

## \* T cell receptor

- T cell Express epitope specific, distinct, cell surface receptor.
- Heterodimer
- compose either  $\alpha\beta$  or  $\gamma\delta$  light-heavy chain pair
- Each polypeptide has single variable region domain + single constant region domain
- TCR [T cell receptor] complex.

↓  
 $\alpha\beta$  or  $\gamma\delta$  TCR heterodimer pair  
+

CD3 - participate in signal transduction  
CD4/CD8 - stabilize interaction of TCR & specific peptide MHC [pMHC] combination

→ Short cytoplasmic tail - lack signaling sequence or immunoreceptor tyrosine activation motifs [ITAMs]

→ TCR - can not bind free epitope  
- Bind only enzymatically cleaved fragment of larger polypeptide that are presented as pMHC complex.

→ TCR diversity:

- DNA recombination to produce variable region

- Junctional diversity

→ TCR generated by recombination enzymes or recombinases

→ TCR: constant region genes united with their respective light chain  $VJ$  by transcription into mRNA

↓ followed by

Splicing to delete intervening mRNA

↓

united  $VJC$  or  $VDJC$  transcripts then translated into proteins that are joint product of rearranged gene.

→ Each developing T cell randomly produce unique light-heavy chain combination with unique specificity