

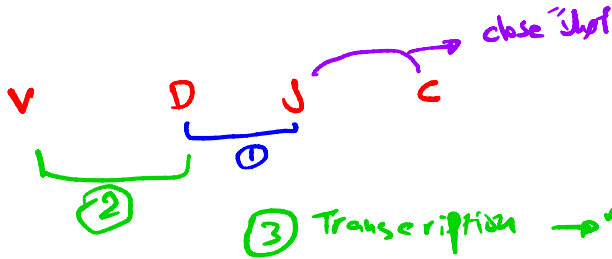
lec 13: $\text{progenitor} \rightarrow \text{pre-B/T} \rightarrow \text{immature} \xrightarrow{\text{selection}} \text{mature}$

⊗ B, heavy \rightarrow D segment.

⊗ RAG_{1,2} (class of enzymes)
Tdt

⊗ B-cell + melanoma.
mouse

Lec 14:



⊗ promoter & enhancer: ...V₂/V₁, ...



⊗ ASS \rightarrow 12/23
deletion hairpin loop
Inversion Tangled
RAG_{1,2}, Artemis
Ku_{70/80}, ligase

Lec 15:

⊗ BCG only Bacterial live attenuated vaccine.

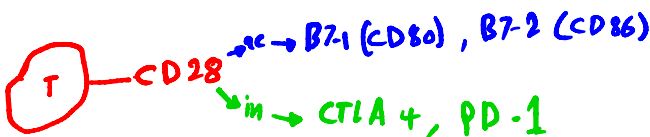
⊗ Live attenuated: MMR, varicella, OPV
Inactivated: IPV, whole-cell pertussis, rabies, hepatitis A
subunit

⊗ Plasmodium falciparum + HBs Ag \rightarrow Malaria

- toxoid: tetanus, diphtheria
- conjugated: streptococci, pneumococci, Hib, meningitis & es

Lec 16:

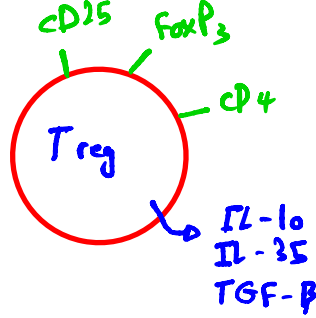
⊗ TH₁: Intracellular
⊗ TH₂: helminthic parasites.
⊗ TH₁₇: fungi + bacteria



⊗ Bel-XL antiapoptotic
⊗ Bel-2
⊗ IL-2 most important or you can say (Ayham Alkmaid)

Integrin موجود على خلايا الالتهاب
selectin موجود على خلايا الالتهاب

- perforin, granzymes
- fasl - fas



Signature cytokines	Immune reactions	Host defense	Role in diseases
CD4 ⁺ Th1 cell → IFN γ	Macrophage activation; IgG production	Intracellular microbes	Autoimmune diseases; tissue damage associated with chronic infections
CD4 ⁺ Th2 cell → IL-4, IL-5, IL-13	Mast cell, eosinophil activation; IgE production; "alternative" macrophage activation	Helminthic parasites	Allergic diseases
CD4 ⁺ Th17 cell → IL-17A, IL-17F, IL-22	Neutrophilic, monocyte inflammation	Extracellular bacteria; fungi	Organ-specific autoimmunity

Lec 17: ابن عجلان يا عزها وسندها

Lec 18:

SLE → B cells
C1q, C2, C4
defect innate.
• NE Tosis
• ↓ clearance debris
• ↓ phagocytosis

T₁D → T cells
β-cells pancreas destroyed

Grave's → hyperthyroidism
TSH receptor

Myasthenia gravis → Muscle → Ach receptor

Lec 19:

HLA highly polymorphic
haplotype

compatibility tests
1. ABO. 2. Tissue Typing.
3. cross matching. 4. Panel Ab.

Kidney
HLA-A, B, DR

GvHD → HLA identical → minor HC

Lec 20:

Ipilimumab (anti-CTLA-4)
provenge / sipuleucel-T (APC vaccination)
virus vaccine → makes the immune system more specific for tumor cells.

Lec 21:

Epstein Barr virus: oncogenic.
LAD-1 → β -integrin
LAD-2 → sialyl Lewis X (selectin ligand)
Chediak Higashi syndrome
Lyst 1. Melanosome X albinism
2. defect nerve.
3. platelet → bleeding
CGD → deficiency in I F- γ Microphage oxidase
deficiency complement C2 most common
C3 most severe TCC Nisseria
Scleritis: complement inhibitor.

⊗ DiGeorge syndrome
CATCH-22

⊗ SCID → cytokine signaling
→ Nucleotide salvage (accumulation of toxins in lymphocytes)
→ V(D)J

⊗ B-cells
Immunodeficiency → IgA ID most common primary ID
→ agammaglobulinemia
→ common variable ID.
→ Hyper IgM CD40

⊗ T-cell → Wiscot Aldrich platelet ↓

Lec 22:

⊗ secondary ID → Malnutrition proteins, zinc, vitamins A, C, D, E
→ Infection HIV, Measles
→ Drugs chemotherapeutic
→ Metabolic and chronic conditions Diabetes, chronic renal disease
→ Extreme ages

lec 25 + 26:

Overview of hypersensitivity reactions:

Type	Immune mediator of pathology	Mechanism of tissue injury	Examples
Immediate (type 1)	IgE	Mast cells and their mediators (vasoactive amines, lipid mediators and cytokines)	Allergic reactions, anaphylaxis, asthma, eczema الحساسية
Antibody mediated (type 2)	IgM, IgG against antigens bound to cells or tissues	Phagocytosis, antibody-dependent cell mediated cytotoxicity (ADCC), receptor blocking or complement mediated lysis	عدم توافق ABO incompatibility, Rh incompatibility
Antibody mediated (type 3)	Stimulating antibodies against antigens bound to cells or tissues	Overactivity in the target organ	Graves' disease مرض يسبب زيادة نشاط الغدة الدرقية
Immune complex mediated (type 3)	Circulating immune complexes of antigens and IgM or IgG	Ag-Ab complexes activate the complement and Fc receptors resulting in activation and recruitment of leukocytes	Systemic lupus erythematosus الحمى الذؤابية, rheumatoid arthritis التهاب المفاصل الرثوي
Cell mediated (type 4)	CD4+ T cells or CD8+ cytotoxic T lymphocytes	Macrophage activation resulting in cytokine mediated inflammation or direct cell killing by cytotoxic T lymphocytes	Tuberculosis

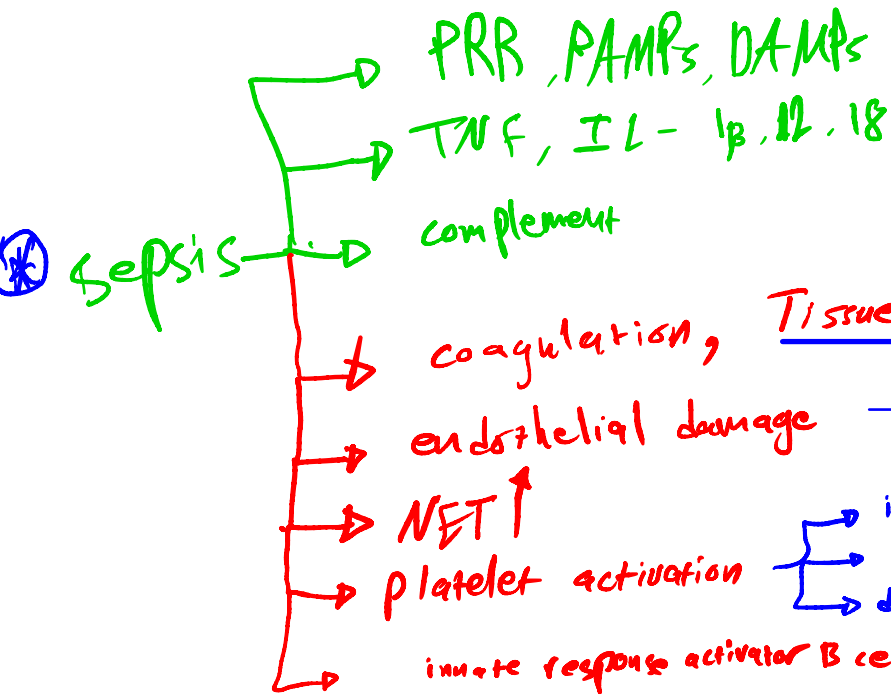
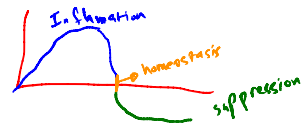
⊗ IgE → Histamine, leukotriene and prostaglandin, cytokines

⊗ rhino conjunctivitis (hay fever)
• Anaphylaxis allergen in the blood epinephrine علاج

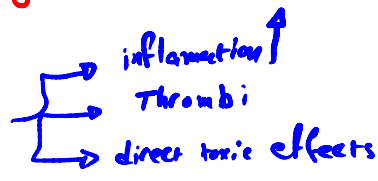
⊗ Rh. anti-D حقن

Lec 24:

⊗ sepsis: unbalanced immune response



يصلح رايات سرّي جزّي
~~leak of~~
 يفر بلبي الجدار.



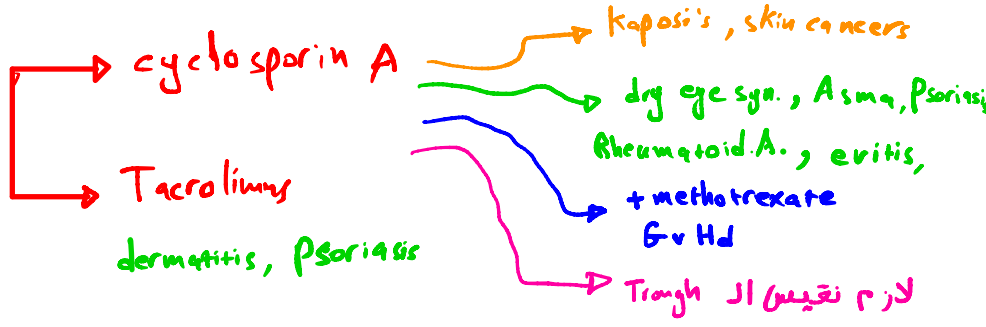
⊗ blood purification techniques.

Lec 27:

⊗ side effects for glucocorticoid

1. ID
2. Adrenal
3. hyperglycemia
4. growth failure
5. Excitatory CNS (euphoria, psychosis)
6. osteoporosis
7. cataract
8. gastric ulcers

⊗ calcineurin inhibitors



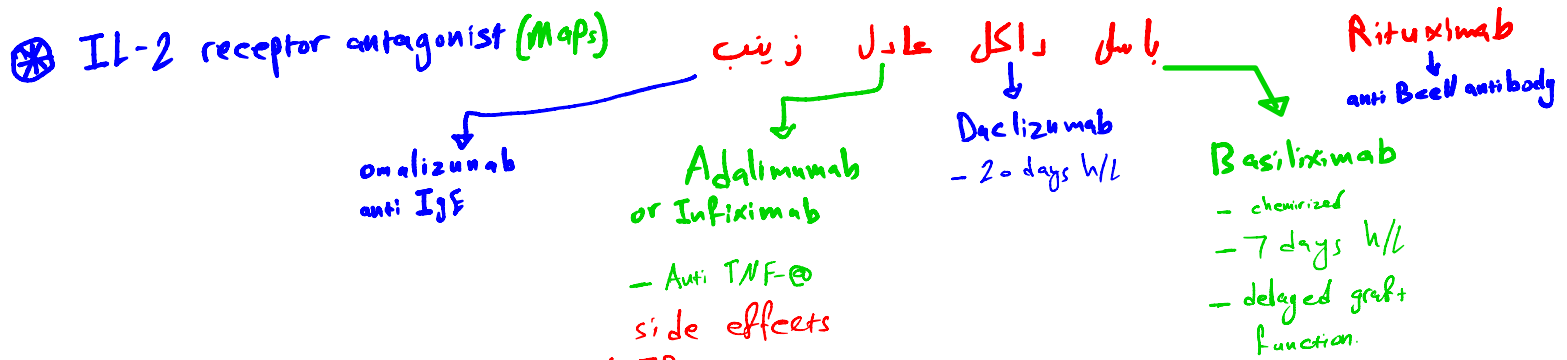
⊗ sirolimus \rightarrow m-TOR

⊗ Methotrexate \rightarrow folic acid
 \rightarrow Rheumatoid A., Behcet disease.

⊗ Mycophenolate, cyclosporine, prednisolone
~~Lo nucleotides~~

مضاد للالتهبي

⊗ Muromonab - CD3 → cytokine storm methyl prednisolone, diphenhydramine, acetaminophen
الارفين



⊗ prednisolone
ينتشر به صحة عصب راني
Ranitidine

إِنْ قُلْتَ فِي الْأَمْرِ لَا أَوْ قُلْتَ فِيهِ
نَعَمْ فَخَيْرَةٌ اللَّهُ فِي لَامِيكَ أَوْ نَعَمْ
اللَّهُ قَسَمٌ بَيْنَ الْخَلْقِ رِزْقَهُمْ
وَأَنْتَ خَيْرٌ فِي الْأَرْزَاقِ وَالْقِسْمِ
أَخُوكَ عَيْسَى دَعَا مَيْتًا فِقَامَ لَهُ
وَأَنْتَ أَحْيَيْتَ أَجْيَالًا مِنَ الرَّمَمِ
وَعَلَّمْتَ أُمَّةً بِالْقَفْرِ نَازِلَةٌ رَعِي
الْقِيَاصِرِ بَعْدَ الشَّائَةِ وَالنَّعَمِ

