PATHOLOGY

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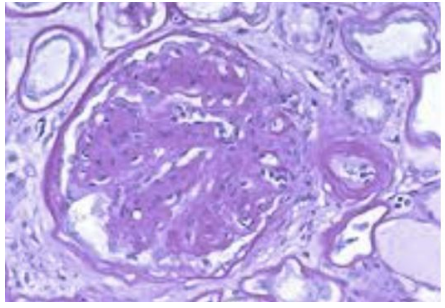
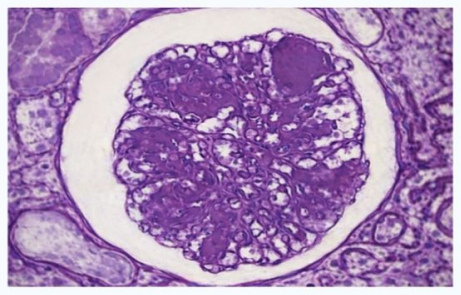




Whatsapp no. 8368491546

1. A 35-year-old woman presents with fatigue, low grade fever and shortness of breath on activity with weight loss for last 3 week. CXR shows enlarged lymph nodes in chest and CT guided lymph node biopsy is shown below. She has 2 pet cats. Which of the following is correct about this condition?

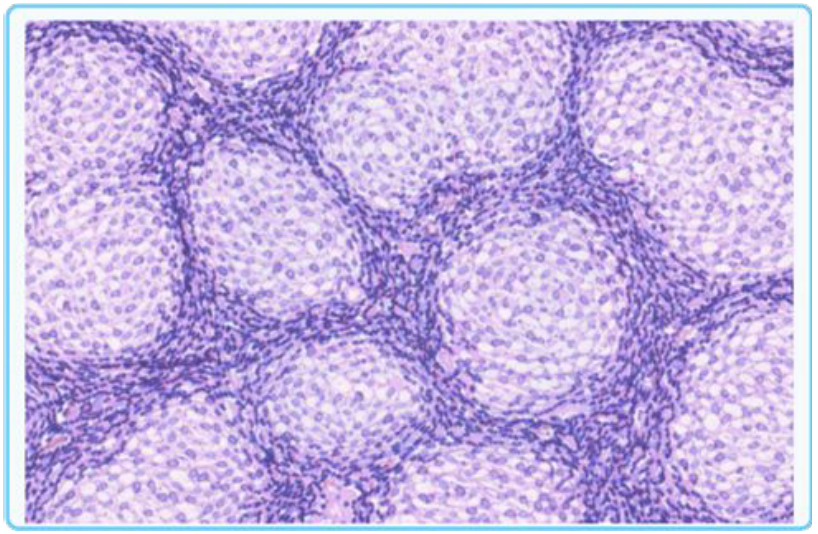
Sarcoidosis

a. Stellate granulomas — Cat scratch

b. Lymphocytic alveolitis

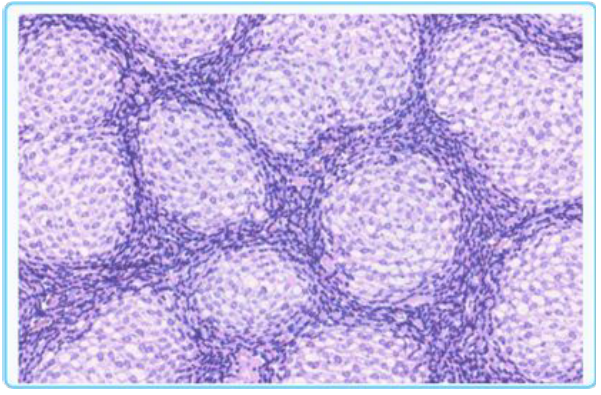
c. Epithelioid macrophages with central suppuration — TB

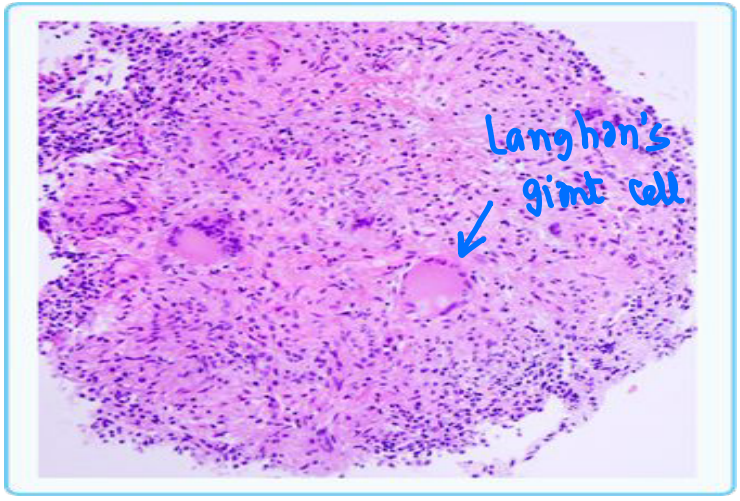
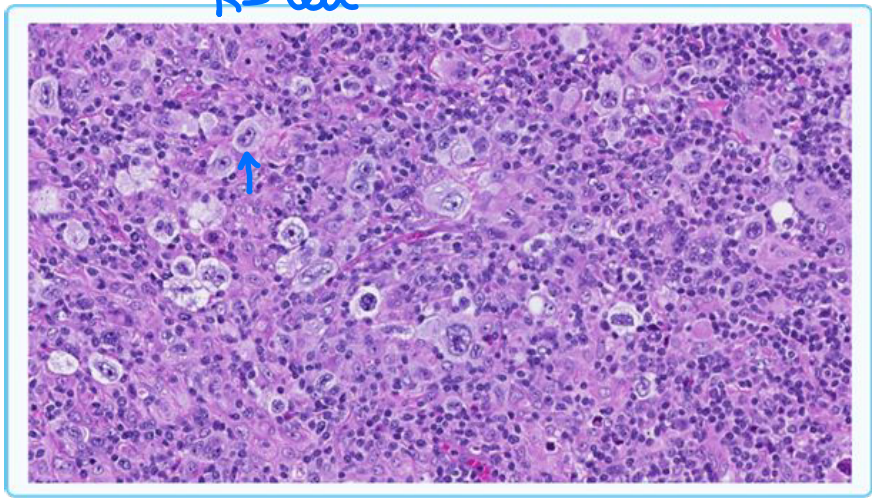
d. Necrotising lymphadenitis — Kikuchi dis



* BAL: $CD_4 : CD_8 > 3.5:1$
* lymphocytic alveolitis
* ACE levels ↑

* ASTEROID BODIES
Schaumann bodies

Sarcoidosis	Cat scratch
	

TB	HL
	

2. Defective phago-lysosomal action of macrophages leading to targetoid appearance and basophilic inclusions in biopsy specimen taken from urinary bladder is seen in which of the following conditions?

a. Chediak Higashi syndrome — LYST gene : NEUTROPHILS inclusion

b. Job syndrome → JACKED UP IgE ↑, old Teeth retained, Boils, BACTERIAL pneumonia

c. Malakoplakia

d. Schistosomiasis — HEMATURIA

Malakoplakia

- ✔ Chronic granulomatous inflammation
- ✔ Usually associated with E. coli infection
- ✔ Macrophages ingest bacteria but fail to digest them completely
- ✔ Leads to accumulation of partially digested bacterial remnants
- ✔ Formation of:
  1. Von Hansemann cells (large macrophages)
  2. Michaelis–Gutmann bodies (targetoid basophilic inclusions)

3. A 30-year-old woman with recurrent episodes of rash in intertriginous area is having massive proteinuria with oedema and hypoalbuminemia. Rash has been managed with topical antimycotics. Due to deranged KFT and fructoasmine levels , Kidney biopsy was done and light microscopy is shown below. Which of the following is correct description of aetiology of this presentation?

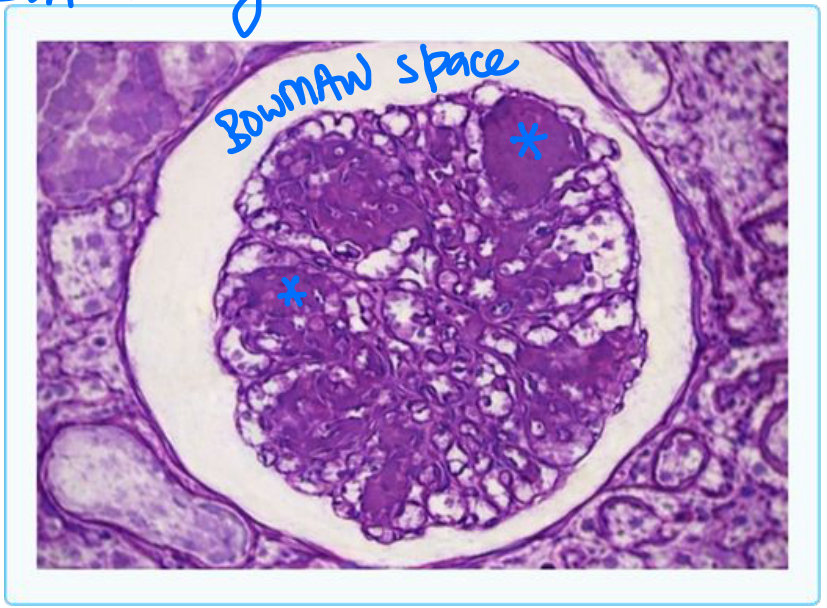
" Kimmelsteil Wilson change "

a. Diabetes mellitus

b. Systemic Lupus erythematosus FACE

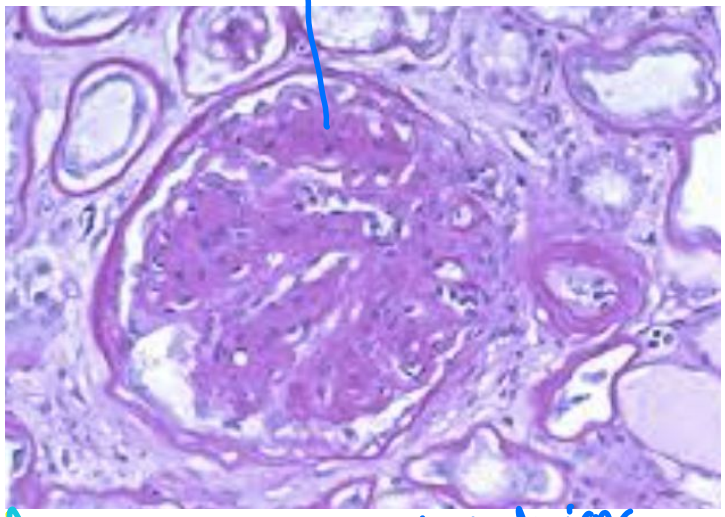
c. FSGS HIV

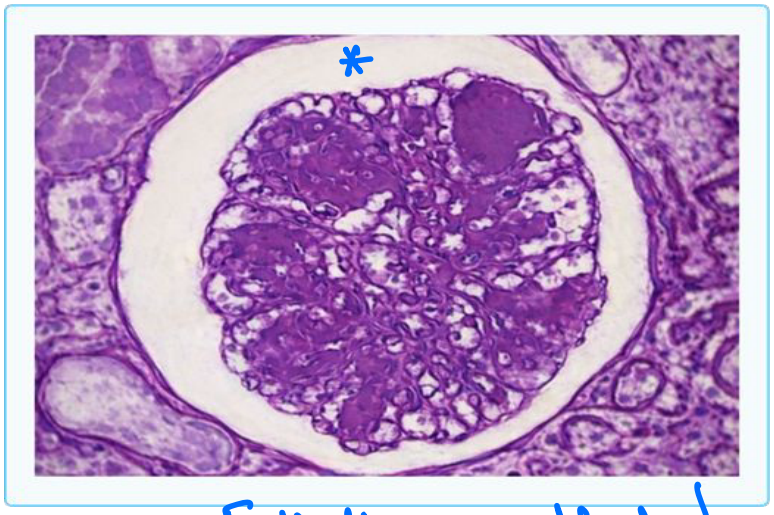
d. Amyloidosis



wire loop lesions

diffuse glomerulosclerosis

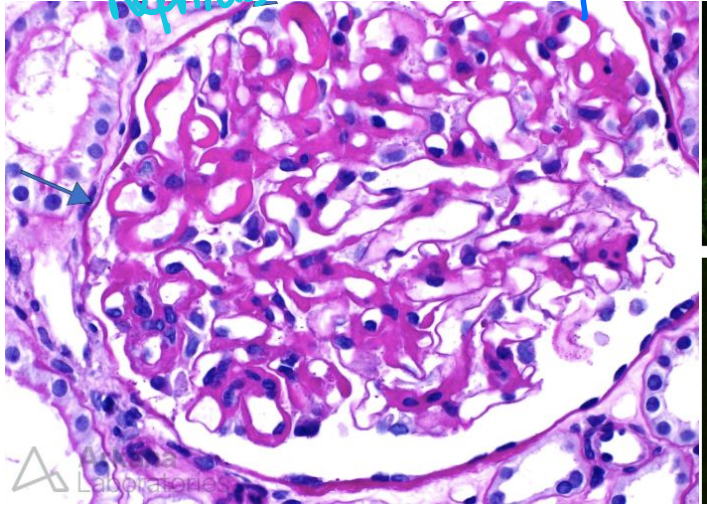


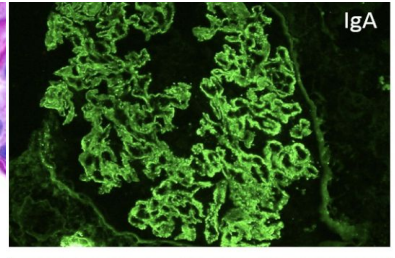


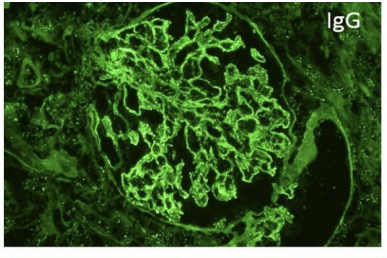
Lupus nephritis

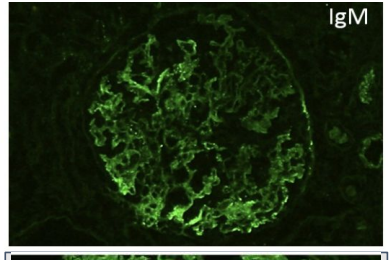
WIRE loop lesions

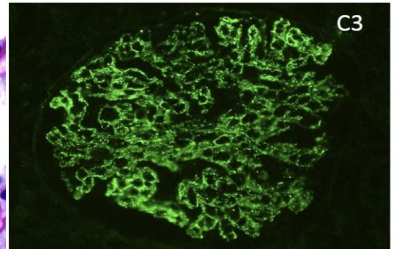
IF → Full House effect!

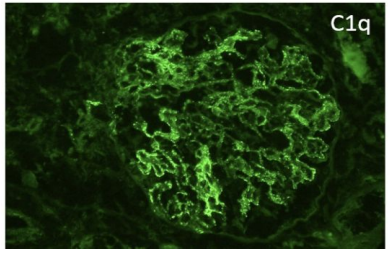


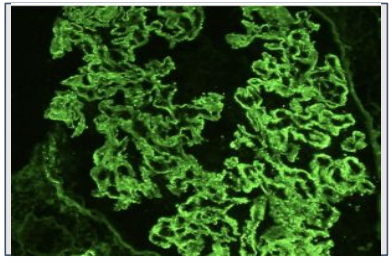












4. 52-year-old man presents with progressive weakness of both lower limbs followed by involvement of the upper limbs over last eight months. There is no sensory loss and no bowel or bladder involvement. On examination muscle wasting and fasciculations are present in the hands. Brisk deep tendon reflexes in lower limbs. Plantar responses are extensor. Cranial nerve examination reveals tongue fasciculations. CSF analysis is normal. Which of the following pathological findings is most likely seen in this condition?

a. Albumino-cytologic dissociation

b. Destruction viral mediated of anterior horn cells

c. Eosinophilic intracytoplasmic inclusions in alpha motor neurons

d. Segmental demyelination of motor roots

GBS

LMN + UMN #

? ALS : BUNINA BODIES

SOD activity ↓

L GBS

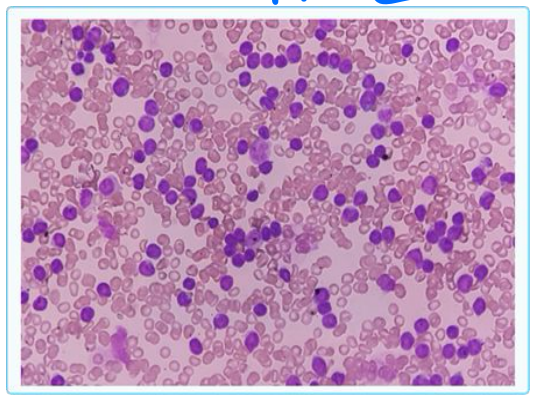
5. A 19-year-old male presents with continuous gum bleeds and fever with progressive fatigue for 3 weeks. Examination shows pallor and mild splenomegaly. CBC shows: Hb: 7.8 g/dL, TLC: 68,000/mm³, Platelets: 42,000/mm³. Bone marrow aspirate shows >25% blasts. Which of the following is correct about this condition?

a. MPO positivity on cytochemistry

b. t(15;17) translocation

c. CD10 and TdT positivity

d. Presence of Auer rods



a, b, d: AML

ANAEMIA + Bleeding

Hb ↓ TLC ↑↑ platelet ↓↓

6. What is the normal B to T cell ratio in peripheral blood immune system?

a. 1: 4

b. 1:2

c. 2:1

d. 4:1

B:T
20% 80%

CD_4: CD_8 RATIO

- In normal peripheral blood:
- - T cells ≈ 70–80%
- - B cells ≈ 10–20%

7. A 2 year old child is admitted with recurrent pneumonia episodes and steatorrhea. You are suspecting mucoviscidosis in this patient. Which is correct about the pathophysiology of this disease?

a. Low sweat chloride levels — elevated

b. Dehydrated periciliary fluid

c. Gain of function of CFTR protein — loss

d. Impaired ciliary function — KARTAGENER SYN : SITUS INVERSUS

CYSTIC FIBROSIS
* AR, ch 7, F508
CFTR protein #

8. A farmer presents with recurrent episodes of fever, dry cough, chest tightness, and breathlessness occurring 4–6 hours after working in his grain storage area. Symptoms partially subside when he stays away from work. On examination, fine inspiratory crackles are heard bilaterally. HRCT chest reveals ground-glass opacities with centrilobular nodules. Bronchoalveolar lavage shows lymphocytosis. Which of the following immunological mechanisms best explains this condition?

a. IgE-mediated mast cell degranulation

b. Antibody-dependent cell-mediated cytotoxicity

c. Immune complex–mediated and T-cell–mediated hypersensitivity

d. Ig-M mediated antibody dependant cell cytotoxicity

Anaphylaxis → Type II

Farmer lung → Hypersensitivity pneumonitis → Type III, IV

↳ mismatched BT

Ca STOMACH

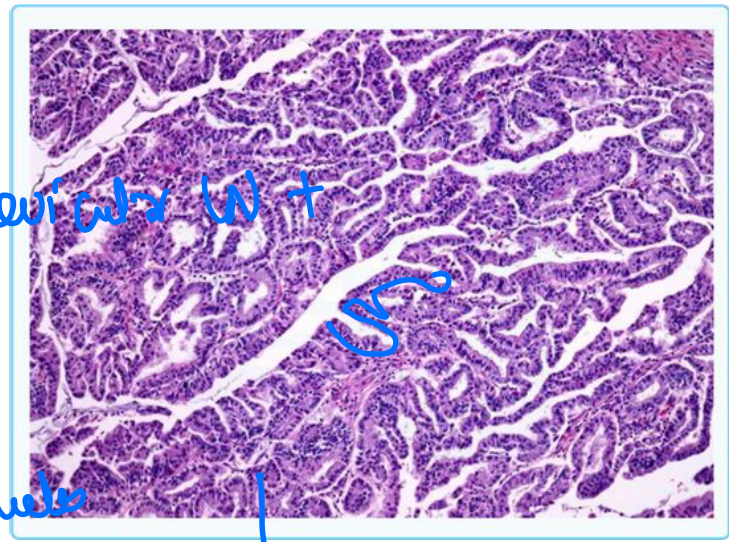
9. A 60-year-old man with recurrent vomiting episodes is found to have cauliflower growth in stomach. Punch biopsy report of the same is shown. Which of the following is not seen with this condition?

a. Linitis plastica ✓ leather bottle app

b. Virchow's node enlargement TROISER left supraclavicular LN +

c. Iron deficiency anemia

d. Umbilical bruising → bleeding



Adenocarcinoma

* UMBILICUS: SISTER MARY JOSEPH Nodule

SERUM SICKNESS

10. A farmer develops extensive rash, fever and arthralgia at all the large joints in the body five days after receiving anti snake venom for neurotoxin envenomation. Which type of hypersensitivity reaction is seen here?

CYANOSIS, RASH, RHONCHI, BP ↓

COBRA

a. Type 1

b. Type 2

c. Type 3

d. Type 4

ASV: HORSE SERUM

YY: HORSE SERUM : acts as antigen

= immune complexes formation

MT
lepromin
HP

11. All of the following can cause the following lung histology findings except?

a. Hemochromatosis due to recurrent packed RBC transfusion

b. Severe anaemia with elevated BNP levels

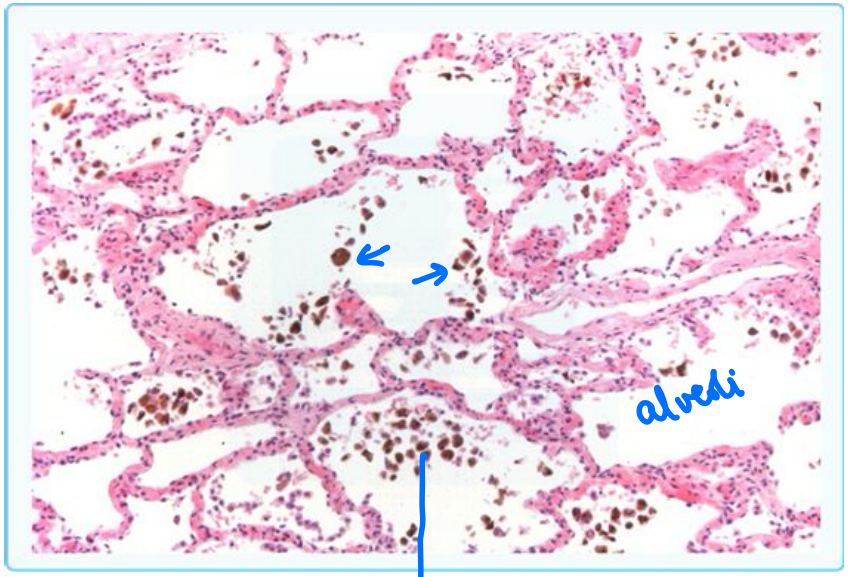
c. Dilated cardiomyopathy

d. Fish mouth mitral heart valve

HF

DCM

MS



HEART failure cell

pulm : RBC in alveolar fluid
edema HEMOSIDERIN +

12. 60-year-old patient develops cough and weight loss for the last 3 months. Biopsy of lung mass shows expression of chromogranin and synaptophysin. Blood sugar was elevated with normal electrolytes. Which paraneoplastic syndrome will most likely be present in this patient?

a. Hypercalcemia
b. Cushing syndrome
c. Gynaecomastia
d. SIADH

Squamous cell Ca lung

I.H.C +: lung Mass

Small cell Ca lung

1. SIADH : Na ↓
2. Cushing : CORTISOL ↑

↓

Large cell Ca lung

* MC lung CANCER ⇒ Adenocarcinoma

Napkin Ring stricture

13. Post mortem specimen of bowel of 60-year-old man is shown below. He was low grade fever and cachexia. Which of the following is the most likely cause of this presentation?

Adenocarcinoma: colon

a. Colon cancer

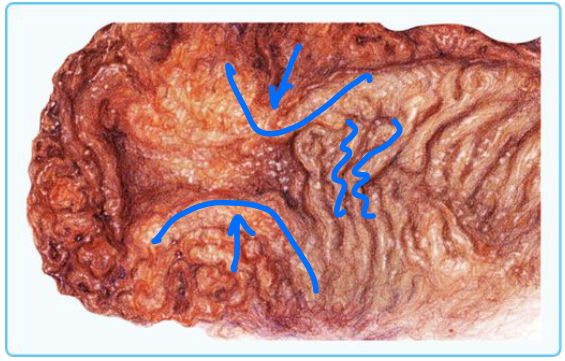
b. Intestinal tuberculosis

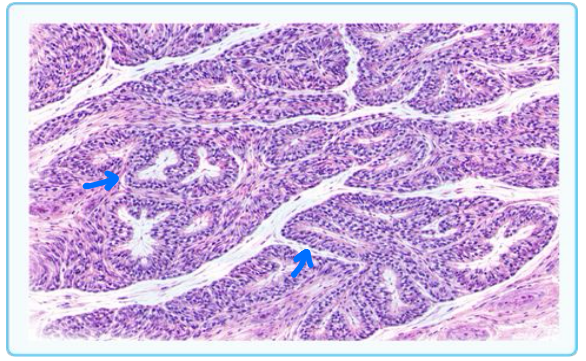
c. Crohn disease (ileum)

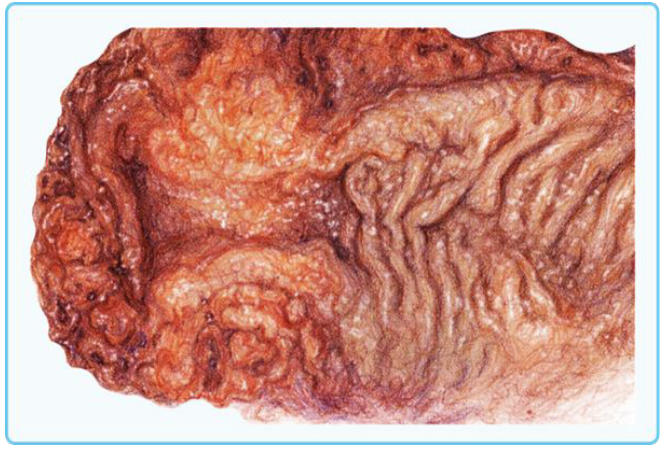
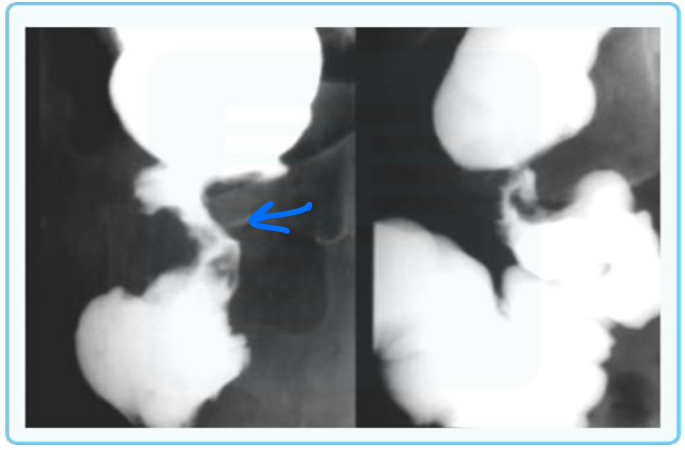
d. Ulcerative colitis

↓

Bloody diarrhea





Colorectal CA	apple CORE apf
	

14. A 2-year-old child is having recurrent pneumonia episodes. Examination shows delayed dentition. Labs show increased Ig E levels and eosinophilia. Which of the following conditions is the cause of this presentation?

a. LYST gene mutation

b. STAT3 mutation

c. 22q11.2 deletion

d. NADPH oxidase (gp91phox) mutation

Chediak higashi

JOB syn

digeorge syn

J * JACKED up eosinophils

O * OLD TEETH Retained

B * BOILS, BACTERIAL pneumonia

↓ Th17

↑ Th2

Neutrophil ↓

IL-4 + IL-5 + eosinophil ↑

C.G.N

JOB- stat

R. pneumonia episodes child

STAT3	Job syndrome (hyper – IgE)	↑IgE eosinophilia, delayed teeth
LYST	Chediak + Higashi	Albinism, Giant granules
22q11 deletion	DiGeorge	Hypocalcemia, thymic aplasia
NADPH oxidase	CGD	Catalase + infections, normal teeth

In Job Syndrome: Th17 impaired and relative Th2 dominance
Th2 cells produce **IL-4, IL-5, IL-13**
IL-5: stimulates eosinophil production in bone marrow
It occurs due to STAT3 mutation

15. Splenectomy is performed due to hypersplenism. Histopathological examination of the spleen shows multiple small, brownish nodules composed of fibrous tissue with hemosiderin deposition and focal calcification. This is seen in which of the following conditions?

a. Cirrhosis

b. Autosplenectomy

c. Accessory spleens

d. Pyelonephritis

GAMNA GANDY Bodies

* Brown, blue
H → Calcification.

S.C.A

FEVER + Flank pain + DYSURIA

16. Which of the following is not a function of B cell?

a. Antibody production

b. Antigen presentation via MHC II cells ✓

c. Immune memory ✓

d. Can proliferate ✓

B cell → plasma cells
antigen detection
YY

B cell vs Plasma cell

Feature	B cell	Plasma cell
Lineage	Lymphocyte	Terminally differentiated B cell
Main function	Antigen recognition & immune memory	Antibody production
Surface immunoglobulin	Present (IgM, IgD)	Absent
Antigen presentation	Yes (to helper T cell via MHC II)	No
Antibody secretion	No	Yes (large amounts)

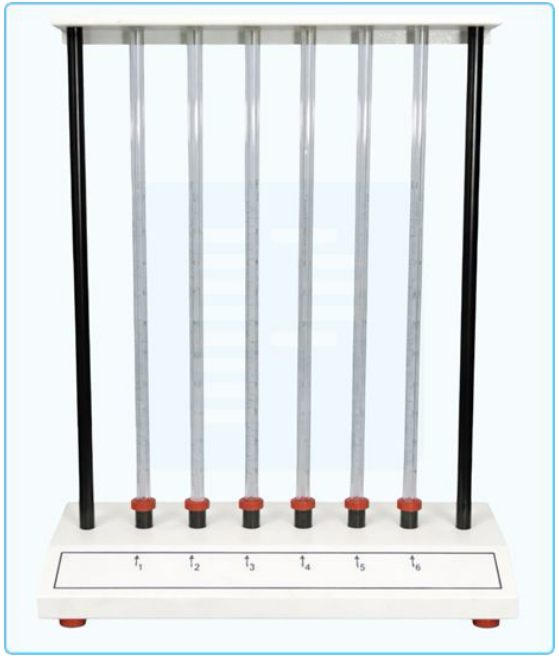
17. The following instrument is used for which of the following parameters?

a. Determination of ESR

b. Determination of osmotic fragility

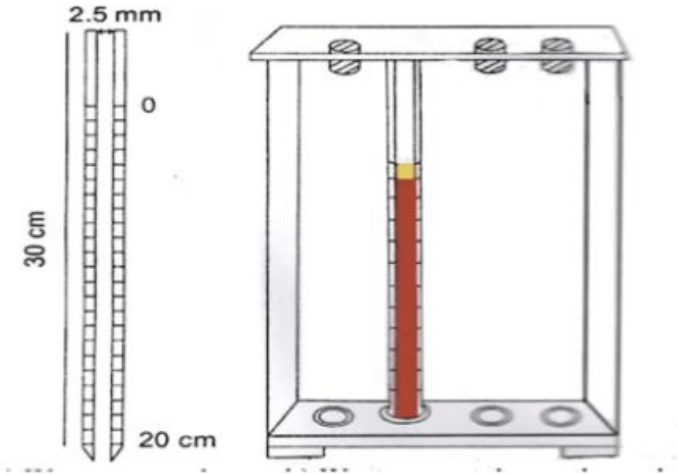
c. Determination of serum bilirubin

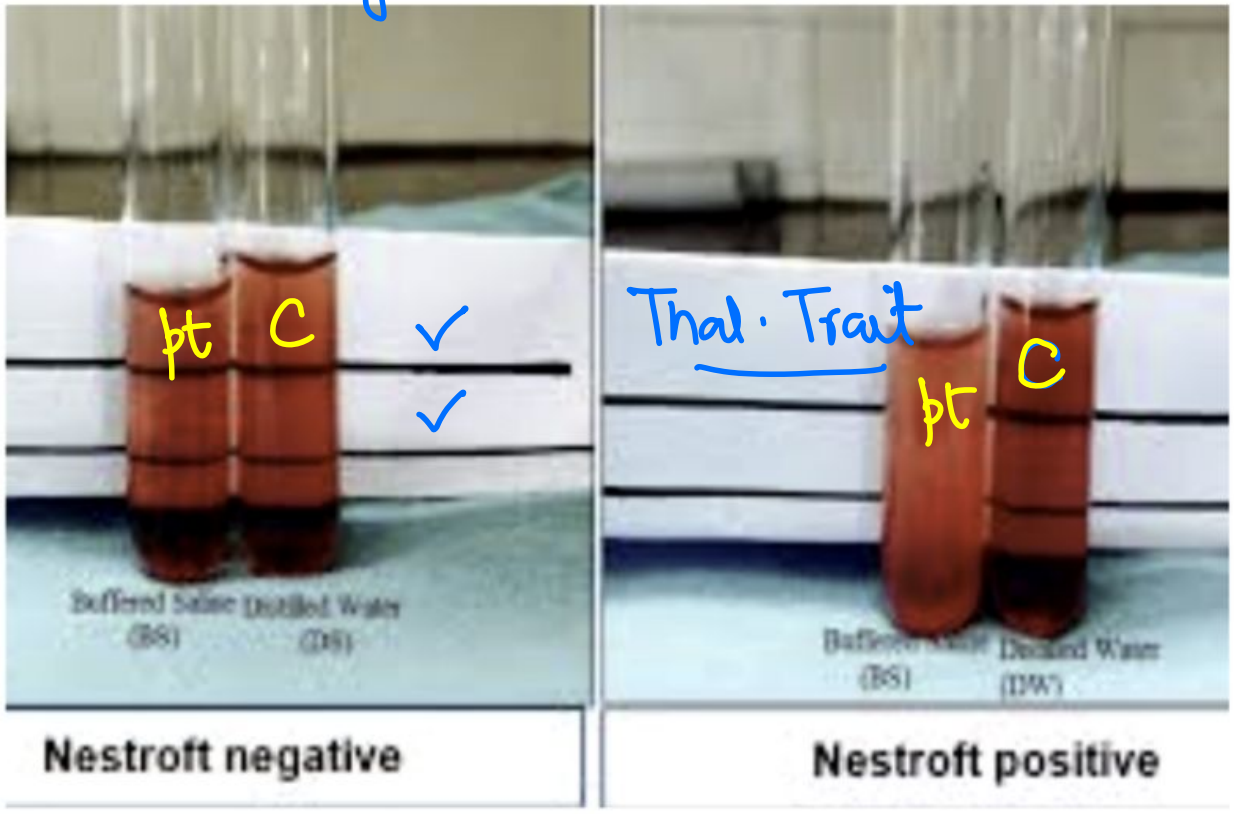
d. Determination of urinary Urobilinogen



WESTEGREN TUBE

Screening: Thalassemia, HS





18. Which of the following cells is primarily responsible for producing circulating antibodies in response to an antigen?

a. Naive B lymphocyte

b. Activated B lymphocyte

c. Plasma cell

d. Memory B cell

ANAPHYLAXIS

19. A 12-year-old boy with a history of RHD is put on secondary prophylaxis with benzathine penicillin. Within minutes of receiving an intramuscular injection, he suddenly develops intense pruritus, breathlessness with wheezing, and a rapid fall in blood pressure. Which of the following immunological mechanisms is primarily responsible for this reaction?

Type 1 HSR

Inj Adrenaline 0.5mg IM 1:1000

a. Eosinophil-mediated ~~complement~~ activation

b. Eosinophil mediated IL- 4 release

c. Basophil-mediated IL-4 release

d. ~~Ig E mediated complement activation~~

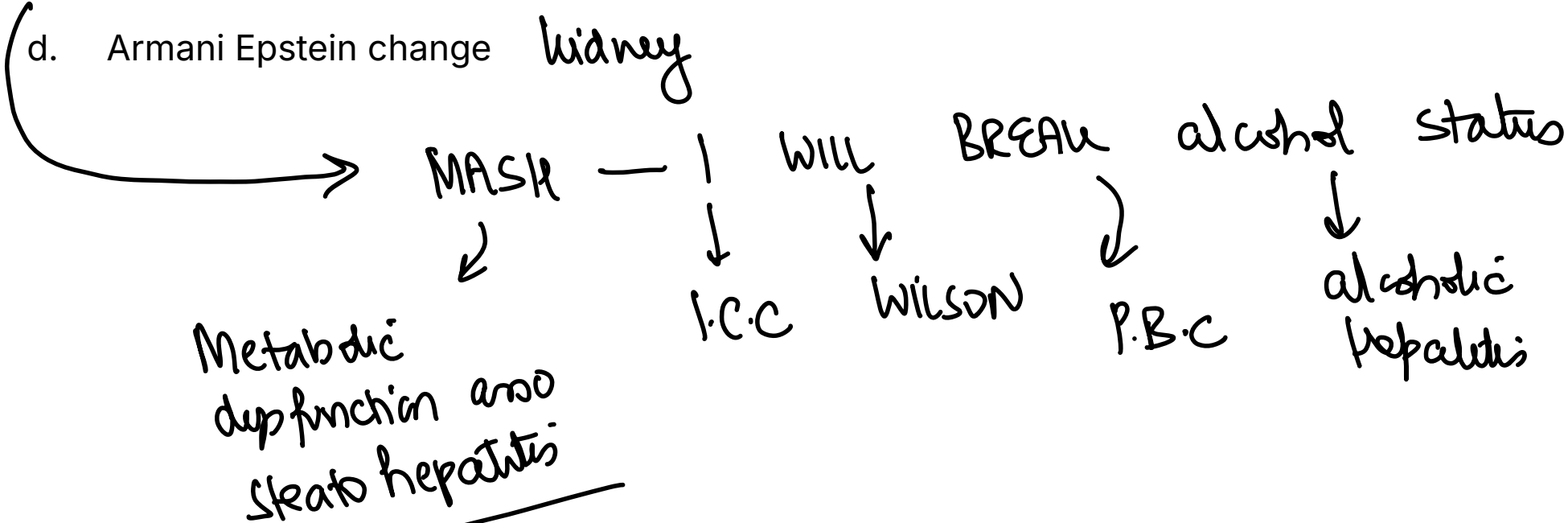
20. Which of the following histopathological findings is seen in liver biopsy of a diabetic patient with HbA1c of 12%?

a. Councilman bodies → HCV

b. Kimmel stein Wilson change — kidney

c. Mallory Hyaline bodies

d. Armani Epstein change — kidney



21. A 50-year-old man presents to the OPD with heartburn and cough and a 25-year history of smoking 2 packs daily. Which of the following epithelial transformations can occur in the lungs of this patient?

a. Squamous to intestinal columnar epithelium ← GERD

b. Columnar to squamous epithelium

c. Transitional to squamous epithelium

d. Cuboidal to columnar epithelium

22. Patient presents with pitting pedal oedema for the past 2 weeks. Labs: LFT = normal, serum albumin= 2 gm/dl, KFT= deranged with massive proteinuria, HbA1c 10% and Echo report is normal. USG abdomen shows bilaterally enlarged kidneys. Kidney biopsy was done. Which of the following histopathological reports is most likely to be seen?

D. Nephropathy

a. Nodular glomerulosclerosis

b. A-beta 2 microglobulin deposits : dialysis dementia

c. Diffuse glomerulosclerosis

d. Apple green birefringence for Congo red deposits — Amyloidosis

23. Which of the following is not correct about T lymphocytes?

a. Derived from bone marrow ✓

b. Concentrated in germinal centres of lymph nodes → B lymphocytes

c. Constitute 70% of peripheral blood lymphocytes ✓

d. Responsible for type IV hypersensitivity reaction ✓

B : T
1 : 4

Feature	T Cells	B Cells
Origin	Bone marrow	Bone marrow
Maturation	Thymus	Bone marrow
% of blood lymphocytes	70-80%	~10-20%
Lymph node location	Paracortex	Germinal centers/follicles
Function	Cell mediated immunity, DTH, cytotoxicity	Humoral immunity, antibody production

24. Liver biopsy of a patient with jaundice and elevated liver enzymes for 6 months was performed. The patient is an IV drug user. Serology shows
HBsAg Positive ✓
HBeAg positive
IgM anti HBc negative
IgG anti HBc positive ✓
Which is the most likely finding to be seen

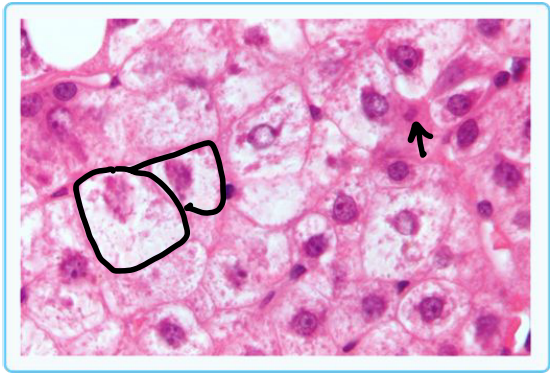
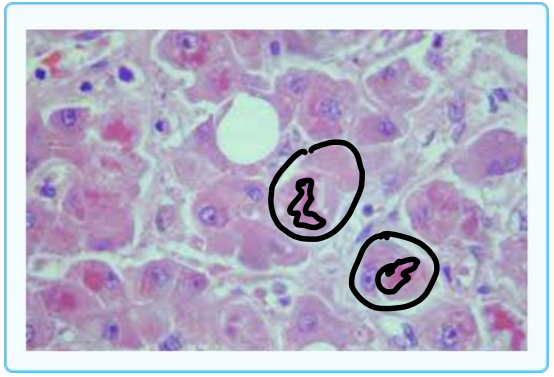
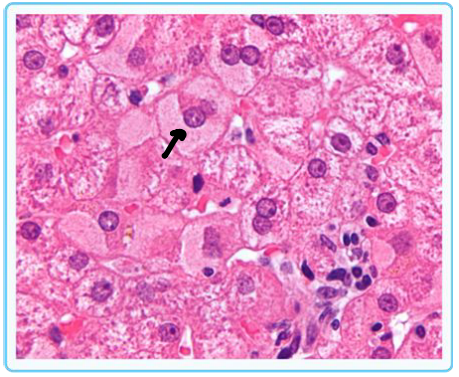
ch. Hepatitis B

a. Councilman bodies → apoptotic bodies: HCV

b. Ground appearance of hepatocytes

c. Mallory Hyaline bodies — MASH – I will break alcohol status

d. Ballooning of hepatocytes — acute viral hepatitis

Councilman bodies	Mallory-denk bodies	ground glass hepatocytes
		

25. All of the following changes are seen in reversible cell injury except?

a. Hydropic changes swelling

b. Pyknosis nucleus #

c. Mitochondrial swelling

d. Myelin figures

Reversible injury	Irreversible injury
S - Swelling (Cell, mitochondria, ER) W-Water accumulation/ Hydropic changes E- ER dilation, ribosome detachment L-Loss of microvilli, membrane blends L - Light nuclear changes (chromatin clumping)	N- Nuclear changes (pyknosis, karyorrhexis, karyolysis) E- Enzyme leakage (lysosomal rupture) C-calcium influx (massive, irreversible damage) R - Ruptured membranes (plasma, organelles) O - Organelle damage (mitochondrial amorphous densities SIS - Severe injury leading to self-destruction

26. “Ghost cells” are seen in which of the following conditions?

a. Fungal granuloma

b. Lipase mediated injury in pancreatitis

c. Burns

Coagulative necrosis

Outline of cell visible

~~Nucleus~~

~~ER~~

d. Fibrinoid necrosis

Outline of the cell is maintained, but cytoplasmic and nuclear details are lost. Seen in coagulative necrosis.

27. Which of the following is not a pro-apoptotic regulator?

a. BAX

b. BAK

c. MCL-1

d. P53

Pro- apoptotic (BCL - 2 family “BH123”proteins)	BAX, BAK, BAD, BID, BIM, PUMA, NOXA	Promote mitochondrial outer membrane permeabilization (MOMP)→Cytochrome C release →caspase activation →apoptosis
Anti-apoptotic (BCL -2 family “BH4” proteins)	BCL-2, BCL-XL, BCL-W, MCL-1	Inhibit MOMP→ prevent cytochrome c release → block apoptosis
Initiator caspases	Caspase - 8 (extrinsic), caspase - 9 (intrinsic)	Activate executioner caspases
Executioner caspases	Caspase -3, -6, -7	Cleave cellular proteins →DNA fragmentation →Cell death

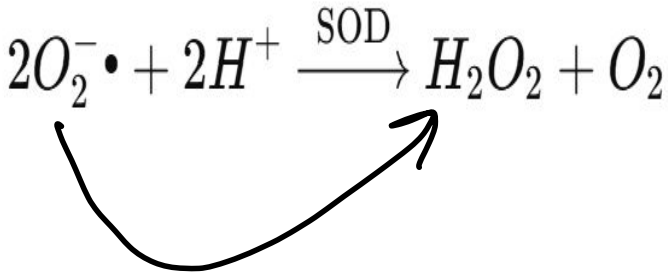
28. Superoxide dismutase works by

a. Degenerating hydrogen peroxide

b. Convert Hydroxyl groups to superoxide

c. Producing hydrogen peroxide

d. Convert superoxide to hydroxyl groups


$2O_2^{-}\bullet + 2H^+ \xrightarrow{\text{SOD}} H_2O_2 + O_2$

✓

29. A 6-month-old male infant presents with sparse, kinky hair, hypotonia, and developmental delay. Laboratory tests reveal low serum copper and ceruloplasmin levels. Which of the following enzyme activity is normal in this condition

a. ↓ Lysyl oxidase — Cu^+ : collagen #

b. ↓ Tyrosinase — Cu^+ : Hypopigmentation

c. ↓ Cytochrome C oxidase — Cu^+ Neurodegn

(d.) Monoamine oxidase A

MENKE : Cu↓

- Gene: ATP7A
- Inheritance: X-linked recessive
- Chromosome: Xq21
- Defect: impaired intestinal copper absorption and defective copper transport into tissues

Pathophysiology (why everything goes wrong)

Copper deficiency →↓activity of copper – dependent enzymes

- Lysyl oxidase →defective collagen & elastin
- Tyrosinase → hypopigmentation
- Cytochrome c oxidase → neurodegeneration
- Dopamine β-hydroxylase → autonomic dysfunction

Option A defect leads to vascular fragility. Option B leads to hypopigmentation. Option C leads to neurodegeneration and hypotonia

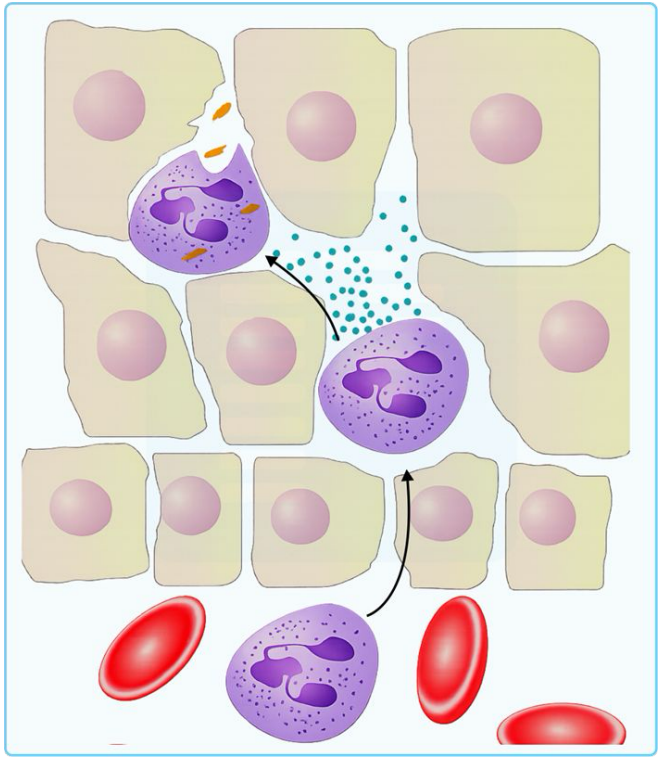
30. Which of the following is not correct about diapedesis?

a. Most important adhesion molecule is CD 31 ✓

b. Occurs in post capillary venules ✓

c. In lungs it occurs via capillaries ✓

d. Bi-directional movement of WBC that perform phagocytosis



Please call V when 31 bad guys come

Occurs in Post Capillary Venules except lungs capillaries

PECAM-1/ CD31 is adhesion molecule expressed by endothelial cells

It is followed by Chemotaxis (unidirectional movement)

Feature	CD31 (PECAM-1)	CD62 family (Selectins: CD6-21/E/P
Molecule type	Ig superfamily adhesion receptor	C-type lectin family (selectins)
Primary role	Transmigration / diapedesis across endothelium (late step)	Tethering and rolling (early step)
Expression	Endothelial cells (junctions), platelets	CD62L on leukocytes
Step in cascade	Diapedesis (paracellular/transcellular)	Capture/rolling preceding firm adhesion
Aliases	PECAM-1	L-selectin (CD62L), E-selectin (CD62E)

31. A 3-month-old male infant presents with recurrent skin infections without pus formation, *delayed umbilical cord separation, and oral ulcers. Laboratory tests reveal marked leucocytosis with neutrophilia. Which of the following is the most likely defect in this patient?

leucocyte adhesion defct

a. Deficiency of CD18

b. Defect in LYST gene — Chediak higashi: albinism

c. Deficiency of adenosine deaminase — SCID: B cell ↓ + T cell ↓

d. Deficiency of NADPH oxidase — CGD: Catalase ⊕

- CD- 18 is the β_2-integrin subunit required for firm adhesion of neutrophils to endothelium
- Defective neutrophils cannot exit bloodstream and pile up in blood leading to neutrophilia

albinism ↓

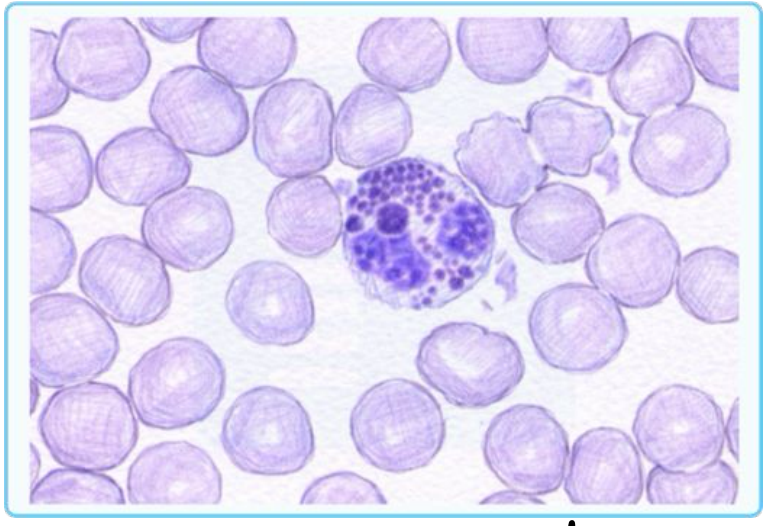
32. A 5-year-old boy presents with recurrent skin and respiratory infections, silvery-gray hair, and light-coloured eyes. On examination, he has mild ataxia. Peripheral blood smear is shown below. Which of the following is the most likely defect in this patient?

a. Defective NADPH oxidase and impaired respiratory burst
↳ C·G·N

b. Defective lysosomal trafficking and impaired phagolysosome formation

c. Defective β2 integrin and impaired neutrophil adhesion
↳ LAD

d. STAT3 mutation and impaired Th17 differentiation
↳ JOB - STAT 3



LYST gene, ch 1 #

33. Which of the following is not correct about chronic granulomatous disease?

a. Increased infection with S. Aureus and Burkholderia Cepacia

b. Abnormal dihydrorhodamine test

c. Impaired neutrophil chemotaxis

d. NADPH oxidase defect

Disorder	Inheritance	Direct/ Pathophysiology	Lab/ diagnostic Test	Infections/ Clinical Feature	Hallmark/Exam Clue	Mnemonic
CGD (chronic Granulomatous Disease)	X-linked	NADPH oxidase defect →impaired respiratory burst	Dihydrochodemine (DHR) test abnormal, nitroblue tetrazolium (NBT) test	Recurrent infections with catalase-positive bacteria (S. aureus, Burkholderia)	Granuloma formation, recurrent infections	"Boys BADly infected" →B: Burkolderia, A: Aspergillus, D: DHR abnormal
Job Syndrome (Hyper IgE Syndrome)	Autosomal dominant (STAT3 mutation)	Th17 defect → impaired neutrophil chemotaxis	High IgE (>2000 IU/mL) eosinophilia	Recurrent 'cold' staphylococcal abscesses, mucocutaneous candidiasis	Triad: Cold abscesses, Eczema, High igE	"JOB" mnemonic: Joints (retained primary teeth), Outbreaks cold abscess, blood: ↑IgE & eosinophils
LAD-I (leukocyte adhesion defect)	Autosomal recessive	CD18/βintegin defect →impaired neutrophil adhesion & migration	Peripheral neutrophilia, gene sequencing CD18	Recurrent bacterial infections, delayed umbilical cord separation	Absent pus formation high WBC in blood	"LAD → L: Late cord, A: Absent pus, D: Dangerously high neutrophils"
Chadiak-Higashi syndrome	Autosomal recessive (LYST gene)	Defective lysosomal trafficking →giant granules in neutrophils	Blood smear →giant lysosomal granules, genetic testing	Recurrent pyogenic infections (staph, strep), neurological problems	Triad: Partial albinism, recurrent infections, neurologic defects	"CHS → C-colorless, H: helper impaired S: Slow nerves"

34. Which of the following antibodies cannot fix the complement system?

a. Ig G

b. Ig M — PENTAMERIC STRUCTURE

c. Ig E

d. Ig A — ALTERNATE complement pathway

35. A 35-year-old young female presents with arm weakness and ptosis that resolves as the day progresses. CT chest shows a peripheral lung mass. Which receptor is affected in this patient?

M. GRAVIS

Lambert Eaton

a. Antibody against nicotinic receptors at the motor end plate

b. Antibody against muscarinic receptor at motor end plate

c. Antibody against voltage gated calcium channels at motor end plate

Ach ↓

d. Antibody against acetylcholinesterase activity

36. A 35-year-old male with lepromatous leprosy presents with fever, painful erythematous nodules on the skin, joint pain, and swelling 3 months after starting multidrug therapy. Which type of hypersensitivity reaction is most likely responsible for his current symptoms?

a. Type I (Immediate, IgE-mediated)

b. Type II (Cytotoxic, antibody-mediated)

c. Type III (Immune complex-mediated)

d. Type IV (Delayed-type, T cell-mediated)

Type II lepra Reaction
Type III HSR

Type I lepra Reaction
Type 4 HSR

37. A 65-year-old man presents with progressive anaemia and cervical lymphadenopathy. P. Smear is shown below. Which CD markers are seen in this case?

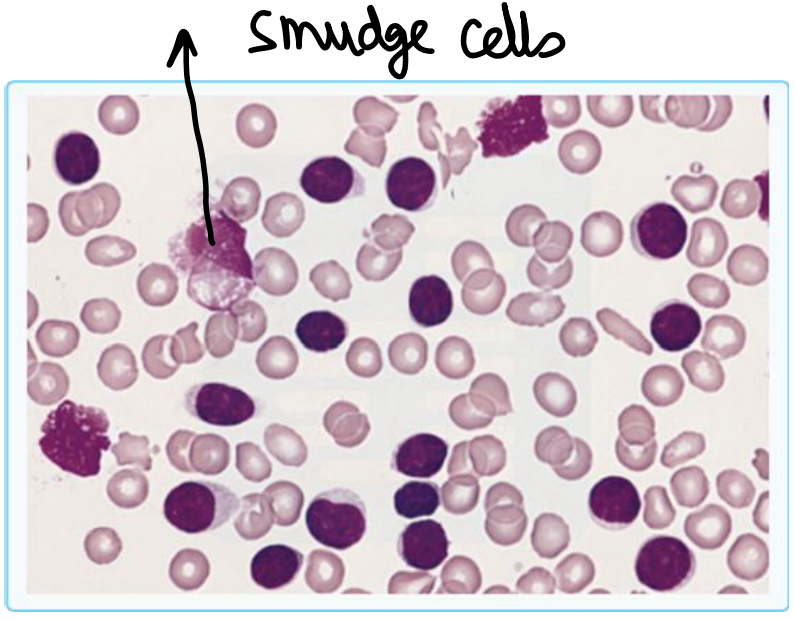
a. CD3, CD5, CD8

b. CD10, CD19, CD22

c. CD19, CD20, CD23, CD5

d. CD13, CD33, CD117

CLL



CLL hallmark = co-expression of B-cell markers (CD19, CD20, CD23) + aberrant CD5 positivity

38. 12-year-old presents with fever, weight loss and painless cervical lymphadenopathy. Lymph node biopsy stained with H&E has hallmark cells. The diagnosis of anaplastic large cell lymphoma was made. Most likely translocation?

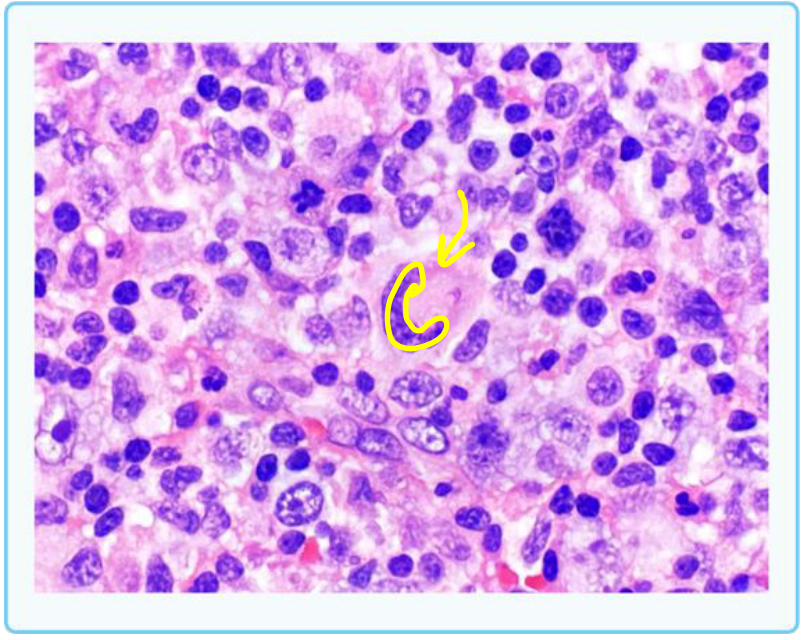
a. t(8;14)

b. t(8;22)

c. t(2;5)

d. t(14;18)

a,b,d: burkitt lymphoma



Hallmark cells are large lymphoid cells with abundant cytoplasm, **eccentric horseshoe/kidney-shaped nuclei**, and prominent nucleoli seen in Anaplastic large cell lymphoma. Most cases have t(2;5) translocation with the NPM-ALK fusion gene.

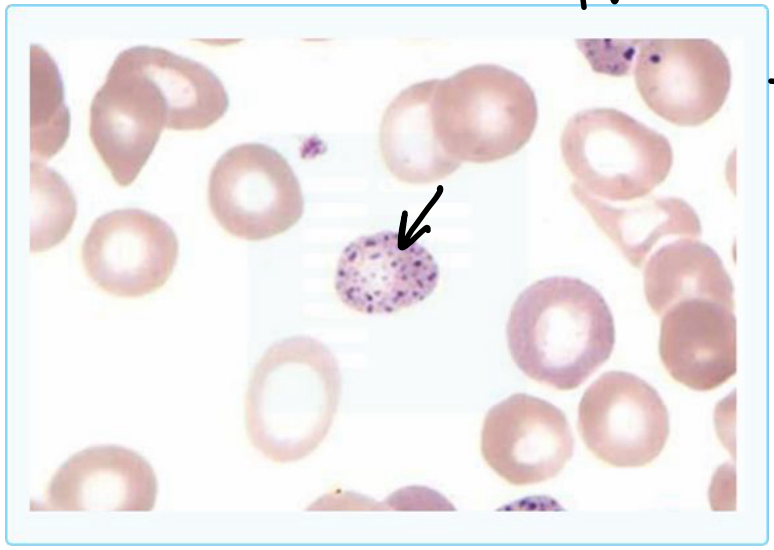
39. A young boy presents with a history of ingestion of paint chips, leaves, and soil. A blood examination is conducted. Based on the clinical history and suspected environmental exposure, what is the most likely pathology?

a. Lead poisoning

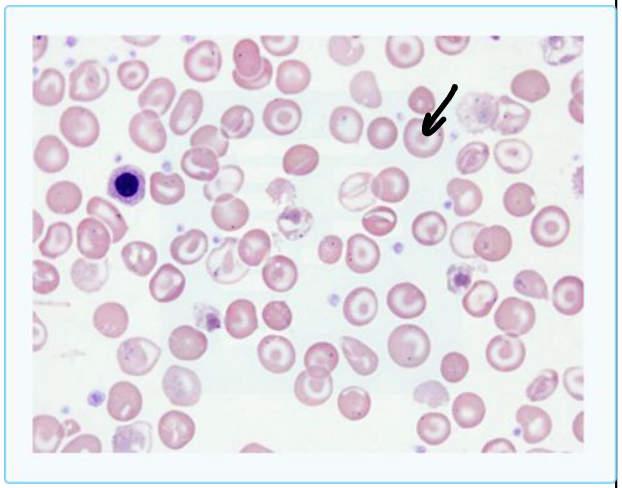
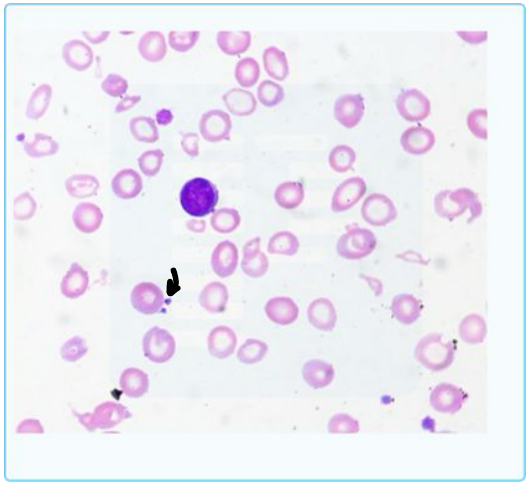
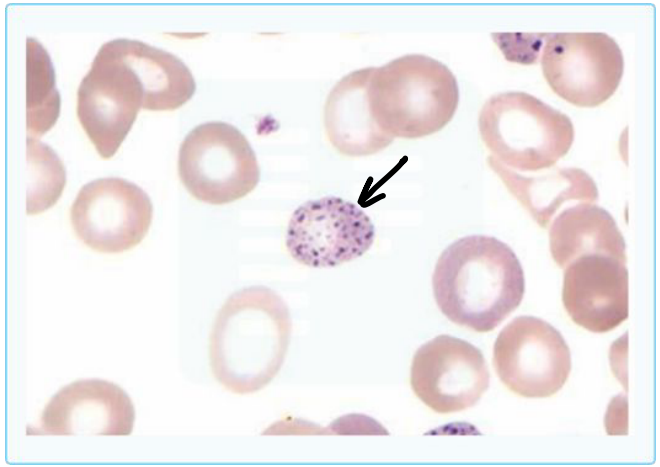
b. Iron deficiency anemia

c. Thalassemia

d. Sickle cell anemia



The peripheral smear shows basophilic stippling of red blood cells. Coupled with history of ingestion of paint chips the final diagnosis is lead poisoning. IDA has anisocytosis and poikilocytosis. Thalassemia has target cells.

TARGET cells	Basophilic stippling	Pappenheimer Body
		

40. Bernard-Soulier syndrome is caused by a defect in which of the following platelet glycoproteins?

a. Gp IIb/IIIa → glanzmann Thromboasthenie : aggregation defect

b. Gp Ib/IX complex

c. Gp Ia/IIa

d. Gp IV

Ristocetin agg Test

* No correction ē addition of normal plasma (vWF)

* Ib

- Bernard soulier syndrome has large (St. Bernard dogs are large species) platelets that have a sticking (adhesion) problem. The Gplb/IX complex on platelets helps in interaction with the Von-Willebrand factor. **Lab findings:**
- Prolonged bleeding time
- Normal platelet count
- Ristocetin aggregation test: *No correction* with normal plasma (vs vWD where it corrects).

Feature	Bernard -Soulier	Glanzmann Thrombasthenia	Wiskott - Aldrich
Inheritance	Autosomal recessive	Autosomal recessive	X -linked recessive
Defective receptor/protein	Gp Ib - IX - V (adhesion to vWF↓)	Gp IIb/IIIa (aggregation↓)	WAS protein (cytoskeleton defect)
Platelet count	Low/ normal	Normal	Low
Platelet size	Large	Normal	Small
Key clinical clue	Mucocutaneous bleeding	Mucocutaneous bleeding	Bleeding + eczema + recurrent infections
Mnemonic	‘Big Bernards Bind vWF’	‘Glue - less Glanzmann’	‘Wet, Small, Susceptible’

41. A newborn presents with upward slanting palpebral fissures, flat facial profile and hypotonia, Karyotyping shows a 5p deletion. What is the most likely diagnosis?

a. Edwards syndrome

b. Cri du chat syndrome

c. Down syndrome

d. Patau syndrome

5p deletion is seen in cridu-chat syndrome where the child has a high pitched cat-like cry **E**dward syndrome is **E**ighteen chromosome trisomy. Down syndrome has 21 chromosome trisomy. Pa**T**au syndrome has **T**hirteen chromosome trisomy

Syndrome	**Top 4 Physical Features**	**Genetic Cause**
Cri du chat	High - pitched cat-like cry, microcephaly, round face, hypertelorism (wide -set eyes)	5p deletion (short arm of chromosome 5)
Edwards syndrome	Clenched fists with overlapping fingers, micrognathia, rocker-bottom feet, low -set ears	Trisomy 18
Down syndrome	Upward slanting palpebral fissures, flat facial profile, single palmar crease, hypotonia	Trisomy 21
Patau syndrome	Cleft lip/palate, microphthalmia, polydactyly, microcephaly	Trisomy 13

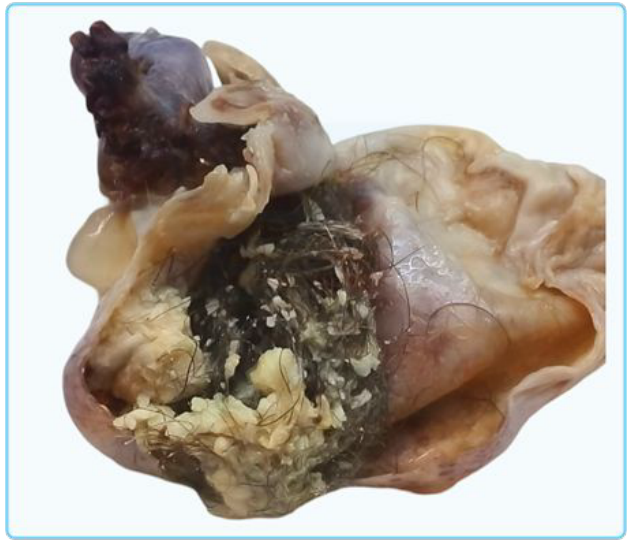
42. A 25-year-old woman presents with lower abdominal discomfort. There is no vaginal discharge. USG abdomen shows an ovarian mass. Post surgical image of resected tumour is given below. What is correct histopathological findings about this condition

a. Psammoma bodies ← PSM

b. Hob nail cells

c. Fried egg appearance — DYSGERMINOMA / SEMINOMA

d. Rokitansky protuberances



TERATOMA

Tumor	Classical Histopath Clue
Serous carcinoma CYSTADENOMA →	Psammoma bodies
Mucinous tumor	Multiloculated mucin -filled cyst
Endometrioid	Glands like – endometrium
Clear cell	Hobnail cells
Teratoma	Hair + teeth
Dysgerminoma	Fried egg ells + lymphocytes
Granulosa cell tumor	Call -Exner bodies + coffee bean nuclei

43. A 16-year-old girl presents to the ER with fever, severe headache, neck stiffness, and purpuric rash. Lumbar puncture is performed, and CSF analysis shows turbid fluid with low glucose, elevated protein, and 1000 neutrophils/mm³. * Gram stain demonstrates gram-negative diplococci. On further history, it is noted that the patient has had multiple hospital admissions in the past for similar episodes of severe bacterial meningitis. Which of the following is the most likely underlying reason for his recurrent infections?

a. Complement C1,2,4 deficiency

b. Complement C5–C9 deficiency

c. Bruton's agammaglobulinemia

d. Chronic granulomatous disease

N. meningitidis
H. influenzae
S. pneumoniae

44. All of the following act as opsonins to enhance phagocytosis except?

a. IgG ✓

b. Complement C3b ✓

c. Mannose-binding lectin ✓

d. Complement C5a ANAPHYLATOXIN

C5a: Chemotactic factor that recruits neutrophils and increases inflammation; does not coat microbes, so it is not an opsonin.

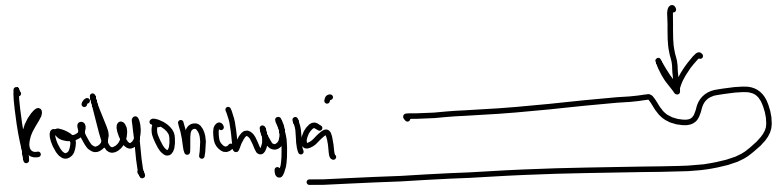
45. Koilocytosis is caused by which of the following conditions?

a. Human papilloma virus

b. Kaposi Herpes simplex virus

c. Upper Oesophageal webs

d. Barrett Oesophagus



HPV 16, 18 infected cell

koilocytosis

1. Cxal CANCER
2. ANAL CANCER
3. Ca larynx

Vacuolation of superficial epithelial cells infected by HPV 6 and 11

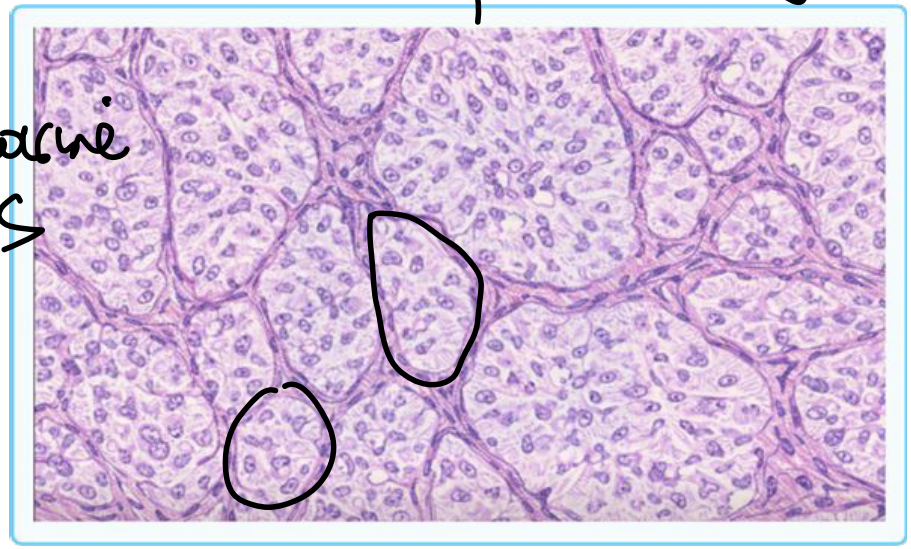
46. A 35-year-old patient undergoes a CT guided biopsy of a retroperitoneal mass. Histopathology shows "nests of cells in Zellballen pattern". Which of the following is correct for biochemical determination of this tumour?

a. Synaptophysin positivity

b. Serum chromogranin A

c. Neuron specific enolase

d. Metanephrines



Option A is IHC marker and b and C are neuroendocrine markers

47. Histology of the excised mitral valve shows fibrinoid necrosis surrounded by mononuclear cells and palisading histiocytes along with Anitschkow cells in the myocardium. Which of the following is the cause of this presentation?

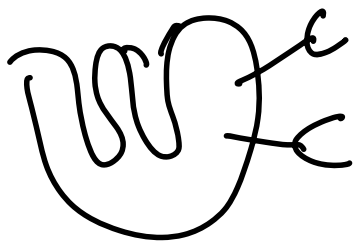
RF
* TYPE II HSR

a. Infection of myocardium with Streptococcus pyogenes

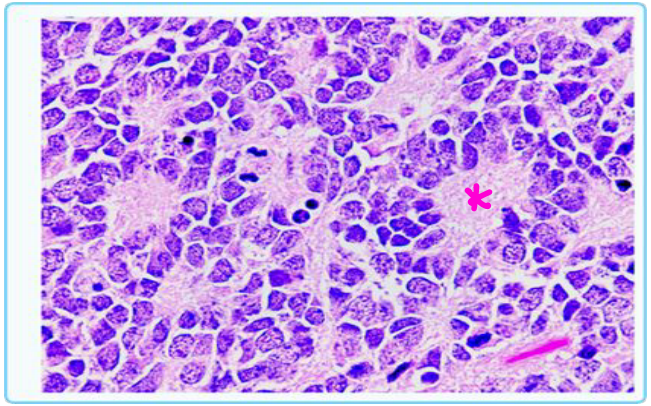
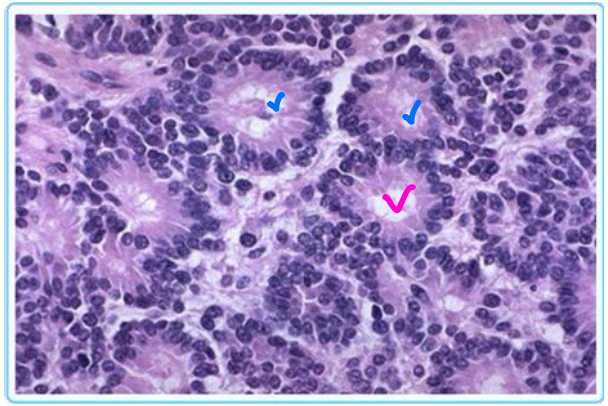
b. Infection of pericardium with C.O.N.S

c. Fibrinoid necrosis of ~~coronary vessels~~

d. Molecular mimicry between Beta- myosin heavy chains and M proteins



48. Which of the following is correct about the rosettes in the slides shown below

A	B
	

HOMER

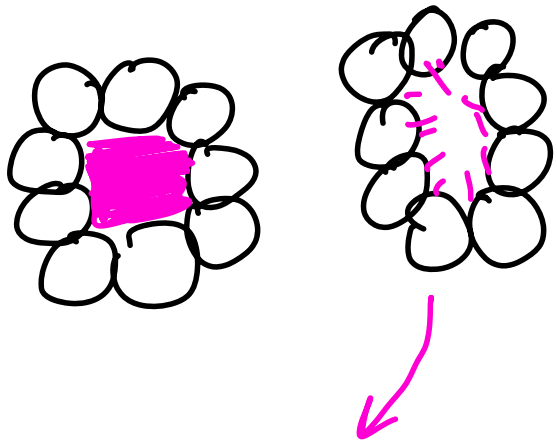
a. A= Homer Wright, B= Flexner Wintersteiner

neuroblastoma, medulloblastoma

b. A= Flexner Wintersteiner, B= Homer Wright

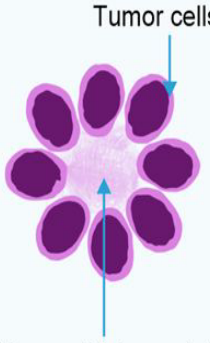
c. A= True ependymal, B= Homer wright

d. A= Homer Wright, B= True ependymal



WINTER

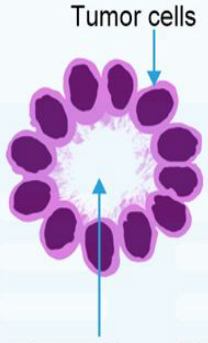
* True Rosette
* Retinoblastoma



Pale Neuropil (dense feltwork of interwoven cytoplasmic processes of nerve cells and neuroglial cells)

Homer Wright Rosettes

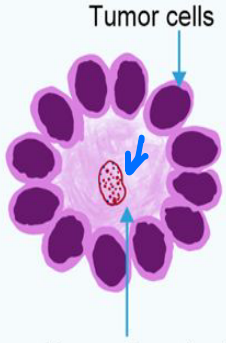
Neuroblastoma
Medulloblastoma
Pineoblastoma



Lumen formed by cell borders & fine cytoplasmic extensions. There will be NO Basement membrane

Flexner-Wintersteiner Rosette

Retinoblastoma



Neuropil projecting towards a central blood vessel

Perivascular Pseudo Rosettes

Ependymoma
Central Neurocytoma
Glioblastoma

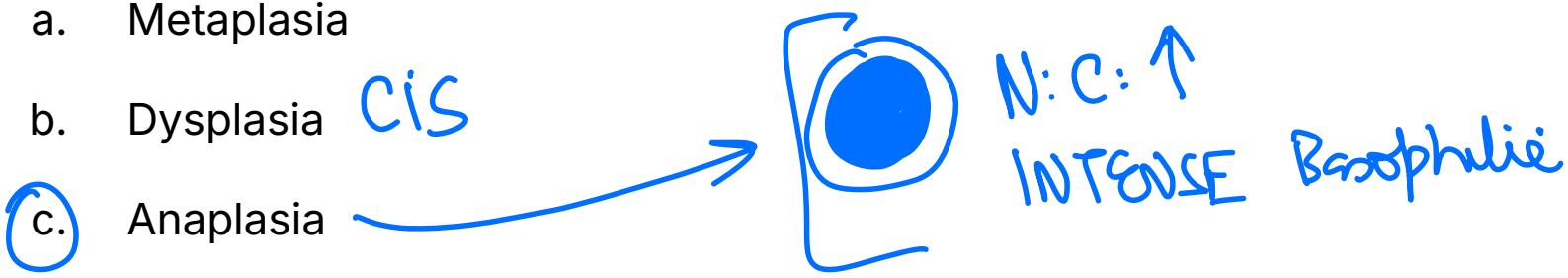
49. Which of the following is a hallmark feature of malignancy?

a. Metaplasia

b. Dysplasia

c. Anaplasia

d. Desmoplasia



50. Which of the following is the most common benign lung tumour?

a. Small cell cancer

b. Squamous cell cancer

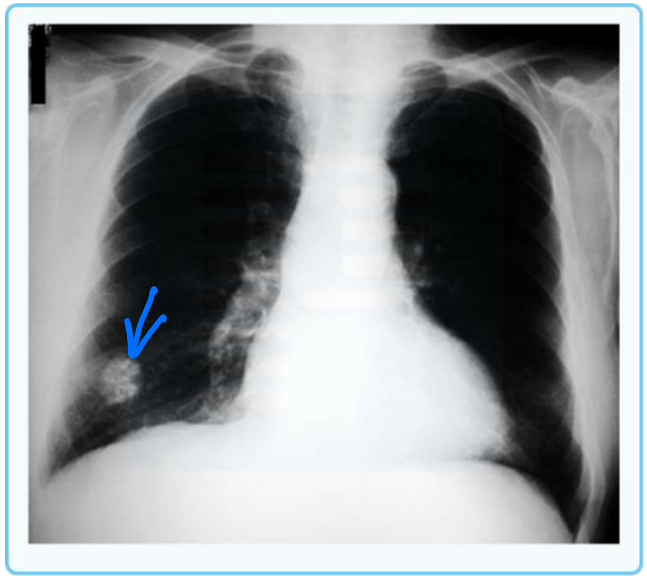
c. Adenocarcinoma lung

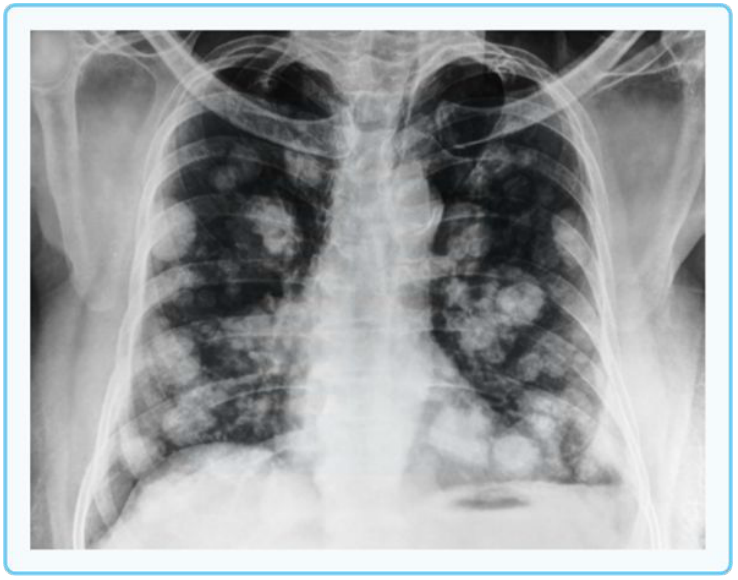
d. Pulmonary hamartoma

malignant

Pop corn

CANON Ball Mets





51. A- 60-year-old lady presents with cachexia and gross abdominal distention. On examination, fluid thrill and shifting dullness is noted. Ascitic tap shows malignant cells. Which of the following is the leading cause?

a. Pseudomyxoma peritonei

b. Serous cystadenocarcinoma of ovary

c. Serous cystadenoma of ovary

d. Mucinous cystadenoma of ovary

Malignant Ascites

Benign

MUCIN + in peritoneum

OJ

52. A 60-year-old man presents with obstructive jaundice. On examination palpable gall bladder is felt in RUQ. MRCP shows an ill-defined 3X 4 cm mass in the head of the pancreas. Which of the following tumour suppressor genes is most likely responsible for this presentation?

a. APC → FAP

b. DPC

c. STK11 → PJS

d. INK4 → Malignant Melanoma

Ca PANCREAS (head) : # CBD

deleted in pancreatic cancer

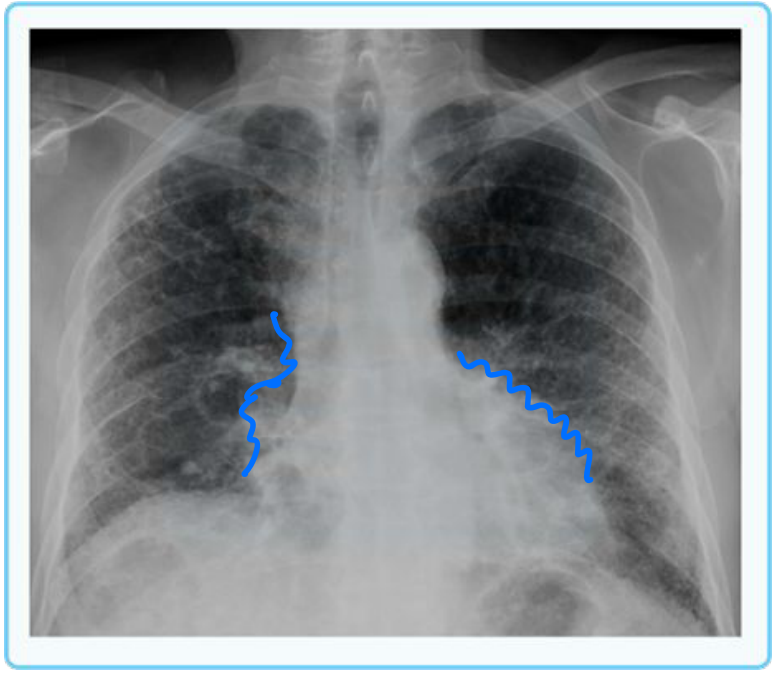
53. A 30-year-old construction worker presents with shortness of breath. CXR is shown below. It was taken after pleural tapping that showed bloody pleural effusion. Which of the following is the cause of this presentation?

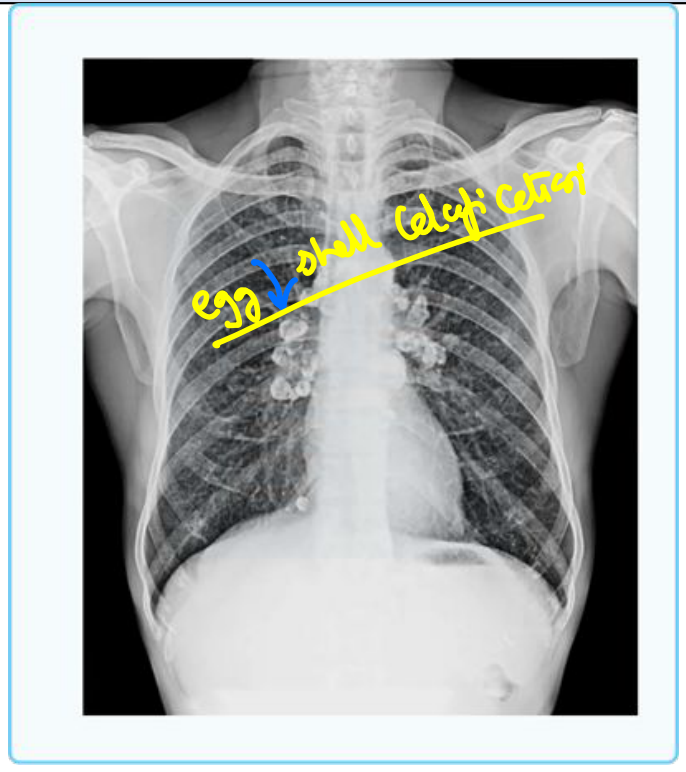
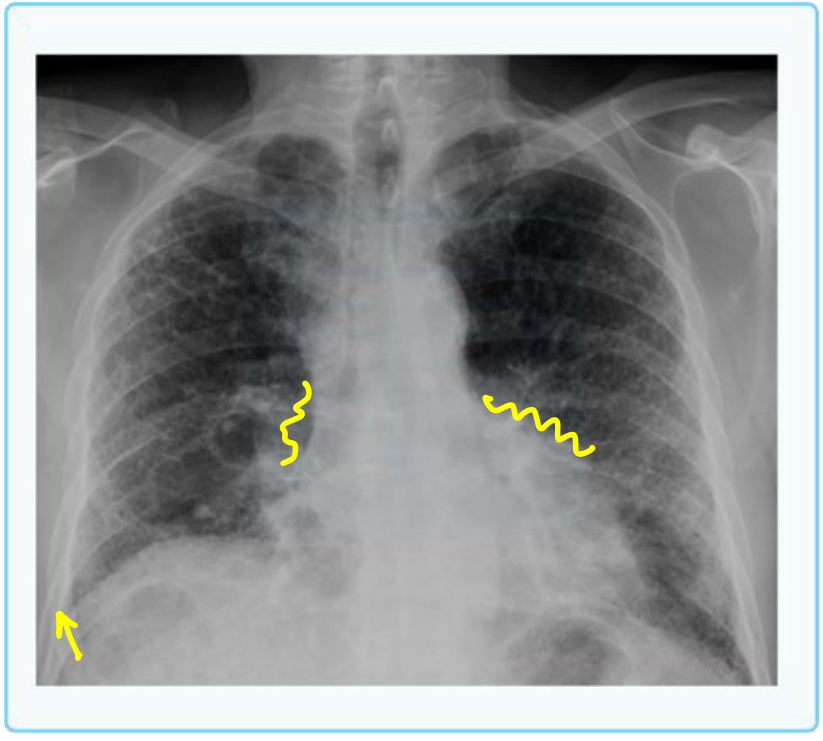
a. Silicosis

b. Asbestosis

c. CWP

d. Siderosis



Silicosis	Asbestosis
	

OCP

54. Hormone responsive liver tumour?

Benign Tumor

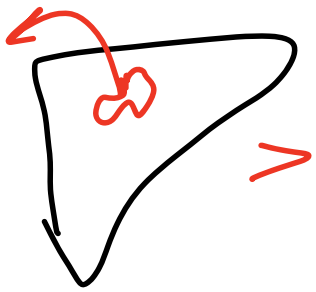
a. Haemangioma

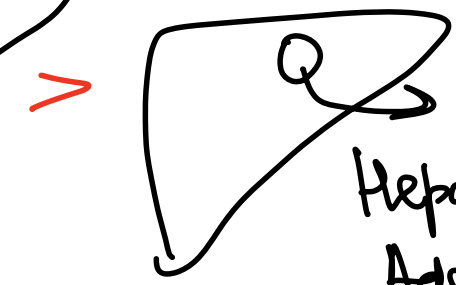
b. Hepatic adenoma

c. Fibrolamellar variant of hepatocellular carcinoma

d. Focal nodular hyperplasia

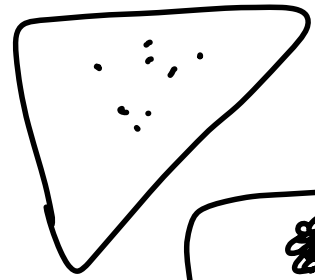
Benign : Hemangioma

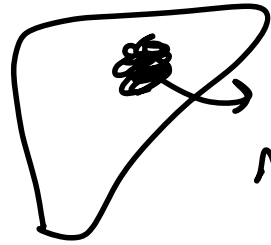




Hepatic Adenoma OCP

Mets = 2°: Ca lung, Breast Ca colon





H.C.C malignant

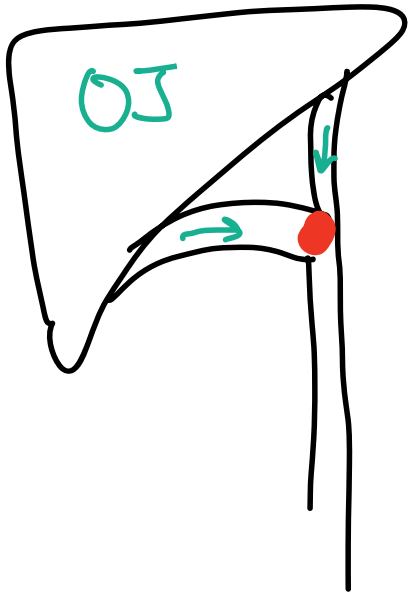
55. Which is correct about the Klatskin tumor?

a. Cholangiocarcinoma at common hepatic duct bifurcation

b. Hepatoblastoma with high AFP levels

c. Liver metastasis from descending colon

d. Angiosarcoma caused by exposure of polyvinyl chloride



* PJS: STK 11 mutation

56. A Young girl presents with chronic diarrhoea and abdominal pain episodes. On examination she has mucocutaneous pigmentation on lips. Endoscopic ultrasound shows polyps in the jejunum. Which of the following is correct about this condition?

a. Gluten elimination from diet will improve her pigmentation and diarrhoea — Celiac

b. Genetic basis on chromosome 19

c. APC gene on chromosome 5 — FAP

d. Associated with C-KIT/CD 117 mutations — GIST

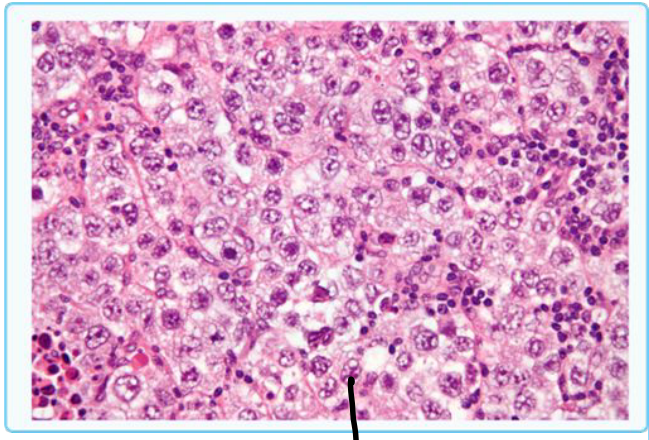
57. A 30-year-old man presents with painless testis enlargement for the last 6 months. Work up was done and high inguinal orchidectomy was done. Resected specimen and histology slide is shown. Which of the following is correct about this tumor?

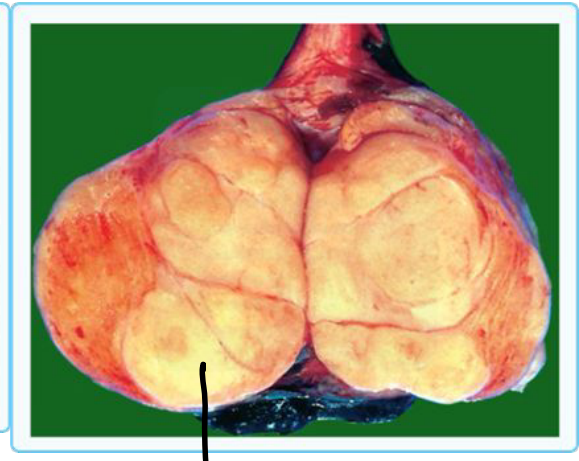
a. Germ cell tumor with raised PLAP

b. Germ cell tumor with raised PAP

c. Germ cell tumor with raised HCG

d. Germ cell tumor with raised AFP





NSGCT

fried egg app

CUT POTATO

SEMINOMA

- **Gross**: large homogeneous, pale/gray-white, lobulated mass without hemorrhage/necrosis (typical seminoma).
- **Histo**: sheets/nests of large clear cells with distinct cell borders + fibrous septa with lymphocytes (“fried-egg” look) of seminoma.

CRUMPLED TISSUE PAPER of cytoplasm

58. Pseudo-gaucher cells on Bone marrow aspiration with low LAP score is seen in which of the following conditions

a. AML

b. CML

c. CLL → MC blood cancer: adult

d. ALL

↳ MC blood cancer: children

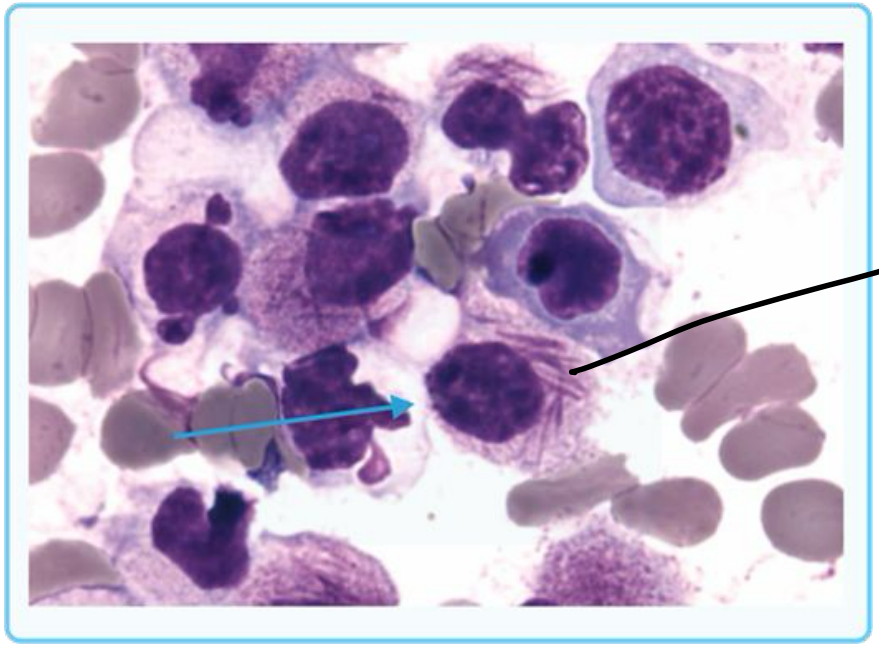
59. 40-year-old man is having recurrent epistaxis, haematuria episodes since last one month. On examination he has petechiae, purpura on lower limbs. Work up shows Hb: 7 gm%, TLC: 3000/cu.mm, Platelet count: 10,000/ cu.mm. P.smear is shown below. Which of the following is the cause of this presentation?

a. t (15:17) M3 AML

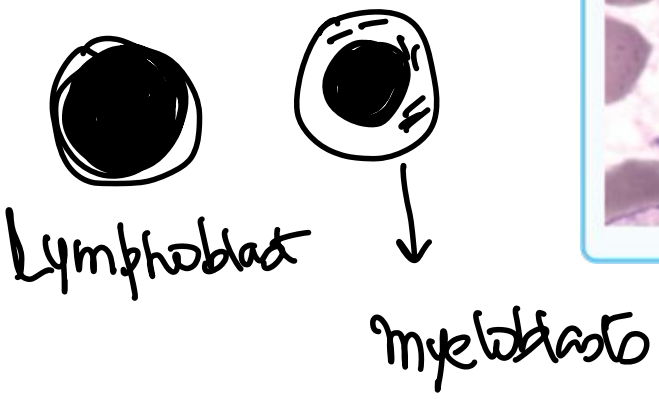
b. inv 16

c. t (8:14) BURKITT

d. t (9:22) CML



AUER RODS +



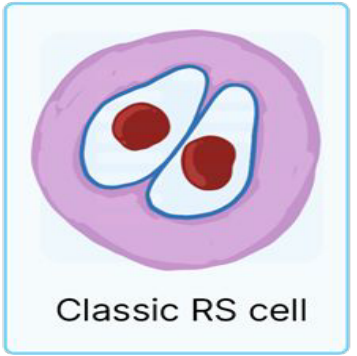
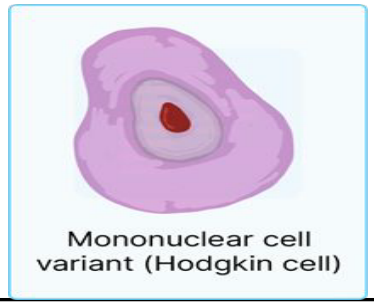
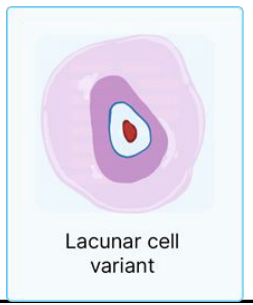
60. Which of the following is the most common type of Non-Hodgkin lymphoma?

a. Nodular sclerosis ← HL

b. Mixed cellularity

c. Diffuse large B cell lymphoma DLBCL

d. Burkitt lymphoma t(8:14)(8:22)(2:8): ⊖ c-myc: ⊖ apoptosis

Description	Appearance
• Large cells (20 to 60 mm in diameter) • Abundant eosinophilic cytoplasm • Nucleus: • Typically two large nuclei- “mirror image” • Prominent eosinophilic nucleolus surrounded by a halo	 Classic RS cell
• •Single, large, round nucleus with a large eosinophilic inclusion-like nucleolus • May be seen in any subtypes of CHL	 Mononuclear cell variant (Hodgkin cell)
• Abundant, lightly acidophilic or water-clear cytoplasm • Large folded or multilobed nucleus • One or more prominent eosinophilic nucleoli • Seen in nodular sclerosis of CHL	 Lacunar cell variant

61. A 60-year-old female presents with low backache, weakness, back pain and repeated infections. Work up shows deranged KFT with anaemia and hypercalcemia. Her serum electrophoresis report is shown below. The prognosis of this condition is determined by which of the following?

CRAB

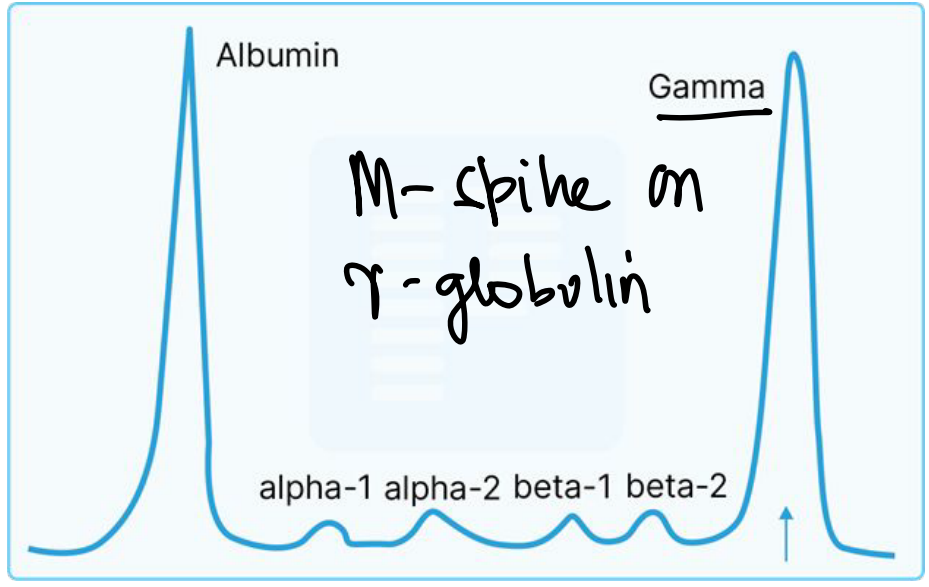
a. Ig G and albumin

b. Hb and urinary Bence jones proteins

c. Albumin and Urinary Bence jones proteins

d. Albumin and beta 2 Micro-globulin

Urine



62. A 8-month-old boy is having bilateral knee hemarthrosis. Mother tells of easy bruisability in a child. Work up shows BT normal, PT normal and aPTT is deranged. Gene sequencing shows F8 gene mutation. What is the best treatment for this patient to prevent recurrence of these bleeds?

Hemophilia A

a. Cryoprecipitate

b. Fresh frozen plasma

c. DDAVP

d. Factor 8 concentrate

63. A 50-year-old man is admitted with a history of recurrent falls. assessment shows dementia with chorea. Family history shows that his father had a similar neurological illness at 60 years of age. Which of the following is correct about this disease?

a. CAG trinucleotide repeats

b. CGG trinucleotide repeats : Fragile X

c. CTG trinucleotide repeats : Myotonic dystrophy

d. GAA trinucleotide repeats : Fredrich ataxie

HD: Dopamine ↑
GABA ↓

Trinucleotide Repeat disorders

Repeat	Disease	Gene (Chromosome)	Inheritance	Key Clinical Features
CAG	Huntington's disease	HTT (Chr4)	AD	Chorea, dementia, psychiatric features
CGG	Fragile X syndrome	FMR 1 (Chr X)	X-linked dominant	Intellectual disability, long face, large ears, macroorchidism
CTG	Myotonic dystrophy type 1	DMPK (Chr 19)	AD	Myotonia, cataracts, balding, gonadal atrophy
GAA	Friedreich's ataxia	FXN (Chr 9)	AR	Ataxia loss of reflexes, cardiomyopathy, diabetes

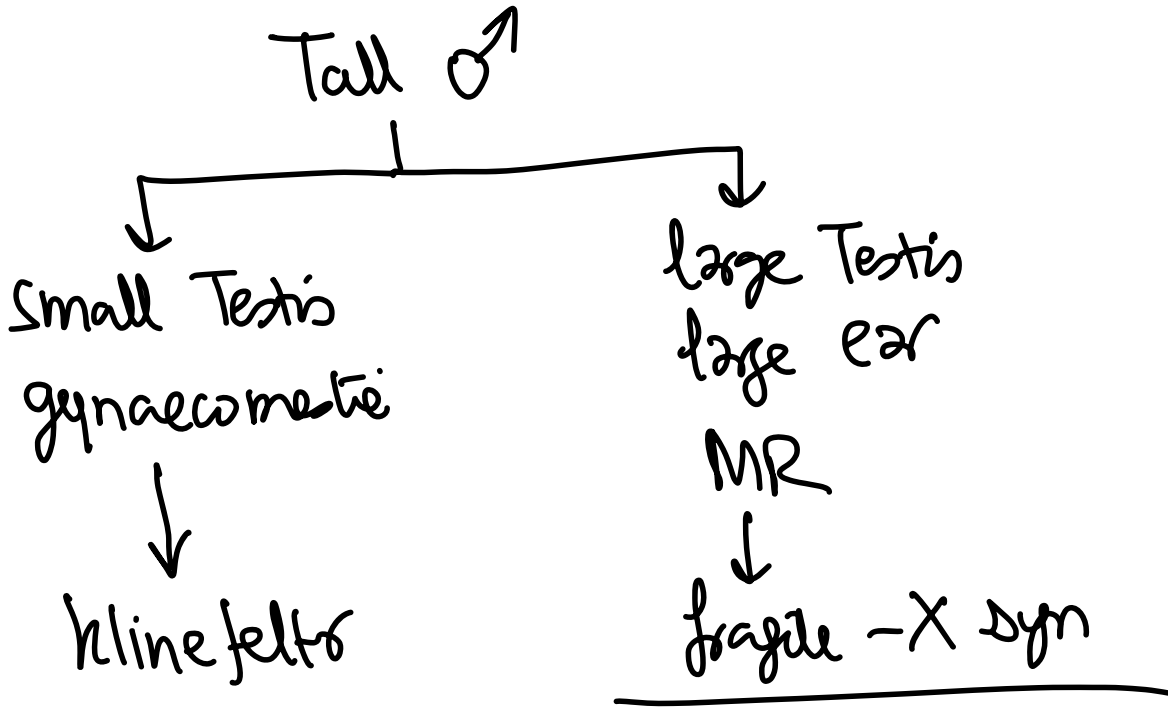
64. In your OPD you have a tall person with long thin face, large ears, large testis and hyperextensible joints. He has an intellectual disability. Defect of which of the following chromosomes is responsible for this presentation?

a. Chromosome 15

b. Chromosome 17

c. Chromosome 19

d. X chromosome



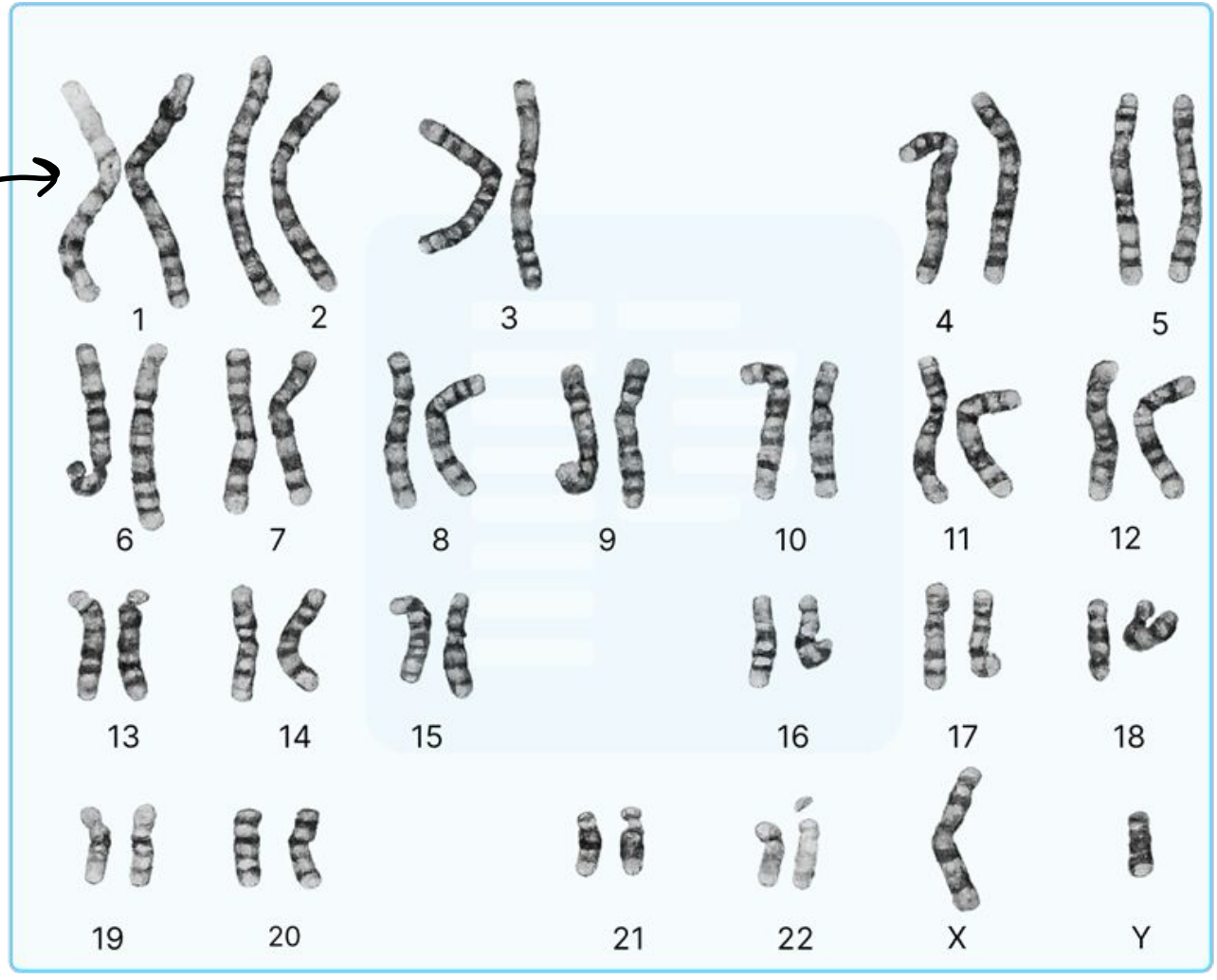
65. Which of the following is the smallest human chromosome?

a. 1 LARGEST

b. 19

c. 21

d. 22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X
Y

66. Which of the following is not an X linked dominant rickets?

a. Vitamin D resistant rickets

b. Alport syndrome

c. Charcot marie tooth disease

d. Fabry disease

XLD

XLR

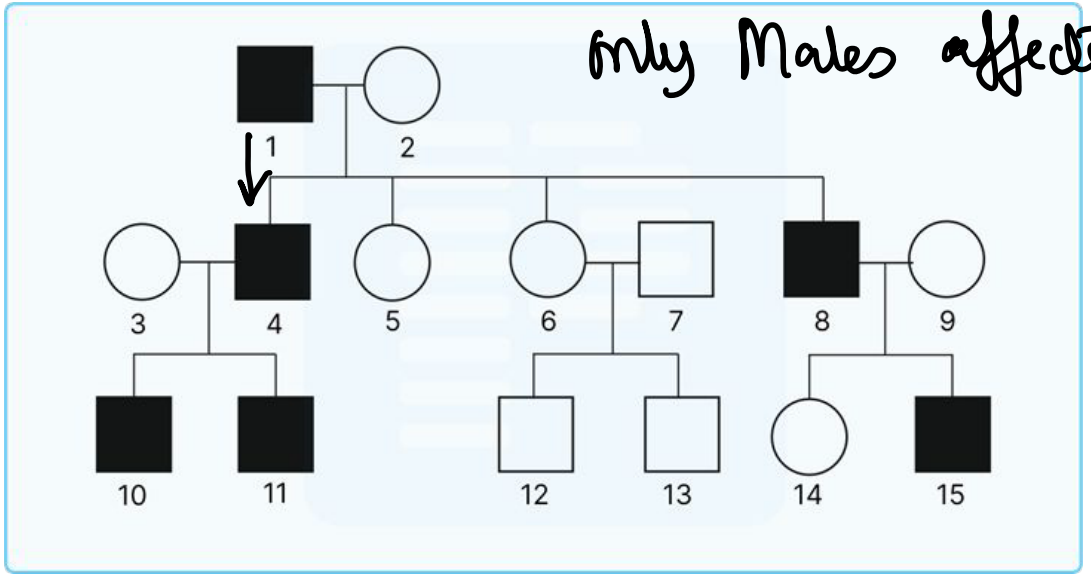
67. Which of the following is correct about pedigree analysis

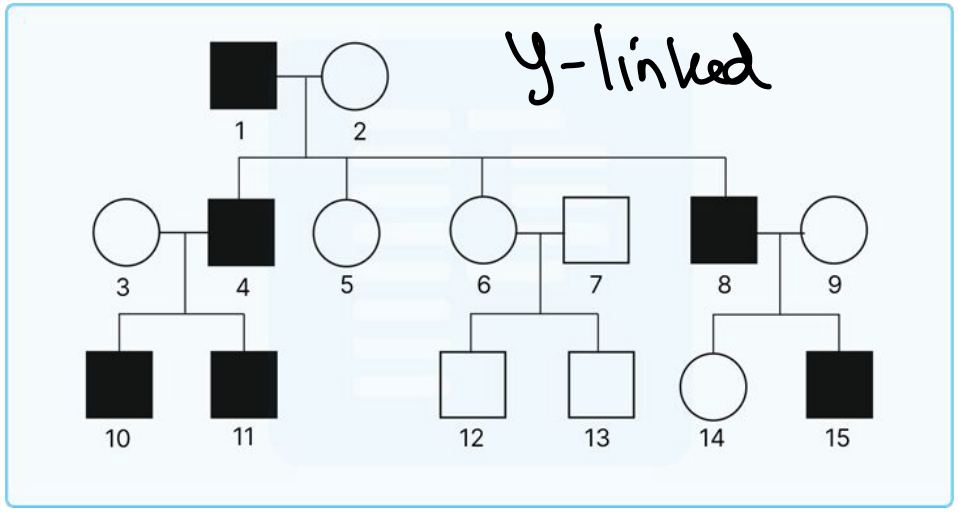
a. X linked recessive

b. X linked dominant

c. Mitochondrial inheritance

d. Y linked inheritance




Y-linked
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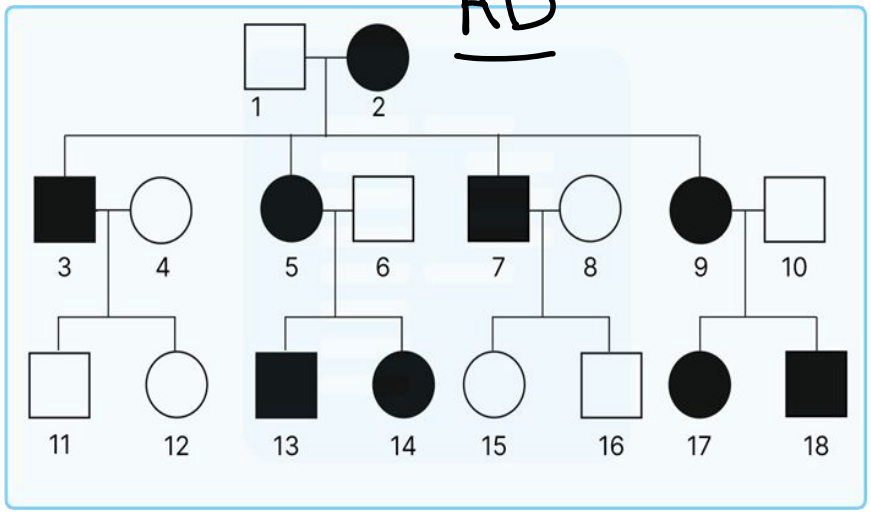
AD
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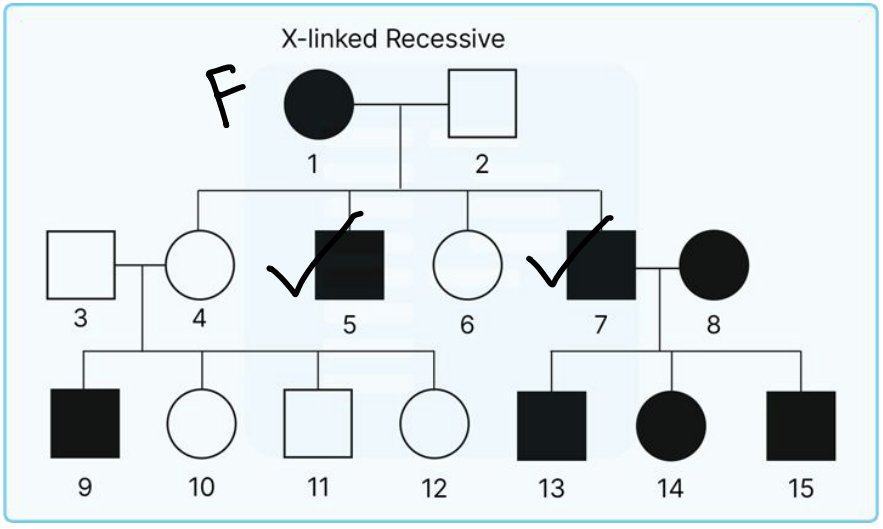
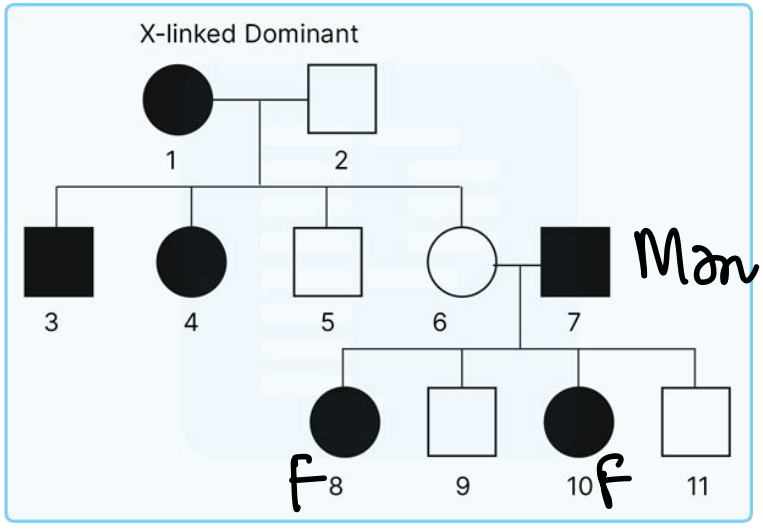


XLR



XLD

* lyon Hypothesis : ♀

68. For a diabetic patient on a follow up visit, you intend to check his KFT and electrolytes for evaluation of diabetic nephropathy. The sample will be drawn in which color vacutainer?

a. Green — lithium heparin
b. Lavender — HbA1c CBC
c. Blue — PT, aPTT
d. Yellow — CULTURE

MALTESE CROSS App: EM

69. Oval fat bodies on urine microscopy are seen in which of the following?

a. Fat embolism syndrome

b. Minimal change disease

c. Abetalipoproteinemia

d. Renal artery stenosis

70. Turbid synovial fluid with 100,000 WBC/ul, 90% PMN and 10% lymphocytes with positively birefringent crystals are seen in which of the following conditions?

a. Calcium pyrophosphate deposition PSEUDO-GOUT

b. Monosodium urate deposition (-) Birefringence

c. Calcium hydroxyapatite deposition

d. Glutamate deposition

Giemsa

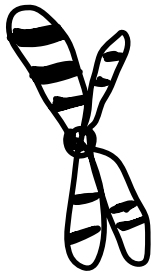
71. G banding in karyotyping is done for staining?

a. Centrosome

b. Telomere

c. Euchromatin and Heterochromatin

d. Fragile sites



72. Which of the following renal cell cancer has the worst prognosis?

a. Clear cell cancer MC, ch3 VHL gene

b. Papillary cancer

c. Bellini duct cancer

d. Chromophobe cancer

73. Leading benign brain tumor of childhood?

a. Medulloblastoma → malignant

b. Craniopharyngioma C>B

c. Pilocytic astrocytoma

d. ~~Meningioma~~ Adulto

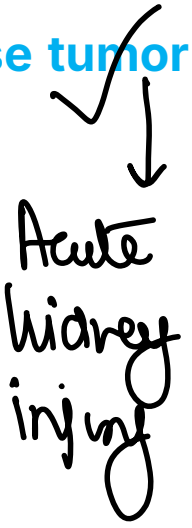
74. Which of the following tumors has the highest propensity to cause tumor lysis syndrome?

a. CLL

b. CML

c. Hairy cell leukemia

d. Burkitt lymphoma



75. The most common extranodal location of lymphoma is?

a. Ileum

b. Jejunum

c. Ovary

d. Stomach

THANK YOU