

T Cell Development

Wednesday, October 15, 2014
9:56 PM

- TCR - recognizes both MHC (CDR1/2) & Peptide (CDR3) (unlike BCR)
- Development results in original repertoire (bigger than BCR)
- Each T-Cell has unique TCR
- genes encoding TCRs undergo rearrangement
- once rearrangement is complete, no other rearrangement is possible (not perfect)
- once TCR recognizes MHC-peptide, that T-Cell multiplies

a: VJ
B: VDJ

- no somatic mutations with TCR! ... therefore, need larger repertoire

Progenitor cells commit to becoming T-Cells

CORTEX = endothelial cells are involved in positive selection

MEDULLA = endothelial cells are checkpoint for negative selection

Pre-TCR = (rearranged β) + (original α)

Mature TCR = (rearranged β) + (rearranged α)

α/β uses MHC

γ/δ does not use MHC

POSITIVE SELECTION - test of binding to self MHC-Peptide at all

<u>poor binding</u>	DEATH BY NEGLECT
good binding	lives (2%)

*1-2% undergo 2nd rearrangement to try to create a functional TCR

MHC 1 > CD8

MHC 2 > CD4

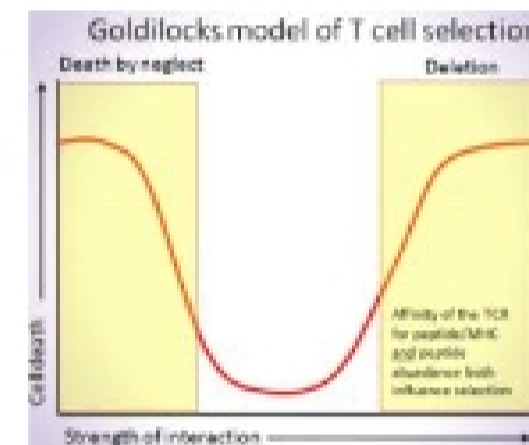
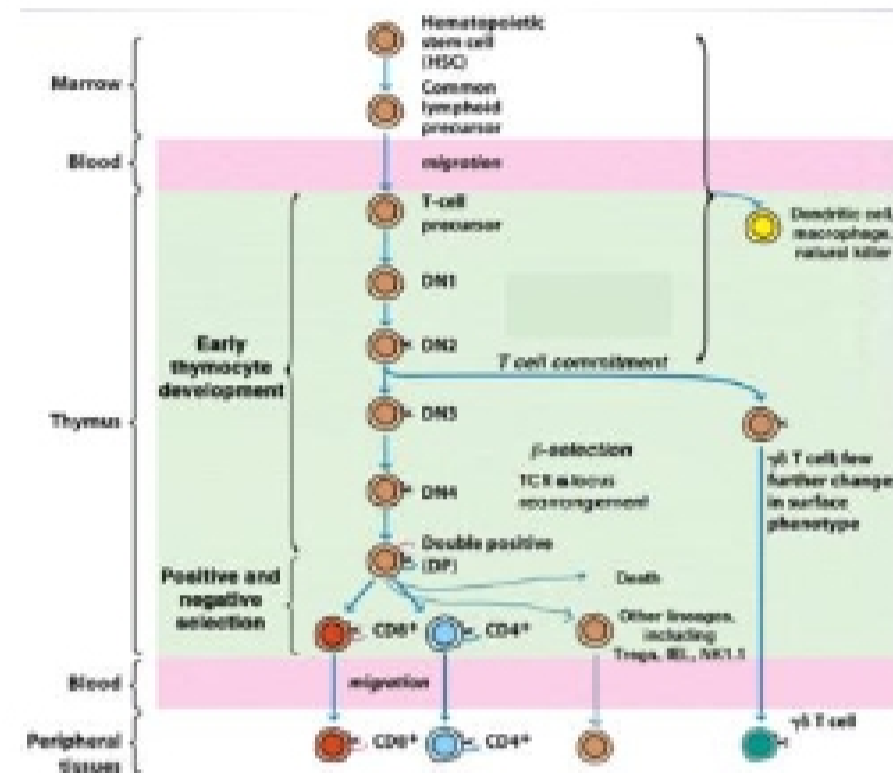
NEGATIVE SELECTION - test of binding to self-MHC-Peptide too strongly

<u>strong binding</u>	DELETION
Moderate binding	lives

AIRE - protein that causes genes to be expressed in epithelial cells to improve Negative Selection

APECED - autoimmune disease caused by lack of AIRE

T_{reg} - regulatory CD4 cell that recognizes self-MHC-Peptide; suppress proliferation & function of T-cells in periphery



*both Affinity & Peptide influence selection