**Ministry of Higher Education And Scientific Research Al-Mustaqbal University College**

**Department of Medical laboratory techniques**

# Chronic Leukemia

**Lec 16 3ed stage hematology**

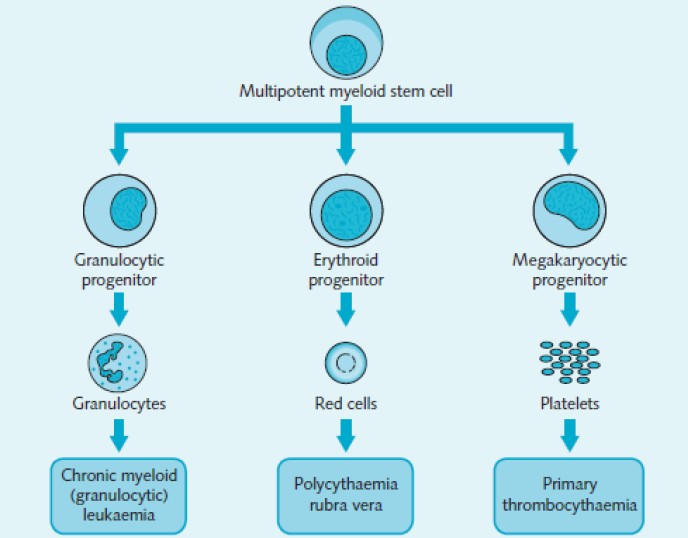
**The Chronic Myeloproliferative Disorders CMPD**

* CMPDs are malignant Clonal stem cell disorder
* Each disorder has specific genetic abnormalities.
* Bone marrow fibrosis in all CMPDs
* Fibrosis is secondary phenomen
* loss of regulatory signals that control the production of the mature cells
* Most of these disorders are seen in older adults (50-70yrs aged) Could be also in children

classification

Clonal hematopoeitic disorders Granulocytic

* + Granulocyte Chronic myeloid Leukemia CML
  + Erythroid RBC Polycythemia Vera (PV)
  + Megakaryocytic Platelets Essential thrombocythemia ET



#### Chronic Myeloid Leukemia (CML)

also known as chronic myeloid leukemia,

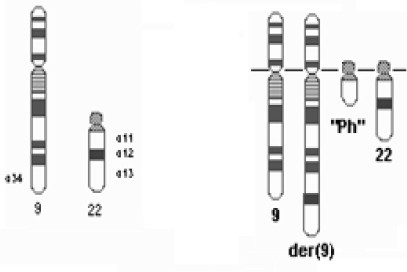
* Definition: is a myeloproliferative disorder characterized by increased proliferation of the granulocytic cell line without the loss of their capacity to differentiate.
* associated with a characteristic chromosomal translocation called the

Philadelphia chromosome.

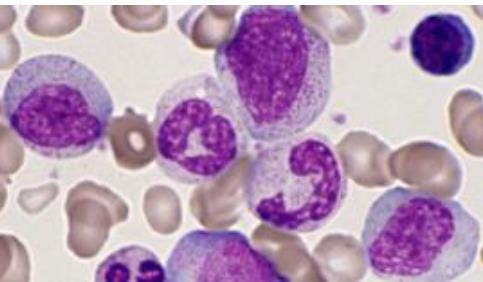
* It accounts for 20% of all leukemia affecting adults..

**Philadelphia chromosome**

is an acquired cytogenetic anomaly that is characterizes in all leukaemic cells in CML 90-95% of CML have Ph chromosome Shared translocation of chromosome 22 and chromosome 9



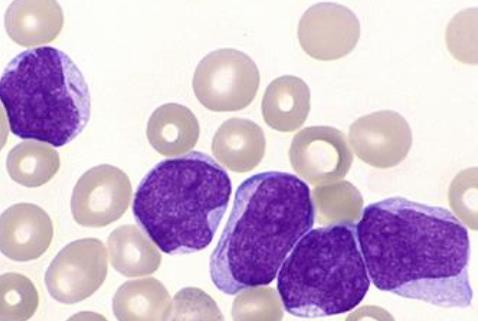
# CML- phases

Disease Course of Chronic myelogenous leukemia classically

occurs in three phases:

**1-A chronic phase** (last 4-5 years up to 15 years) asymptomatic or have only mild symptoms of fatigue and the % Of blast is less than 5%

* 1. **An accelerated phase** (last 6-9 months)



a gradual increase in blasts in the blood or bone marrow ,

it is short, may transformed to AML or myelofibrosis,

and the % Of blast is between 5-20%

* 1. **Blast crisis** (last for3-6 months)

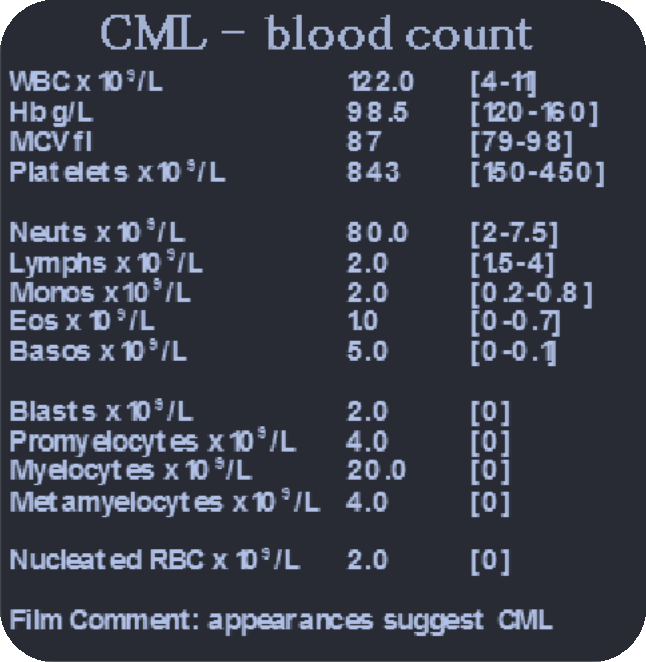
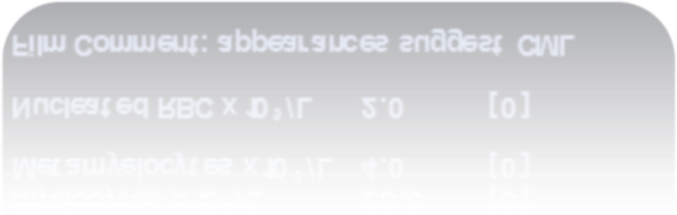
rapid progression and short survival , and the % Of blast

is more than 20% in the peripheral blood and bone marrow

## CML Diagnosis

###### 1- CBC

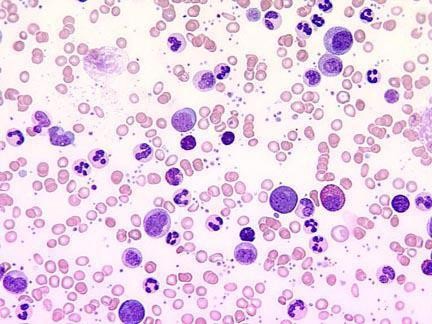
shows increased **granulocytes of all types,**



typically including mature myeloid cells. **Basophils and Eosinophils** are almost commonly increased; this feature may help differentiate CML from a leukemoid reaction ***RBC:***

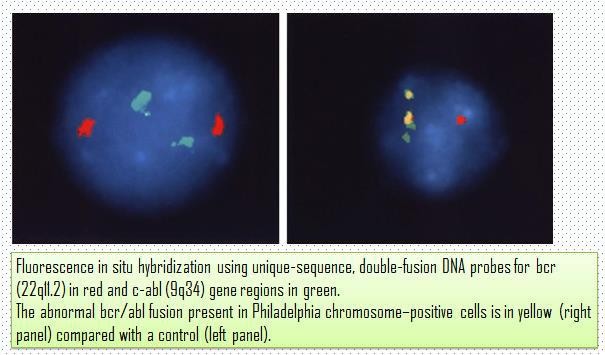
1. Hb: is low
2. NRBC: may present

**Platelet count** :increase



## CML Diagnosis

**2-Bone Marrow study**

1. Cellularity: Hypercellular, Increase reticulin fibrosis in 30-40%
2. Granulocytic hyperplasia blasts less 10%
3. Ph.chromsome test: positive [t(9;22)]
   1. **cytogenetics that detects the translocation t(9;22)** which involves the **ABL1** gene in chromosome **9** and the **BCR** gene in chromosome **22**

As a result of this translocation known as the

**Philadelphia chromosome chromosomal abnormality**

## Chronic lymphocytic leukemia (CLL)

* Chronic lymphoproliferative disorder
* Cell: B cells, Non adequate functional,
* Accumulated in the P. blood , bone marrow, spleen, liver and lymphnodes
* Age: 55-70 yrs
* Sex: frequent in males than females
* Life: 2 yrs. up to 20 yrs.
* Some die rapidly, within 2-3 years of diagnosis;
* Discovered incidentally after a blood cell count is performed for another reason 25-50% of patients will be **asymptomatic** at time of presentation.

# Symptoms

* + 1. Enlarged lymph nodes, liver, or spleen
    2. Recurring infections
    3. Loss of appetite or early satiety
    4. Abnormal bruising (late-stage symptom)
    5. Fatigue
    6. Night sweats

# CLL Diagnosis

**Peripheral blood show CBC**

1. RBC: mild anemia
2. WBC: over 50.000 / with lymphocytosis
3. PLT: slight decrease

###### P.B.S

shows the presence of blood smear **show**

**small lymphocytes** &**smudge cells**