CYTOGENETICS

ADULT ALL

CYTOGENETICS	% OF PATIENTS	CR (%)	LONG-TERM PROGNOSIS
Normal	20-30	90	Good
Ph+	15-20	50-65	Poor
t(8;14), t(8;2), t(8;22)	<10	65 (with conventional therapy)	Poor, but changing with new therapy
6q-, 14q+	5	55-60	?
Hyperdiploid	10	85	Good
Hypodiploid	<5	60	Poor
T(4;11)	<2	?	Poor
t(1;19)	<2	?	Poor
Insufficient metaphases	20-30	75	Good
ALL = acute lymphocytic leukemia; CR= complete response.			

ABNORMALITY	GENES INVOLVED	ASSOCIATED PHENOTYPE
t(1;19)	E2A-PBX1	Pre-B ALL
t(4;11)	AF4-MLL	CD 10 neg, B ALL
t(8;14)	Myc-IG	B cell, L3 (100%)
t(9;22)	BCR-ABL	Mixed lineage ALL
t(12;21)*	TEL-AML1	Pre-B ALL
+4; +10*	Unknown	Pre-pre B, hyperdiploid
t(1;14)	TAL1-T cell receptor delta	T cell

*confers a good prognosis

AML

ABNORMALITY	GENES INVOLVED	ASSOCIATED PHENOTYPE
t(15;17)	PML-RAR	M3 (100%)
Inv(16) or t(16;16)	CBFB-MYH11	M4E (100%)
t(8;21)	AML-ETO	M2
+8	Unknown	AML
t(9;22)*	BCR-ABL	M1, M2, post CML
Del 5 or del 7*	Unknown	Secondary AML
11q23*	MLL	Secondary AML
Complex*	Various	Secondary AML

*Difficult to treat. UF Hematopathology Course 2000

SARCOMAS

SARCOMA SUBTYPE	CHROMOSOMAL CHANGE	FREQUENCY (%)
Ewing's sarcoma	t(11;22) EWS-FLI1	> 85
Synovial sarcoma	t(X;18) SYT-SSX1 or -SSX2	> 90
Myxoid/round cell liposarcoma	t(12;16) TLS-CHOP	> 75
Well differentiated/dedifferentiated liposarcoma	Giant or ring chromosomes	> 60
GIST	CD117 (c-kit) mutation, exon 9 or 11	> 80

Reference: Maki R. Sarcoma. In MKSAP Oncology, 3rd Edition (page 320).

FLOW CYTOMETRY

T-lymphocyte markers

CD1 (common thymocyte)
CD2 (E-rosette-forming T cell)
CD3 (immunocompetent T cell)
CD4 (helper T cell)
⇓ In HIV infection
⇑ In Sézary syndrome
⇓ In T-cell-directed immunosuppression

CD5 (mature T cell)
Aberrantly expressed in CLL/mantel cell

CD7 loss of CD7 in Mycosis Fungoides

CD8 (suppressor T-cell)

B-lymphocyte markers

CD10 (Common All-associated Antigen (CALLA)
Often expressed in bilineage lymphoblastic leukemia/NHL
CD19 (pan-B-cell)
Virtually always expressed in CLL

Commonly expressed in ALL and intermediate-and high-grade lymphomas; used as target for immunotherapy and immunotoxins

CD20 (pan-B-cell): used in Rituximab therapy
CD22 (resting B-cell)
CD23 (activated B-cell): negative in mantle /(+) CLL
IgG (surface or cytoplasmic)
IgM (surface or cytoplasmic; usual in CLL)
κ chains (surface or Cytoplasmic)
λ chains (surface or Cytoplasmic)
CD79a (B lineage pan B)

Myelomonocytic markers

CD11C (on monocytes, macrophages, and NK cells)
CD13 (monocytes, granulocytes)
CD14 (monocytes)
CD15 (granulocytes)—Reed Sternberg cells, also

NK-cell markers

CD16 (NK cells and granulocytes)
CD56 (NK cells)
CD57 (NK cells and T and B lymphocytes)

Miscellaneous markers

CD25 (Hairy cell, Transformed of Mycosis Fungoides)
CD30 (Reed-Sternberg cell)
CD34 (myeloid progenitors) (immature marker)
CD38 (activated T cells, plasma cells)
CD45 (all leukocytes)
CD61 (platelets, megakaryocyes)
Recognizes glycoprotein IIIa
Ckit (stem cell receptor: myeloid blasts)
HLA-DR (immature myeloid and lymphoid)
Glycophorin (erythrocytes)
Tdt (lymphoblast)
CD103; 11c: Hairy cell

Adapted from Hematology MKSAP 2nd Edition.

Last Updated on January 14, 2007