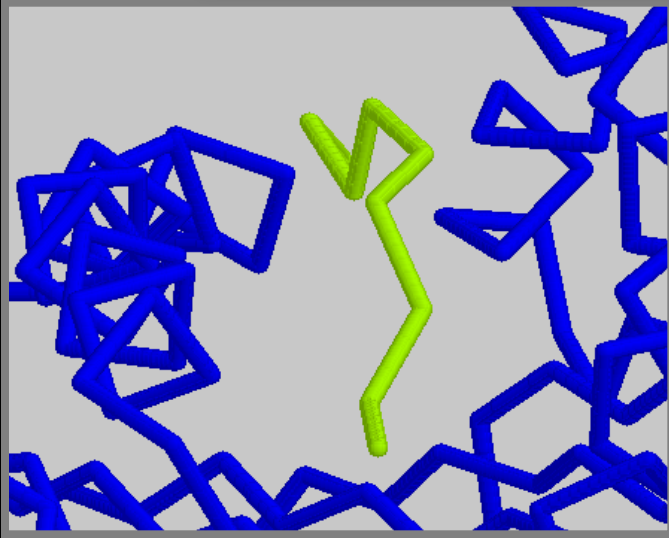


# MHC Sınıf II - Peptid

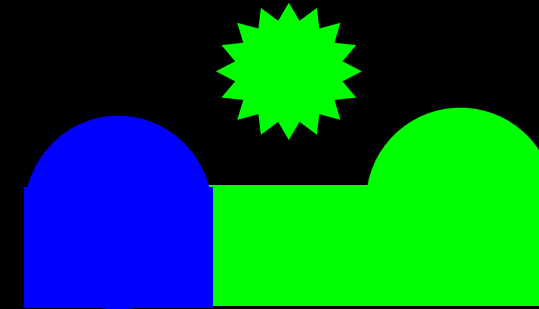
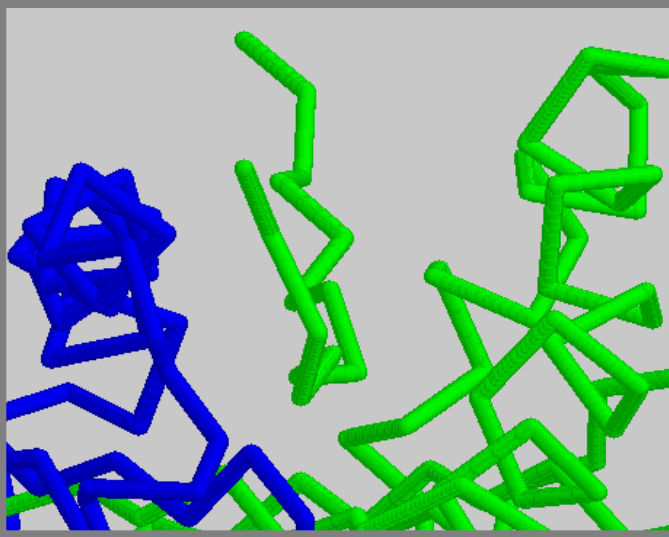




# Peptid Taşıyan Oluğun Geometrisi



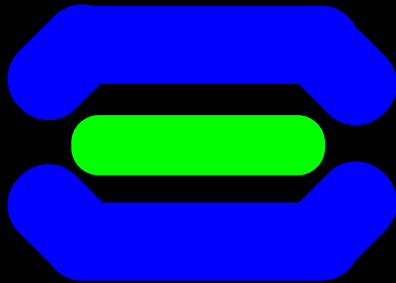
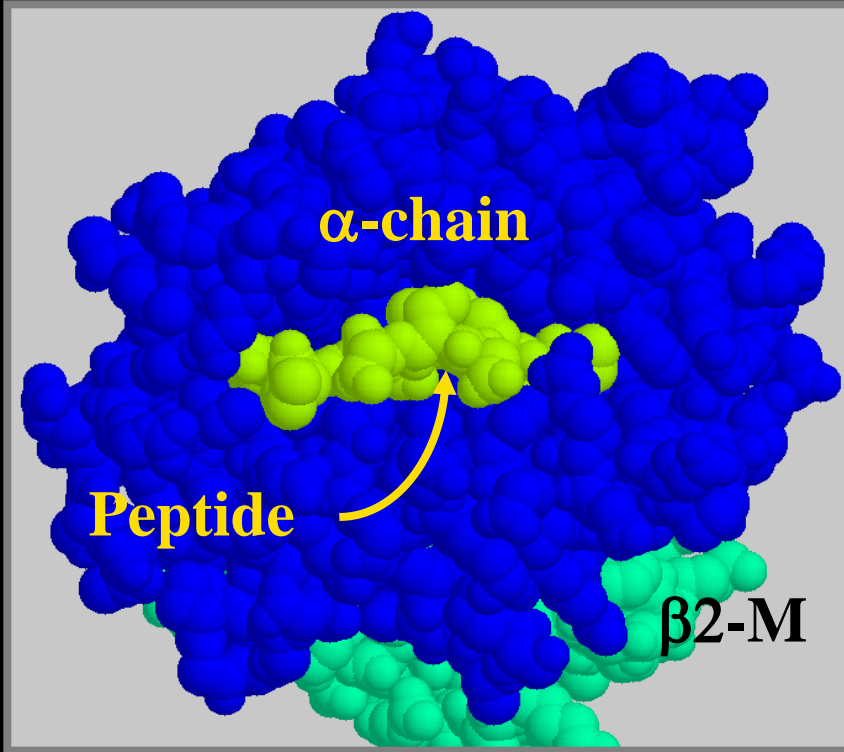
MHC sınıf I



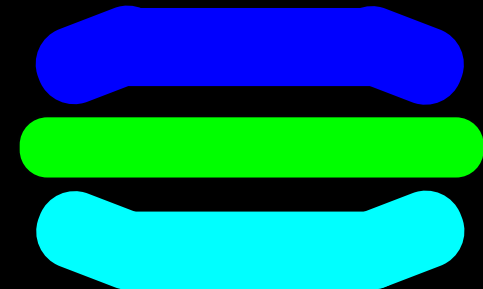
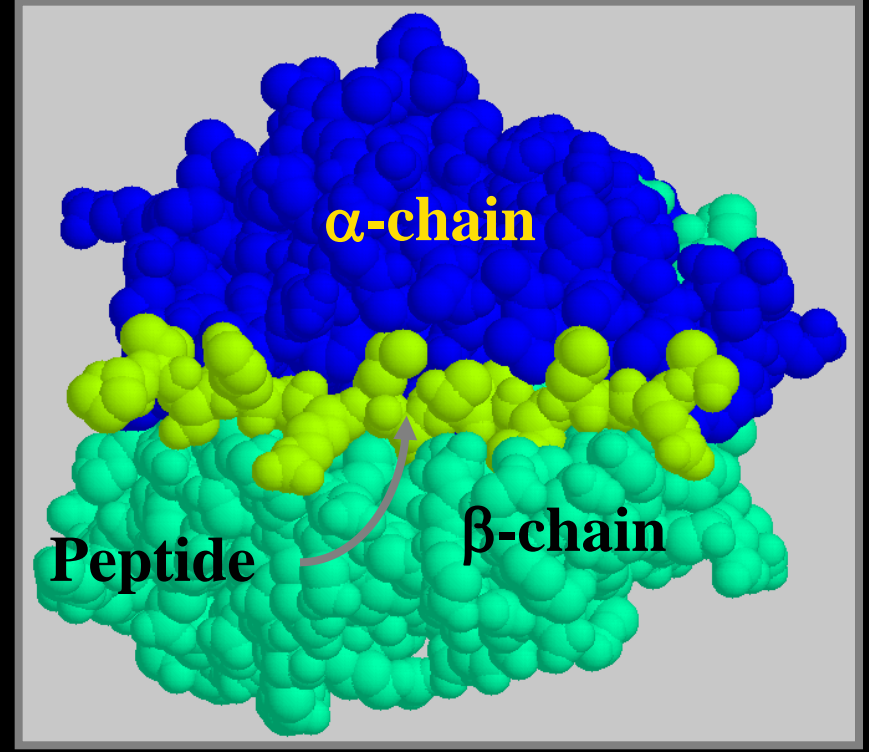
MHC sınıf II

Peptid oyukta non-kovalent bağlarla tutulur

# Peptid Taşıyan Oluğun Geometrisi



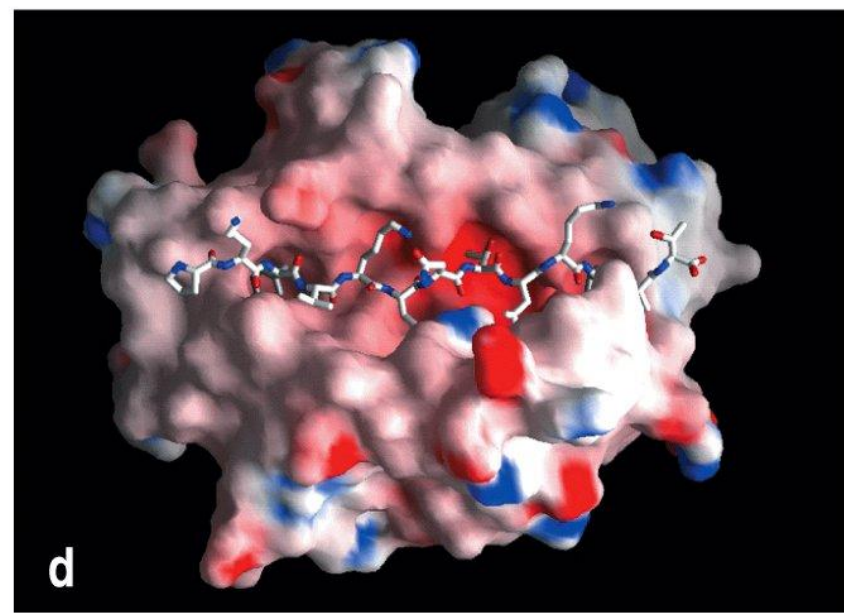
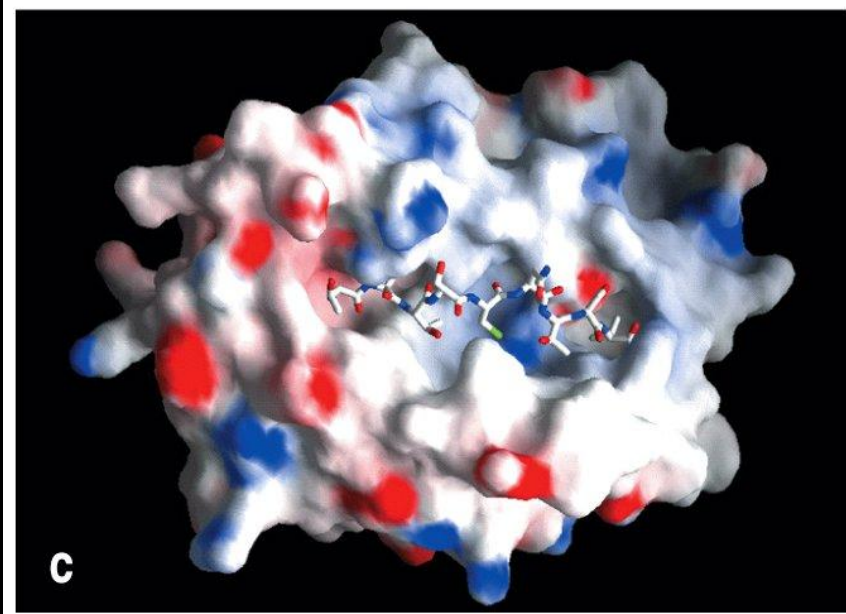
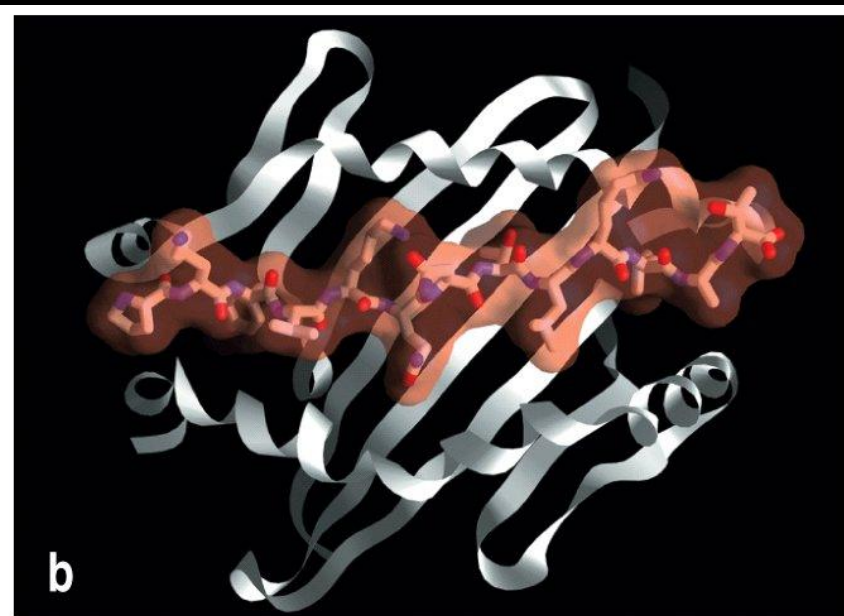
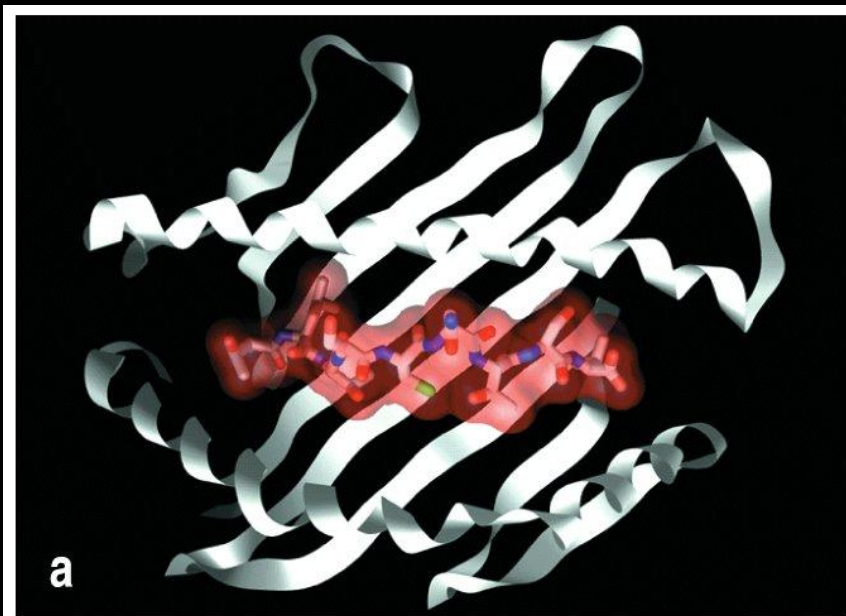
**MHC sınıf I** 8-10 amino asitlik peptidleri taşır



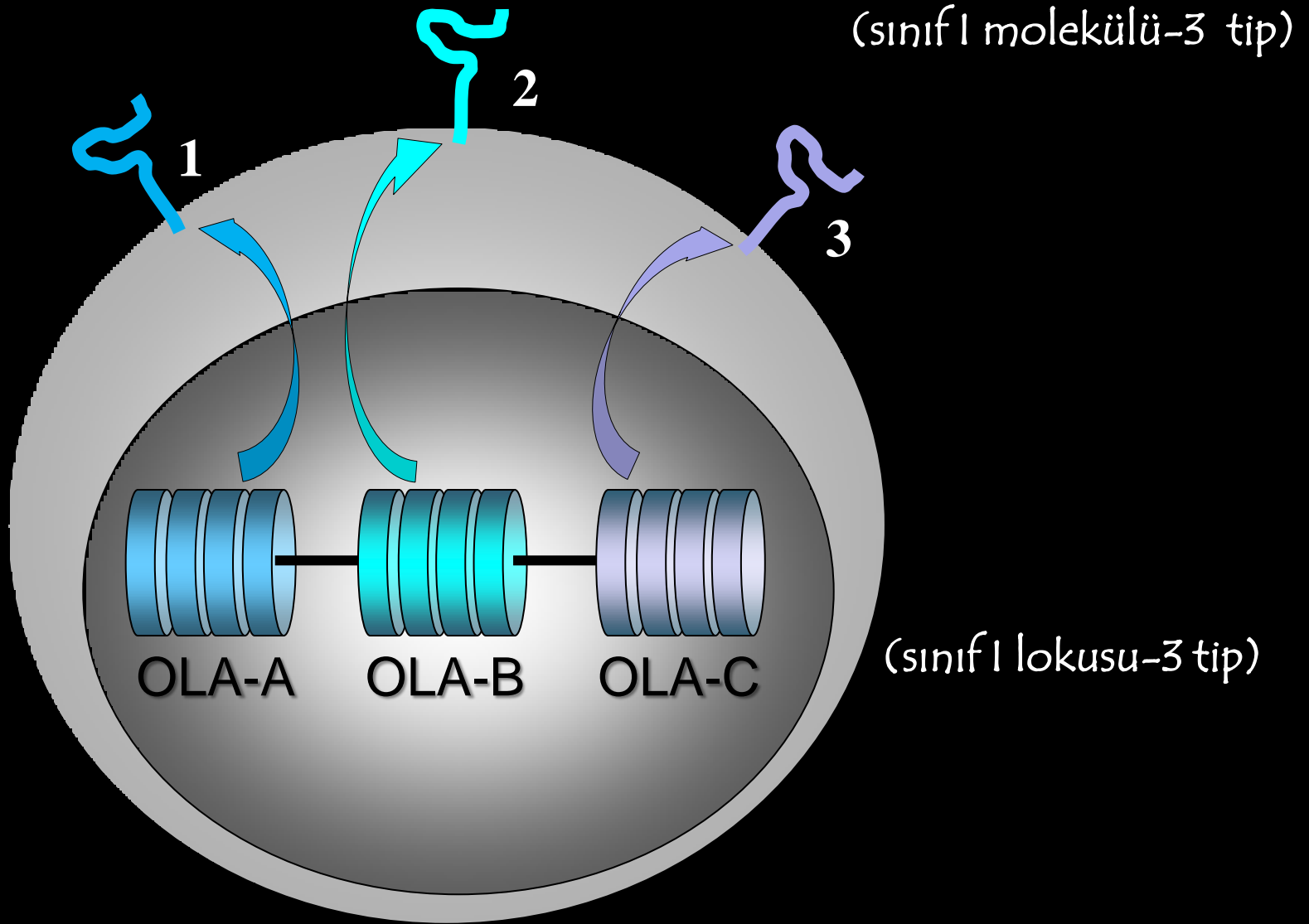
**MHC sınıf II**  $\geq 13$  amino asitlik peptidleri taşır

# MHC I/peptid

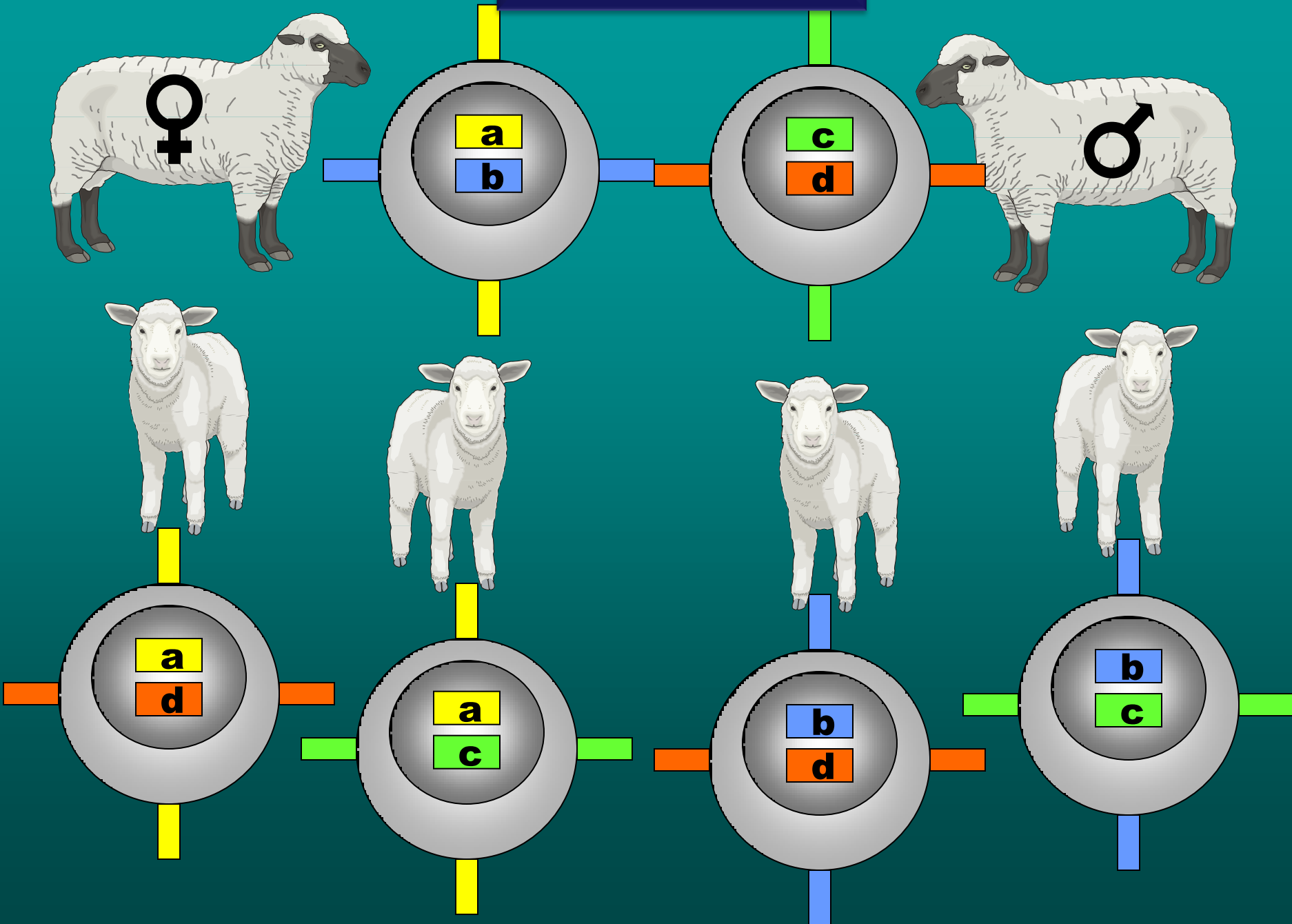
# MHC II/peptid



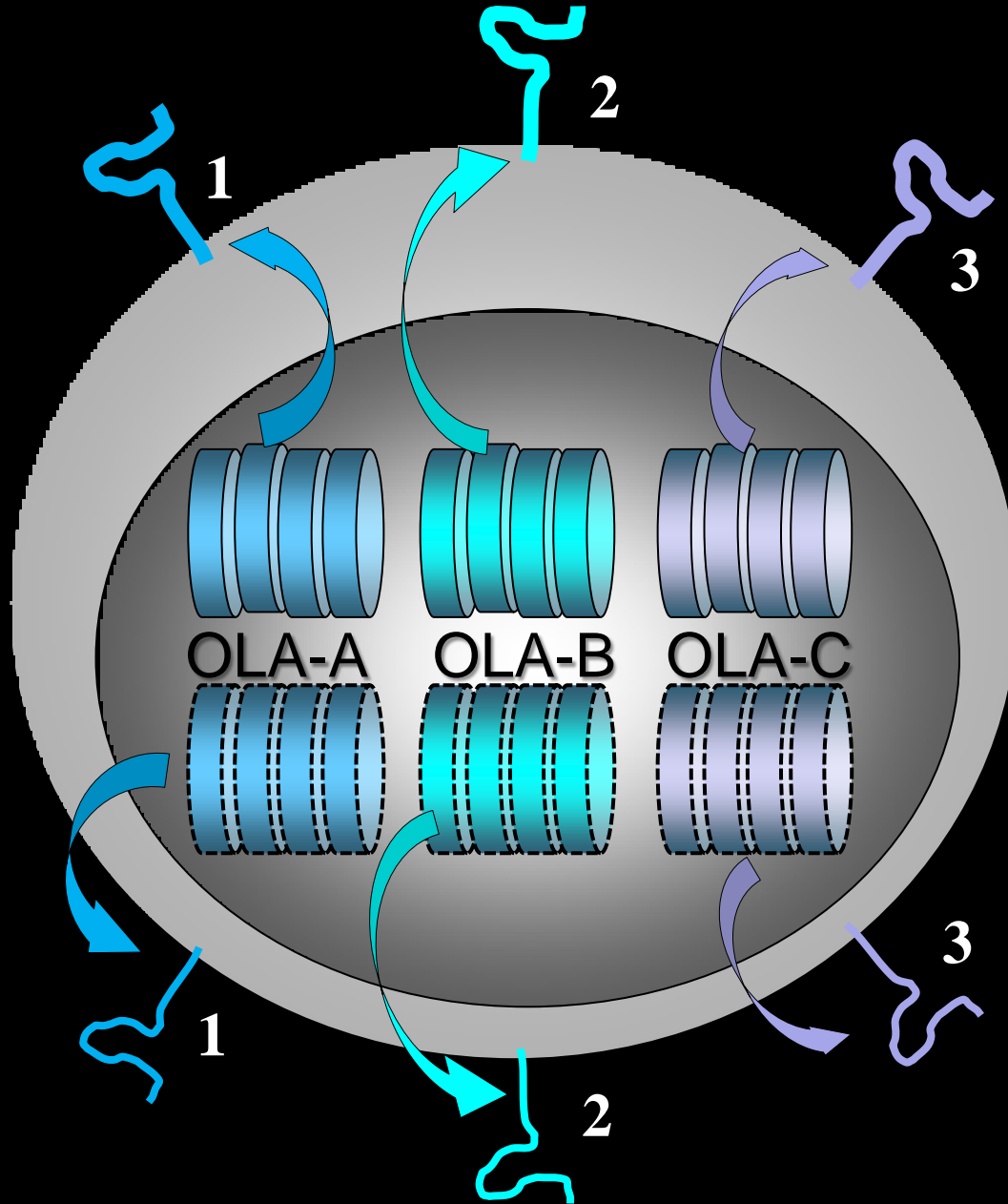
# MHC Polimorfizmi – Sınıf I



# MHC Polimorfizmi



# MHC Polimorfizmi – Sınıf I



Homozigot koyunda  
sınıf I molekülü-3 tip

Heterozigot koyunda  
sınıf I molekülü=

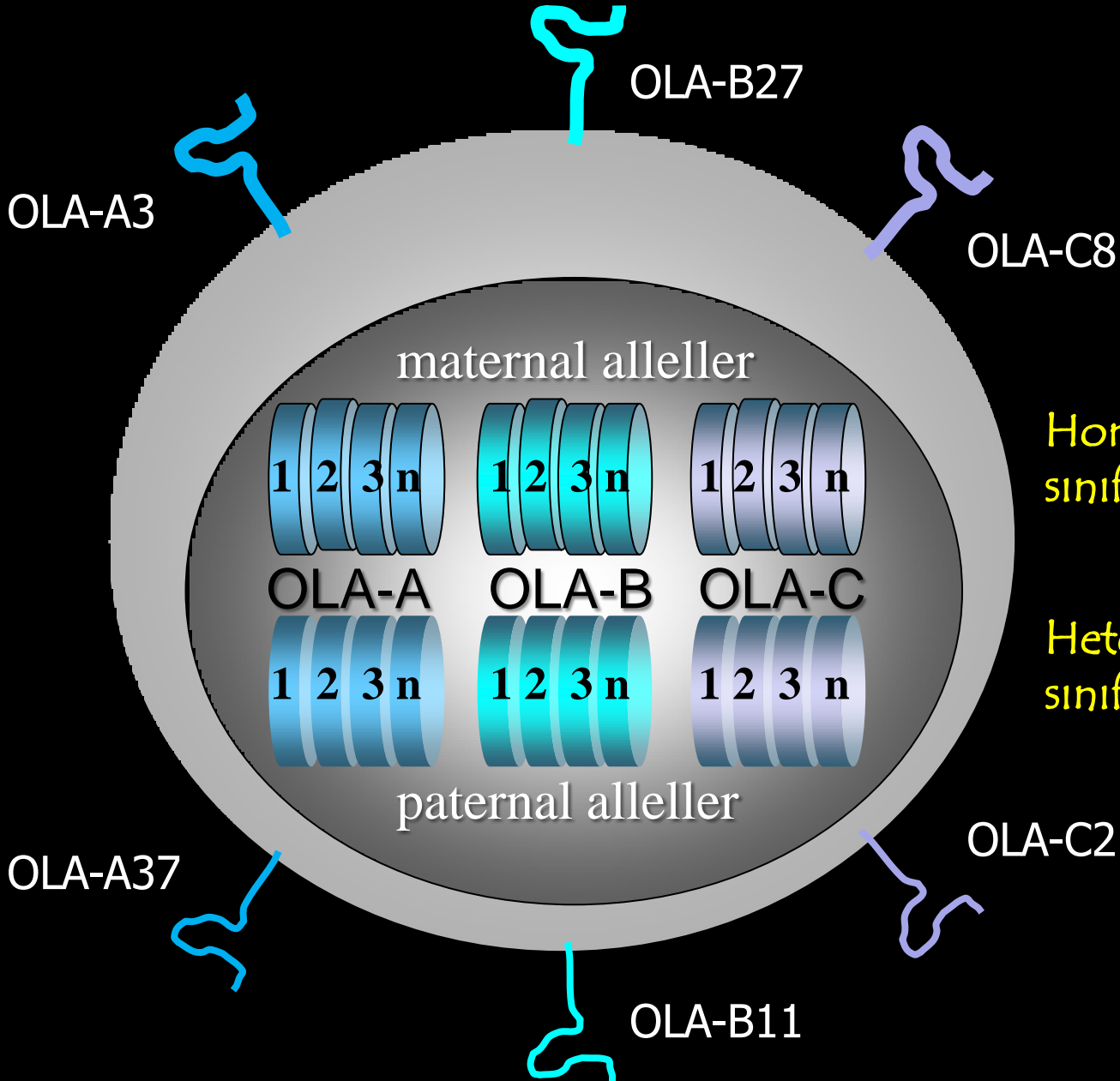
Anneden gelen  
sınıf I lokusu-3 tip

+

Babadan gelen  
sınıf I lokusu-3 tip

= 6 tip

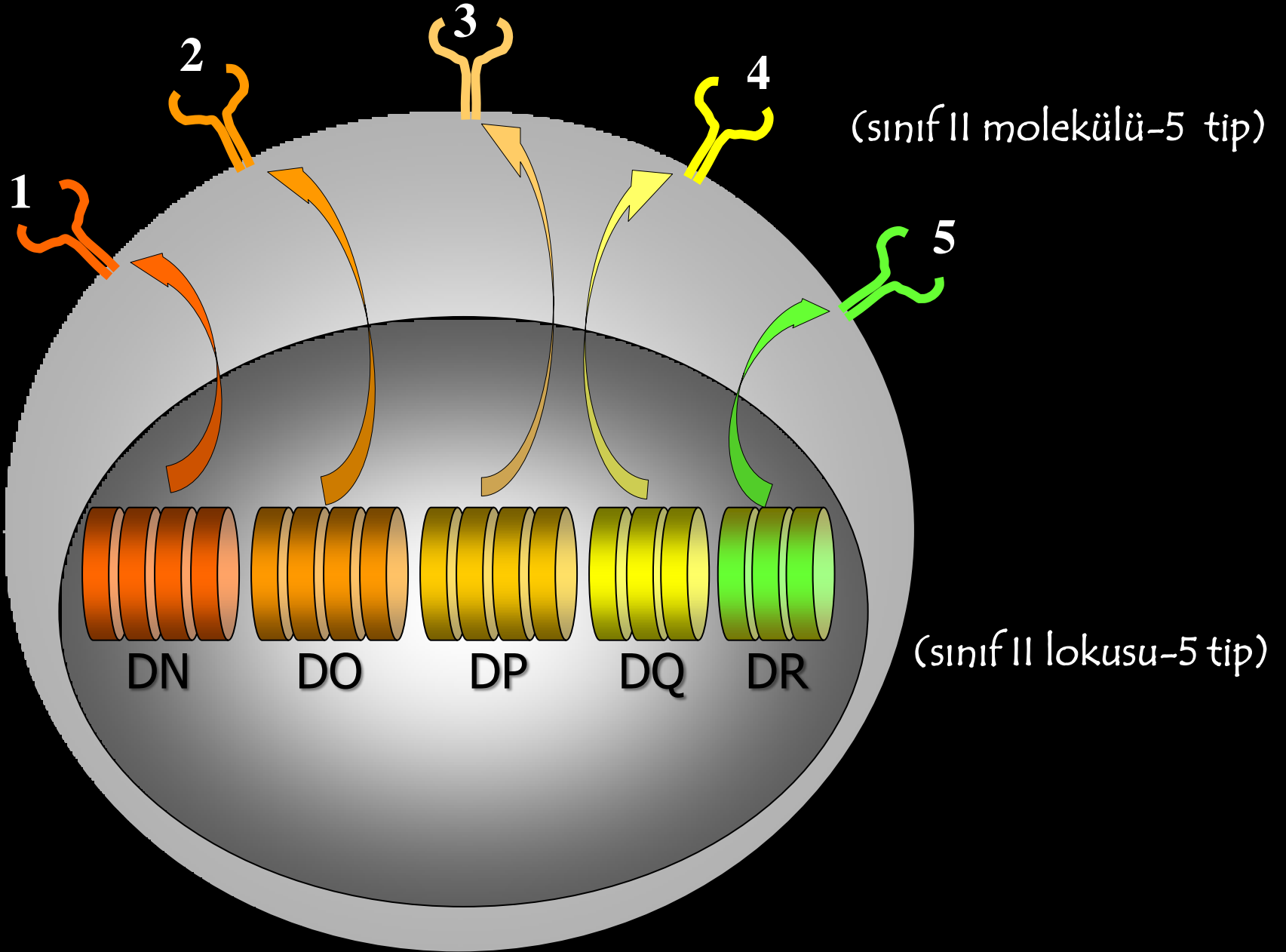
# MHC Polimorfizmi – Sınıf I



Homozigot koyunda sınıf I molekülü=3 tip

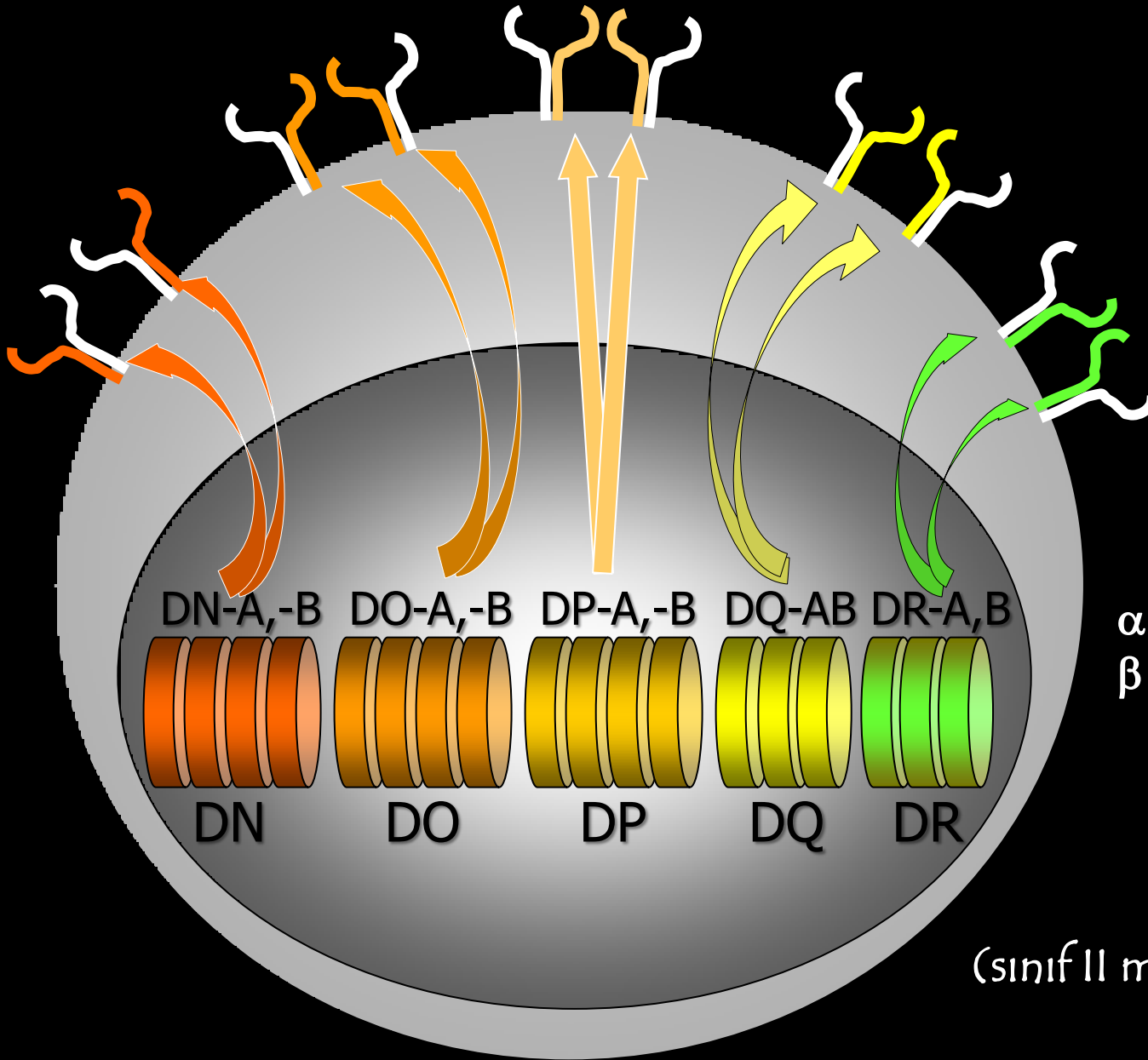
Heterozigot koyunda sınıf I molekülü=4-6 tip

# MHC Polimorfizmi – Sınıf II

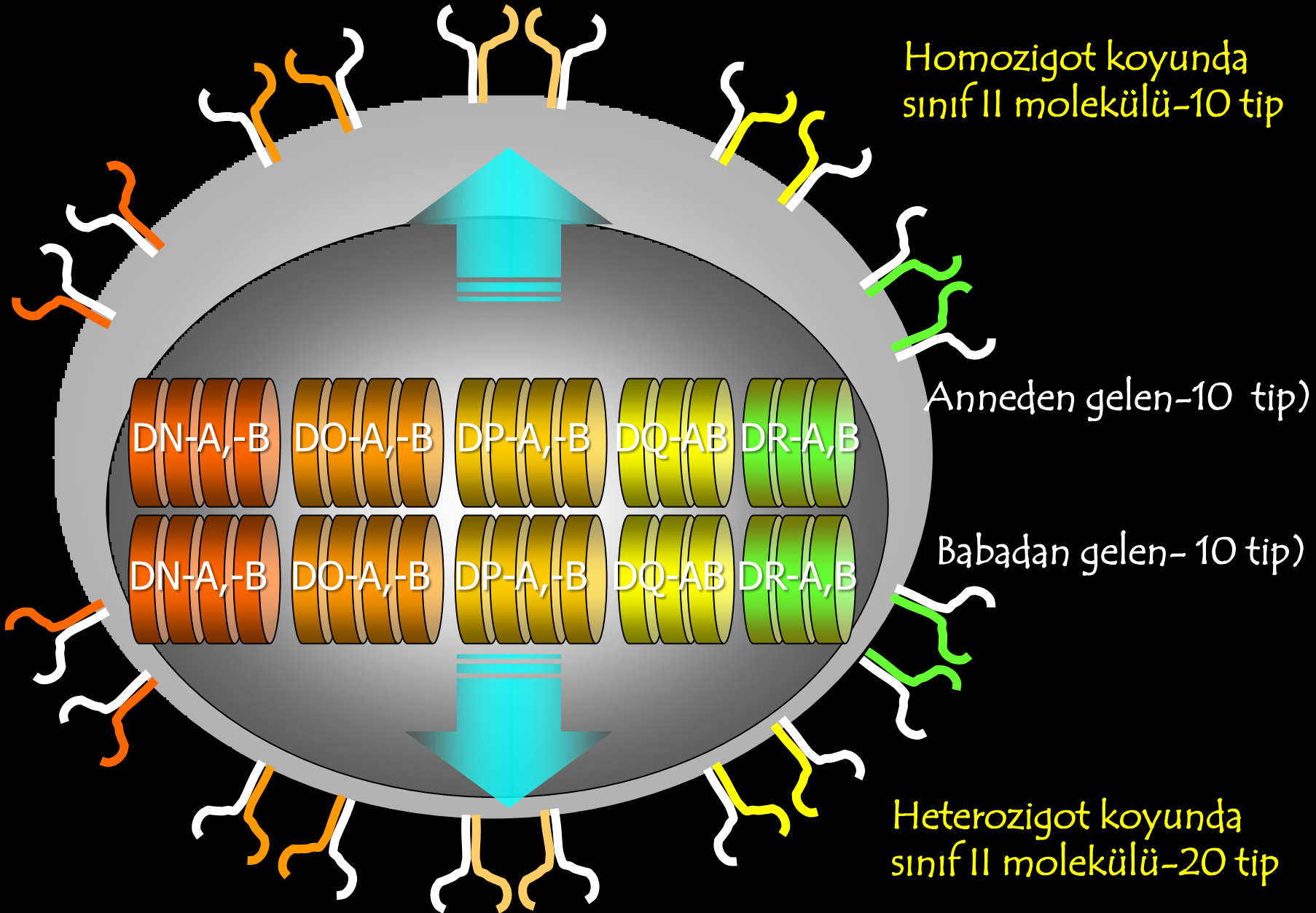




# MHC Polimorfizmi – Sınıf II



## MHC Polimorfizmi – Sınıf II

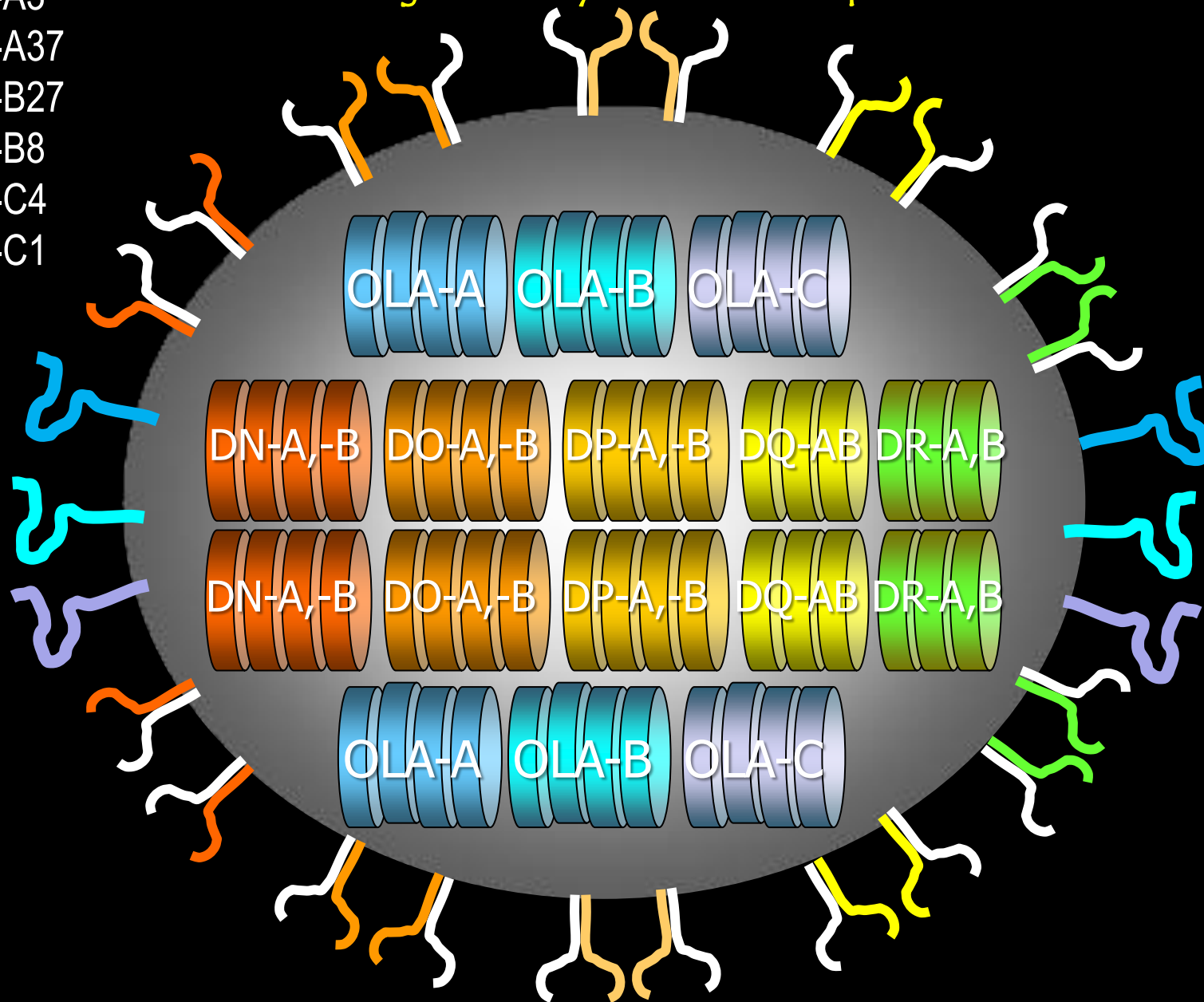


# MHC Polimorfizmi – Sınıf 1 + Sınıf II

*Heterozigot bir koyunun MHC repertuarı*

OLA-A3  
OLA-A37  
OLA-B27  
OLA-B8  
OLA-C4  
OLA-C1

DN-A5  
DN-B2  
DN-A12  
DN-B8  
DO-A4  
DO-B3  
DO-A1  
DO-B7  
DP-A2  
DP-B1  
DP-A3  
DP-B5  
DQ-A5  
DQ-B2  
DQ-A9  
DQ-B9  
DR-A7  
DR-B1  
DR-A6  
DR-B3

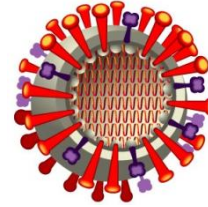


# MHC Polimorfizminin Sonuları

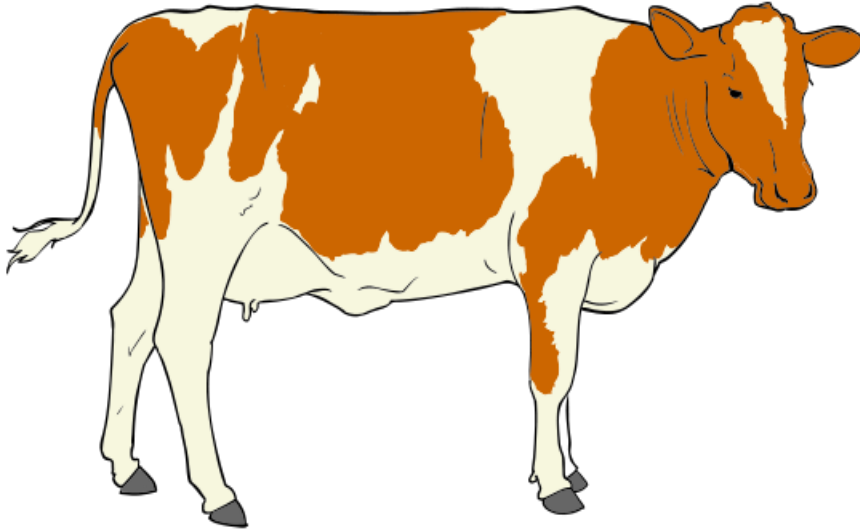
A mikrobu



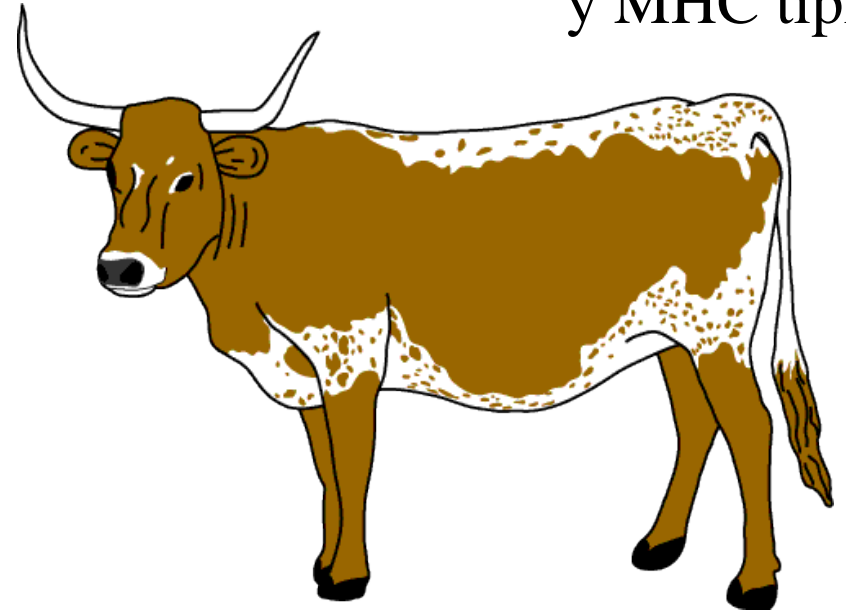
B mikrobu



x MHC tipi



y MHC tipi



x MHC tipi A mikrobuna direnli

x MHC tipi B mikrobuna duyarlı

y MHC tipi B mikrobuna direnli

y MHC tipi A mikrobuna duyarlı

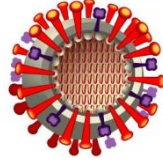
**MHC eřitlilięi bireysel avantaj saęlamıyor !!!**

# MHC Polimorfizminin Sonuları

A mikrobu



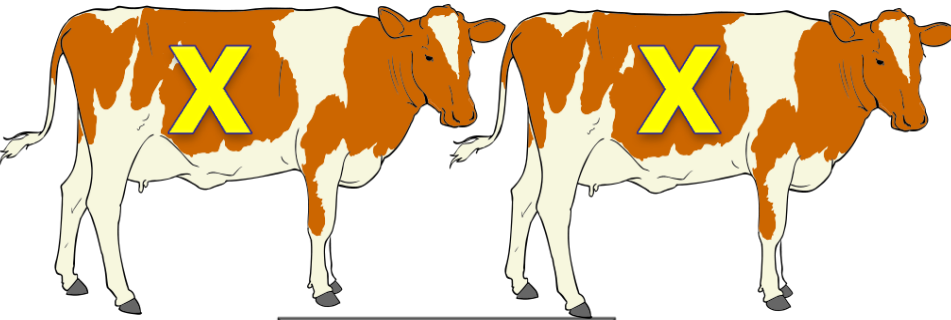
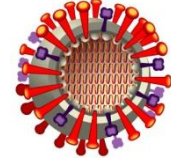
B mikrobu



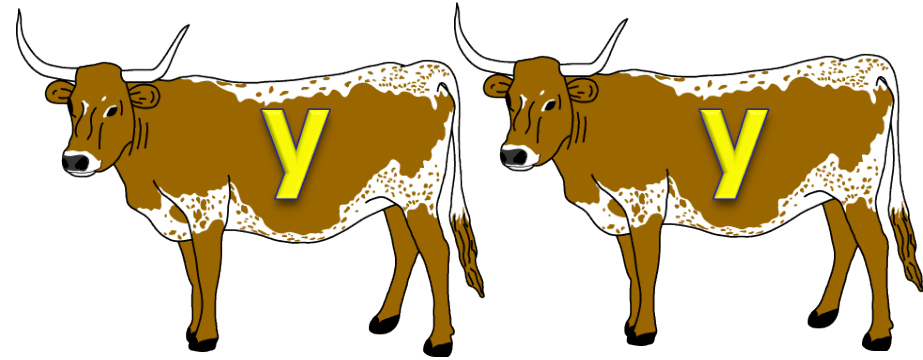
A mikrobu



B mikrobu



x MHC tipi



y MHC tipi

x MHC tipi A mikrobuna direnli

y MHC tipi A mikrobuna duyarlı

x MHC tipi B mikrobuna duyarlı

y MHC tipi B mikrobuna direnli

## MHC-Hastalık İlişkisi

1. Mikrobiyal antijenlerin sunulup sunulmaması ile ilgili,
2. Mikrobun MHC'yi hedef alması ve bozması ile ilgili,
3. Mikrop-Self antijen çapraz reaksiyonu ile ilgili olabilir.

# MHC Polimorfizminin Sonuçları

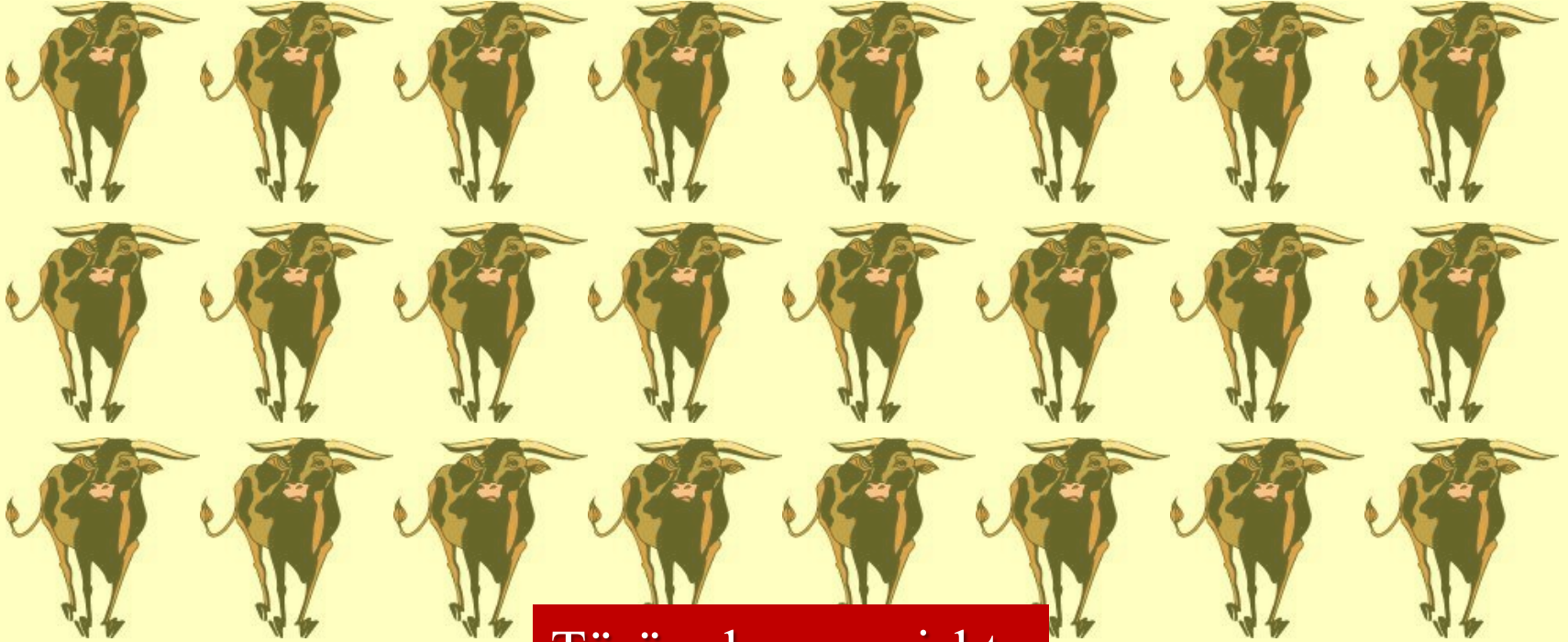
Eğer popülasyonda tek tip MHC olsaydı ? (örn. MHC x)

MHC x ile  
sunulmayan  
veya bozan patojen

MHC x



Bireyin yaşamı riskte



Türün devamı riskte

# MHC Polimorfizminin Sonuları

Populasyonda iki tip MHC olduėunu varsayalım (MHC x ve MHC y)



MHC x patojen antijeni sunamaz veya bozular



MHC y patojen antijeni sunar ve etkilenmez



MHC x'in devamı riskte



# MHC Polimorfizminin Sonuçları

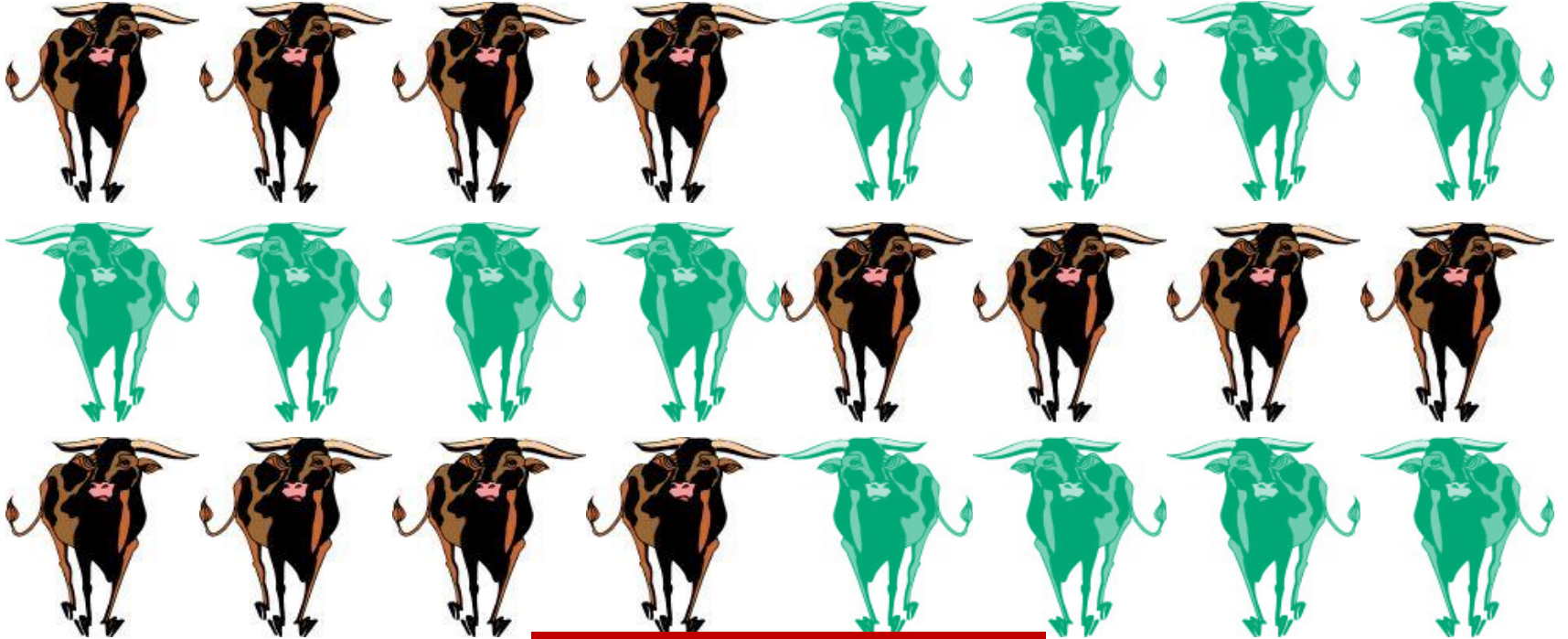
Populasyonda 2 tip MHC ve 2 tip mikrop olduğunu varsayalım

A

A

MHCx A patojeni  
antijeni sunamaz  
veya bozular

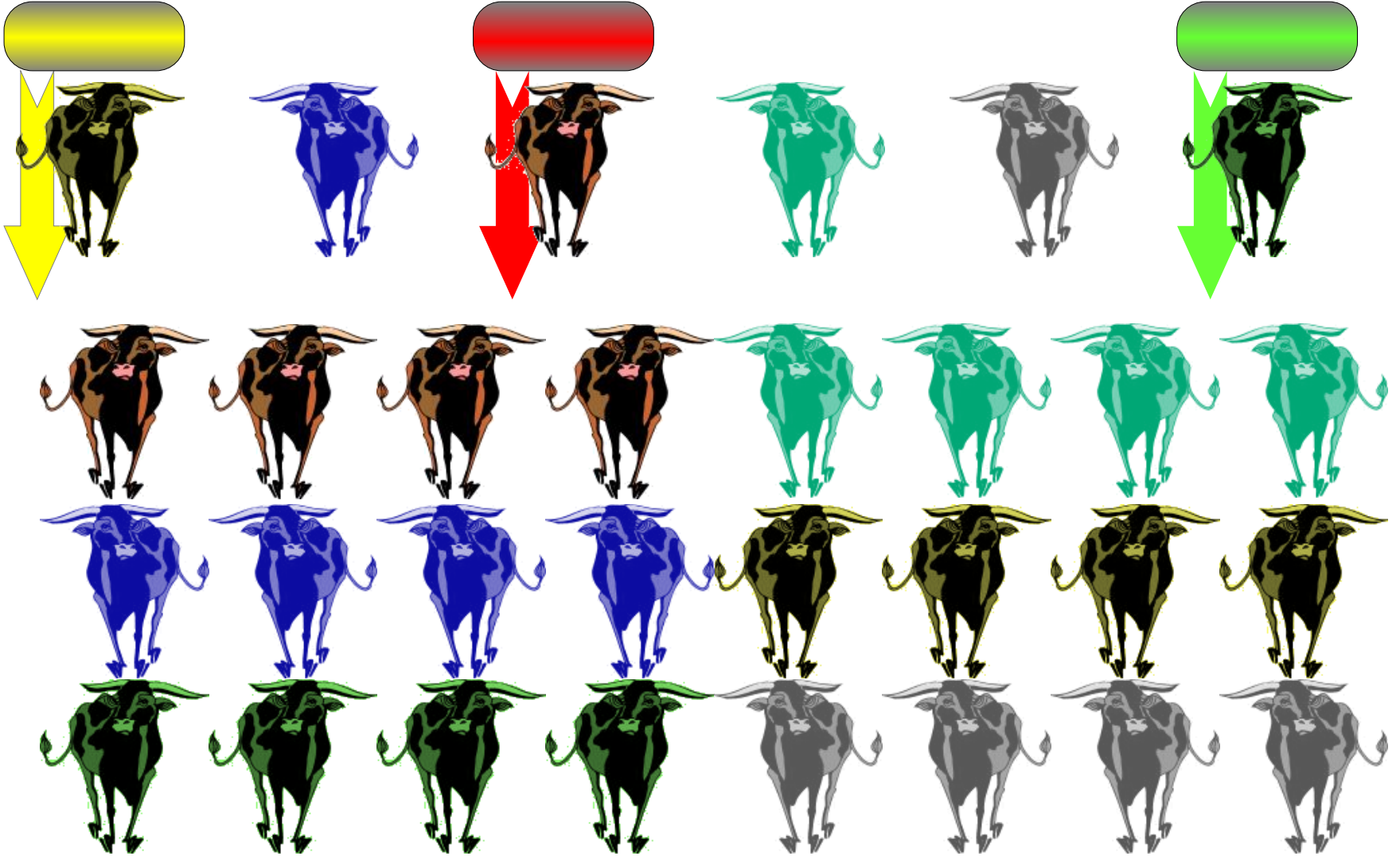
MHC y B patojeni  
antijeni sunamaz  
veya bozular



Türün devamı riskte

# MHC Polimorfizminin Sonuçları

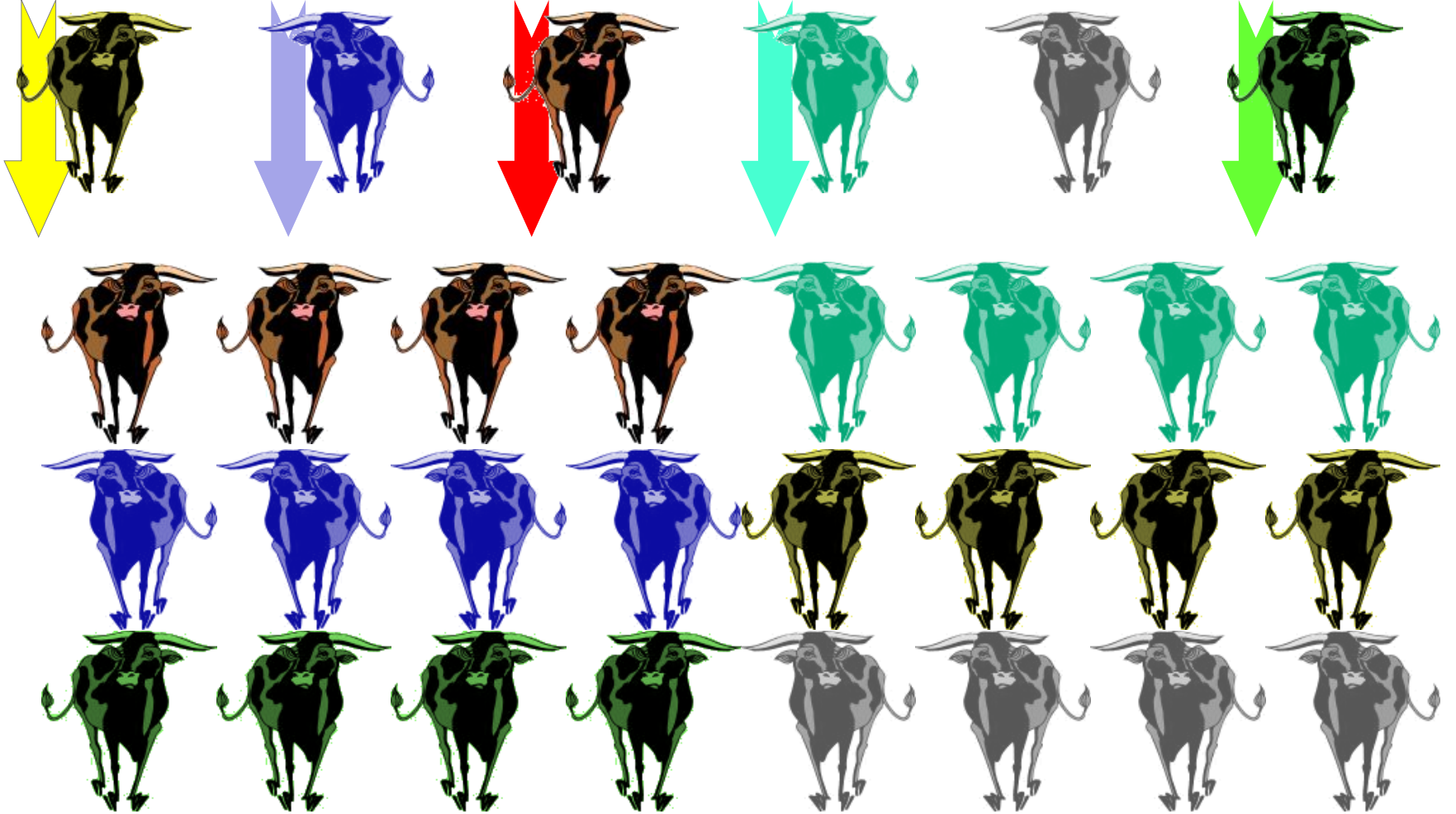
Populasyonda çok sayıda MHC tipi ve mikrop tipi olduğunu varsayalım



Türün devamı garantide

# MHC Polimorfizminin Sonuları

Populasyona yeni bir mikrop tipi girdiđini varsayalım



Türün devamı garantide