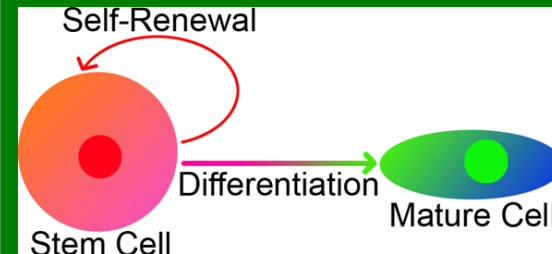
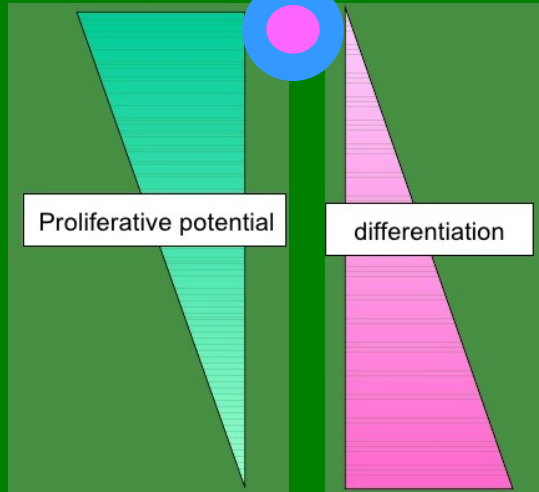
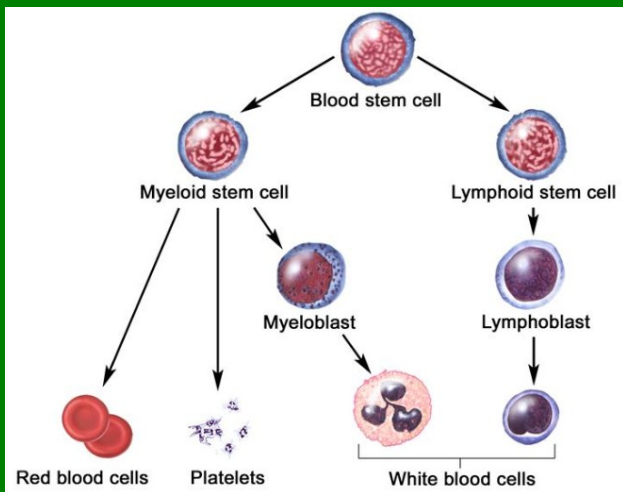


# Hematopoéza

Bourková L., OKH FN Brno

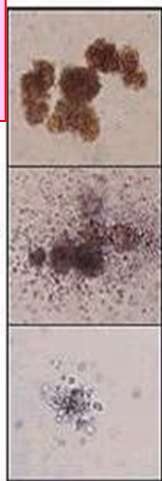
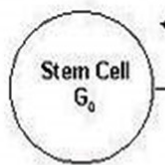
- bílé krvinky – leukocyty – WBC (*White Blood Cells*)
- červené krvinky – erytrocyty – RBC (*Red Blood Cells*)
- krevní destičky – trombocyty – PLT (*Platelets*)

# Kmenové buňky hematopoézy

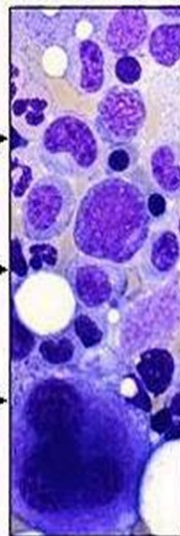


## STEM CELL MODEL OF HEMATOPOIESIS

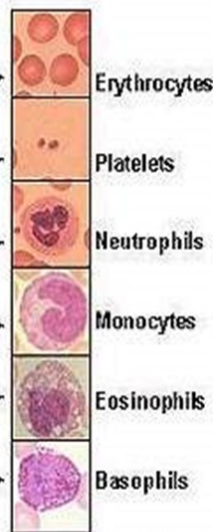
**Tkáňové kultivace**  
- funkční testy  
- vitální buňky



BFU-E-derived colony (erythroid)  
CFU-GM-derived colony (myeloid)  
CFU-Meg-derived colony (megakaryocyte)



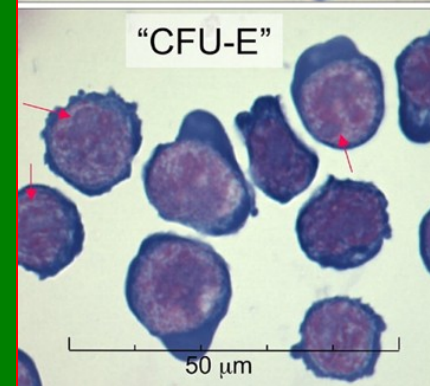
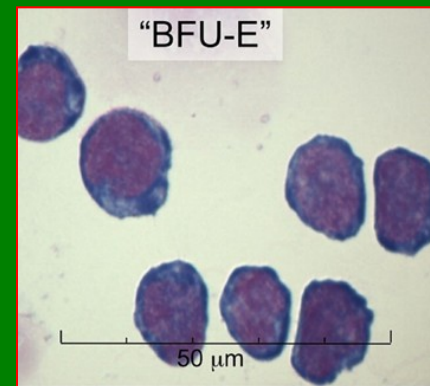
**Precursor Cells:**  
Morphologically recognizable cells seen in the marrow aspirate.



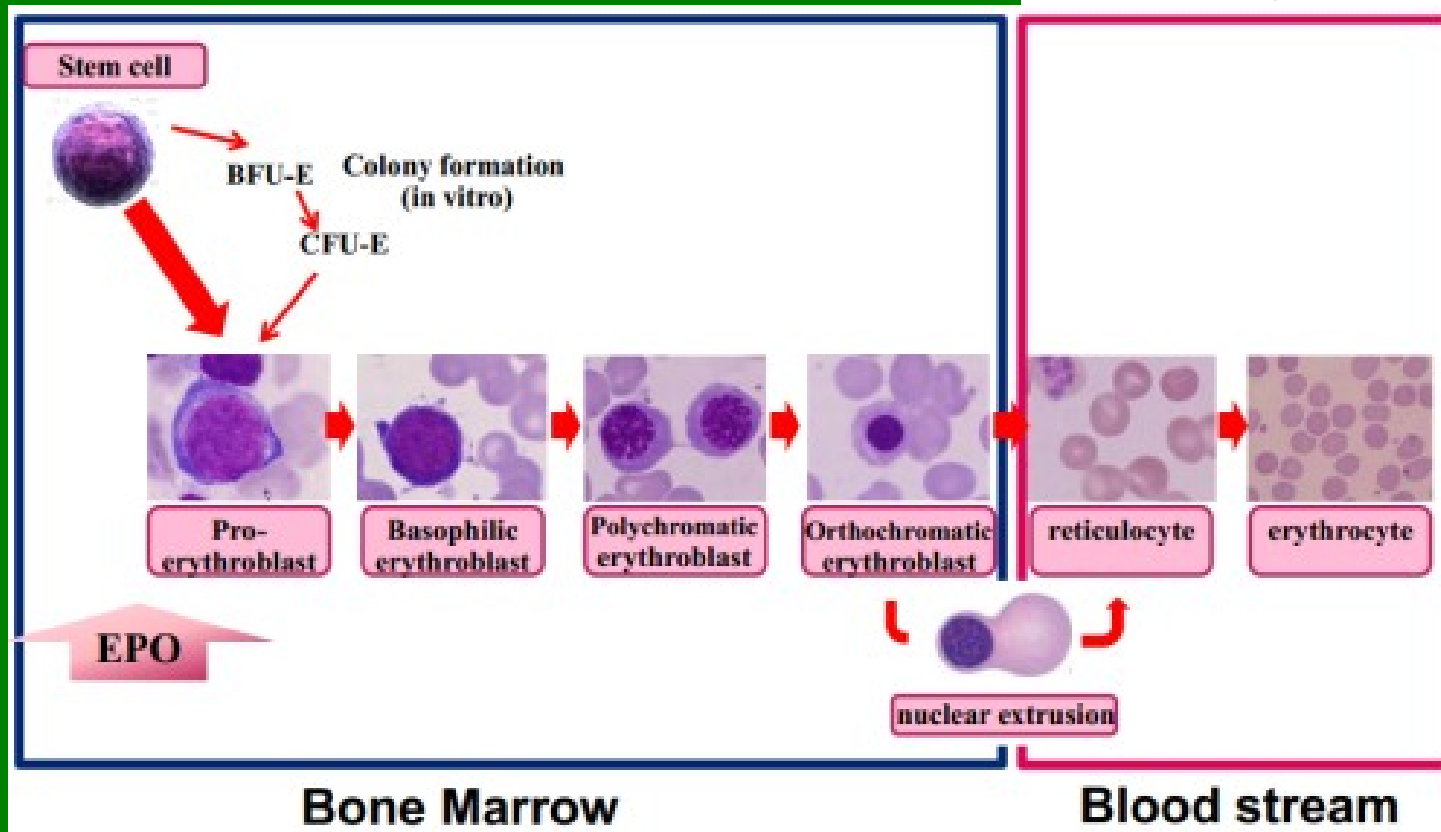
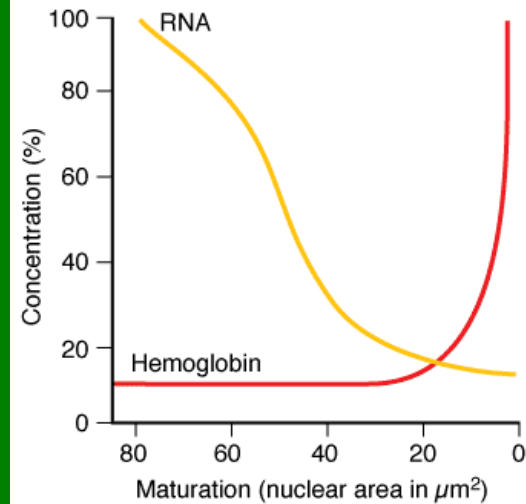
**Mature Cells:**  
Circulate in the blood.

**Stem Cells:**  
Reconstitute hematopoiesis when transplanted into a myeloablated host.

**Progenitor Cells:**  
Expand in the presence of growth factors; can be identified by their ability to form colonies *in vitro*.



# Erythropoéza



# Granulopoéza

myeloblast



promyelocyte



myelocyte



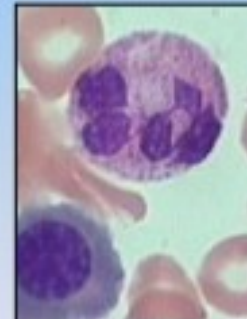
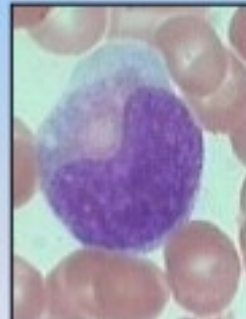
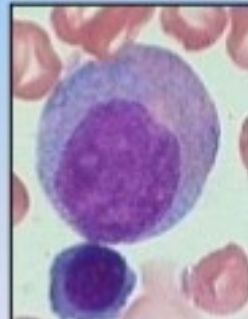
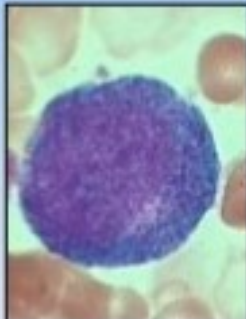
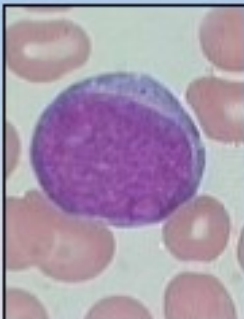
metamyelocyte

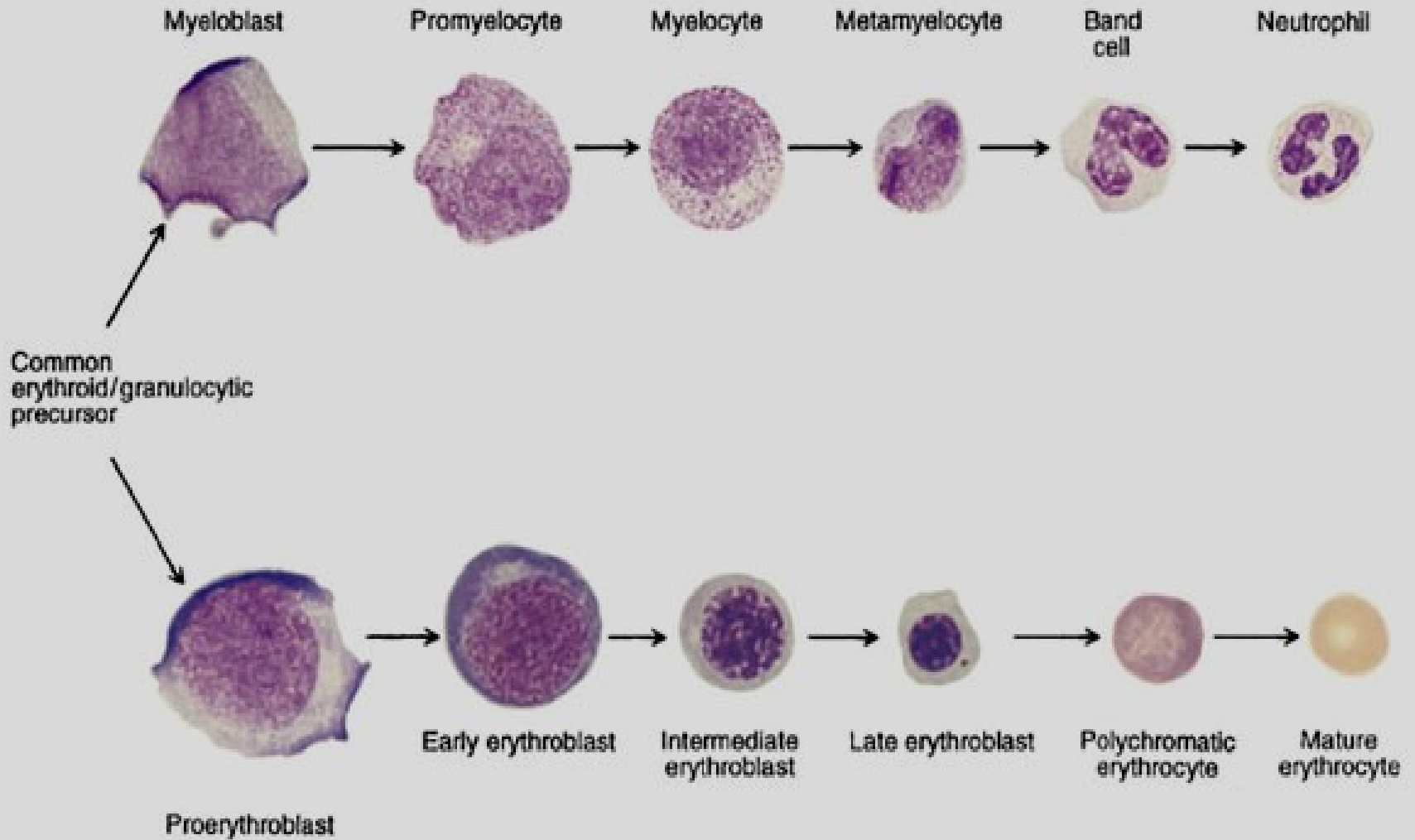


band

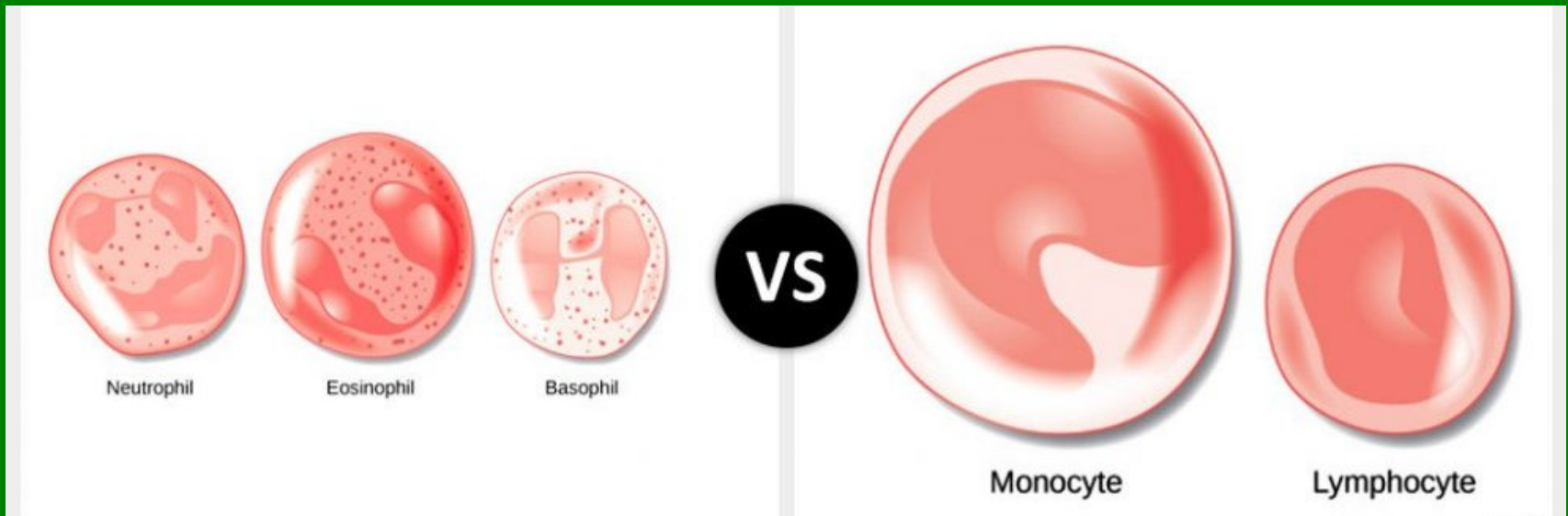


neutrophil





# rozdíl velikostí leukocytů

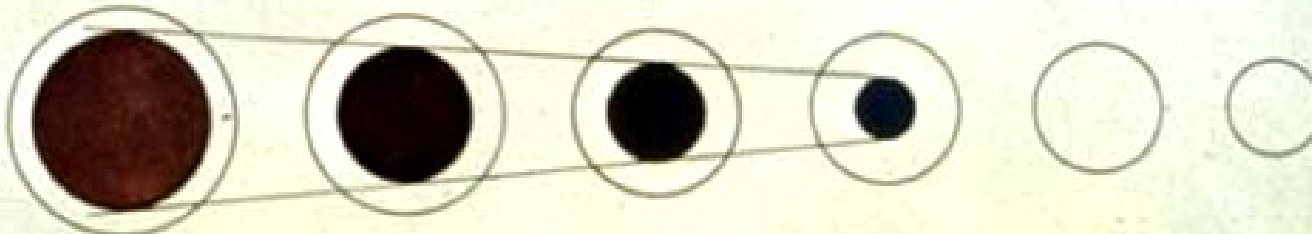


# Sledování buněčných morfologických změn



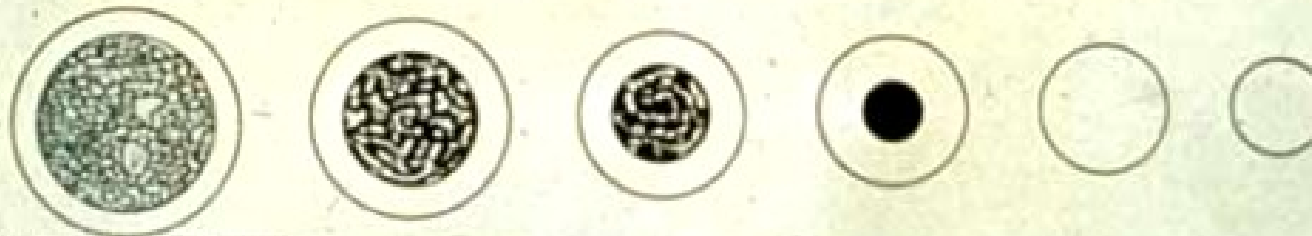
A Cell size and cytoplasm color

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 

magakaryoblast 

promegakaryocyt 

megakaryocyt

lymfoblast 

prolymfocyt 

plazmat. b.

neutrofilní tyč

eozinofilní tyč

bazofilní tyčí

neutrofilní segment

eozinofilní segment

bazofilní segment

retikulocyt

erytrocyt

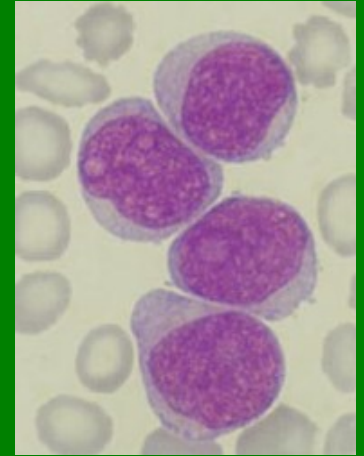
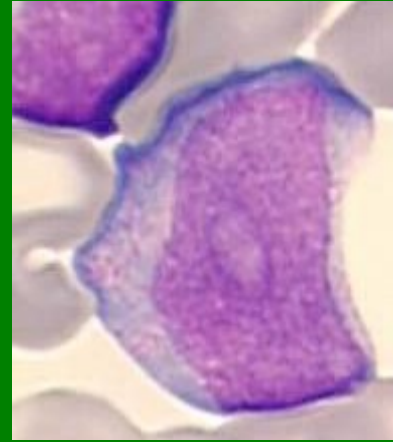
monocyt

PERIFERNÍ KREV

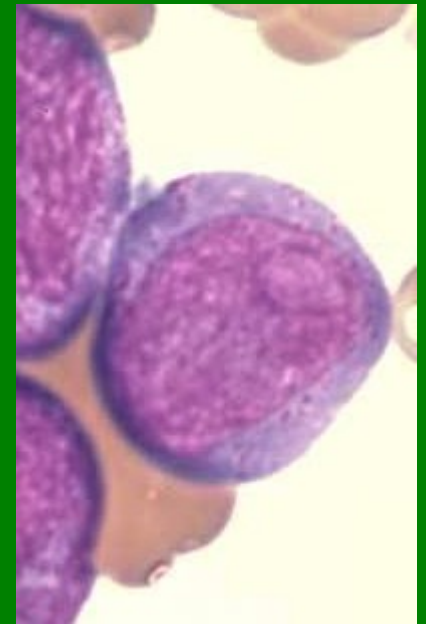
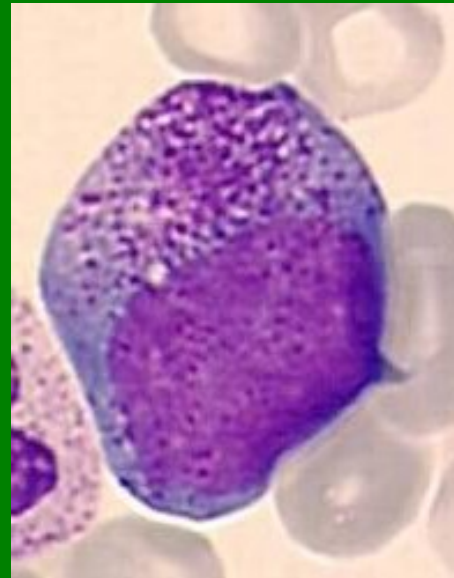
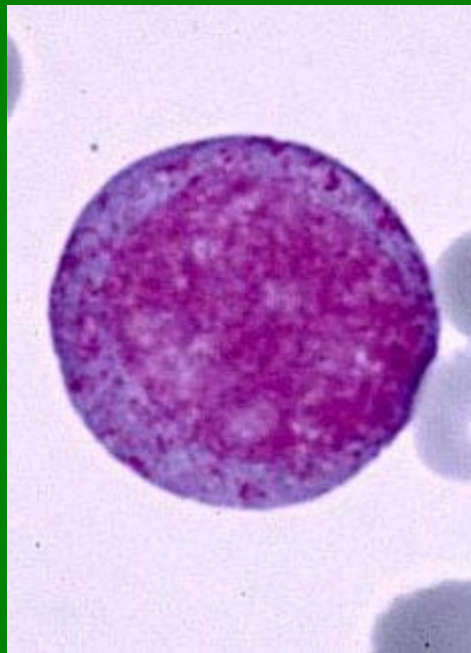
trombocyty

lymfocyt

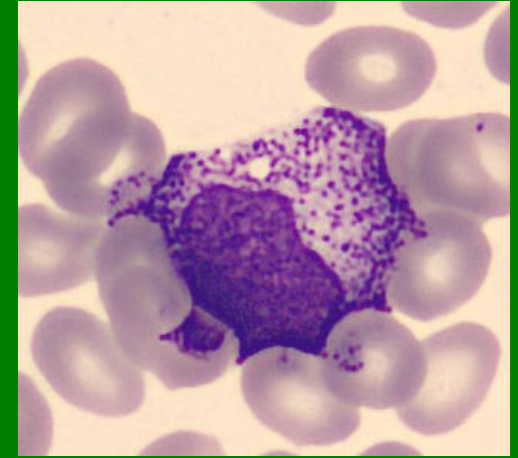
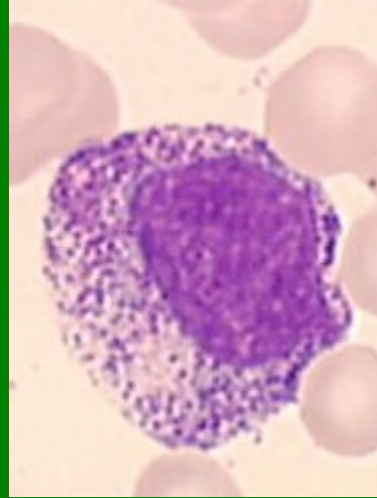
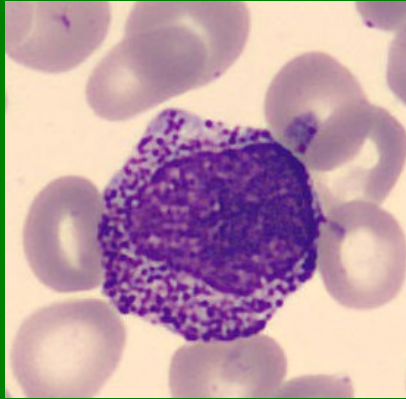
## Myeloblasty



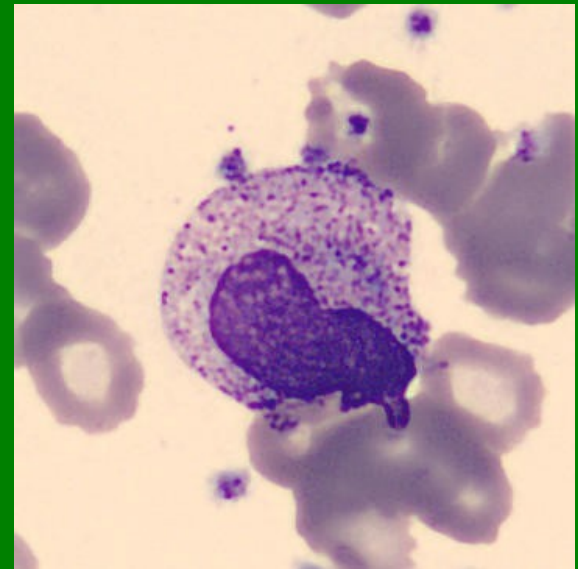
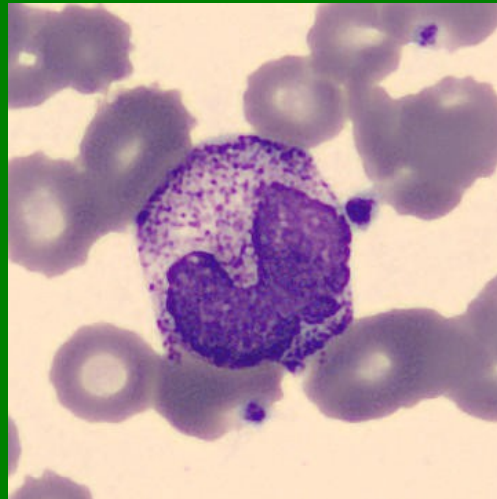
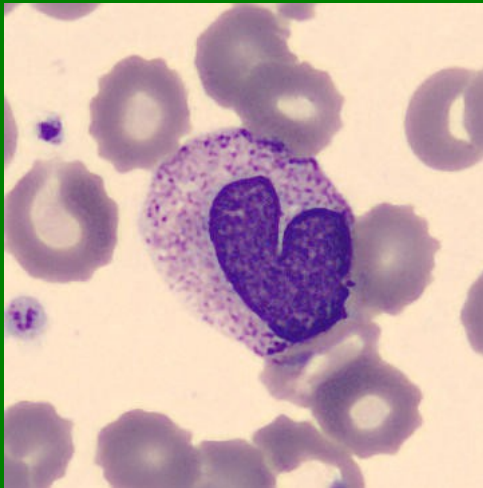
## Promyelocyty



# Myelocyty – Ne (nezralé, zralé)



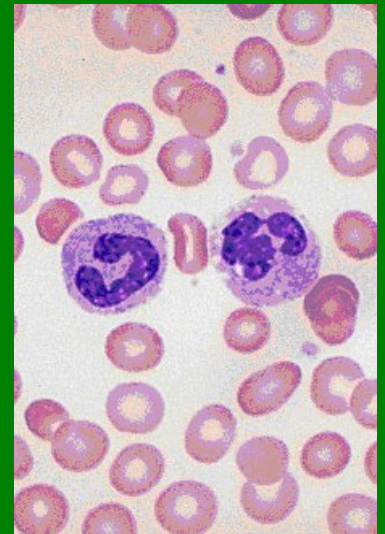
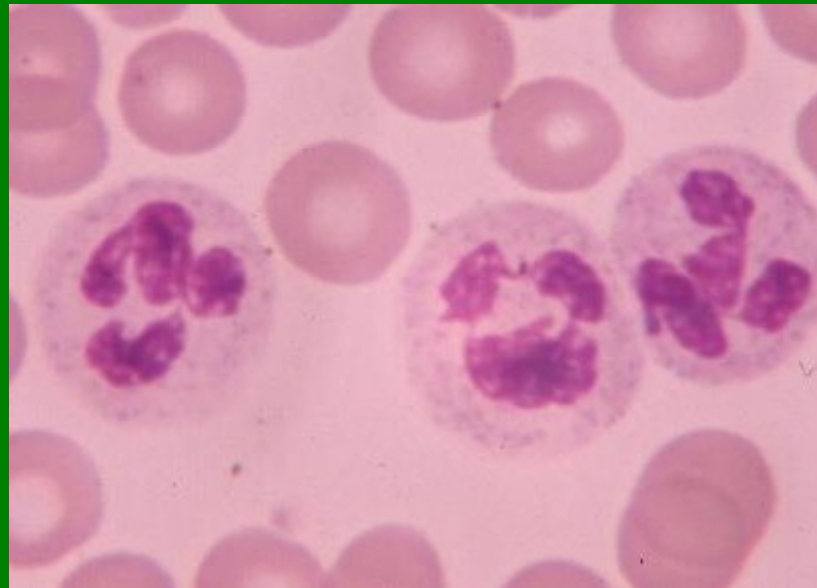
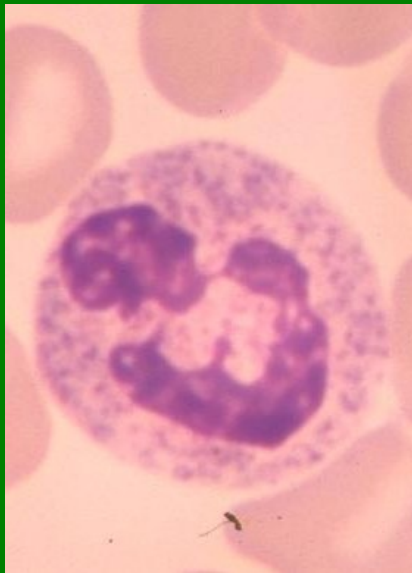
# Metamyelocyty - Ne



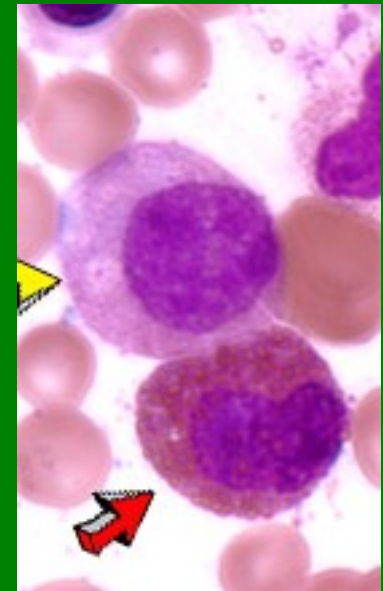
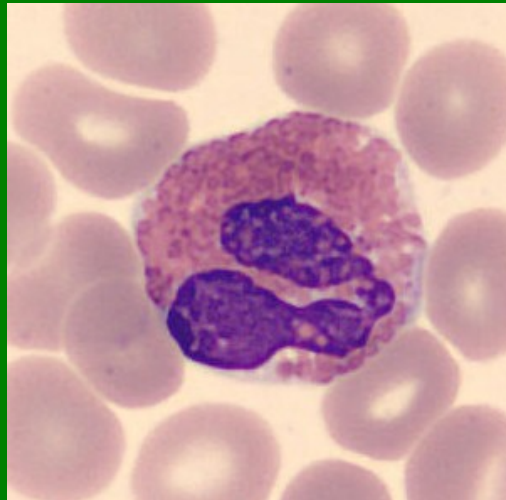
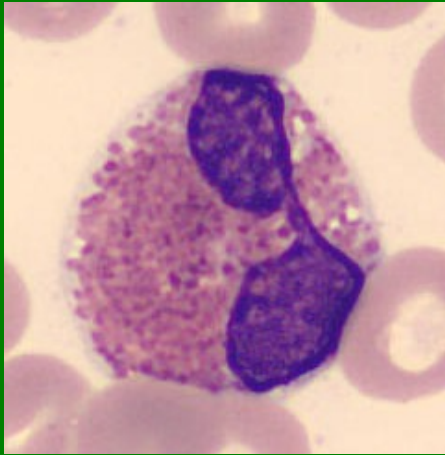
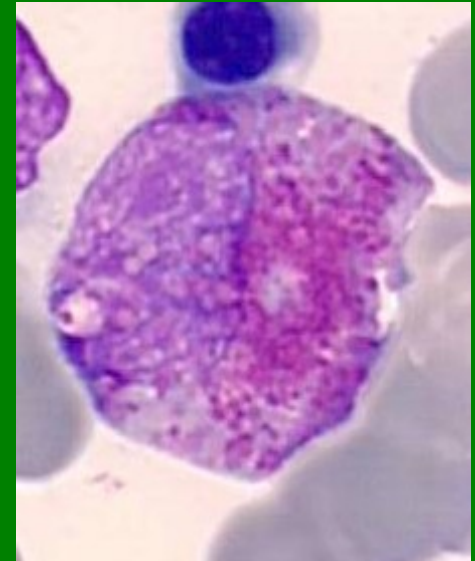
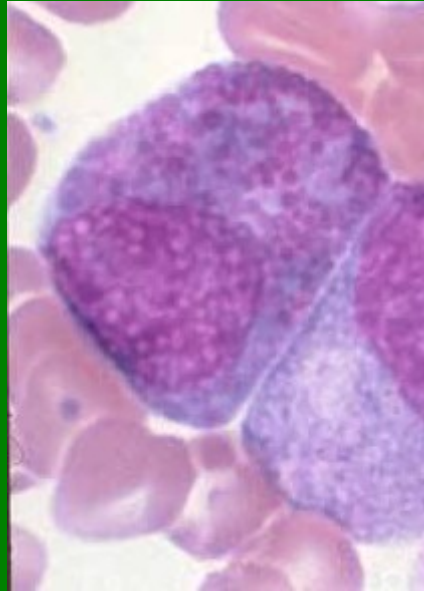
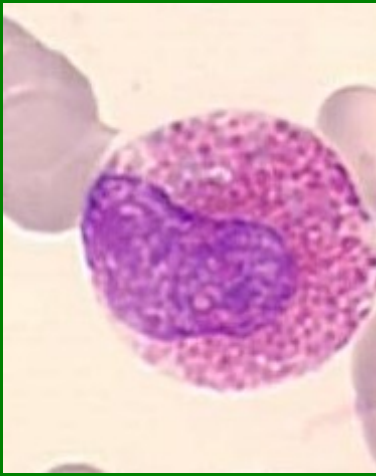
**Tyč – Ne** (rozdíl mezi nejširším a nejužším tvarem jádra je 1/3 až 1/2)



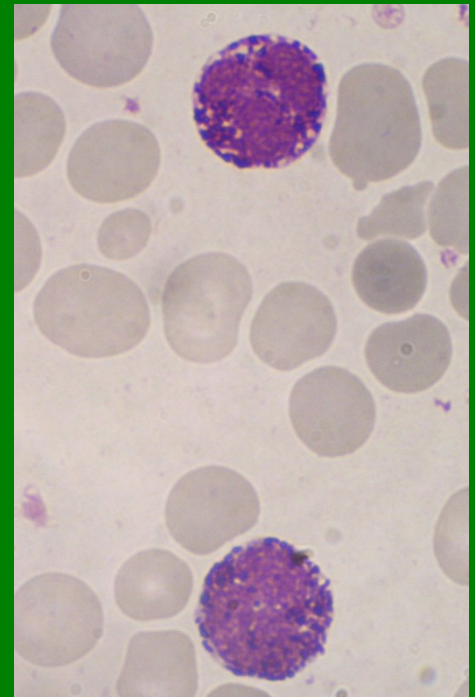
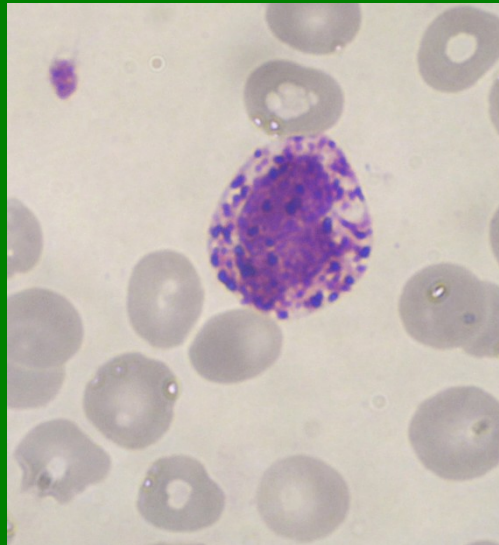
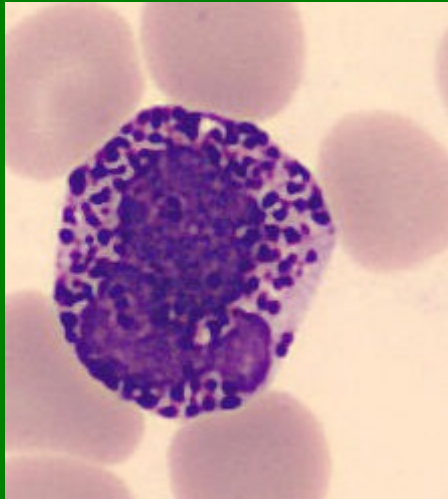
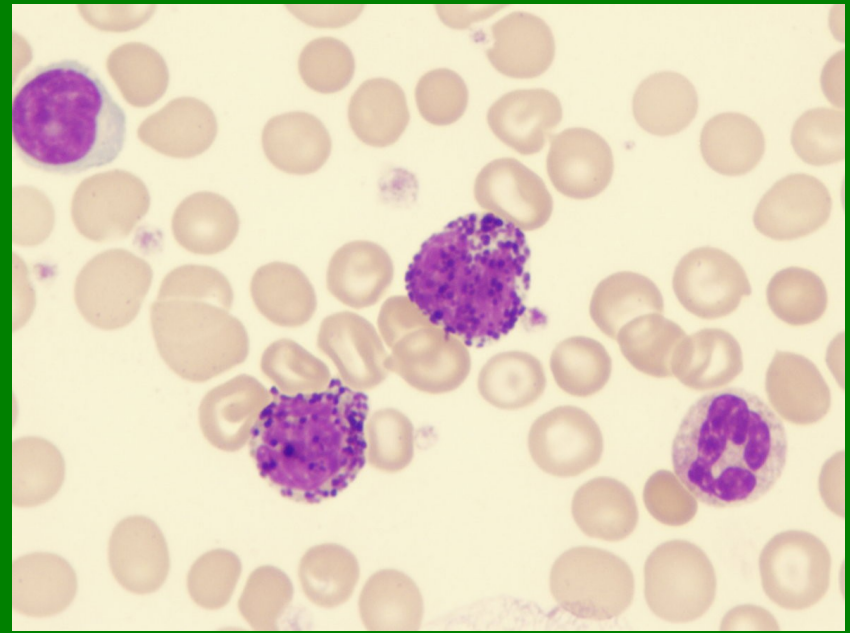
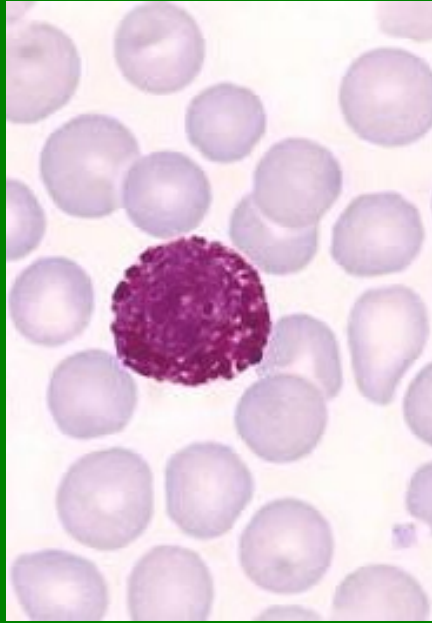
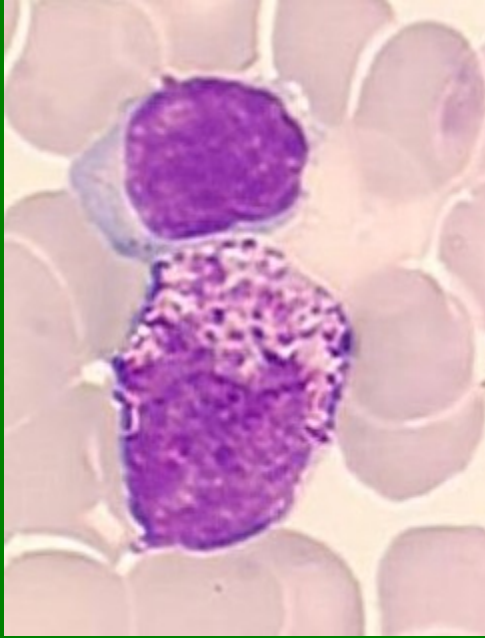
**Segment - Ne**



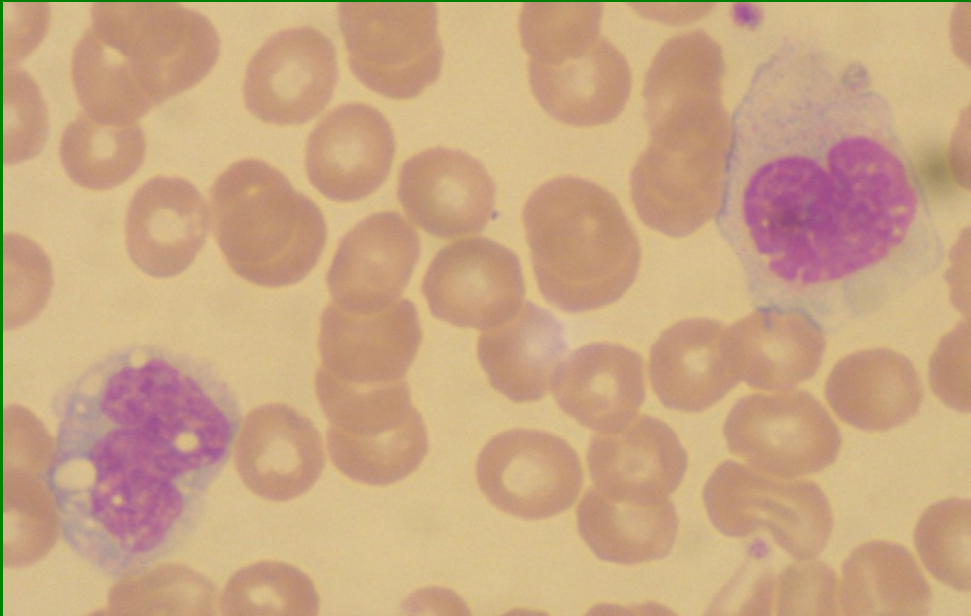
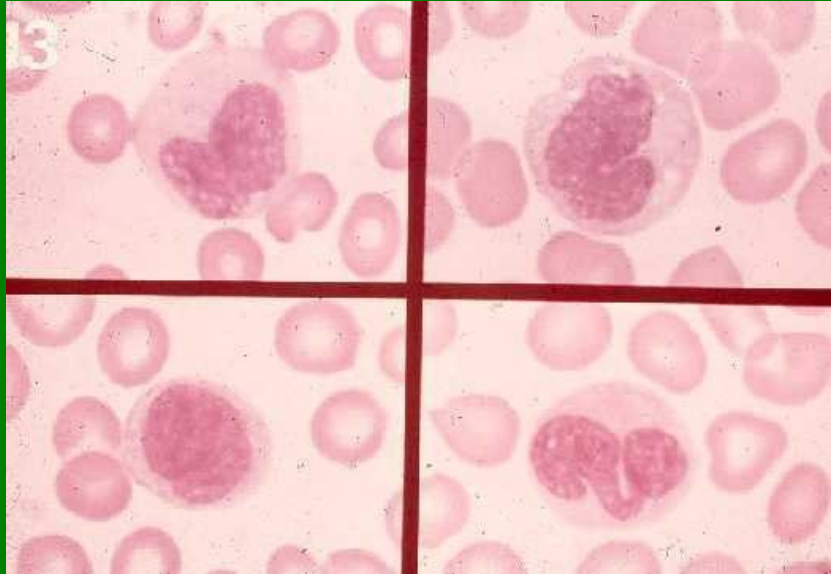
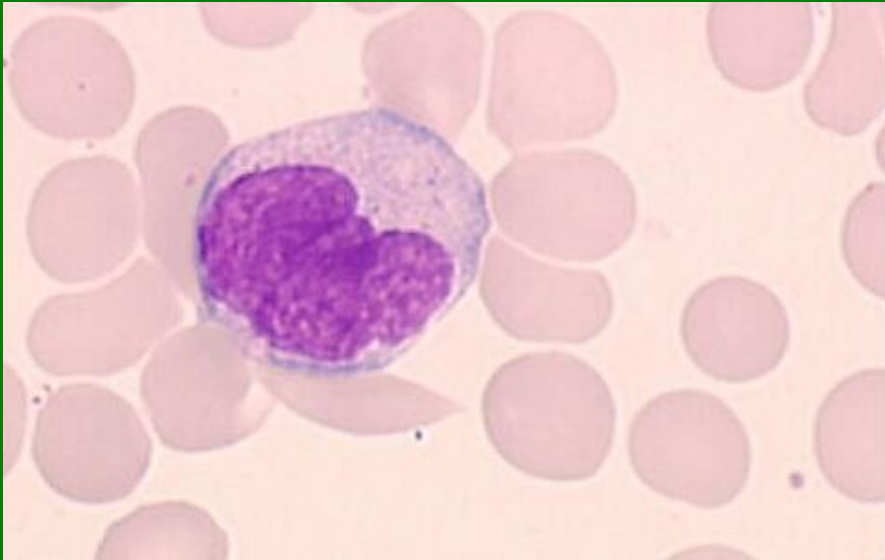
# Eozinofily



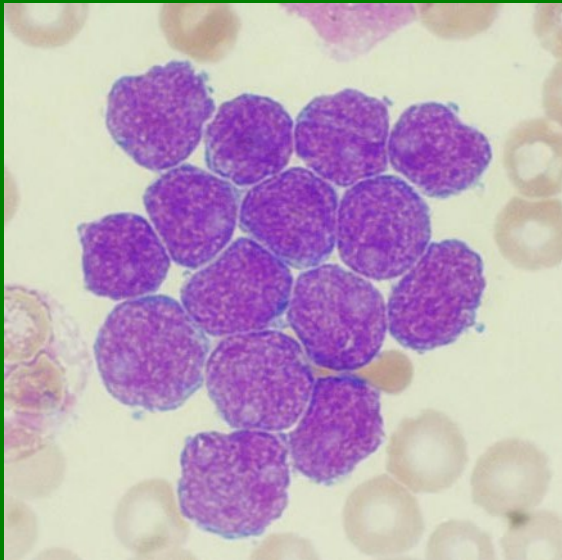
# Bazofily



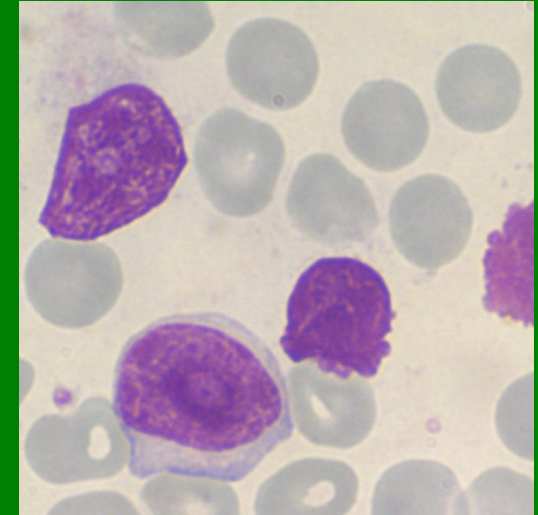
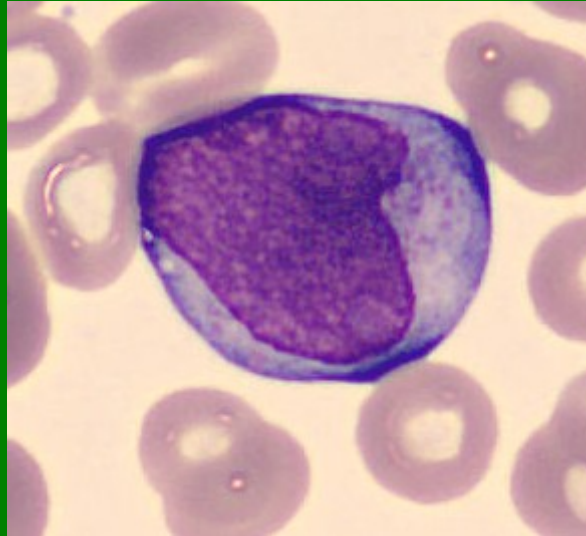
# Monocyty



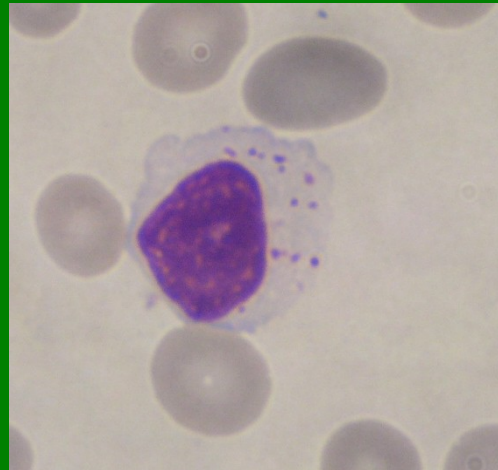
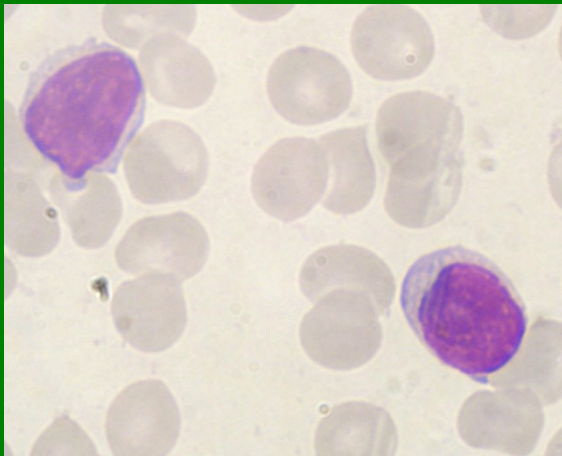
**Lymfoblasty**



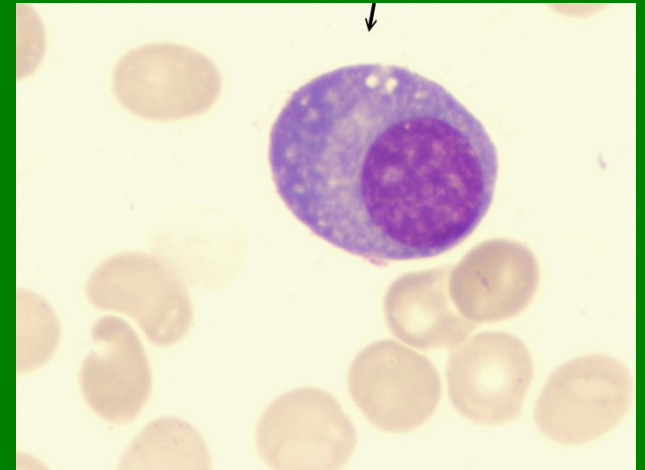
**Prolymfocyt**



**Lymfocyty**

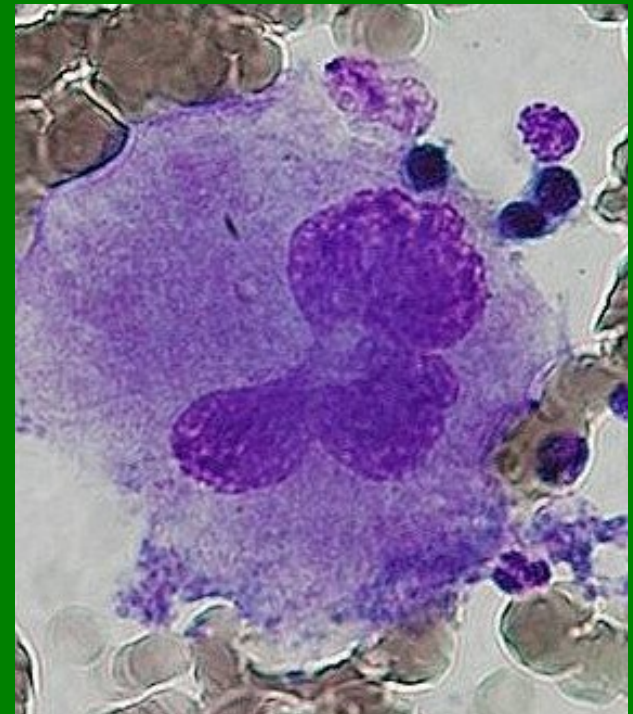
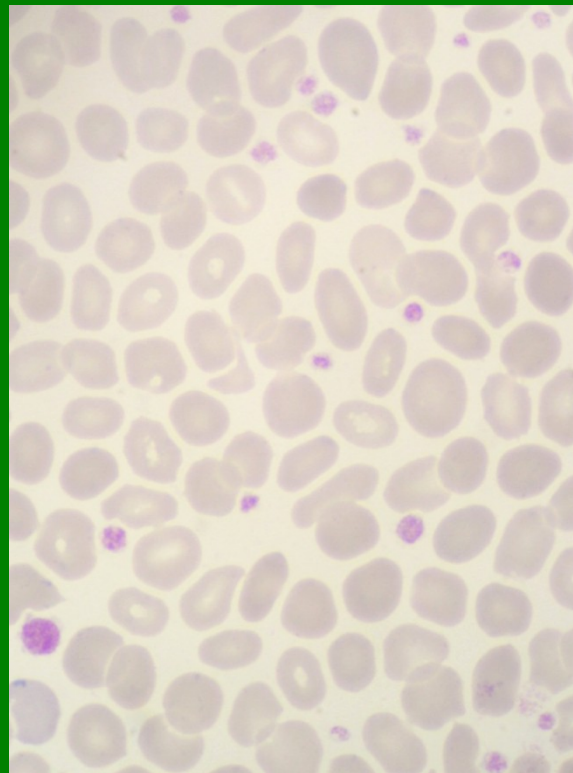
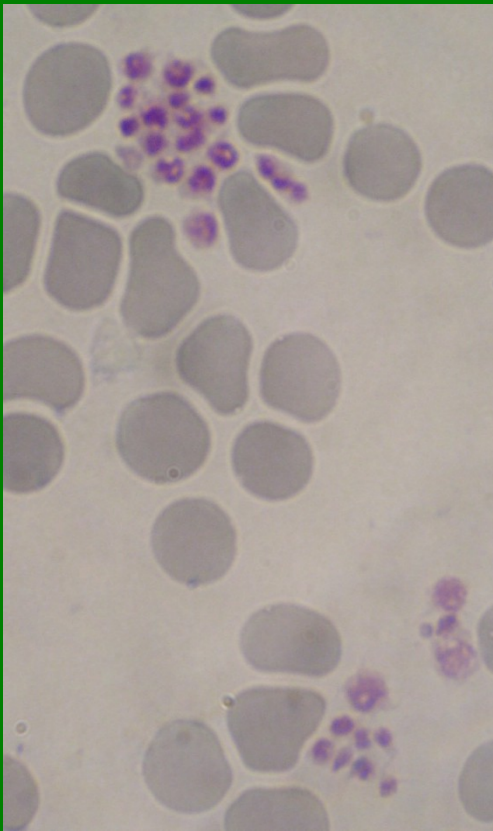
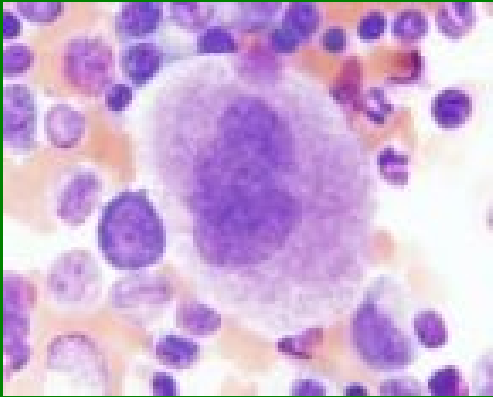


**Plazmatická buňka**

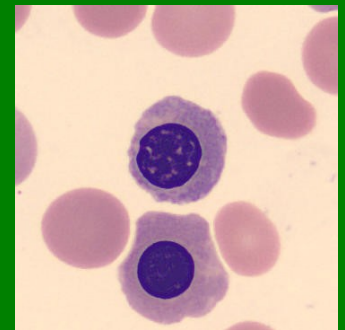
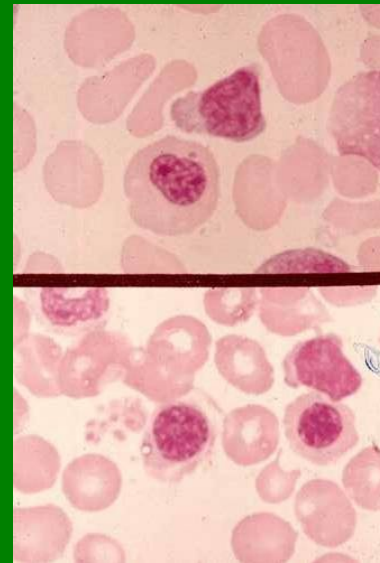
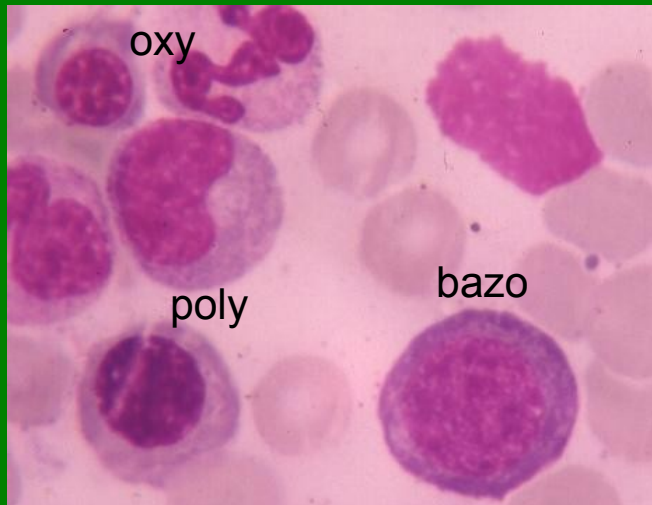
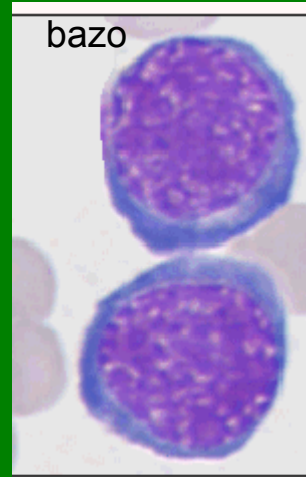
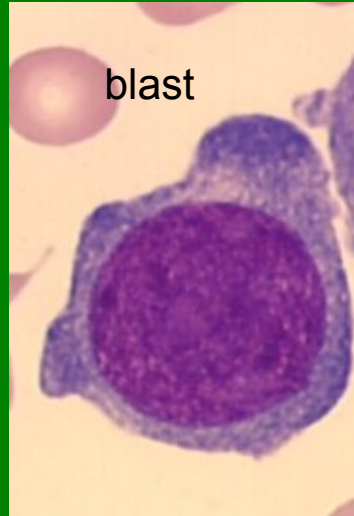
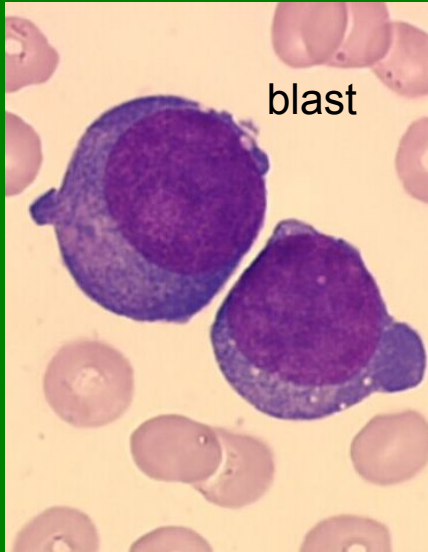




# Megakaryocyty, PLT

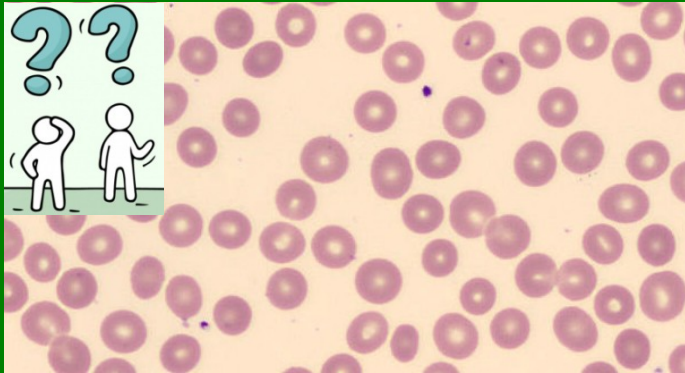


# NRBC

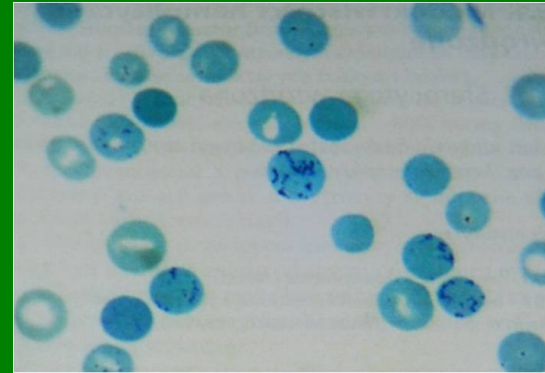


# Retikulocyty

RBC/Retic?



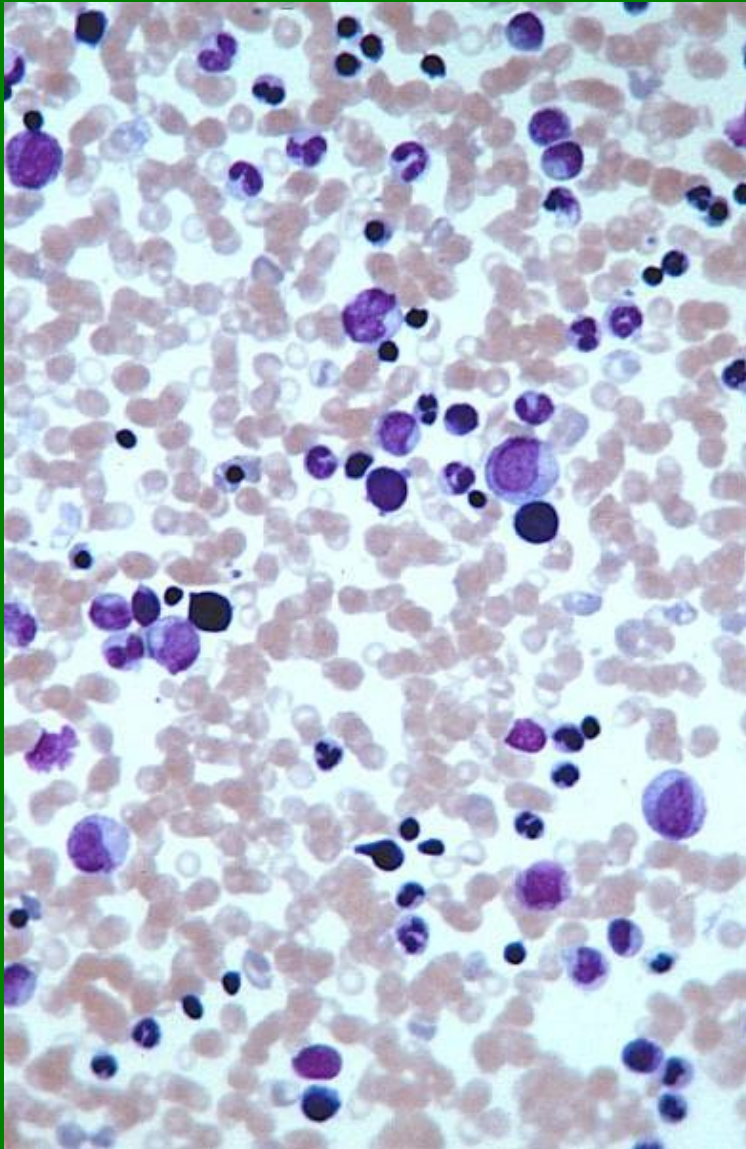
Retic



- 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

