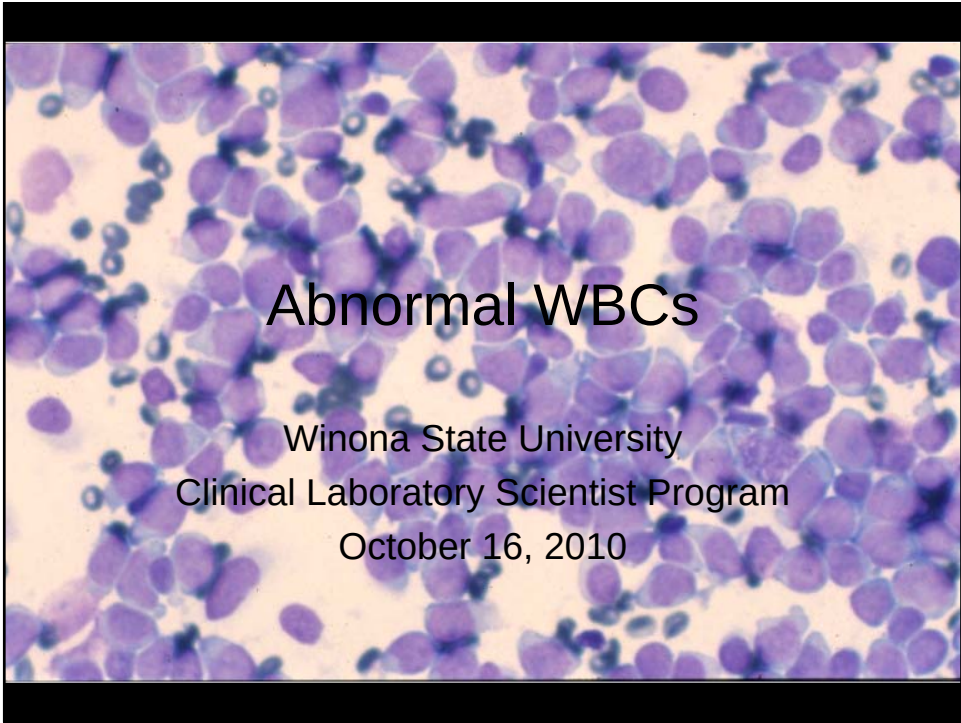
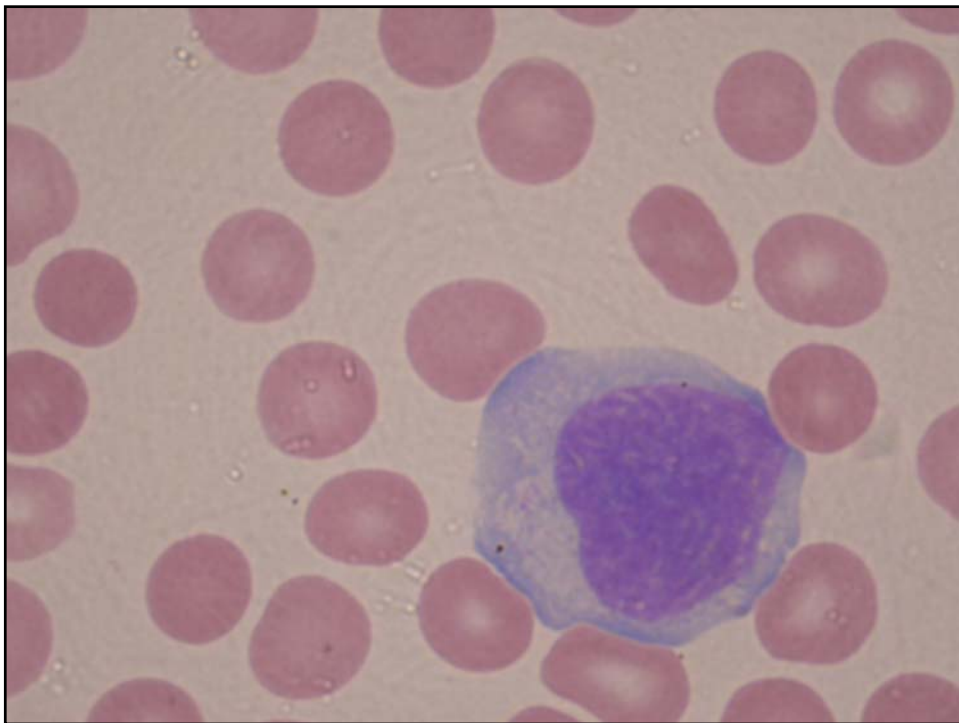
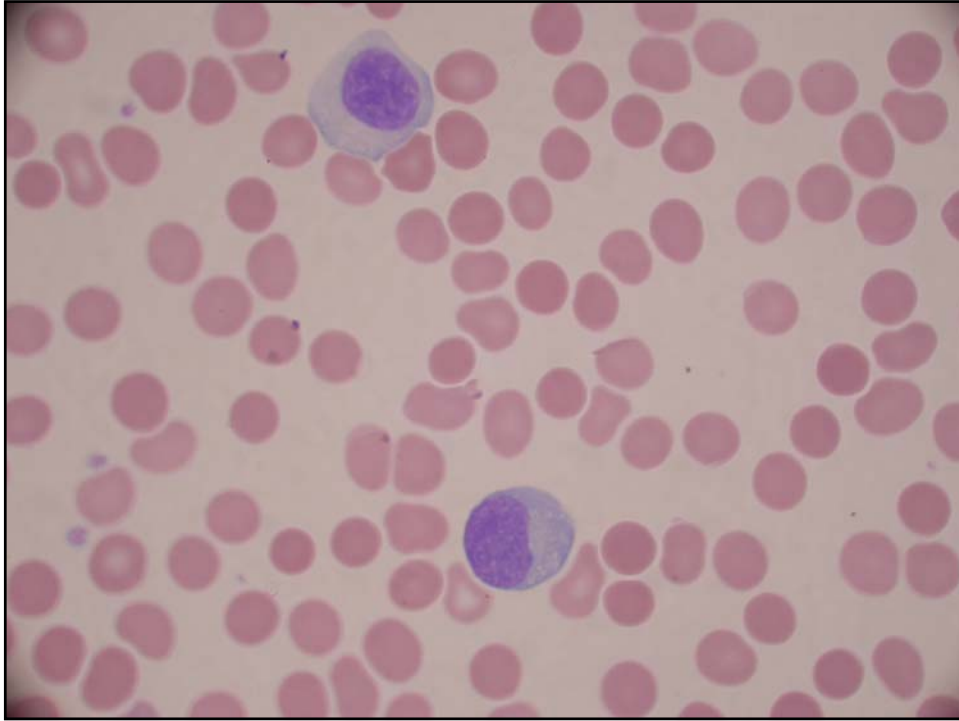
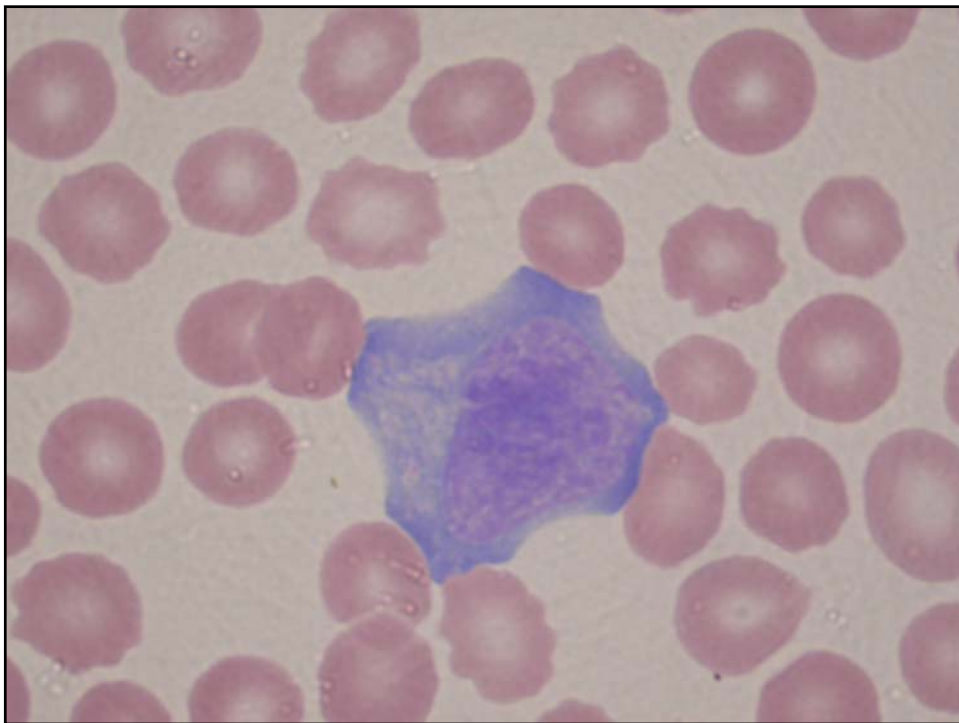
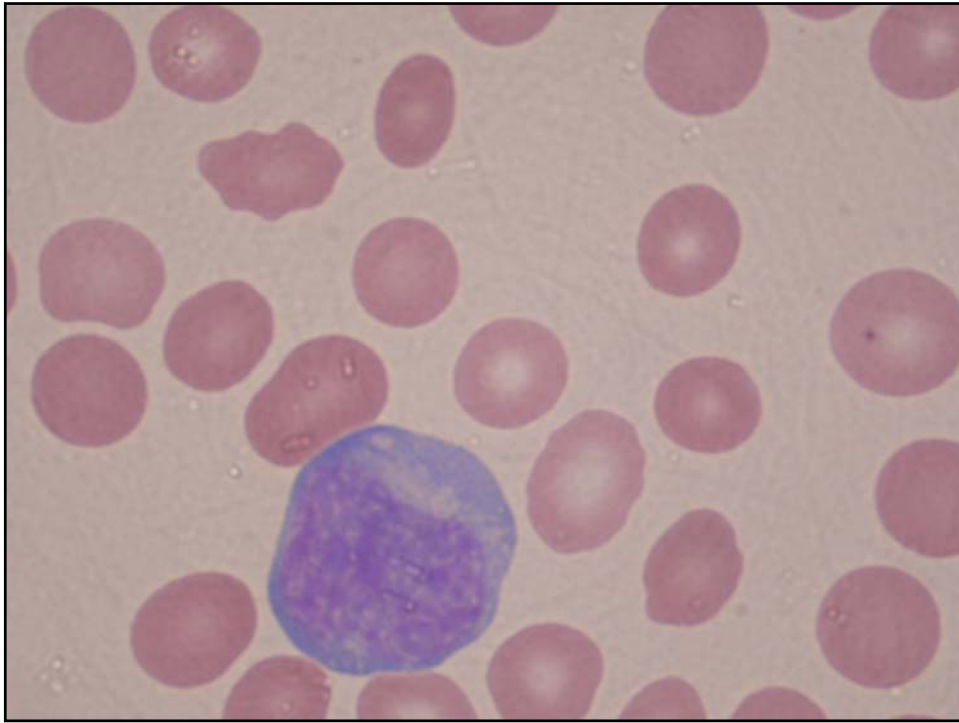


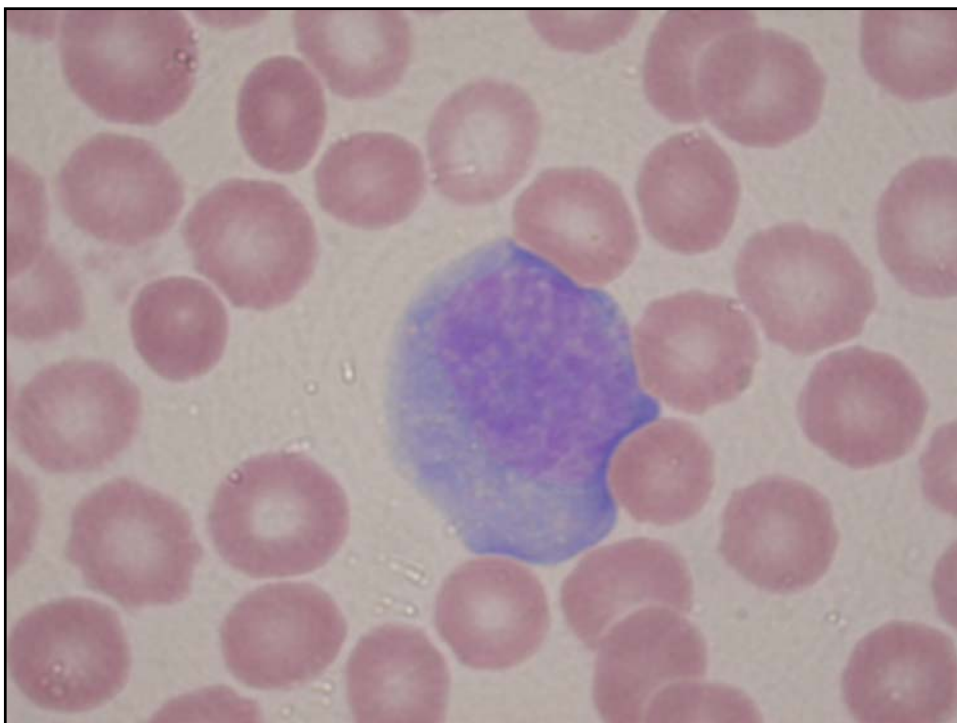
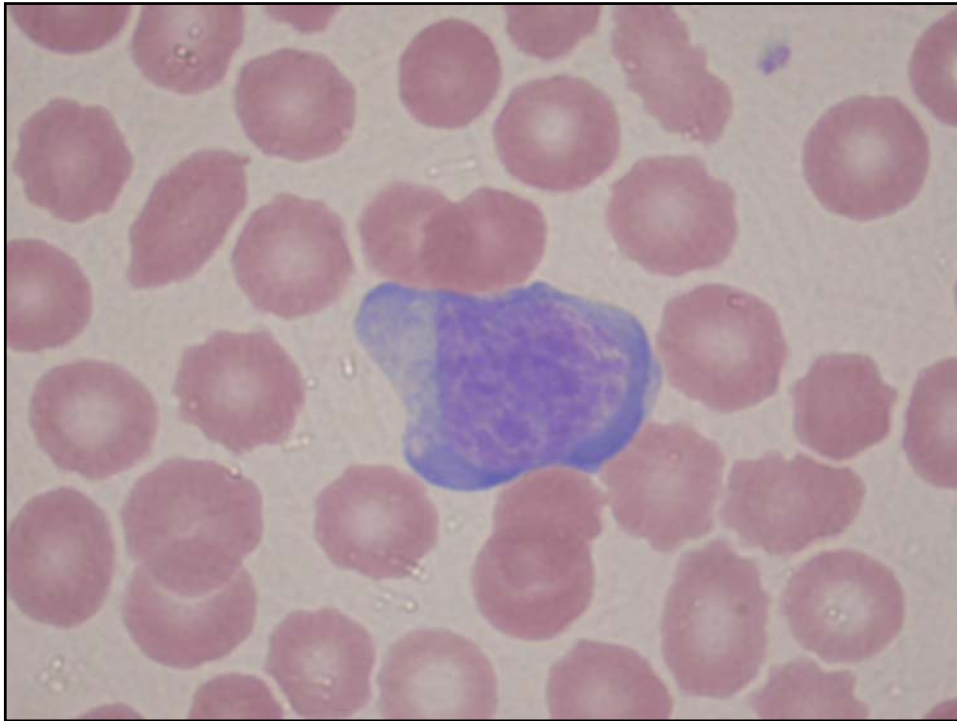


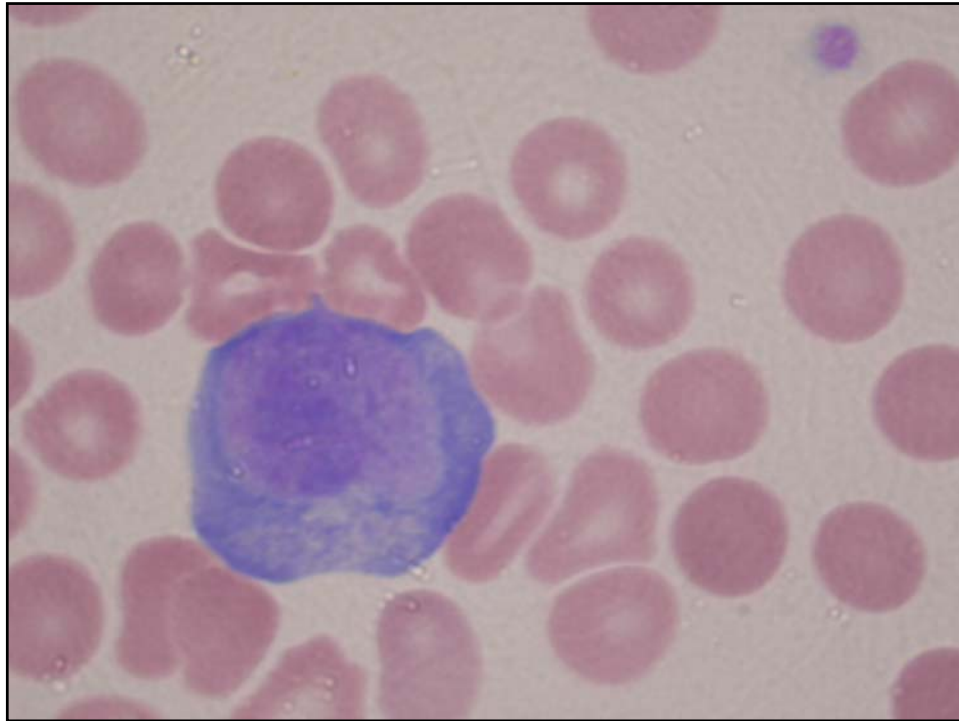
16 year old female with fever,
sore throat, fatigue

CBC W/DIFF				POLYNUC NEUTROPHIL		4
WBC	L	3.9	(4)	BAND NEUTROPHIL		19
RBC	L	3.92	(4)	LYMPHOCYTE		43
HGB		13.0	(1)	ATYPICAL LYMPHS		33
HCT		36.3	(3)	MONOCYTE		1
MCV		92.6	(8)	ABS POLYNUC NEUT	L	0.2
MCH		33.3	(2)	ABS BAND		0.7
MCHC		36.0	(3)	ABS LYMPH		1.7
RDW		11.5	(4)	ABS ATYP LYMPHS		
PLATELET	L	85	(1)	ABS MONOCYTE	H	1.3
MPV	H	11.4	(7)	WBC MORPHOLOGY	L	0.0
				RBC MORPHOLOGY		NONE
				PLT ESTIMATE		NORMAL
						DECREAS









BLD SMEAR EVAL BY MD There are many atypical lymphocytes present;
suggests infectious mononucleosis.
Pathologist's interpretation performed by Lauren L
Anthony MD
CPT CODE 85060

MONOTEST

NEGATIVE (NEG)

MONOTEST

NEGATIVE (NEG)

Monotest detects “heterophile” antibodies that are associated with EBV infectious mononucleosis – but up to 30% of patients with IM don’t have them.

MONOTEST

NEGATIVE (NEG)

EPSTEIN BARR VIRUS

SEE NOTE
(NOTE)

Test	Result

EBV Ab, IgG, IgM, and EBNA, S	
EBV VCA IgM	Positive
EBNA	Negative
Interpretation	
Results suggest recent infection	
EBV VCA IgG	Positive

Board Question

- Are the atypical lymphocytes T or B cells?

Infectious mononucleosis

- EBV infects the B-cells
- Attaches to CD20 a cell membrane marker on B-cells
- Atypical lymphs are uninfected cytotoxic T-cells that attack infected B-cells

CD20

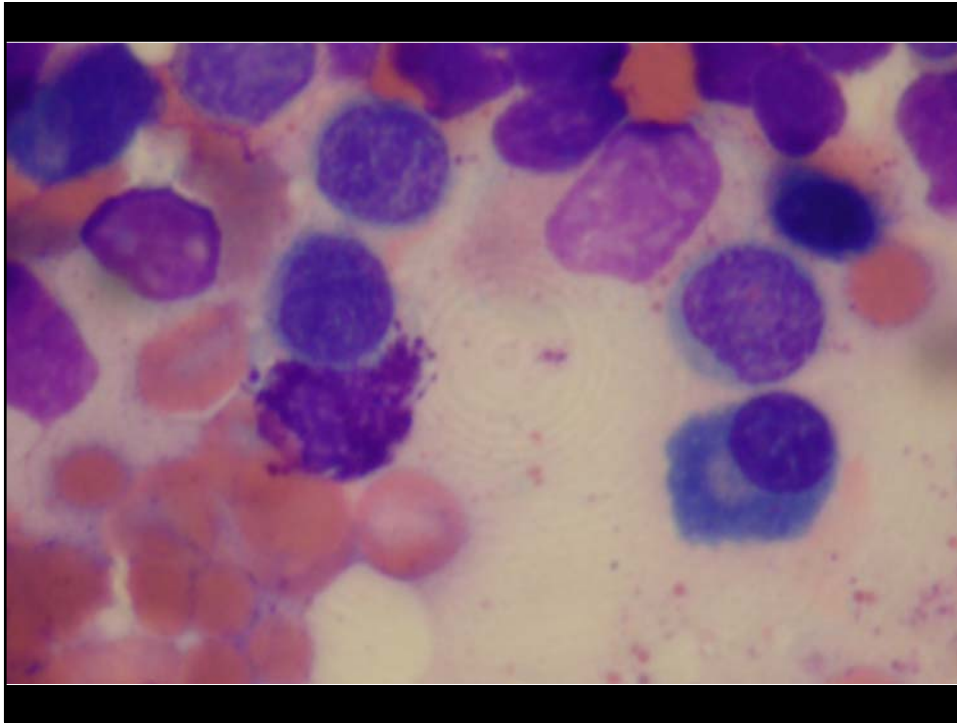
- Cell membrane marker on mature B-cells
- Most lymphomas are
 - B-cell lymphomas?
 - Or
 - T-cell lymphomas?

CD20

- Most lymphomas are B-cell lymphomas
- Rituxin – monoclonal antibody to CD20
- Used to treat B-cell lymphomas

Herpes Viruses

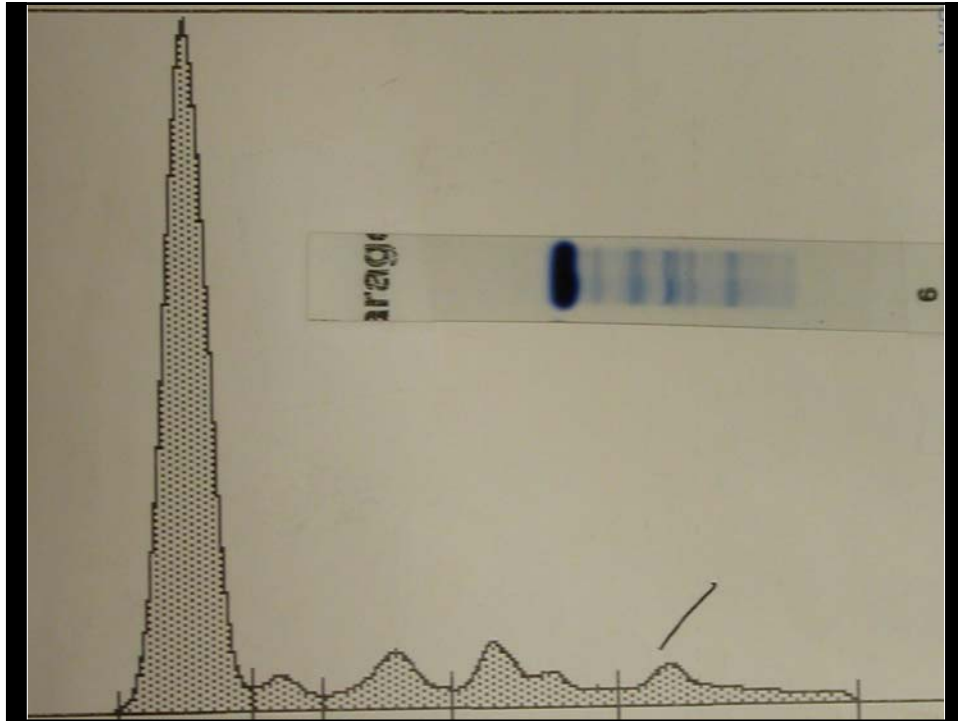
- Infection persists for life
- HSV – skin/membranes, nerves
- EBV – B-lymphocytes
- CMV - skin/membranes, monocytes and lymphocytes
- VZV – skin/membranes, nerves
- DNA viruses that become incorporated in nuclear DNA of infected cells.



Serum Protein Fractionation

MONOCLONAL EVAL

TOTAL PROTEIN	6.5
ALBUMIN	4.5
ALPHA 1	0.2
ALPHA 2	0.5
BETA	0.7
GAMMA	L 0.6



Serum Immunoglobulins

MONOCLONAL EVAL

IGG, SERUM

L 570 (613-1400)

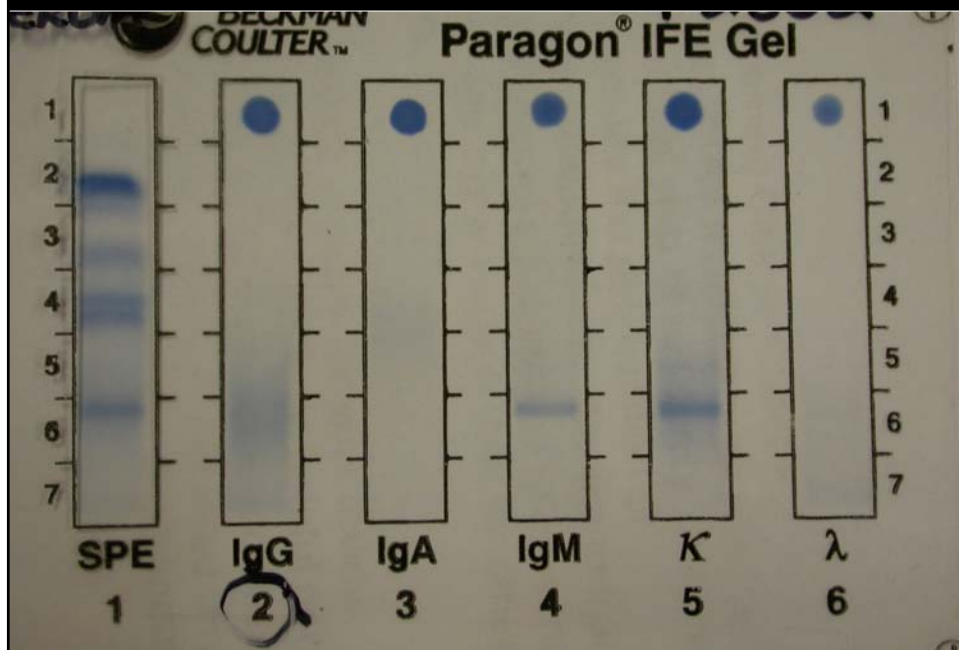
IGA, SERUM

69 (69-309)

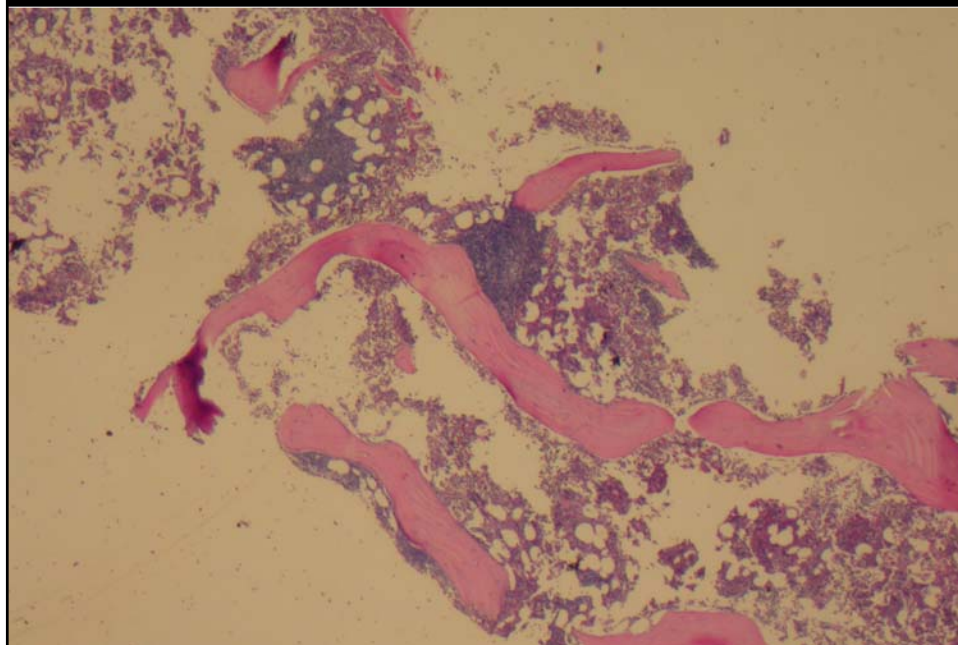
IGM, SERUM

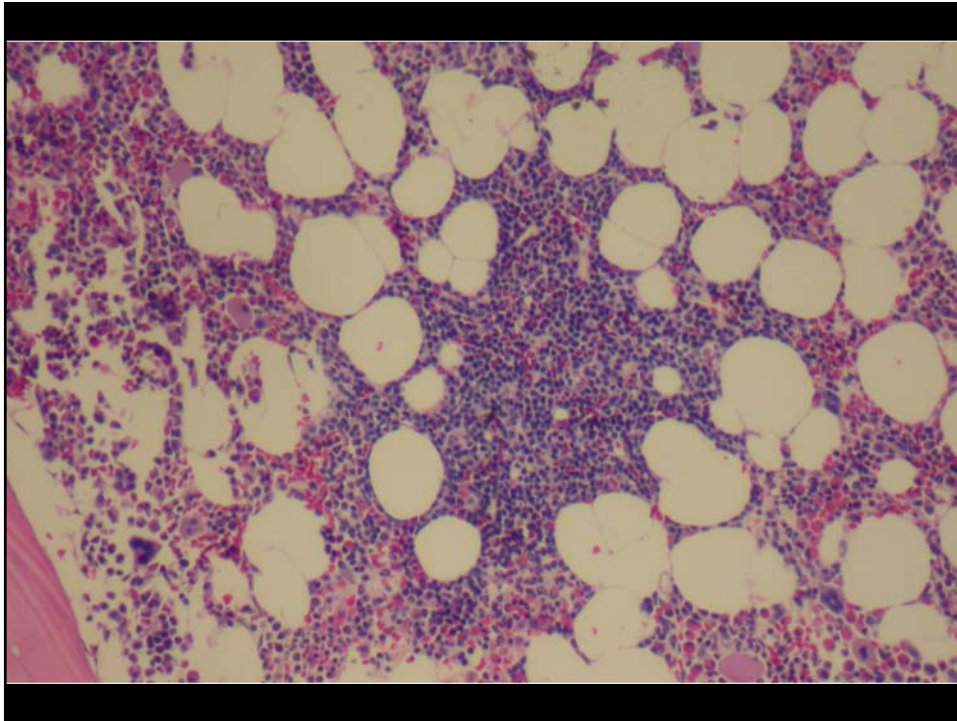
H 414 (53-334)

Serum Immunofixation

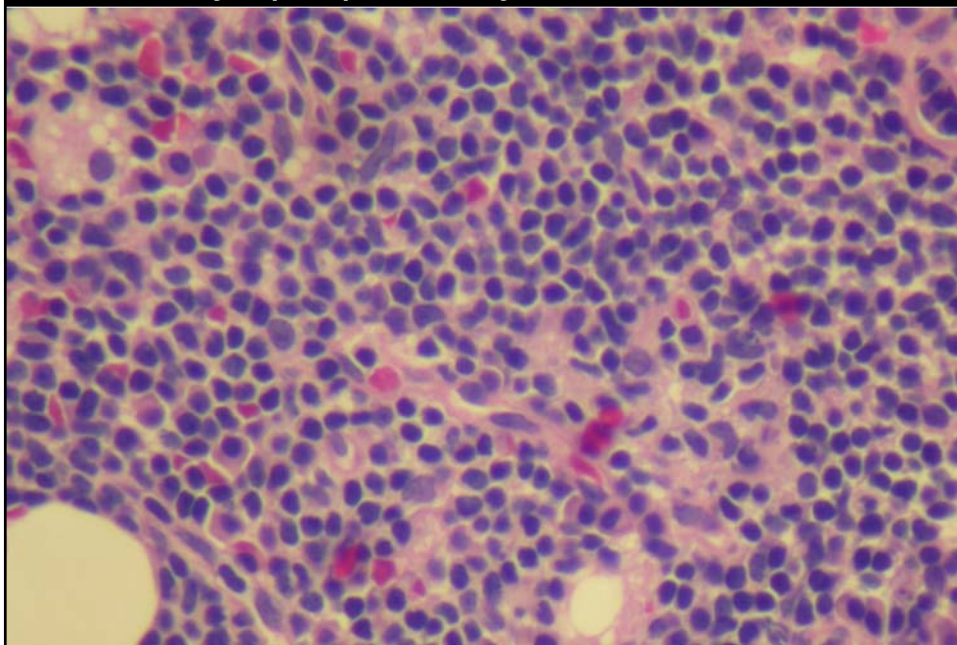


Bone Marrow Core Biopsy

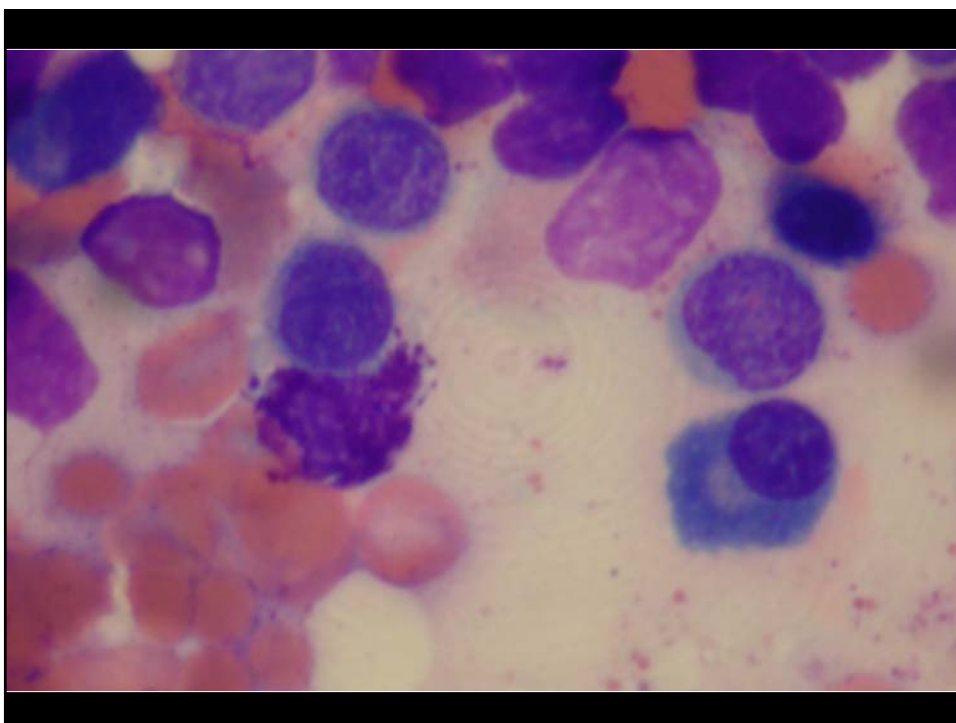
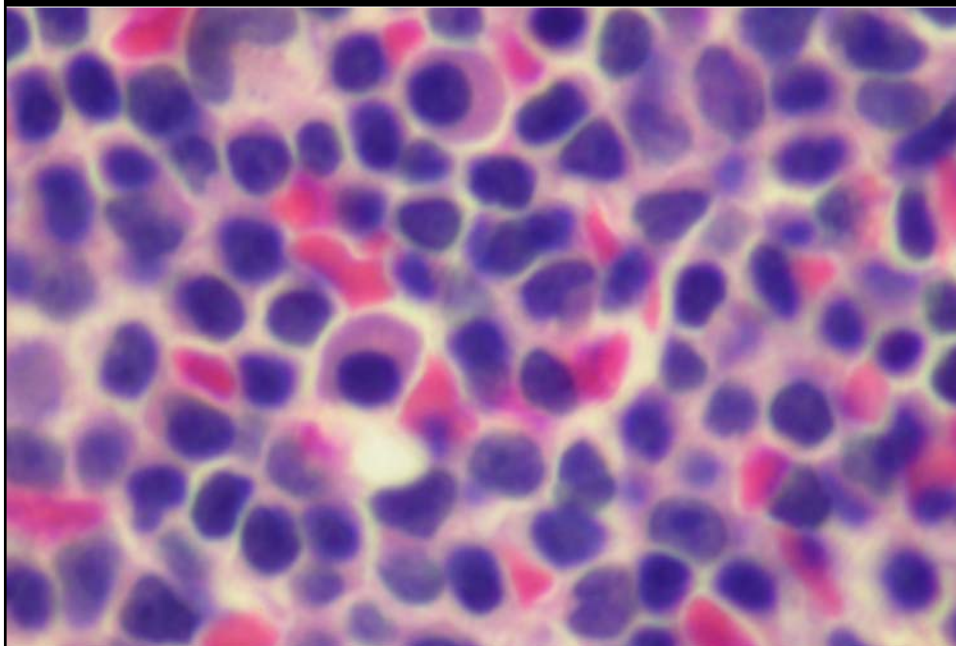


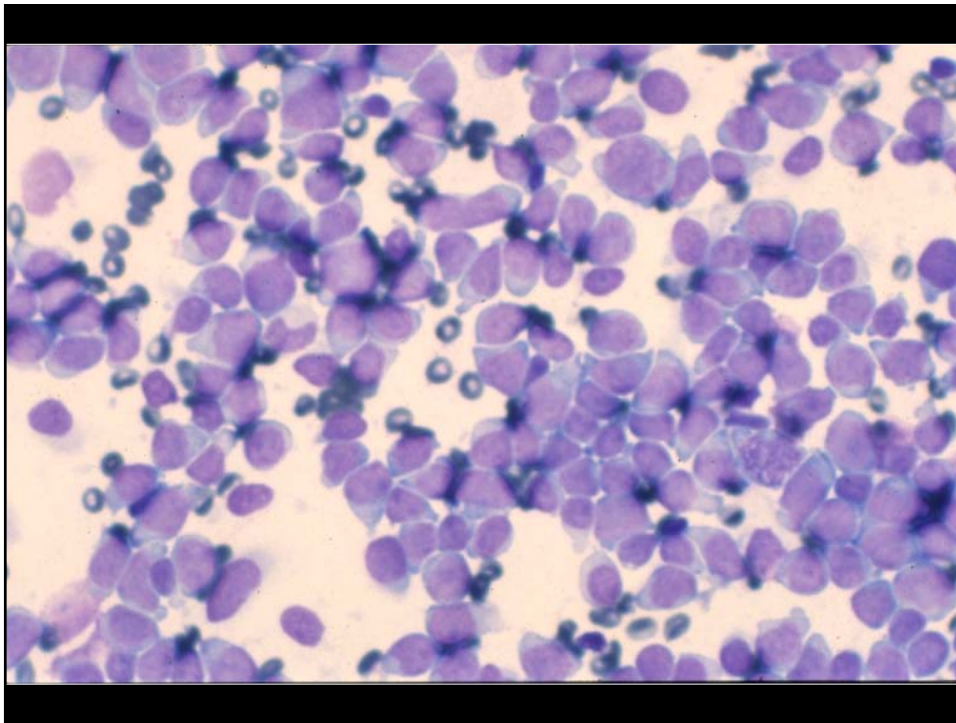


Lymphoplasmacytic Infiltrate



Lymphoplasmacytic Infiltrate – High Magnification





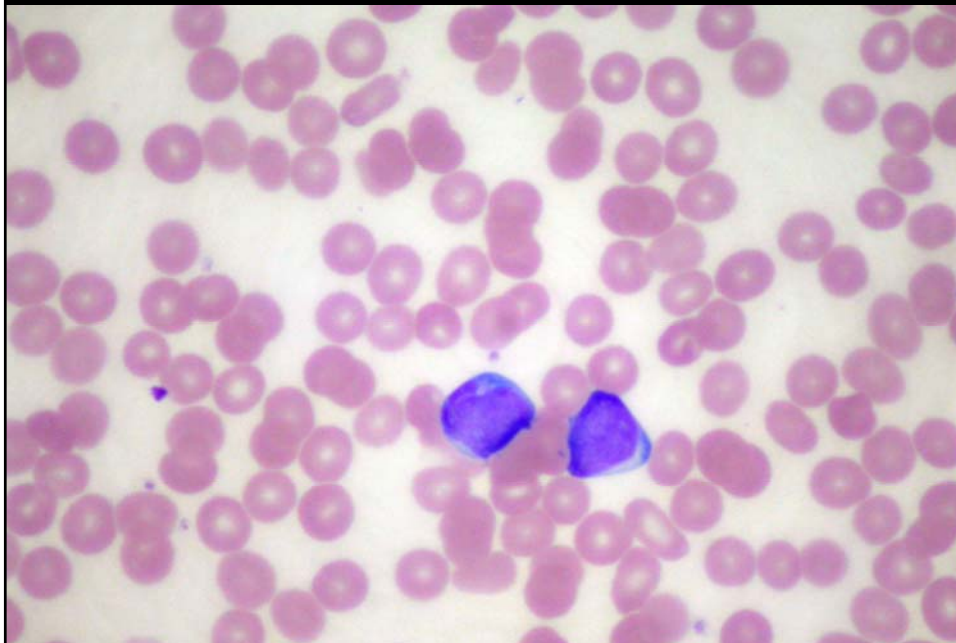
5 year old girl with leg pain seen on March 24

CBC W/O DIFF			
WBC	11.4	(5.0-17.0)	THOUS/CMM
RBC	4.86	(3.9-5.4)	MILL/CMM
HGB	12.6	(11.0-14.0)	GM/DL
HCT	37.8	(34.0-42.0)	%
MCV	77.6	(75-88)	FL
MCH	25.9	(25.0-35.0)	PG/CELL
MCHC	33.4	(32.0-36.0)	G/DL
RDW	12.3	(<15.0)	%
PLATELET	382	(140-440)	THOUS/CMM
MPV	7.6	(7.4-10.4)	FL

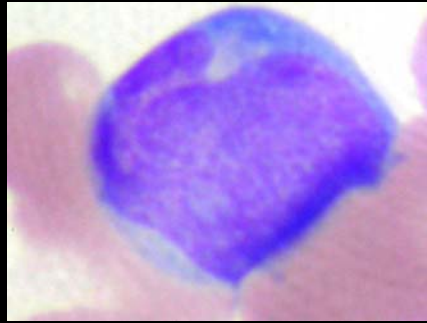
Same girl seen again on April 5

CBC W/DIFF		STAT	
WBC	H 24.3	(5.0-17.0)	THOUS/CMM
RBC	4.73	(3.9-5.4)	MILL/CMM
HGB	11.8	(11.0-14.0)	GM/DL
HCT	35.5	(34.0-42.0)	%
MCV	75.1	(75-88)	FL
MCH	L 24.9	(25.0-35.0)	PG/CELL
MCHC	33.2	(32.0-36.0)	G/DL
RDW	12.9	(<15.0)	%
PLATELET	163	(140-440)	THOUS/CMM
MPV	8.2	(7.4-10.4)	FL
POLYNUC NEUTROPHIL	11	%	
BAND NEUTROPHIL	3	%	
LYMPHOCYTE	40	%	

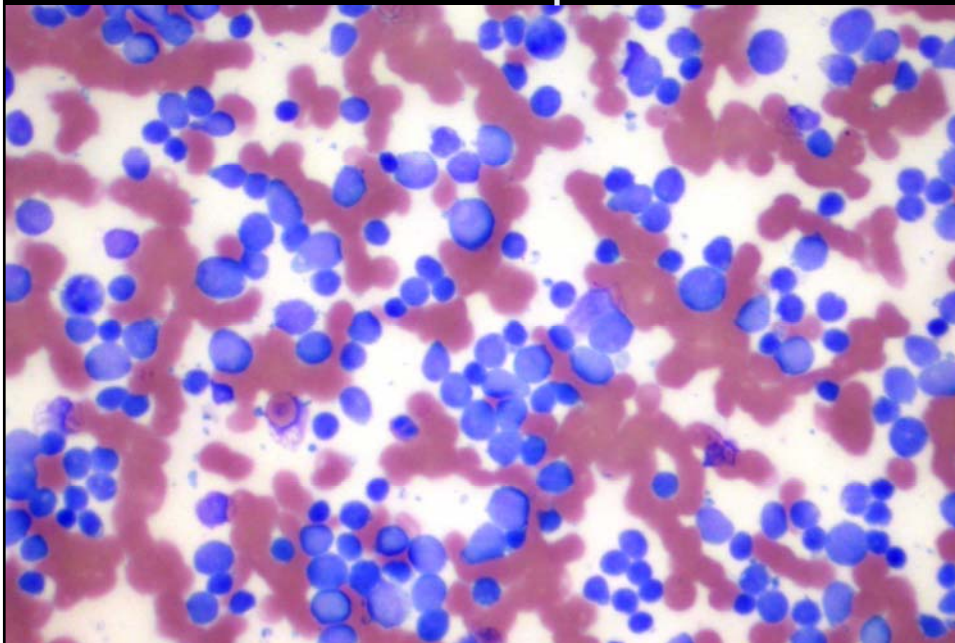
Peripheral Blood Smear



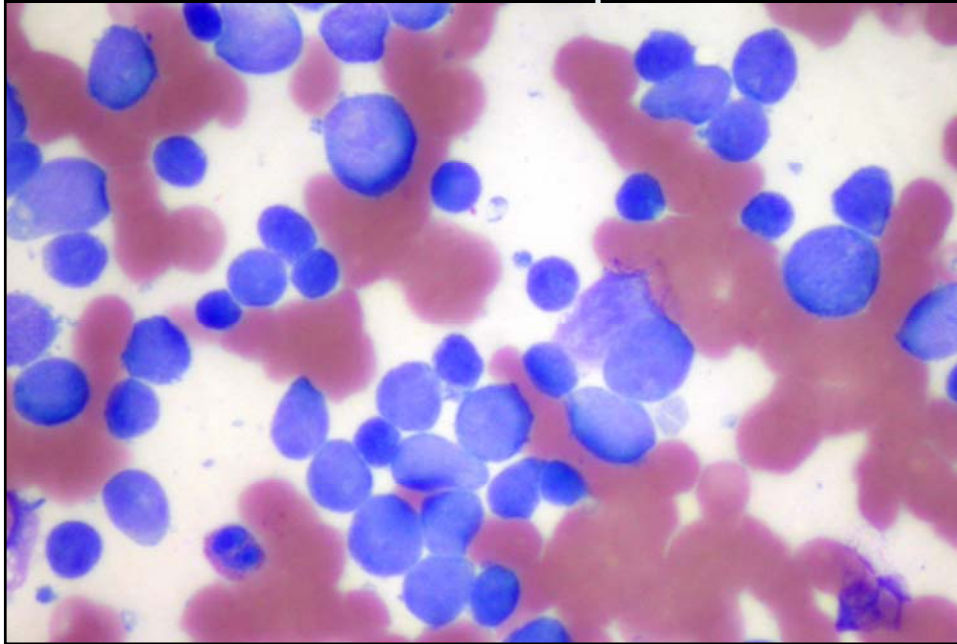
Peripheral Blasts



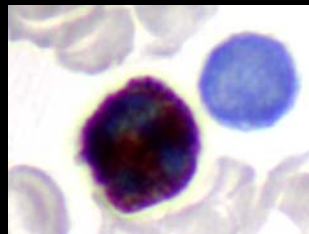
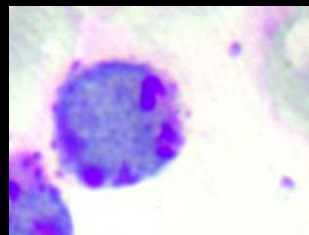
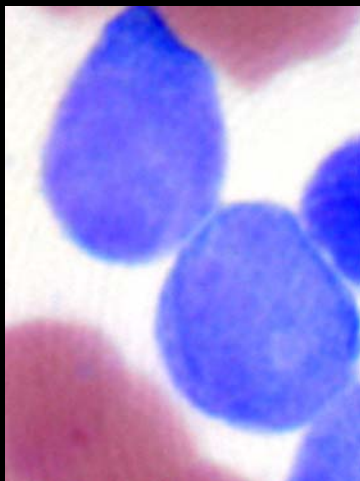
Bone Marrow Aspirate



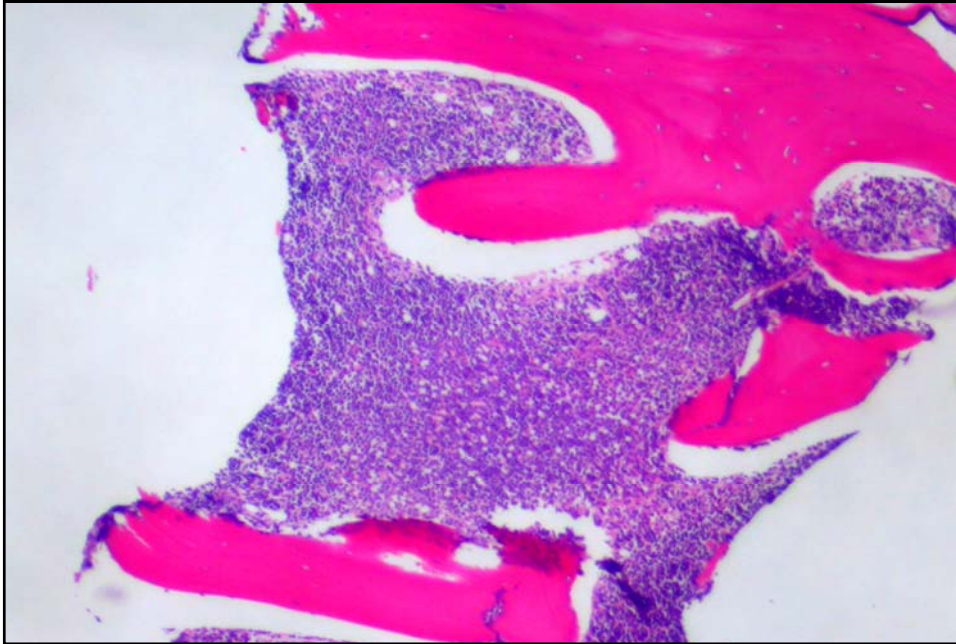
Bone Marrow Aspirate



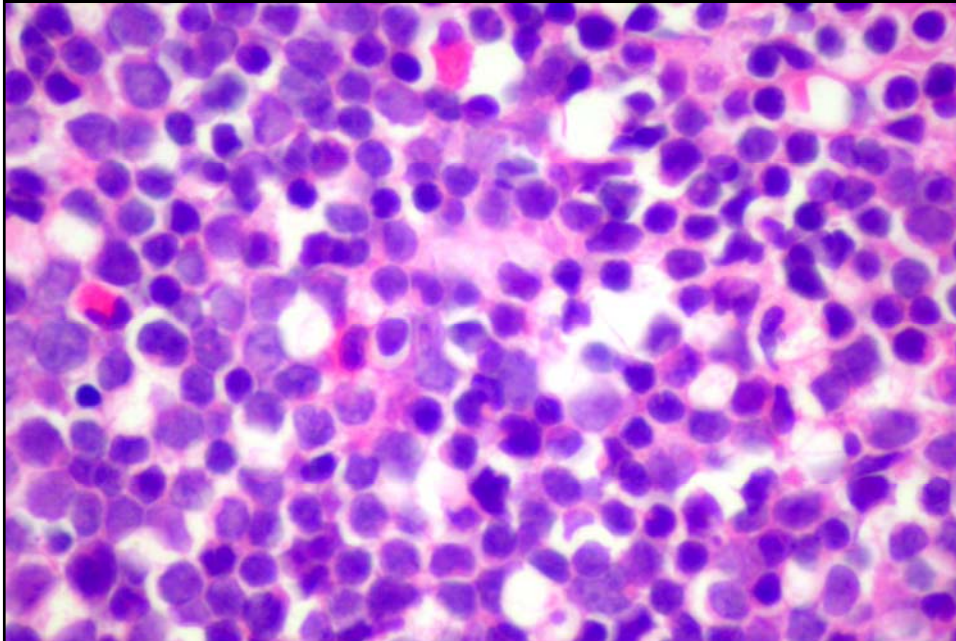
PAS, MPO



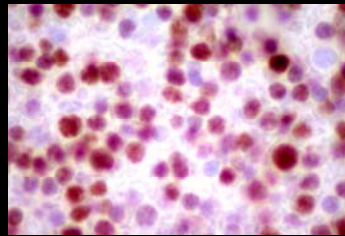
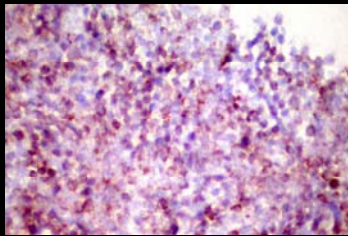
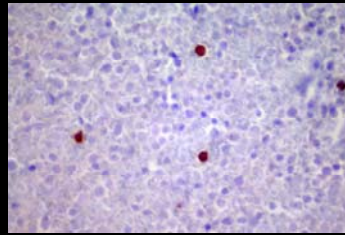
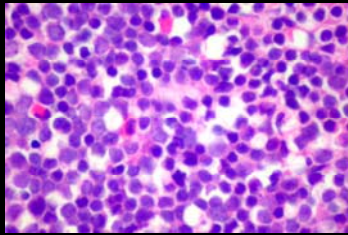
Bone Marrow Biopsy



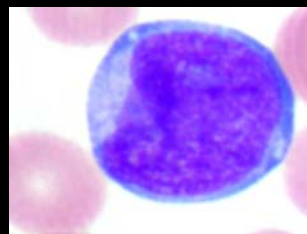
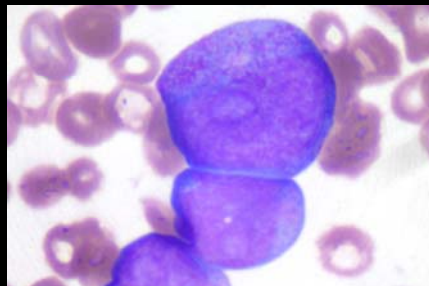
Bone Marrow Aspirate

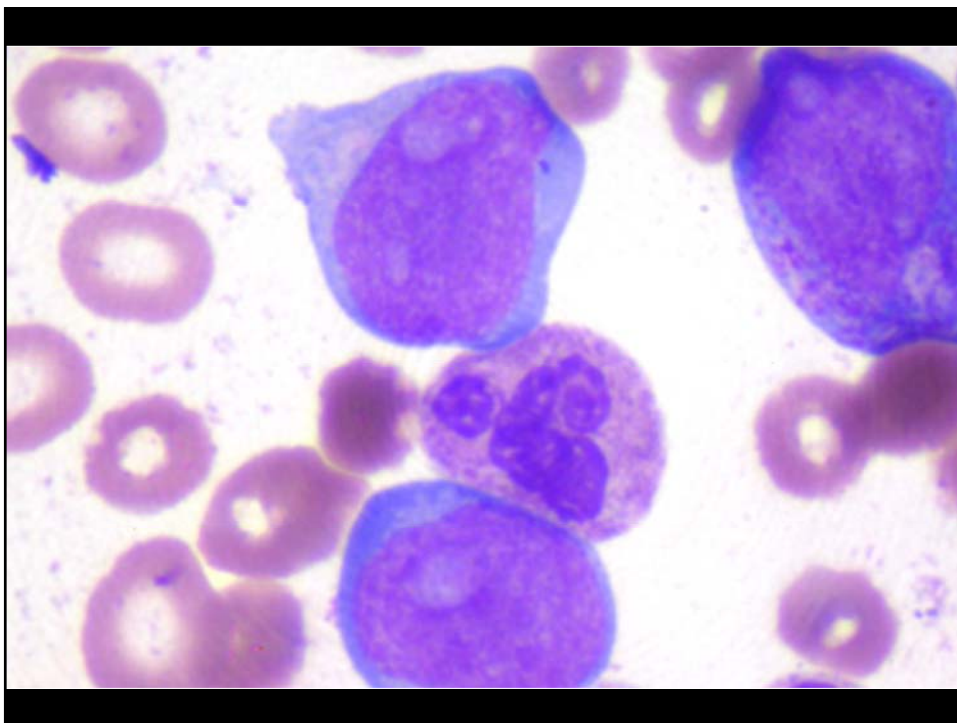
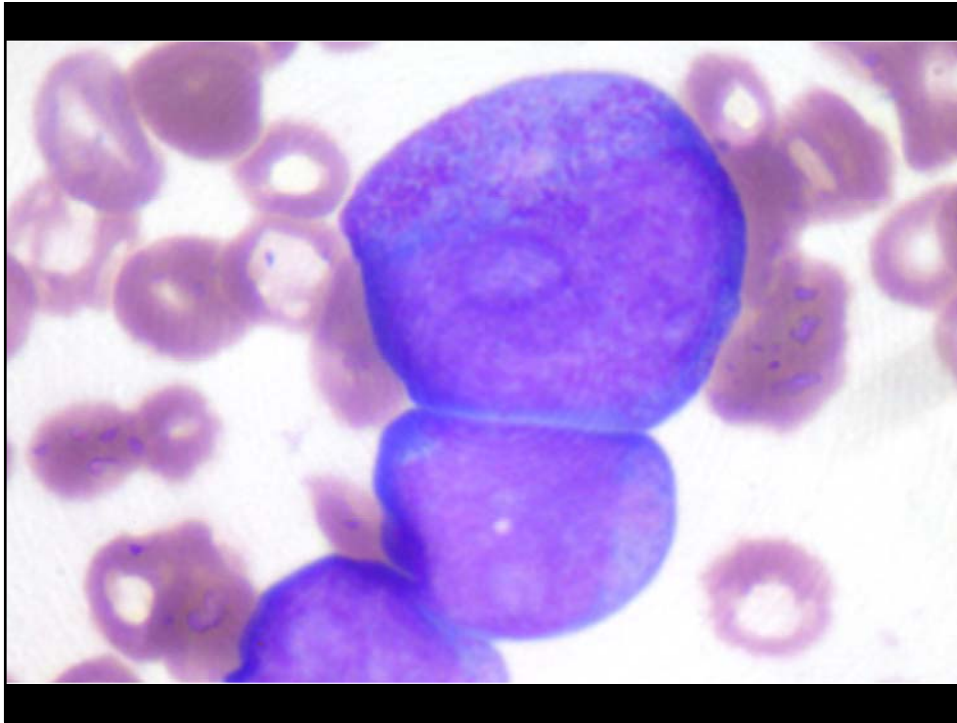


CD 3, CD79a, TdT

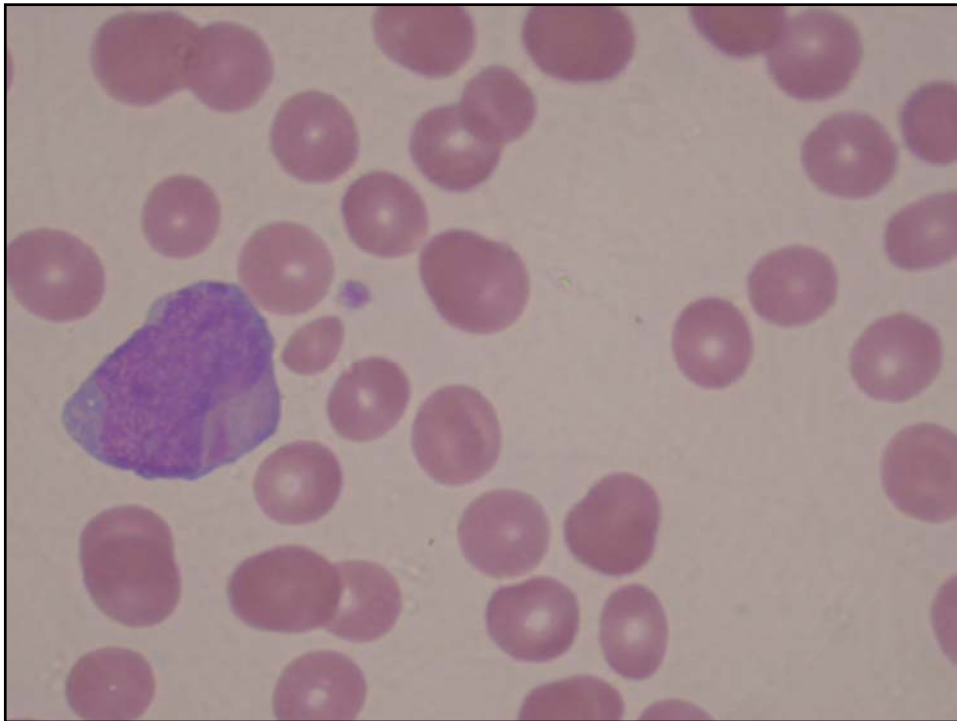


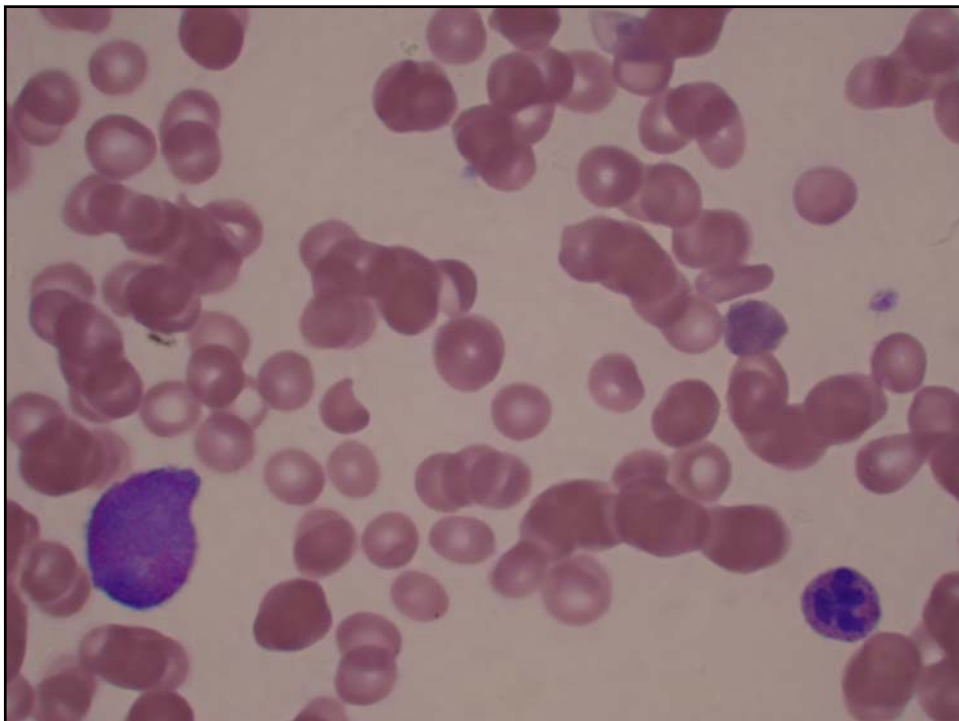
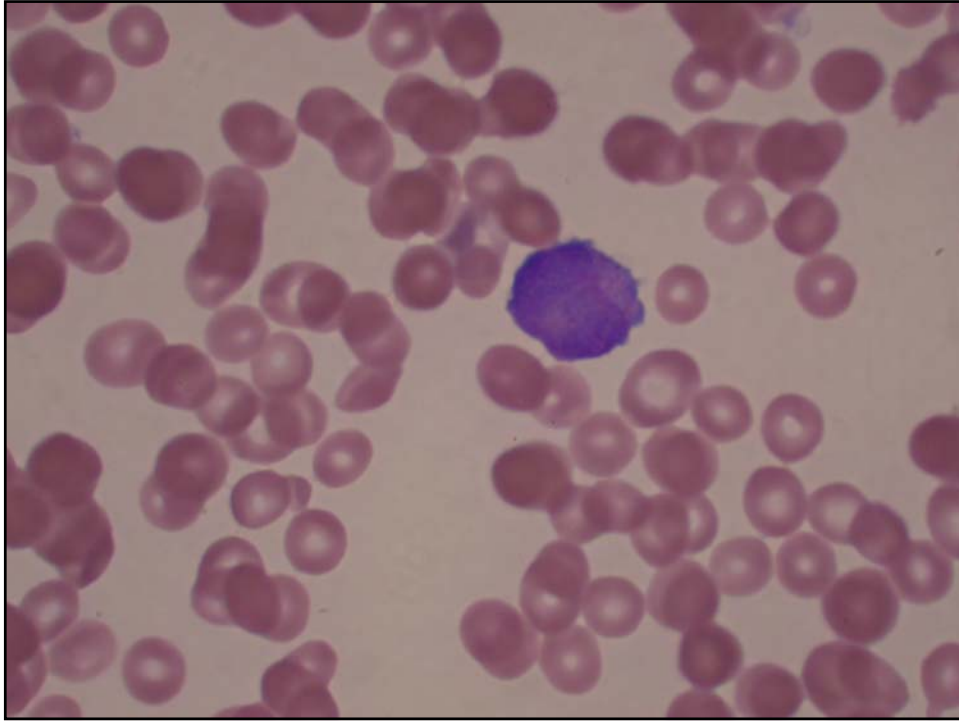
AML, ALL blasts

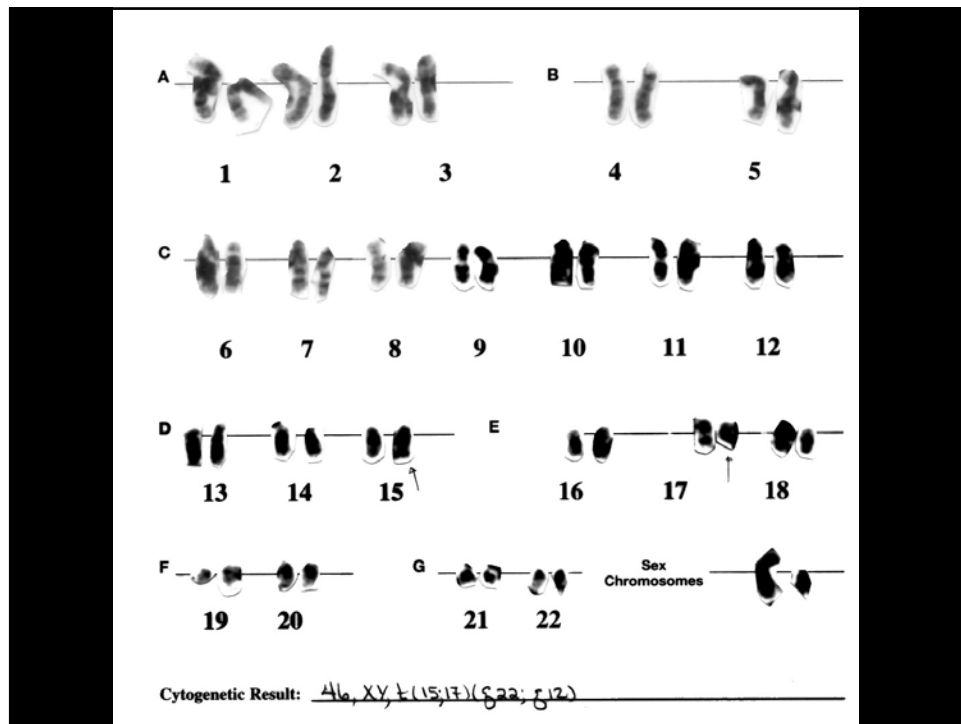




26 year old male with
pancytopenia and abnormal
WBCs







81 year old female

- WBC count
- Nuclear Maturity
- Nucleus: Cytoplasm ratio

