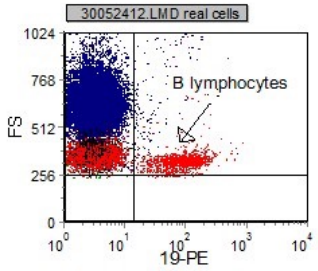
ALL Review Handout

Lab Techniques

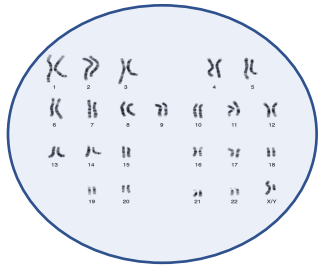
Flow Cytometry



Cell shape/size and CD marker identifies the cell population

Blood or Bone Marrow Flow Cytometry Result:
There is a 20% abnormal CD20+ population

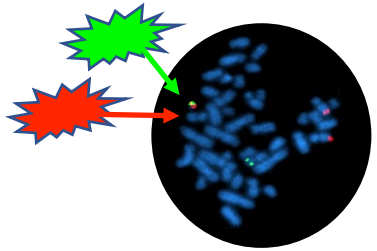
Karyotyping



Visual inspection of metaphase chromosomes reveals large gene changes

Karyotype result:
There is trisomy 21

FISH



Fluorescently tagged DNA probes can detect target DNA sequences

FISH result:
There are X copies of a BCR-ABL translocation

NGS

GGCCTAA → GGTCCAA

Gene Sequencing sequences specific genes and detects ANY gene mutations

NGS result:
There is a FLT3 mutation

ALL Diagnosis/Prognosis

B cell	T cell
CD10	CD3
CD19	CD4
CD20	CD7
CD22	CD8

Bad Clinical Prognostic Factors	Bad Genetic Prognostic Factors
Age	Philadelphia chromosome T(9,22)
B cells > 100K T cells > 30K	Ph-Like
Early B/T cells	T(4,11)
CNS disease	Complex cytogenetics
MRD	

ALL Treatment

Ph- = Chemotherapy

CALGB-10403

- Peg-asparaginase
  * Monitor fibrinogen/AT3 level
  * Can't use Posaconazole with PEG
- Vincristine
- Daunorubicin
- Prednisone
- IT Methotrexate
- IT Cytarabine

Ph+ = Chemotherapy + TKI

HyperCVAD

- **C**yclophosphamide
- **V**incristine
- Doxorubicin (**A**driamycin)
- **D**examethasone
- IT Methotrexate
- IT Cytarabine

TKIs

Ph+ = Chemotherapy + TKI

Imatinib (1st TKI)	QTC Rash Diarrhea Muscle cramps Fluid Retention
Dasatinib (2nd TKI) * Penetrates CNS	QTC Pleural Effusion Pulmonary HTN Thrombocytopenia
Nilotinib (2nd TKI)	QTC Pancreatitis Hyperglycemia Hyperlipidemia GI/Liver toxicity
Bosutinib (2nd TKI)	Rash Diarrhea GI/Liver toxicity
Ponatinib (3rd TKI)	QTC Thrombosis CHF Liver toxicity Pancreatitis Fluid retention