GP CME

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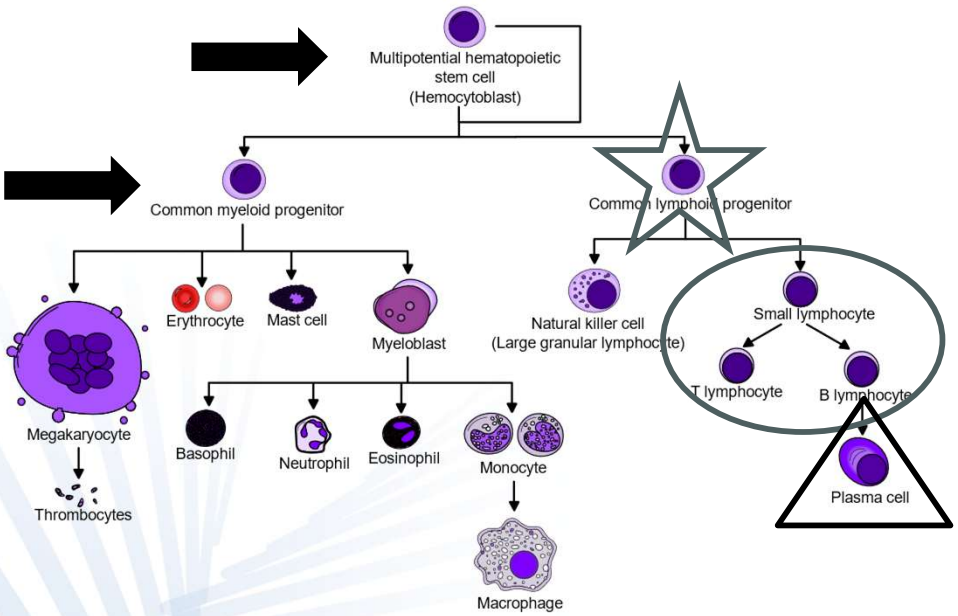
Date:

5th Edition WHO Classification (2022)

- Myeloproliferatve Neoplasm (MPN)
  - **Chronic myeloid leukaemia**
  - **Polycythaemia vera**
  - **Essential thrombocythaemia**
  - **Primary myelofibrosis**
  - Chronic neutrophilic leukaemia
  - Chronic eosinophilic leukaemia
  - Juvenile myelomonocytic leukaemia
  - Myeloproliferative neoplasm, not otherwise specified

Haematology Malignancy Concept



By A. Rad and Mikael Häggström, M.D.

- Clonal disorder
  - Excessive production of myeloid/lymphoid cells
  - Associated with "**driver**" mutation and can acquire "**passenger**" mutation

Myeloid Malignancy Concept

- Acute myeloid/lymphoblastic leukaemia
  - Failure of maturation resulting in accumulation of primitive blasts
- Myelodysplastic syndrome (MDS)
  - Maturation occurs but faulty instruction resulting in “abnormal” assembly
- Myeloproliferative neoplasm (MPN)
  - Maturation occurs and normal assembly
- MDS/MPN overlap syndrome

Case 1

- 60yr old Fijian Indian
- Presented with influzena (H1N1) and suffered myocarditis on weekend
  - Treated with abx discharged on Monday
- PMHx
  - HTN
  - Dyslipidaemia
- Social Hx
  - Current smoker (40pk yr)
  - High ETOH

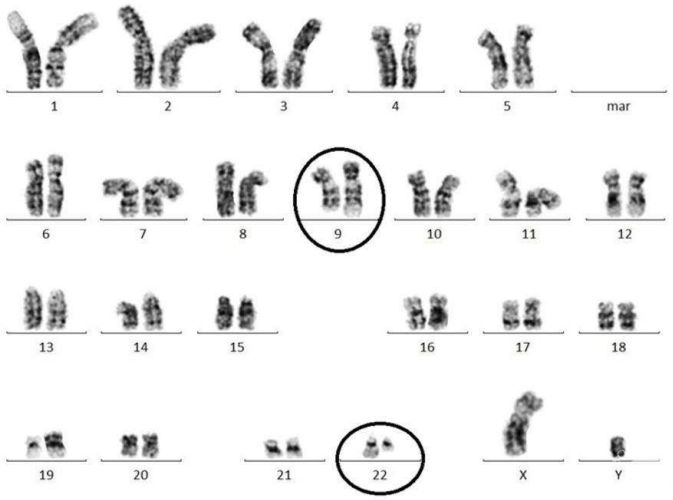
Laboratory Findings

- FBC/CBC

		Ref. Range
Haemoglobin	96	(115 – 155)
Platelets	785	(150 – 400)
WBC	205.2	(4.0 – 11.0)
Blasts	2.1	
Promyelocytes	6.2	
Myelocytes	15.4	
Metamyelocytes	10.2	
Neutrophils	142.7	(1.90 – 7.50)
Lymphocytes	6.16	(1.00 – 4.00)
Monocytes	2.05	(0.20 – 1.00)
Eosinophils	10.2	(<0.51)
Basophils	10.2	(0.00 – 0.20)

- Key findings
  - Increased white cell and platelet
    - Majority of the cells are normal looking neutrophils
      - No or minimal dysplasia
    - Blasts <20%
    - "Twin peak"
      - Myelocytes and neutrophils
    - Basophilia
      - >3% then think "CML"

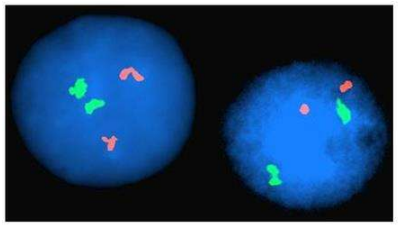
Diagnosis



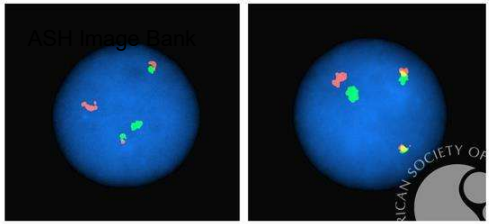
ASH Image Bank

Typical BCR/ABL1 positive FISH pattern

Normal cells
(BCR/ABL1 negative)



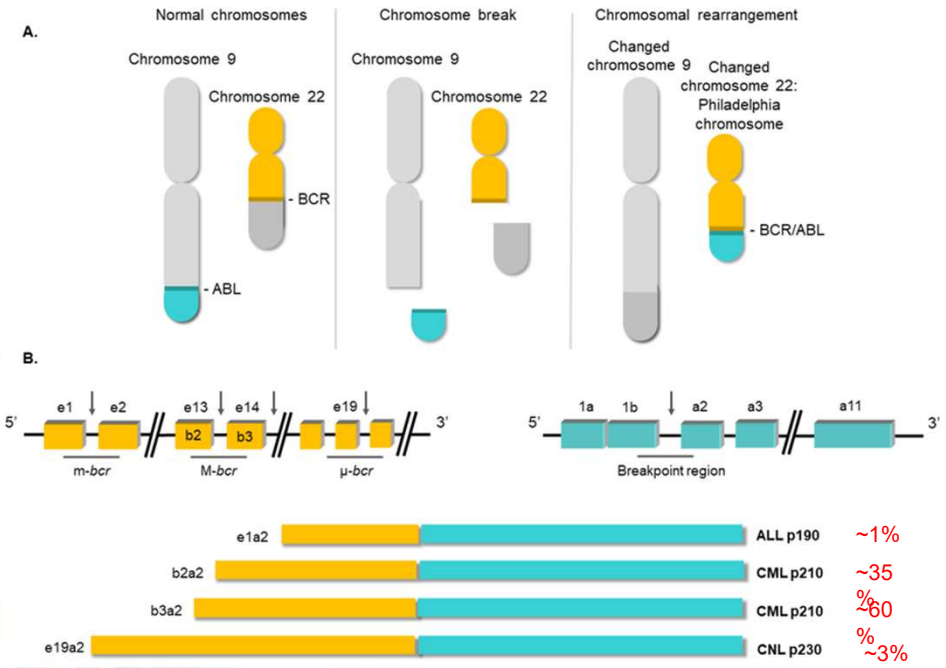
Abnormal cells
(BCR/ABL1 positive)



ABL1 (9q34)-Red; BCR (22q11.2)-Green

Chronic Myeloid Leukaemia

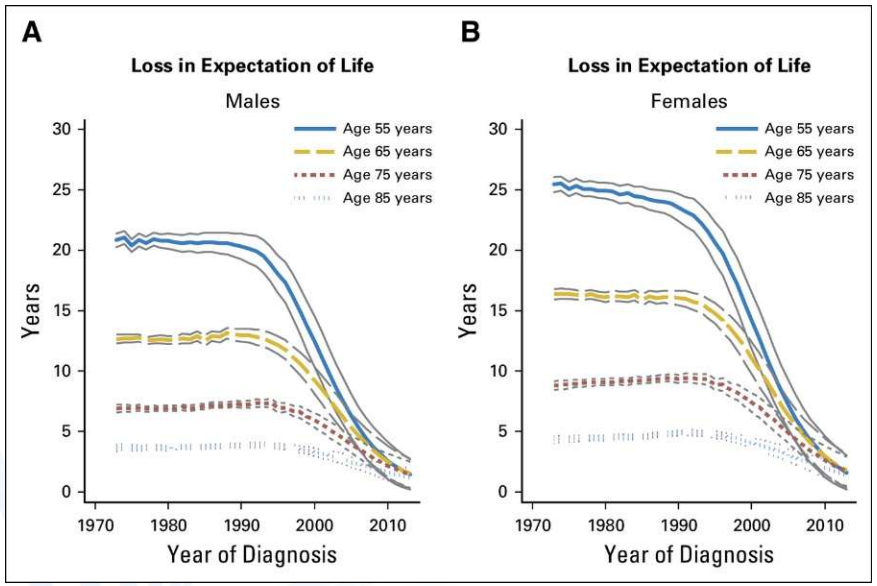
- Molecular "Driver"



Vuelta E el al. Biology (Basel). 2021 Feb 4;10(2):118

- Philadelphia chromosome
  - Translocation t(9;22)
- *BCR::ABL1* fusion gene (oncogene)
  - p210 commonest
  - p230 associated with thrombocytosis and chronic neutrophilic leukaemia
  - p190 associated with monocytosis, lymphoid involvement

Prognosis



Life Expectancy of Patients With Chronic Myeloid Leukemia Approaches the Life Expectancy of the General Population

Authors: Hannah Bower, Magnus Björkholm, Paul W. Dickman, Martin Höglund, Paul C. Lambert, and Therese M.-L. Andersson AUTHORS INFO & AFFILIATIONS

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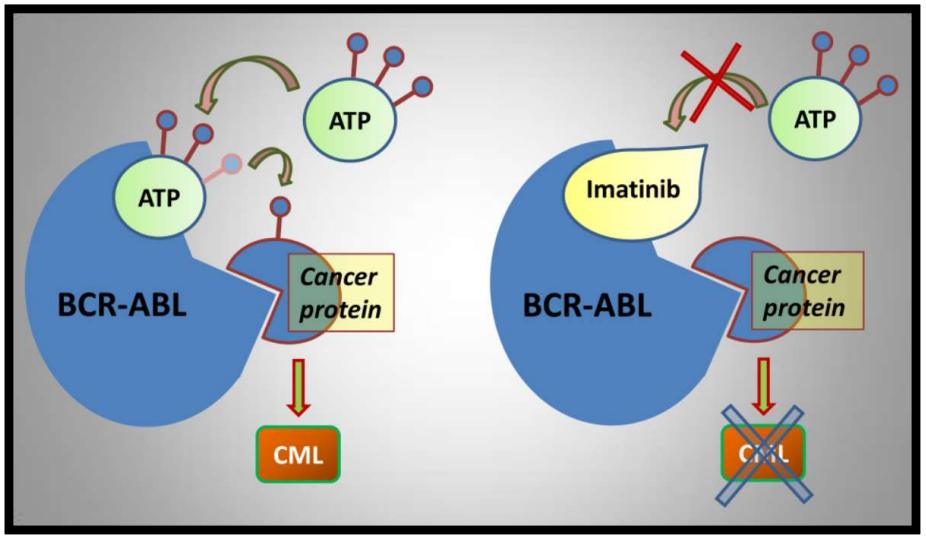
- 1970s Hydroxycarbamide
- 1980s Allogeneic bone marrow transplant
- 1980s Interferon
- 1998 Imatinib used in clinical setting

Treatment

- “Perfect” concept for target therapy
  - Unique tyrosine kinase
- Tyrosine Kinase Inhibitor
  - First generation - Imatinib
  - Second generation – Dasatinib and nilotinib
  - Third generation – Ponatinib and Bosutinib
- Side effects
  - Peripheral oedema
  - MSK sx
  - Pancreatitis
  - Pleural effusion
  - HTN
  - Increased risk of CVD
  - GI (diarrhoea)



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Modern Therapy of Chronic Myeloid Leukemia

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