

Hematopoéza

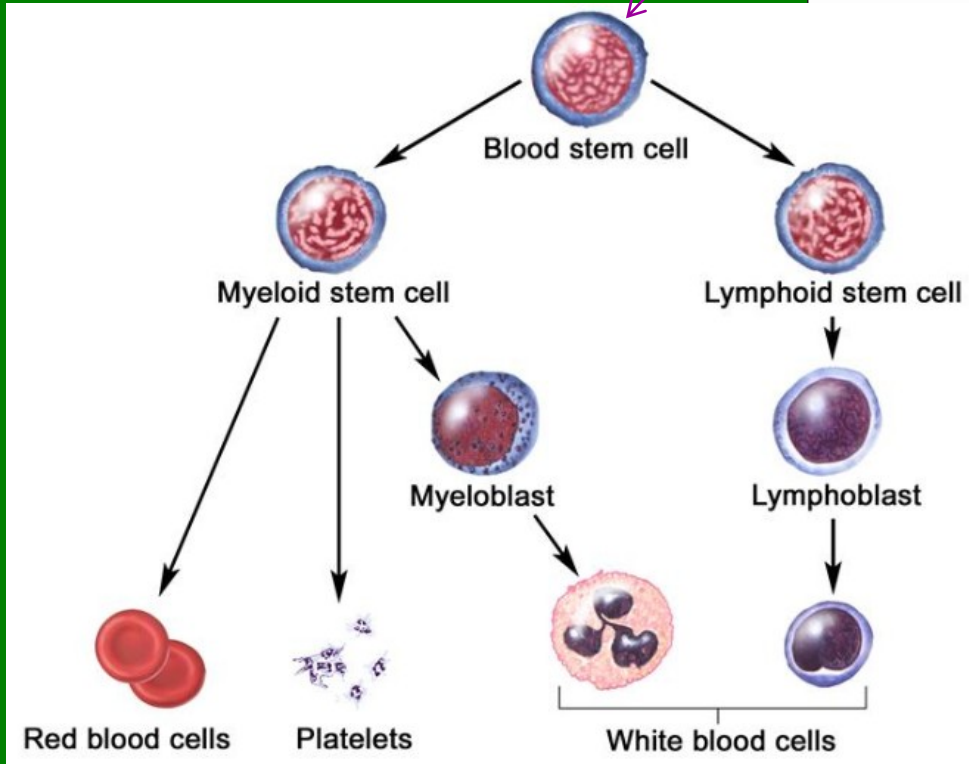
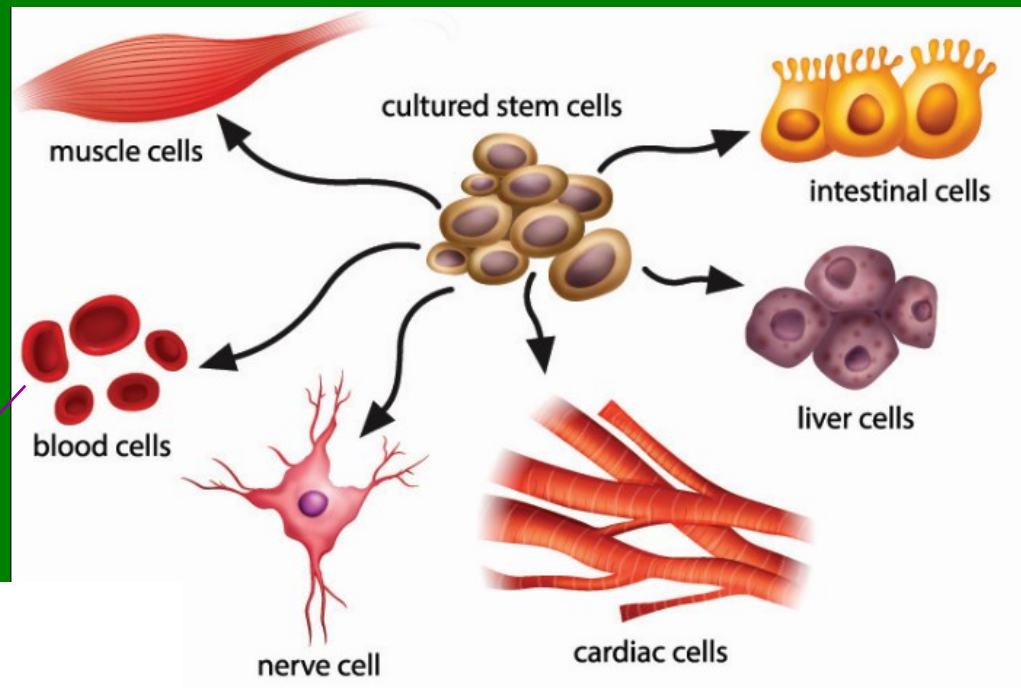
Bourková L., OKH FN Brno

- bílé krvinky – leukocyty – WBC (*White Blood Cells*)
- červené krvinky – erytrocyty – RBC (*Red Blood Cells*)
- krevní destičky – trombocyty – PLT (*Platelets*)

Kmenové buňky (*stem cells*)

- nediferencované buňky:
 - mají schopnost se dělit (proliferovat)
 - a přeměnit se na jiný buněčný typ (diferencovat)
 - proliferací a diferenciací vznikají zralé funkční buňky
- jsou schopny tvorby vlastní identické kopie (klon) a diferenciaci
- podle míry schopnosti dát vznik různě diferencovaným buňkám se dělí na:
 - totipotentní (velmi časně buňky zárodku)
 - pluripotentní, multipotentní či jen unipotentní
 - ❖ *Z křevetvorné kmenové buňky v kostní dřeni může vzniknout kterákoli hematopoetická buňka.*

Kmenové buňky



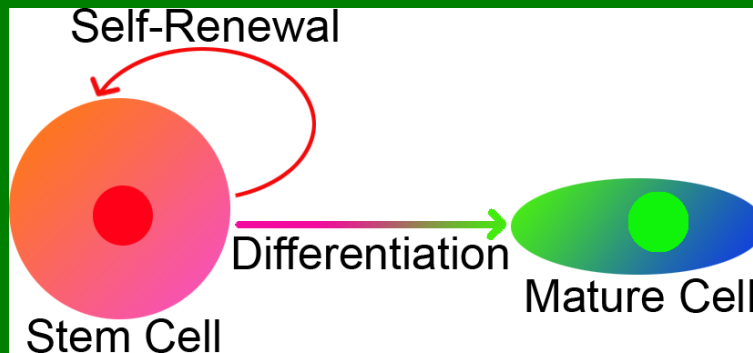
Hematopoéza

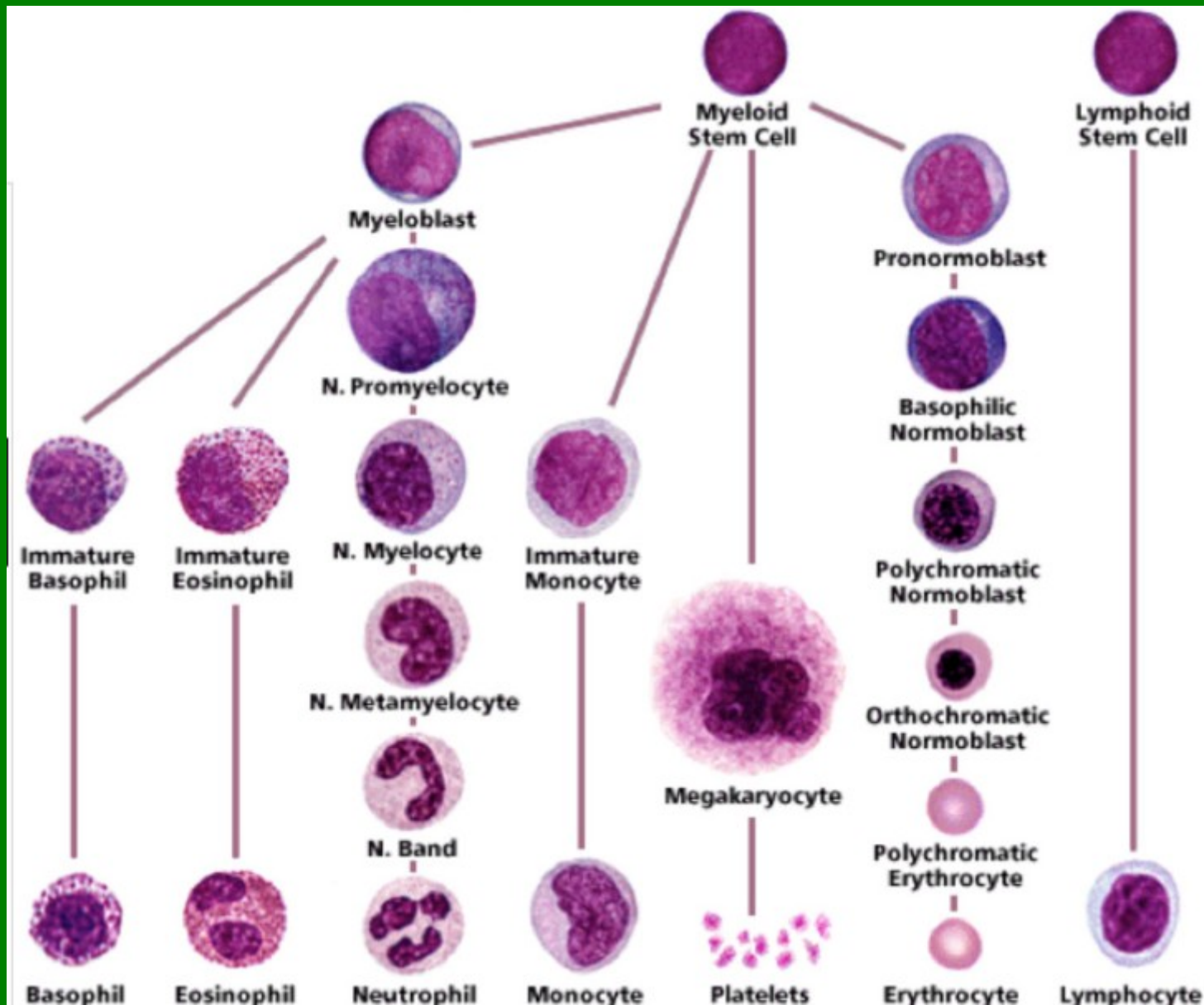
Hematopoiesis

Proliferative potential



differentiation

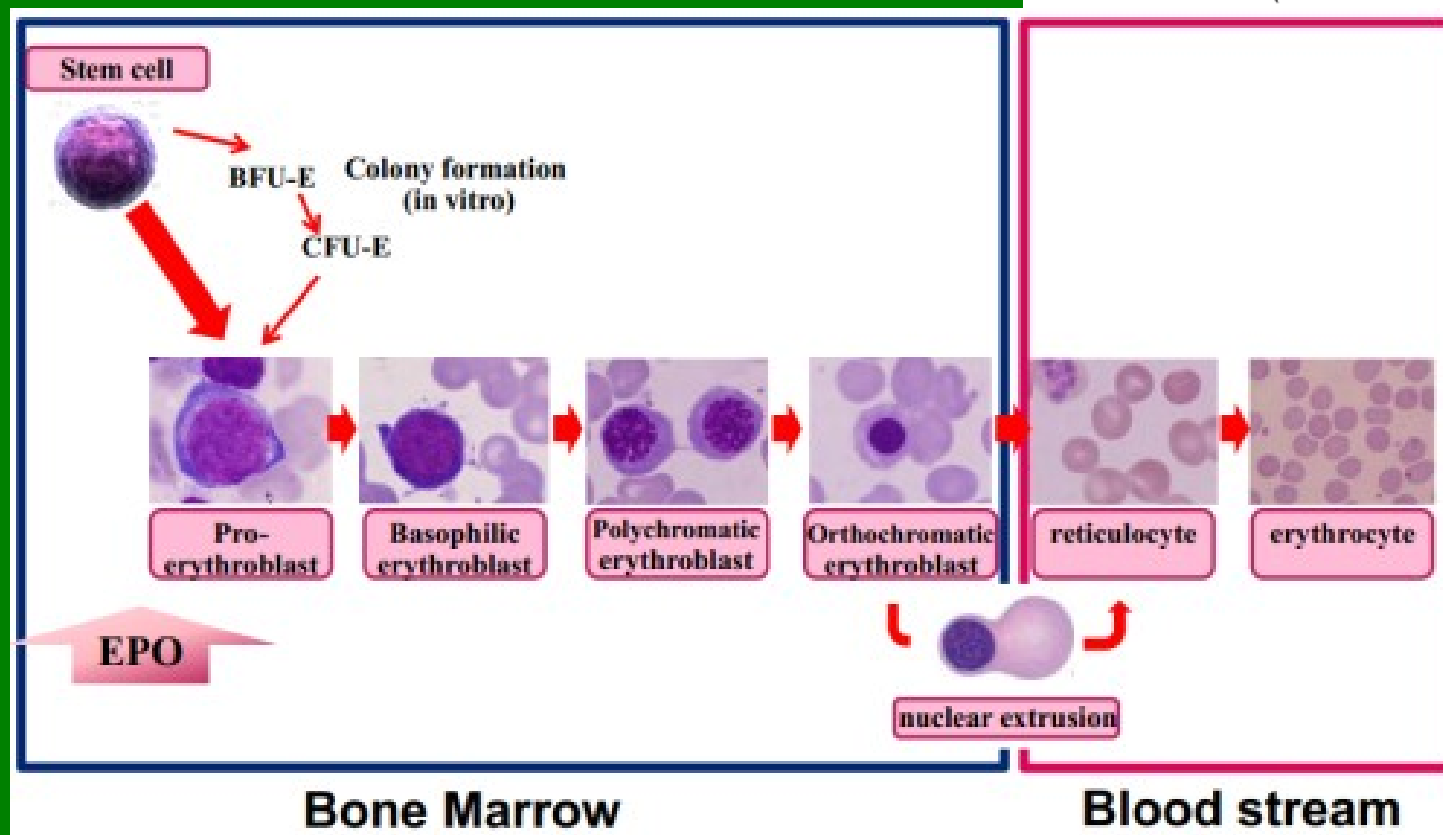
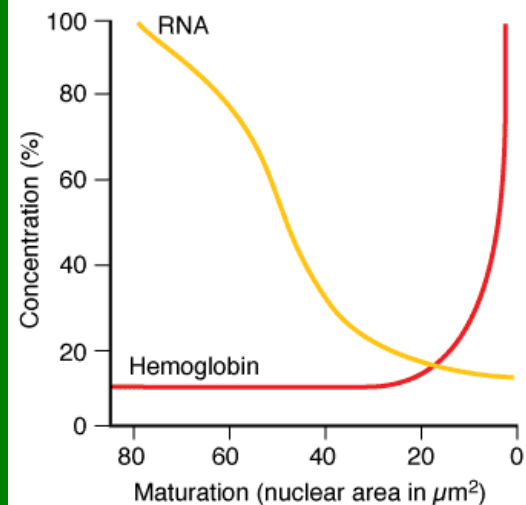




rozdíl velikostí leukocytů



Erythropoéza



Granulopoéza

myeloblast



promyelocyte



myelocyte



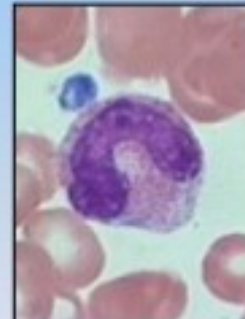
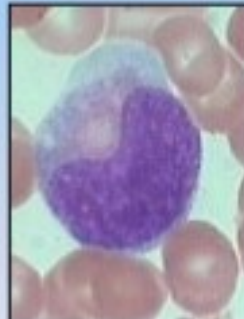
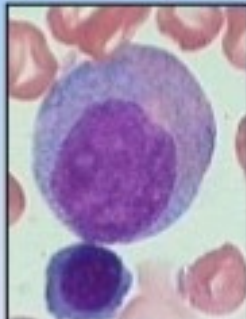
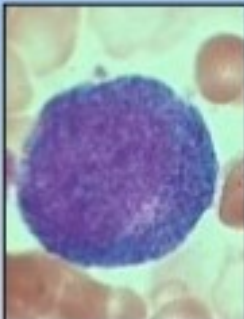
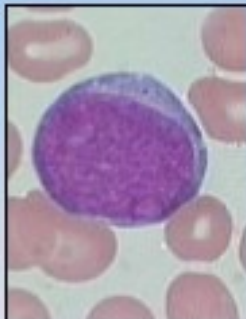
metamyelocyte

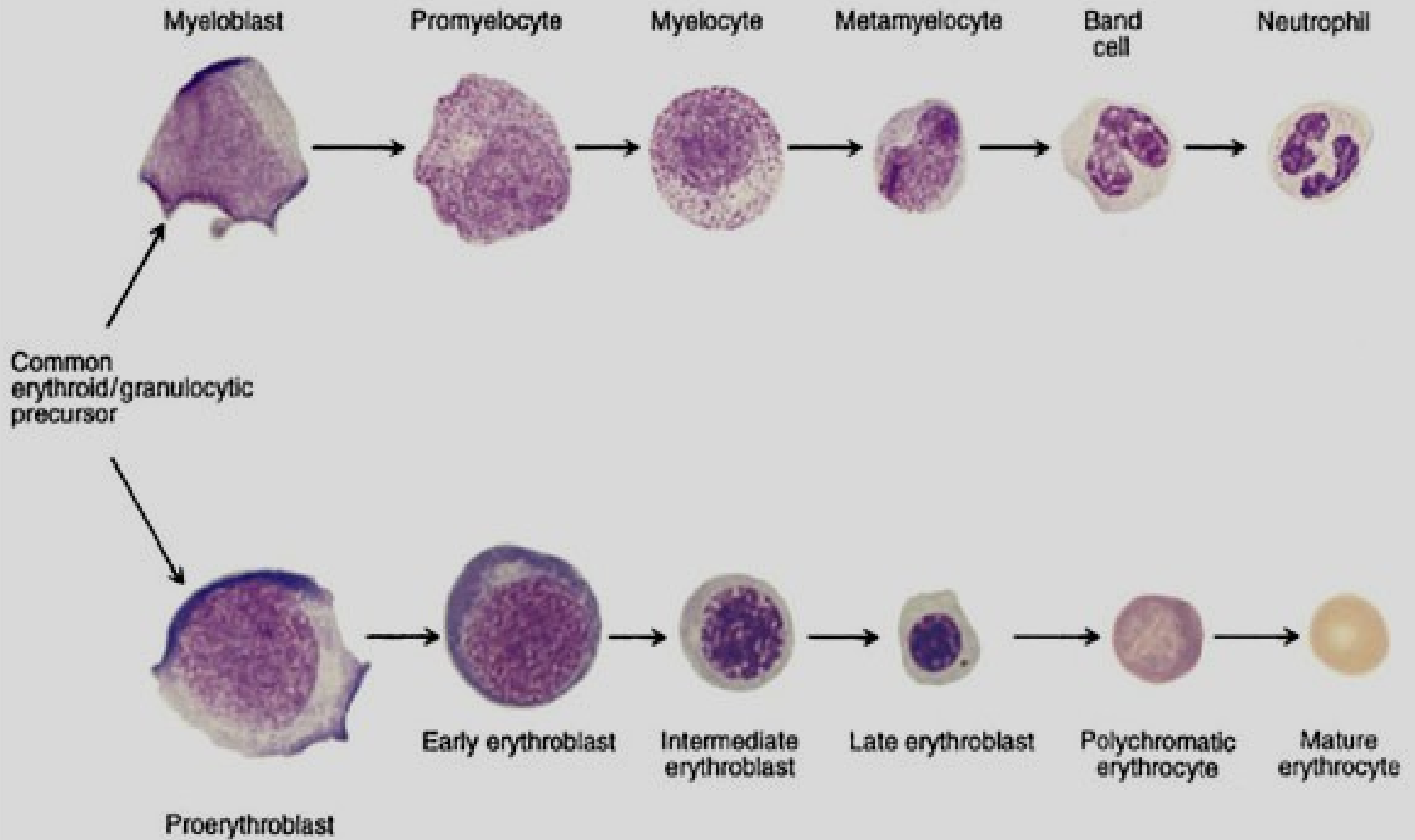


band



neutrophil



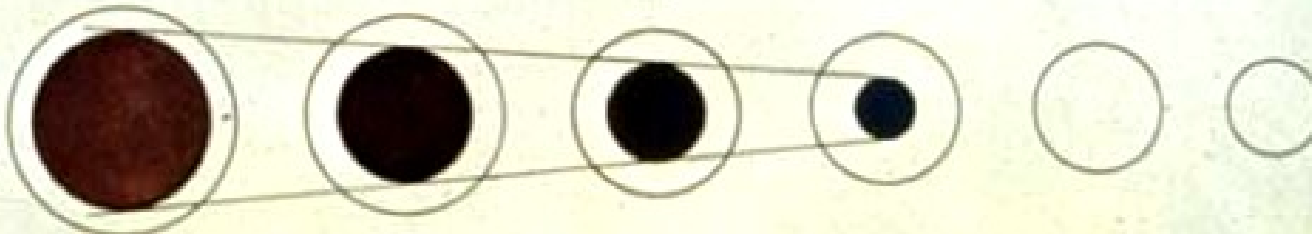


Sledování buněčných morfologických změn



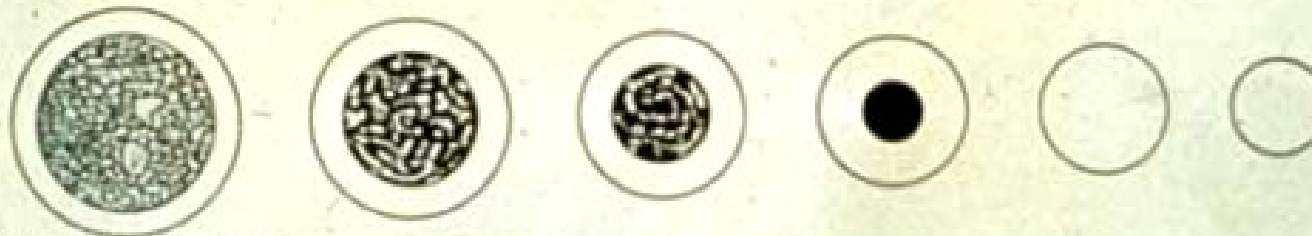
A Cell size and cytoplasm color

zbarvení, obsah
cytoplazmy



B Nuclear size and color

velikost, tvar
jádra



C Nuclear chromatin structure

struktura chromatinu,
jadérka



D Composite (Left to right: Rubriblast, Pro-rubricyte, Rubricyte, Metarubricyte, Diffusely basophilic erythrocyte, Erythrocyte)

komplexní hodnocení

KOSTNÍ DŘEŇ

myeloblast

promyelocyt

neutrofilní myelocyt

eozinofilní myelocyt

bazofilní myelocyt

neutrofilní metamy

eozinofilní metamy


bazofilní metamy

proerythroblast

časný erythroblast
(bazofilní normoblast)

středně zralý erythroblast
(polychromní normoblast)

pozdní erythroblast
(ortochromní normoblast)

monoblast 

promonocyt


makrofág

magakaryoblast 

promegakaryocyt 

megakaryocyt

lymfoblast 

prolymfocyt 

plazmat. b.

neutrofilní tyč

eozinofilní tyč

bazofilní tyčí

neutrofilní segment

eozinofilní segment

bazofilní segment

retikulocyt

erytrocyt

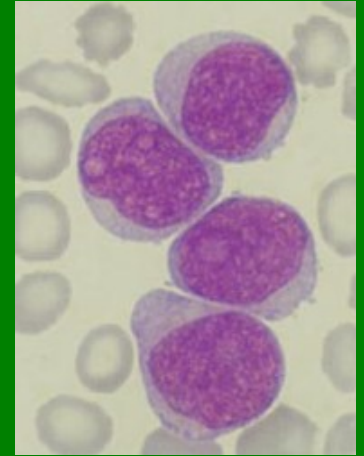
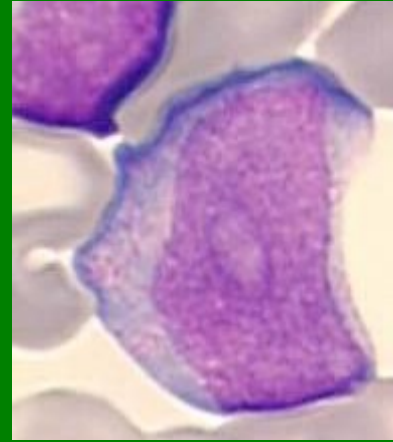
monocyt

PERIFERNÍ KREV

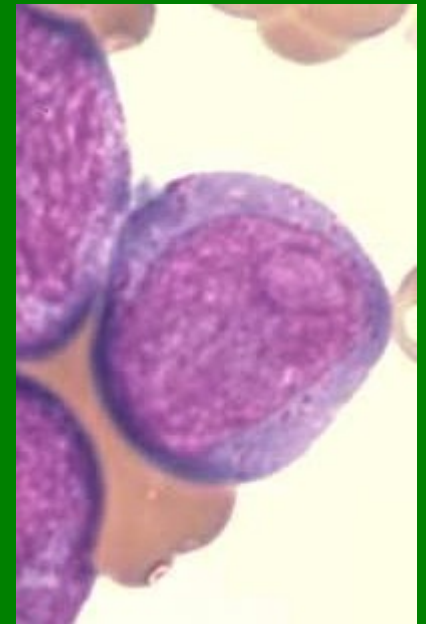
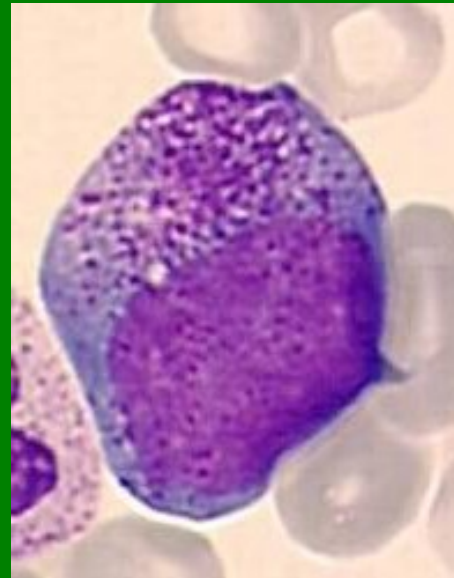
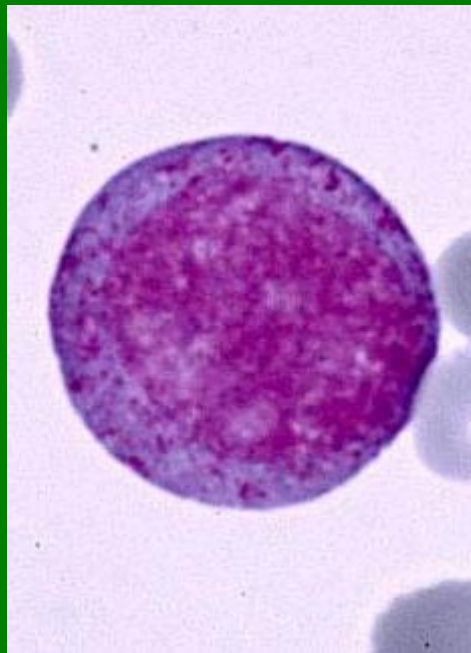
trombocyty

lymfocyt

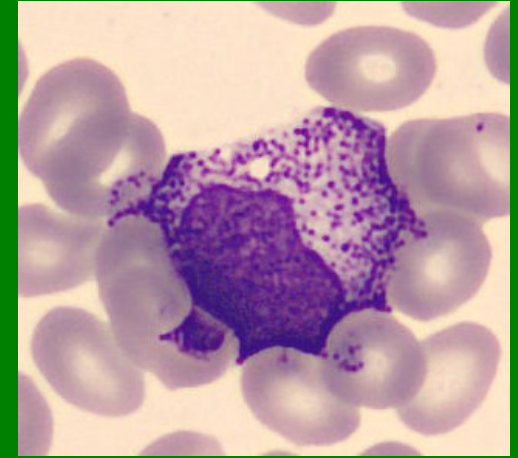
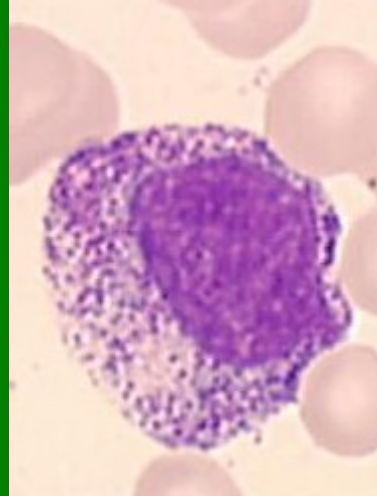
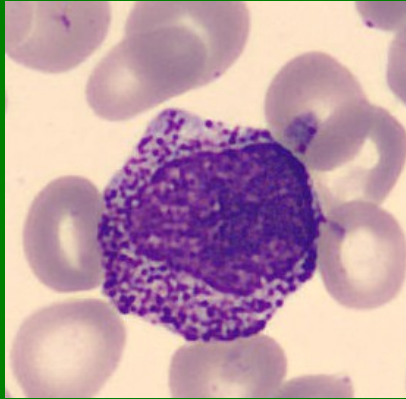
Myeloblasty



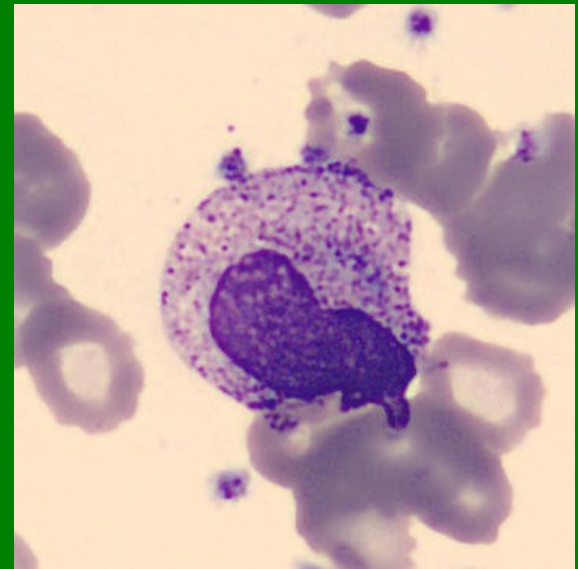
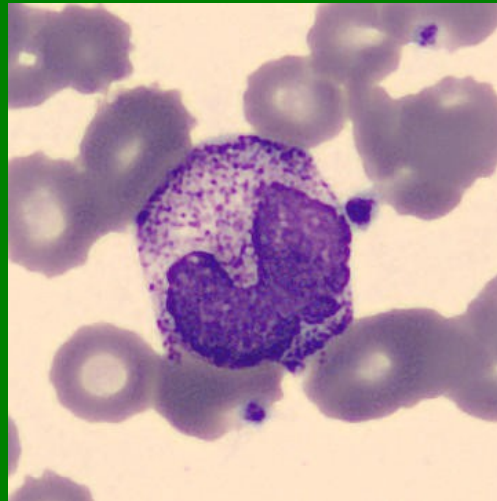
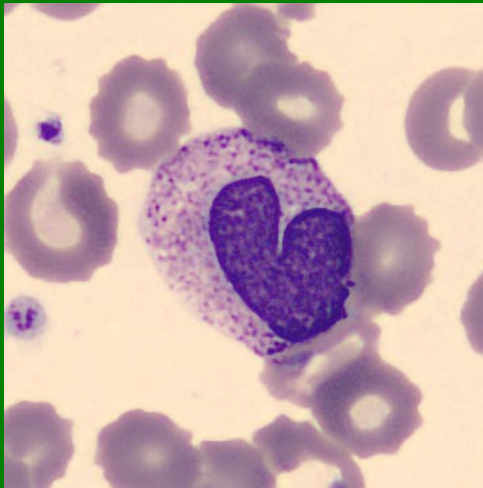
Promyelocyty



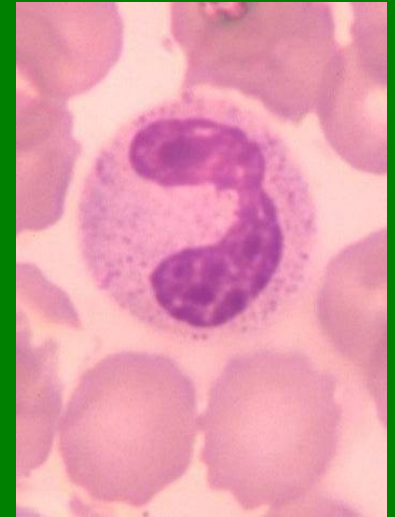
Myelocyty – Ne (nezralé, zralé)



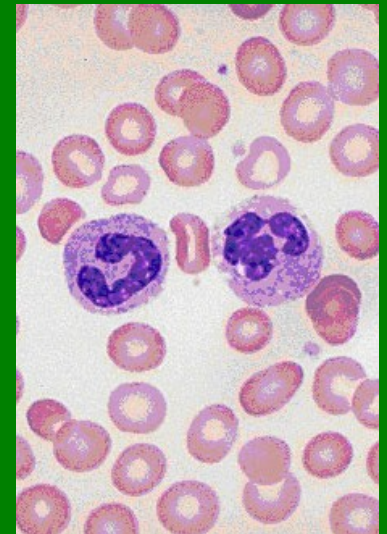
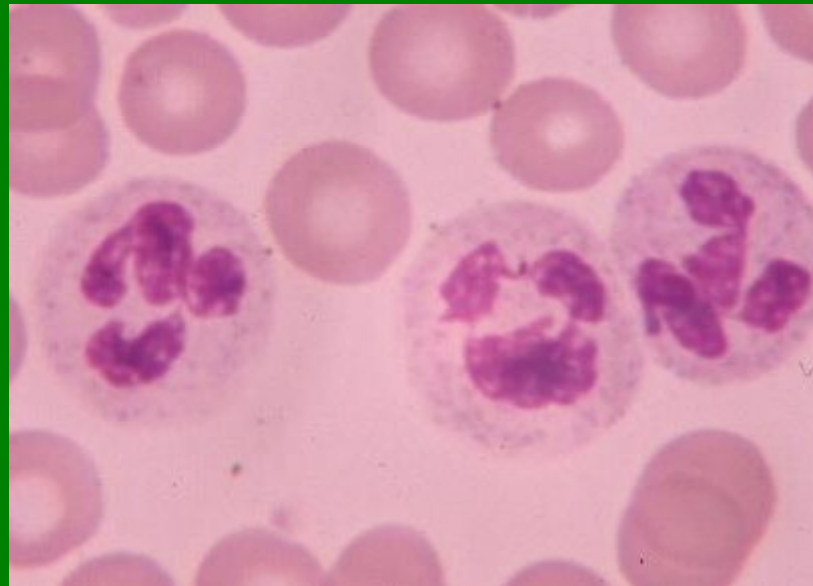
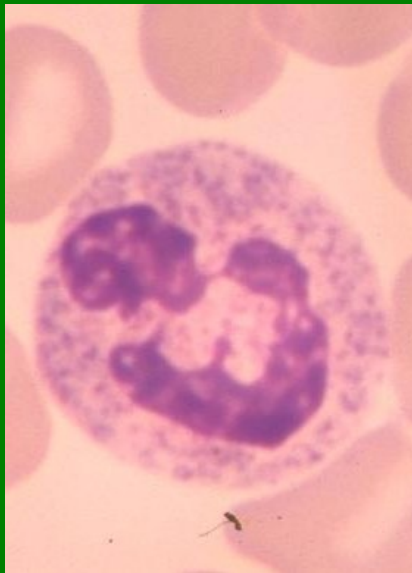
Metamyelocyty - Ne



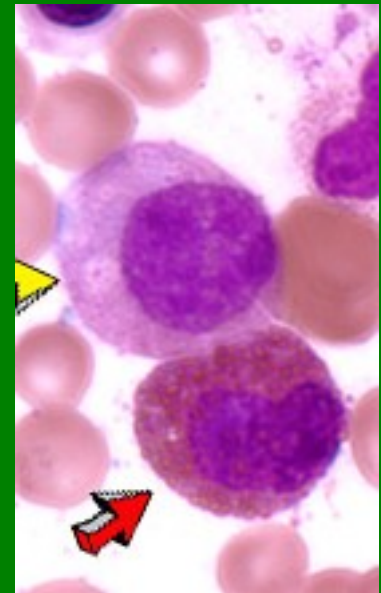
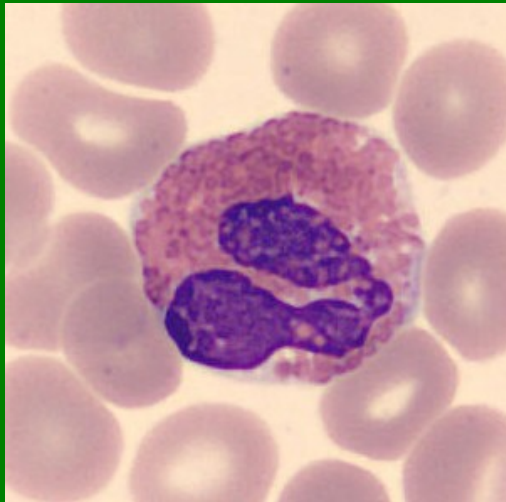
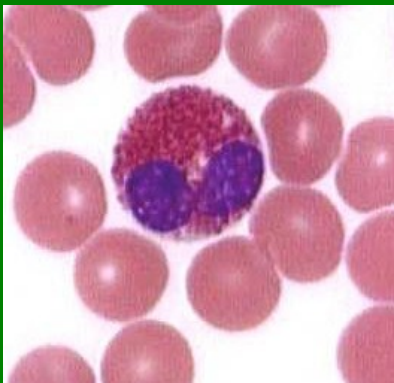
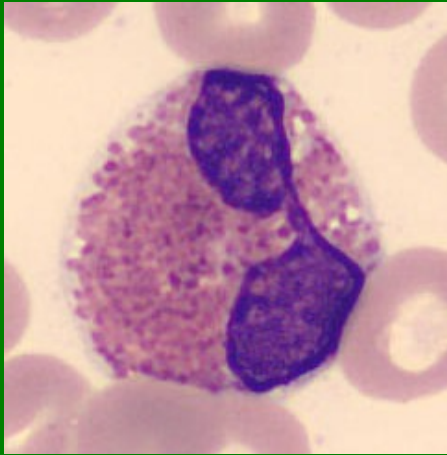
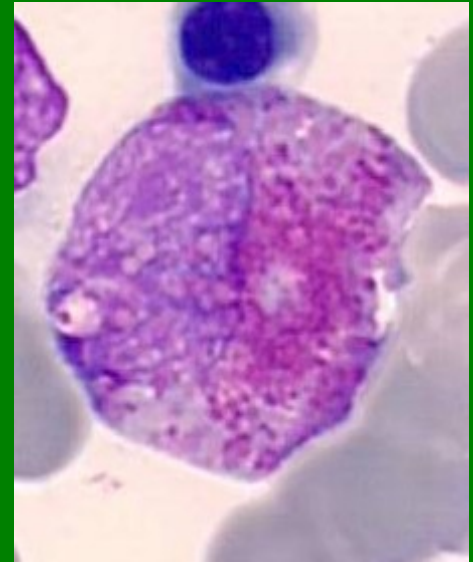
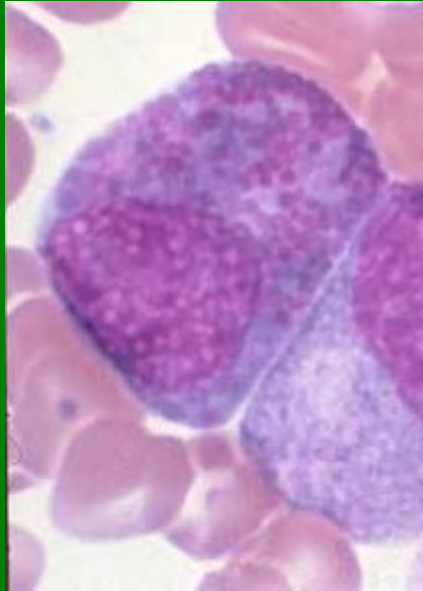
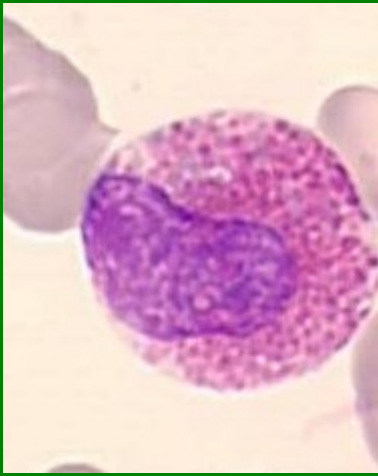
Tyč – Ne (rozdíl mezi nejširším a nejužším tvarem jádra je 1/3 až 1/2)



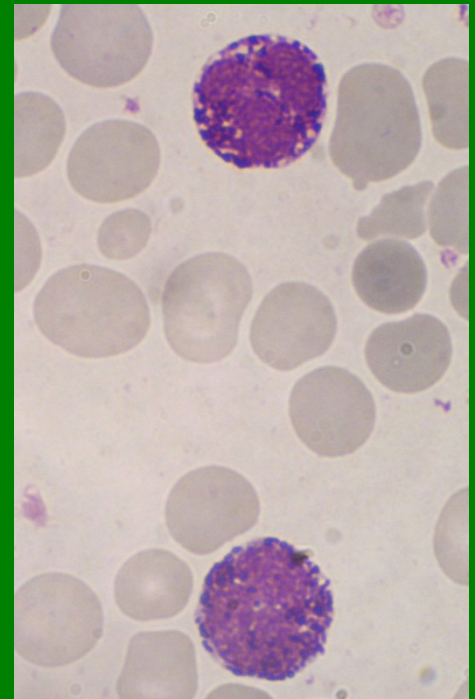
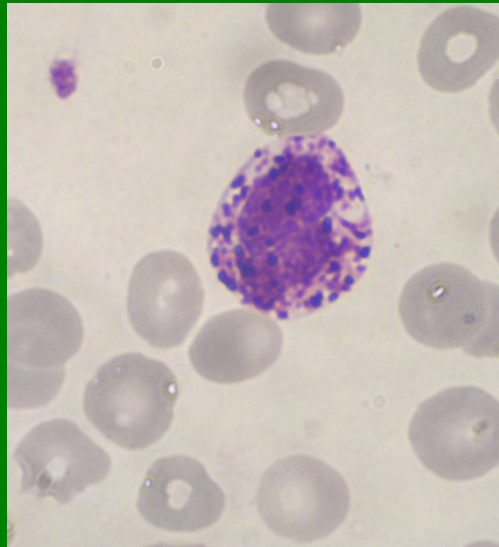
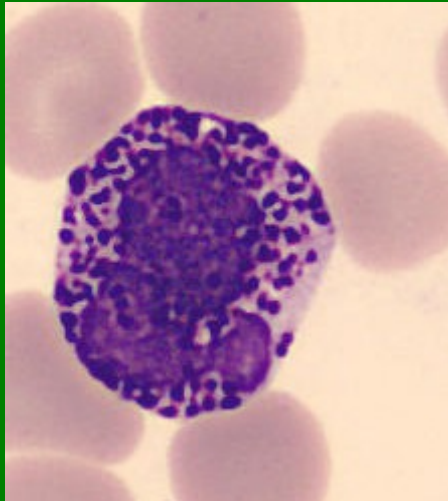
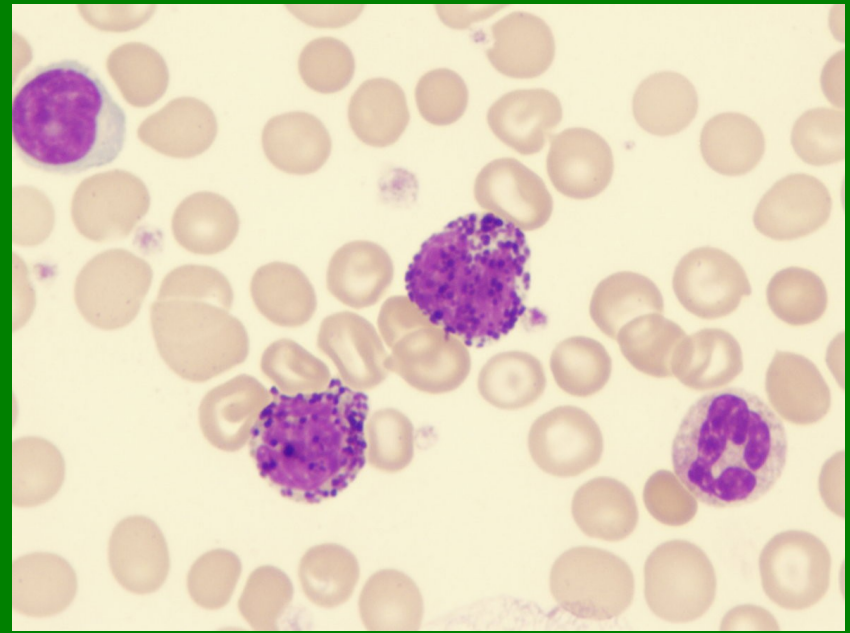
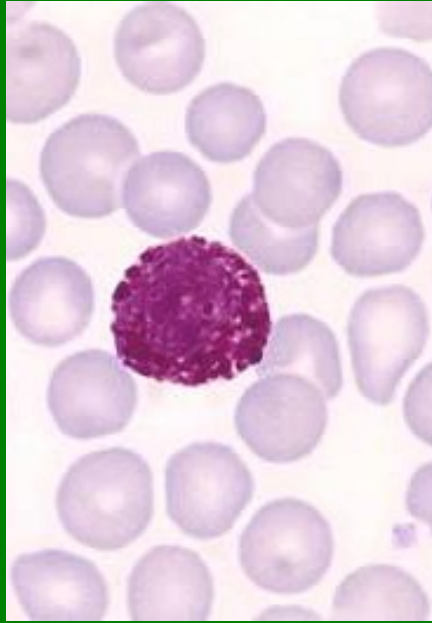
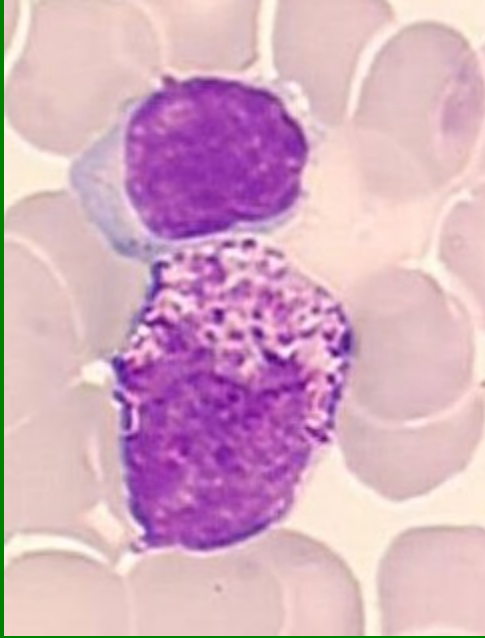
Segment - Ne



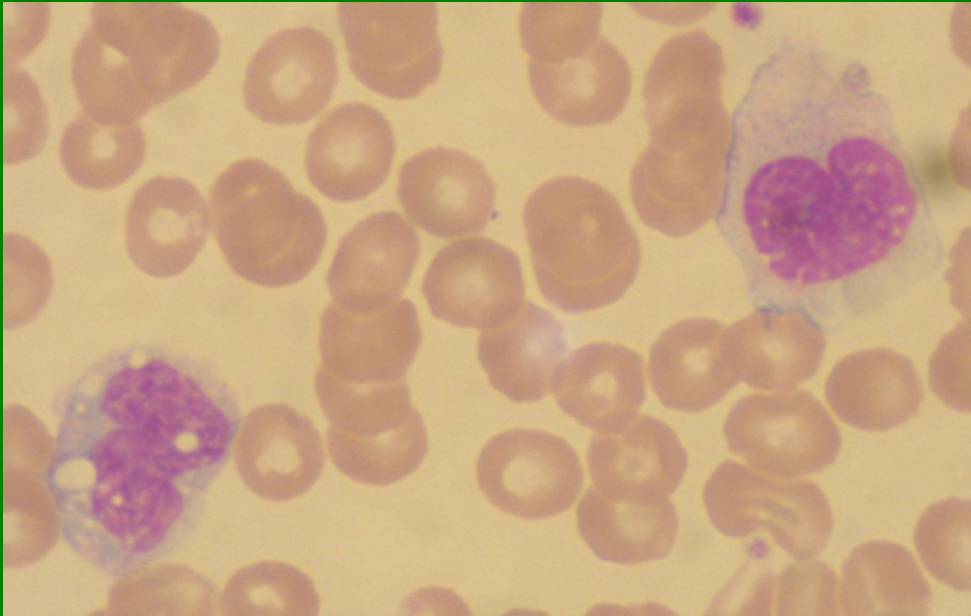
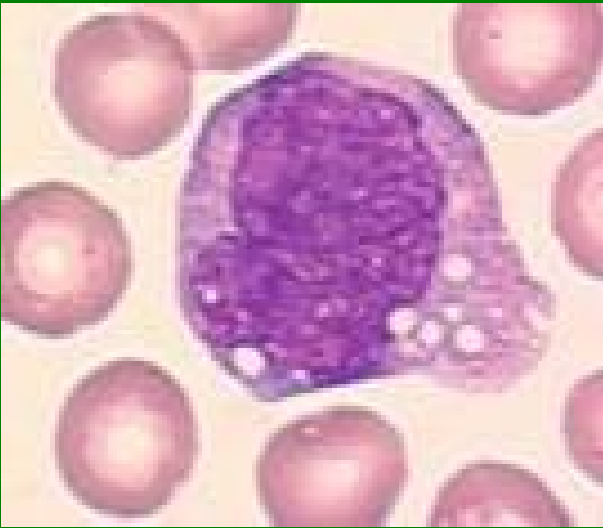
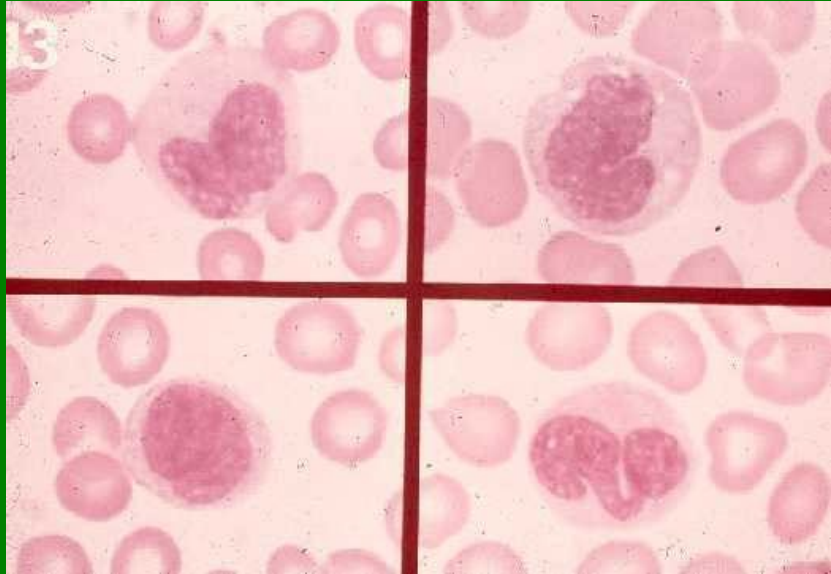
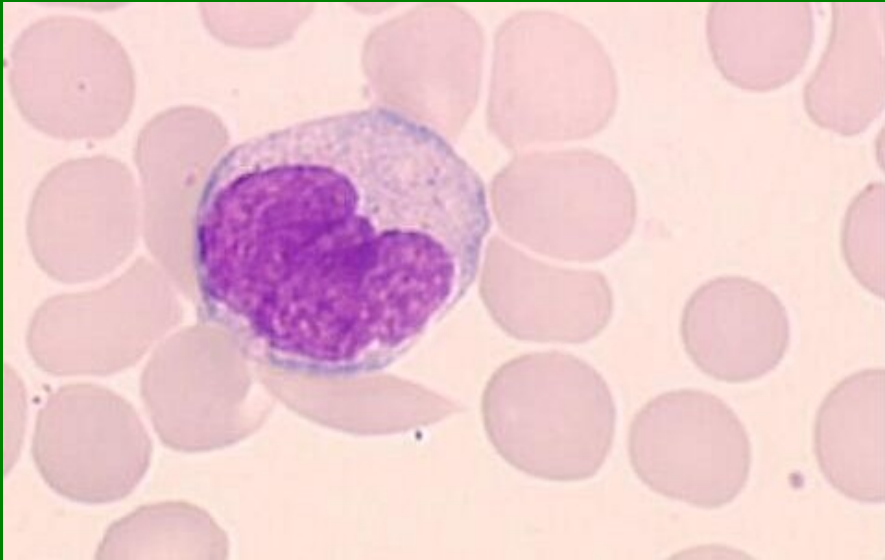
Eozinofily



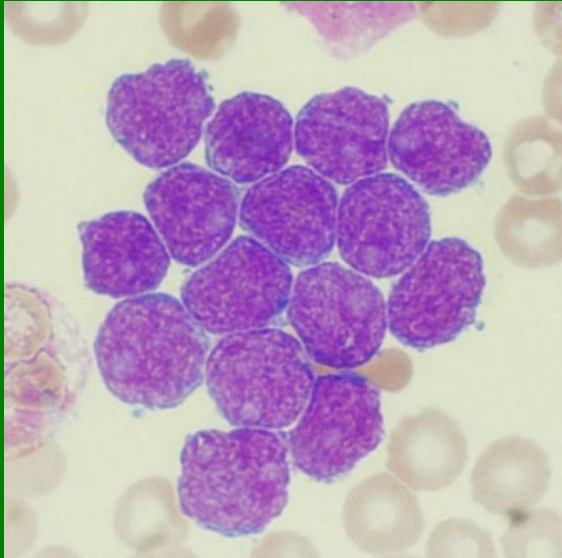
Bazofily



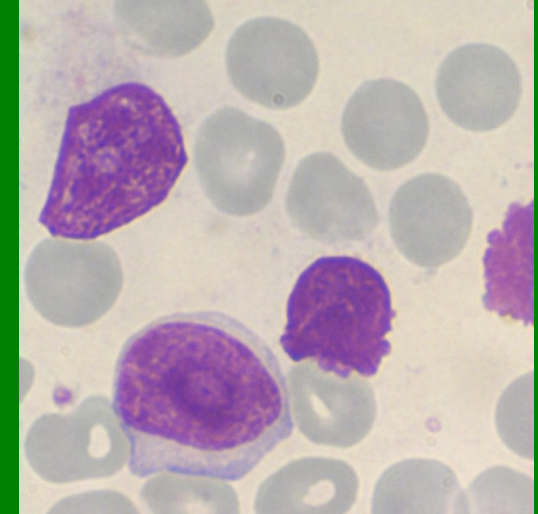
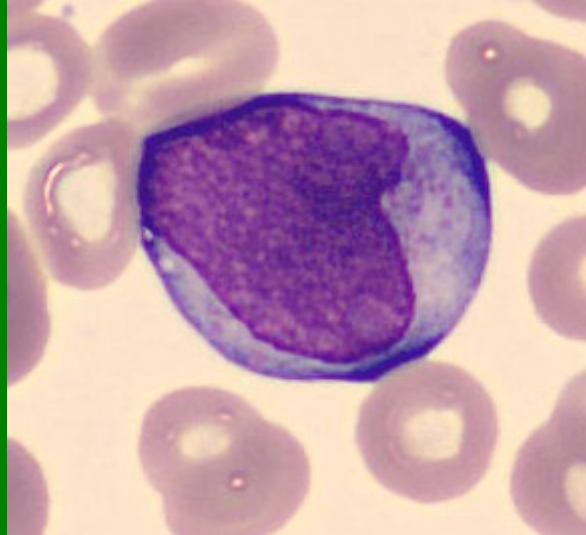
Monocyty



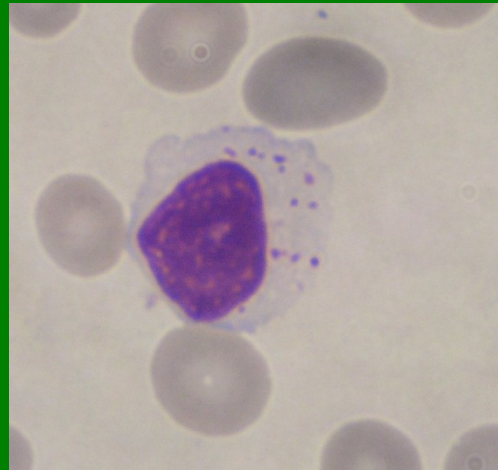
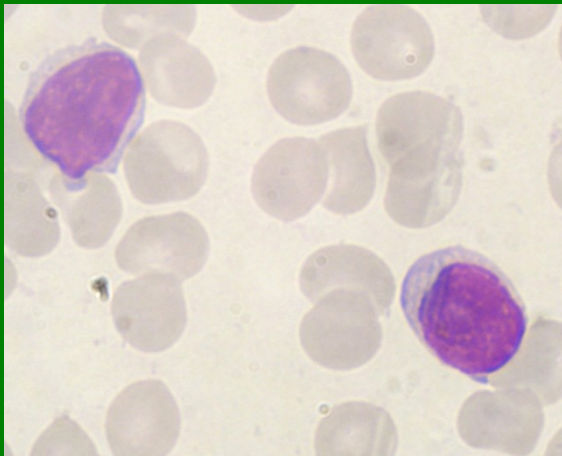
Lymfoblasty



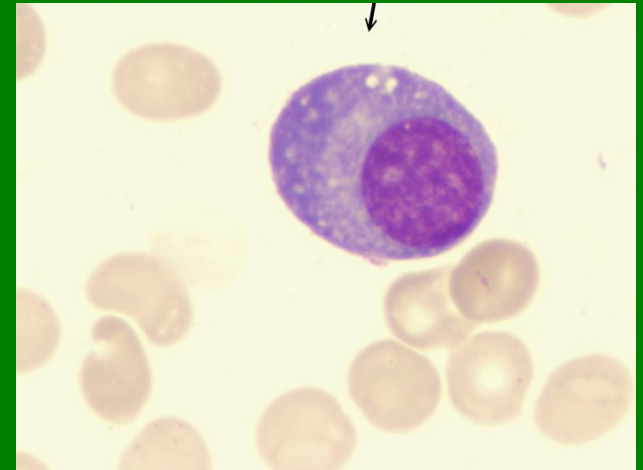
Prolymfocyt



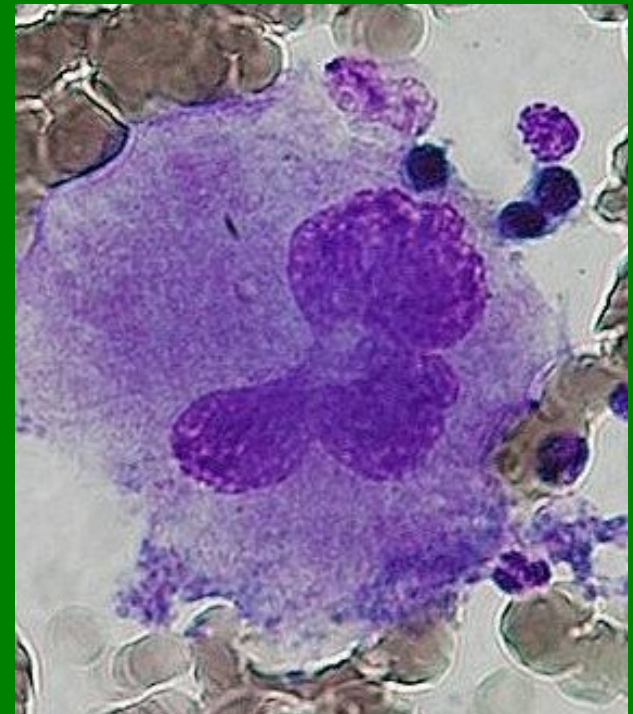
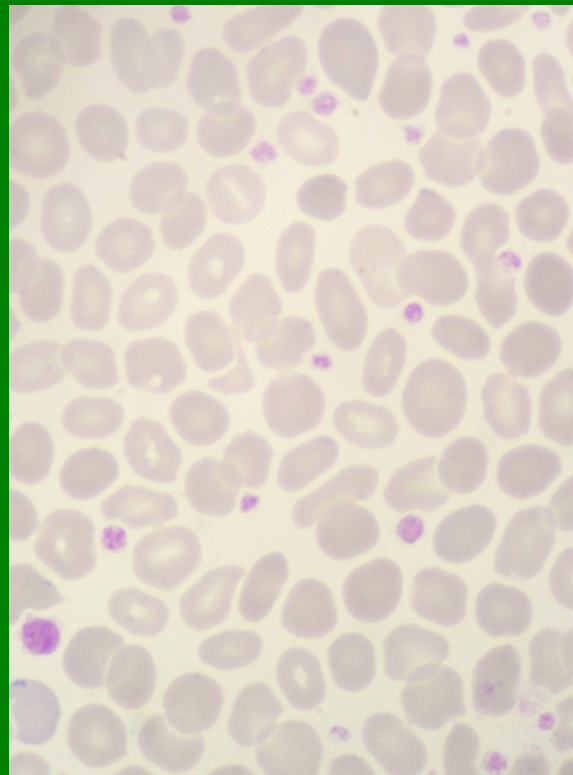
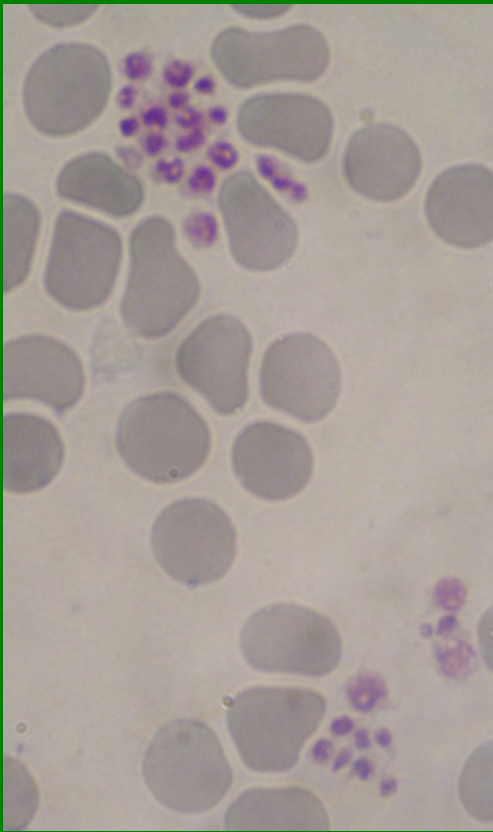
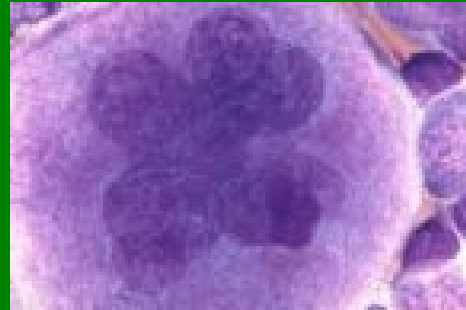
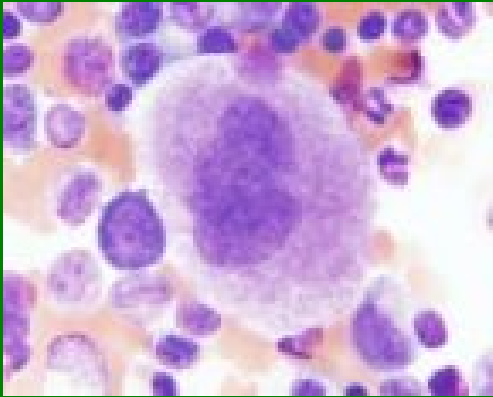
Lymfocyty



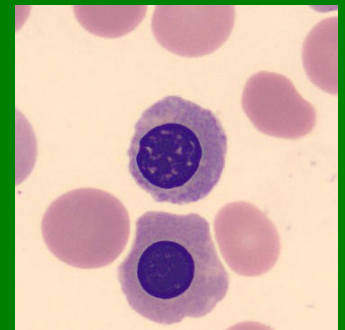
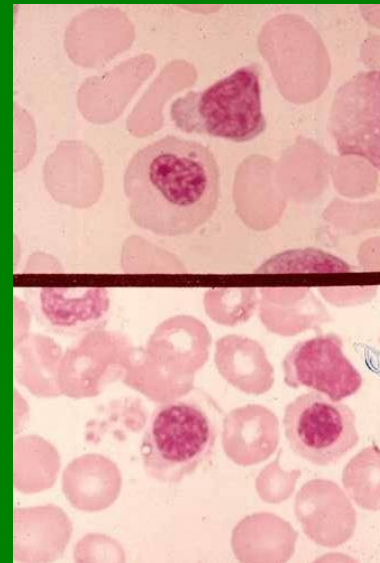
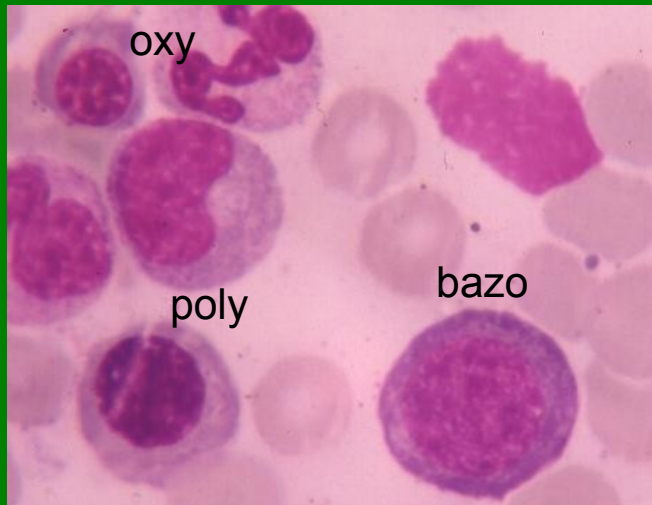
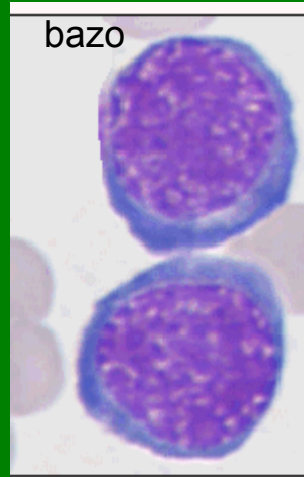
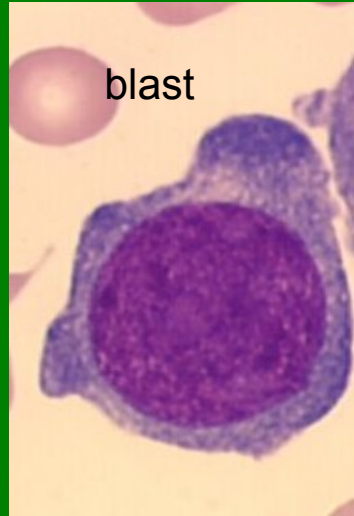
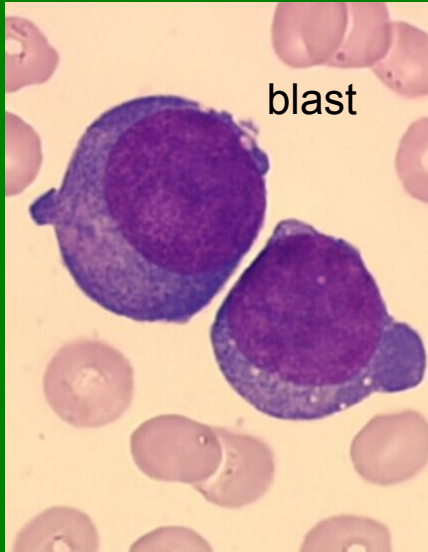
Plazmatická buňka



Megakaryocyty, PLT

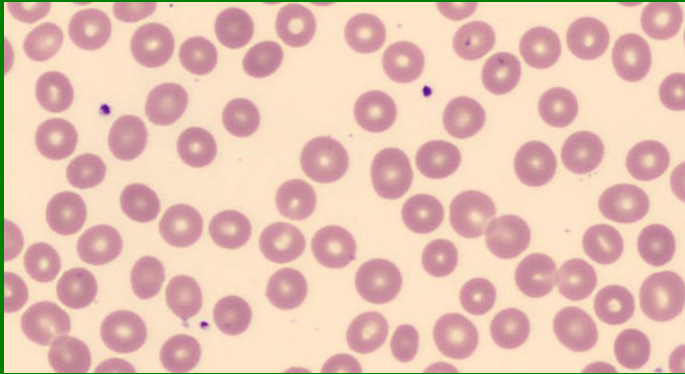


NRBC

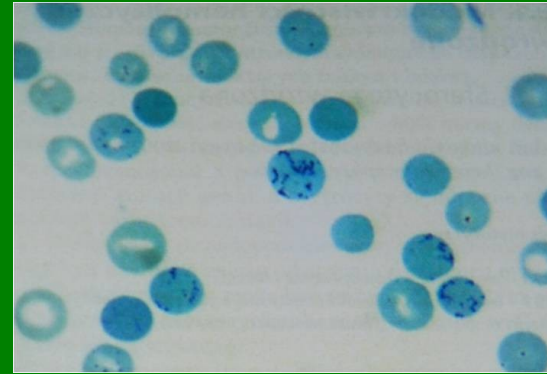


Retikulocyty

RBC/Retic?



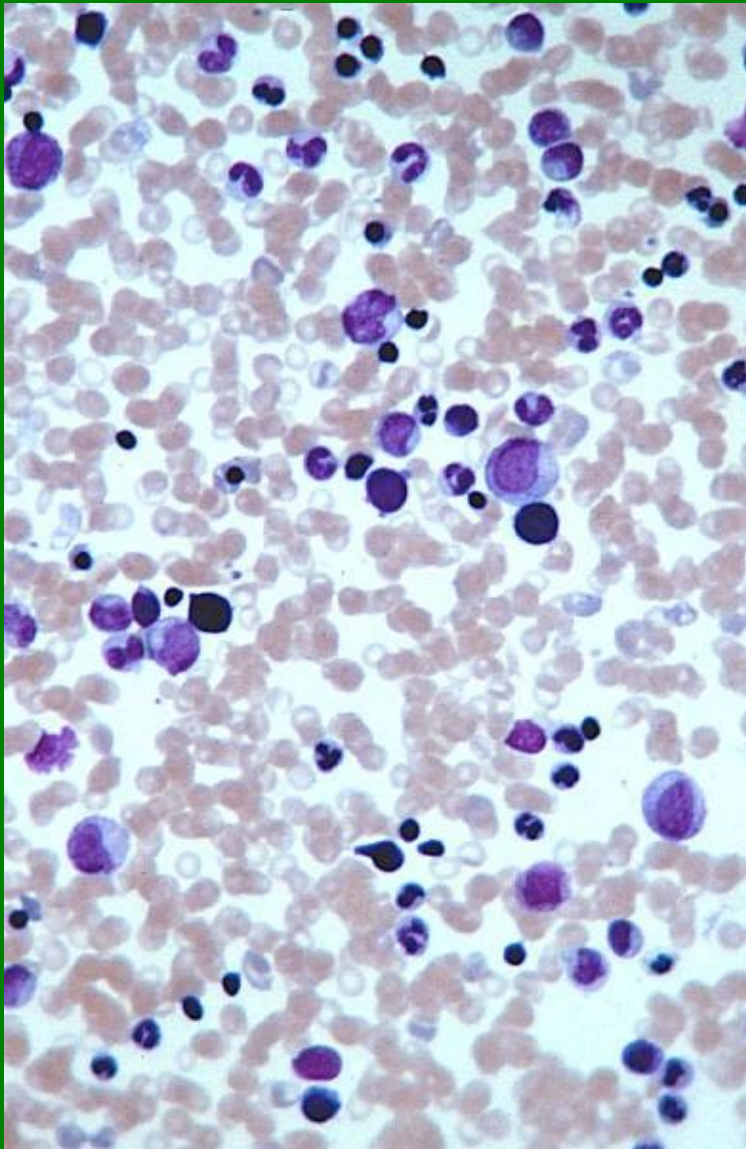
Retic



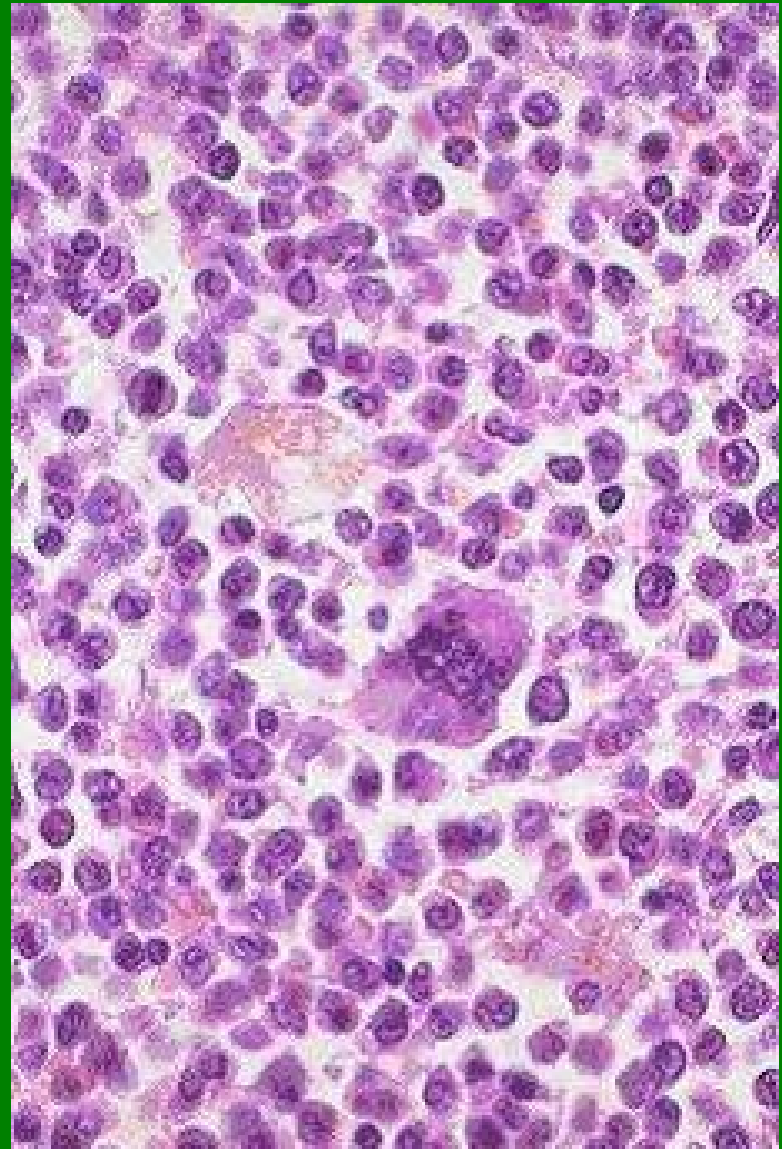
- větší než normocyty
- obsahují zbytky RNA v buněčných organelách (ribozomy, endoplazmatické retikulum)
- proto ještě může docházet k syntéze hemoglobinu
- průkaz speciálním barvením
(nelze prokázat běžným panoptickým barvením)

Kostní dřeň - buněčnost

normální



vysoká



Perinukleární projasnění

Golgiho zóna (návaznost na jádro přes endoplazmatické retikulum)

