

Algorithm GRANK – Case study: Diffuse Large B-Cell Lymphoma

Ref.: A.A. Alizadeh, a.o., Nature 403 (2000) 503-511.

Database: <http://lmpp.nih.gov/lymphoma>

Number of gene clones: 4026

Number of DLCL samples: 50

Number of clusters found: 17

Vector space covered: 100%

Significance level: 5% per gene

Each gene clone in the database has an identifier. For some clones, this identifier refers to a known human gene. For other clones, the identifier may reflect sequence homology, but not identity, to a gene as judged by BLAST analysis (labeled “Similar to ...”). The remainder of the clones are listed as “Unknown”. If these “Unknown” clones have been assigned to a Unigene cluster, as defined by NCBI, the identifier includes “UG Hs.” Followed by the Unigene identification number. The identifier is prefaced by an asterisk if the sequence assignment of the clone has been verified; otherwise the identifier is in parentheses.

Cluster_01: 18 genes

(STAT1=IFN alpha/beta-responsive transcription factor ISGF3 beta subunits (p91/p84); Clone=26599)
(CD97; Clone=272532)

*immunoglobulin kappa light chain; Clone=293425

*immunoglobulin kappa light chain; Clone=293425

*immunoglobulin kappa light chain; Clone=1240813

*HKG7=cell surface protein in NK and T cells=G-CSF-induced gene; Clone=1172268

*immunoglobulin kappa light chain; Clone=840451

*immunoglobulin kappa light chain; Clone=725263

*Immunoglobulin mu; Clone=200700

*Immunoglobulin mu; Clone=1240921

*Immunoglobulin mu; Clone=214441

*Immunoglobulin mu; Clone=1336565

*Immunoglobulin mu; Clone=1338133

*Immunoglobulin D heavy chain constant region; Clone=1370359

*Immunoglobulin D heavy chain constant region; Clone=1341469

(Unknown UG Hs.133394 EST; Clone=1671645)

*Immunoglobulin D heavy chain constant region; Clone=1341469

*Unknown UG Hs.169476 tubulin, alpha, ubiquitous; Clone=1338201

Cluster_02: 39 genes

(JAK2 tyrosine kinase; Clone=789379)

*interferon-gamma receptor alpha chain; Clone=47900

*interferon-gamma receptor alpha chain; Clone=1287774

*c-jun; Clone=238363

(CPBP=CBA1=DNA-binding protein; Clone=510381)

*hFat=homologue of drosophila FAT gene; Clone=503119

*CD39; Clone=589630

*jun-B; Clone=809707

*jun-B; Clone=1350588

(IL-6; Clone=1301232)

*CD44=Pgp-1=extracellular matrix receptor-III=Hyaluronate receptor; Clone=713145

*CD44=Pgp-1=extracellular matrix receptor-III=Hyaluronate receptor; Clone=703824

*A20=TNF alpha inducible, TRAF1,2 binding inhibitor of NF-kB activation; Clone=712368

*A20=TNF alpha inducible, TRAF1,2 binding inhibitor of NF-kB activation; Clone=1358255

(Unknown UG Hs.79937 ESTs; Clone=682976)
(GLUT3=glucose transporter protein-3; Clone=259029)
(CD49B=Integrin alpha 2; Clone=103)
(Unknown; Clone=1186078)
(KOC=putative RNA binding protein; Clone=429494)
*ARK2=aurora-related kinase 2; Clone=1241369
(Unknown UG Hs.140559 EST; Clone=1339835)
(FA-A=DNA crosslinking repair protein=Mutated in Fanconi's anemia A; Clone=1350486)
(Unknown UG Hs.128782 ESTs, Weakly similar to !!!! ALU CLASS B WARNING ENTRY !!!!
[H.sapiens]; Clone=1372845)
*CD95=Fas; Clone=299745
(Unknown UG Hs.140483 ESTs; Clone=1319683)
*Smad7=Homologue of Mothers Against Decapentaplegic (MAD)=negative regulator of TGF beta
signaling; Clone=148968
(IL-3 receptor alpha chain; Clone=1035852)
(Unknown UG Hs.232234 ESTs; Clone=1341280)
*IL-15 receptor alpha chain; Clone=488019
*histone H2A.X; Clone=114416
(Unknown; Clone=1371537)
*TRAIL=Apo-2 ligand; Clone=1251947
(KIAA0279; Clone=51439)
*Syndecan-4 = amphiglycan = ryudocan core protein; Clone=339321
(stk2 = serine / threonine kinase 2; Clone=345600)
*BLC=BCA-1=B lymphocyte chemoattractant BLC=CXC chemokine; Clone=753794
(filamin=ABP-280=actin-binding protein; Clone=487418)
(Unknown UG Hs.110341 ESTs; Clone=1338439)
(DEC1=basic helix-loop-helix protein; Clone=469297)

Cluster_03: 5 genes

(Unknown UG Hs.230171 ESTs; Clone=825006)
*Unknown UG Hs.92448 ESTs; Clone=1354413
*Immunoglobulin J chain; Clone=161023
*Immunoglobulin J chain; Clone=1240978
*Immunoglobulin J chain; Clone=117806

Cluster_04: 81 genes

(Unknown UG Hs.172195 ESTs, Weakly similar to KIAA0226 [H.sapiens]; Clone=1352465)
(CD75=sialyltransferase (CMP-N-acetylneuraminic acid-2,6-sialyltransferase) (EC
2.4.99.1); Clone=194295)
*Low-affinity IgG Fc receptor II-B and C isoforms (multiple orthologous genes); Clone=138623
(Unknown UG Hs.191727 ESTs; Clone=826417)
(Unknown; Clone=1337415)
(p120E4F transcription factor; Clone=1339393)
(Unknown UG Hs.194307 ESTs, Moderately similar to !!!! ALU SUBFAMILY SX WARNING ENTRY !!!!
[H.sapiens]; Clone=1300369)
(jun-D; Clone=998844)
*mucosal addressin cell adhesion molecule-1 (MAdCAM-1); Clone=379536
*jun-B; Clone=809707
*Unknown UG Hs.191322 ESTs; Clone=1369117
*Unknown UG Hs.191322 ESTs; Clone=1287536
*Ikaros=LyF-1=hIk-1; Clone=711680
*Unknown UG Hs.126733 ESTs; Clone=1372076
(monoamine oxidase A; Clone=359661)
*Unknown UG Hs.122505 ESTs; Clone=1242035
*Smad7=Homologue of Mothers Against Decapentaplegic (MAD)=negative regulator of TGF beta

signaling; Clone=148968

*CD11C=leukocyte adhesion protein p150,95 alpha subunit=integrin alpha-X; Clone=234357

*CD11C=leukocyte adhesion protein p150,95 alpha subunit=integrin alpha-X; Clone=1306024

*Interferon, alpha-inducible protein (clone IFI-6-16); Clone=324912

*LTK-2=EPLG2=tyrosine kinase receptor; Clone=924165

*eotaxin=Small inducible cytokine A11=chemokine; Clone=343736

(CD52=CAMPATH-1; Clone=301723)

*GALECTIN-1=Beta galactoside-binding lectin L-14-I=Lactose binding lectin 1=S-LAC lectin

1=Galaptin=14 KD lectin=HPL=HBL; Clone=376168

*TIMP-2=Tissue inhibitor of metalloproteinase 2; Clone=325072

(CD64=high affinity immunoglobulin gamma FC receptor I A form precursor=FC-gamma RI=FCRI=IGG

FC receptor I; Clone=258802)

*histone H2A.X; Clone=114416

*STAT4; Clone=183407

*Similar to ferritin H chain; Clone=1334575

*Syndecan-4 = amphiglycan = ryudocan core protein; Clone=339321

*Cyclin D1=BCL1=PRAD1=Translocated in mantle cell leukemia; Clone=841641

*RANTES=chemokine; Clone=1219244

*CD63 antigen (melanoma 1 antigen); Clone=769861

*CD105=endoglin; Clone=307887

(NF2=Neurofibromin 2 (bilateral acoustic neuroma)=schwannomin=CS1=putative membrane-organizing protein causes neuro-fibromatosis type 2=merlin; Clone=1271828)

(Thy-1; Clone=382714)

*FGF-7=Fibroblast growth factor 7 (keratinocyte growth factor); Clone=186286

*RANTES=chemokine; Clone=1071581

*MMP-9=Matrix metalloproteinase 9=92 kD Gelatinase B=92 KD type IV collagenase; Clone=526335

(Cytochrome P450, subfamily XXVII (steroid 27-hydroxylase, cerebrotendinous xanthomatosis);

Clone=195269)

*CD115=fms=CSF-1 receptor; Clone=713974

*cathepsin B; Clone=261517

*cathepsin B; Clone=297219

*cathepsin B; Clone=261517

*FCERI=Fc epsilon receptor gamma chain=High affinity immunoglobulin epsilon receptor gamma-subunit precursor; Clone=235155

(cathepsin L; Clone=345538)

(cathepsin L; Clone=345538)

(udp glucuronosyltransferase; Clone=293742)

*Fibronectin 1; Clone=139009

(Unknown UG Hs.106127 ESTs, Highly similar to (define not available 4689136) [H.sapiens];

Clone=358168)

*OSF-2os=osteoblast-specific factor=putative bone adhesion protein with homology with the insect protein fasciclin I; Clone=897910

(MMP-2=Matrix metalloproteinase 2=72 kD type IV collagenase precursor=72 kD gelatinase=gelatinase A=TBE-1; Clone=323656)

(osteonectin=SPARC=basement membrane protein; Clone=487878)

*Fibronectin 1; Clone=139009

(Cyclin D2/KIAK0002=overlaps with middle of KIAK0002 cDNA; Clone=359412)

*TIMP-3=Tissue inhibitor of metalloproteinase 3; Clone=754106

*Integrin beta 5; Clone=202074

(Similar to plasma gelsolin; Clone=1319034)

(Gap junction protein, beta 1, 32kD (connexin 32, Charcot-Marie-Tooth neuropathy, X-linked);

Clone=376522)

*Receptor protein tyrosine kinase TKT precursor=Tyrosine protein kinase TYRO 10=Nuerotrophic tyrosine kinase receptor-related 3; Clone=236420

*R-PTP-mu=receptor protein tyrosine phosphatase mu; Clone=162199

*HTS1=HeLa tumor suppressor gene; Clone=781014

*PIGF=placenta growth factor; Clone=213797

(RAR-gamma-1=Retinoic acid receptor; Clone=797060)
 *Dri42=phosphatidic acid phosphohydrolase homolog; Clone=85394
 *Interferon-inducible protein 1-8U; Clone=512213
 *Interferon-inducible protein 1-8U; Clone=809910
 *Estrogen receptor; Clone=725321
 *BST-1=surface molecule of bone marrow stromal cell lines that facilitates pre-B-cell growth; Clone=250126
 *GS2 protein (DXS1283E)=Anonymous X chromosome gene; Clone=220821
 *SMRT=silencing mediator of retinoid and thyroid hormone action=corepressor; Clone=235911
 *SMRT=silencing mediator of retinoid and thyroid hormone action=corepressor; Clone=235911
 *SMRT=silencing mediator of retinoid and thyroid hormone action=corepressor; Clone=723911
 (Cytidine deaminase; Clone=1142821)
 (Unknown; Clone=815519)
 *alpha-galactosidase A; Clone=684879
 *uridine phosphorylase; Clone=488966
 (Unknown UG Hs.203750 EST; Clone=1316627)
 *SCGF-beta=lymphocyte secreted C-type lectin; Clone=1376215
 *Unknown UG Hs.5025 nebullette; Clone=302188
 *Unknown UG Hs.126733 ESTs; Clone=1335809

Cluster_05: 13 genes

*TNF alpha=tumor necrosis factor alpha; Clone=102
 *CD21=B-lymphocyte CR2-receptor (for complement factor C3d and Epstein-Barr virus); Clone=101
 (Unknown; Clone=2025)
 (Unknown; Clone=1369321)
 (Unknown; Clone=1367957)
 (Genomic DNA, integration site for Epstein-Barr virus; Clone=1369566)
 *Unknown UG Hs.28070 KIAA0753 gene product; Clone=1251853
 *Immunoglobulin alpha (1 or 2) heavy chain constant region; Clone=154441
 *Immunoglobulin alpha (1 or 2) heavy chain constant region; Clone=182930
 *Immunoglobulin alpha (1 or 2) heavy chain constant region; Clone=91
 (Unknown UG Hs.122834 ESTs; Clone=1369561)
 (Unknown UG Hs.123319 EST, Weakly similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]; Clone=1367888)
 (Tandem repeat region 3' of Ig constant regions; Clone=711657)

Cluster_06: 12 genes

*TCL-1=Translocated in T-CLL; Clone=746233
 *TCL-1=Translocated in T-CLL; Clone=200018
 *TCL-1=Translocated in T-CLL; Clone=1241524
 *Unknown UG Hs.123285 ESTs, Weakly similar to reverse transcriptase related protein [H.sapiens]; Clone=701116
 *Unknown UG Hs.123579 ESTs; Clone=1338881
 (Unknown; Clone=1670989)
 (Protein phosphatase 2A, regulatory subunit B' alpha-1; Clone=712492)
 *pLK=homologue of Drosophila polo serine/threonine kinase; Clone=1352275
 (Kinase A anchoring protein with an RGS domain; Clone=43630)
 *BL34=RGS1=regulator of G-protein signaling which inhibits SDF-1 directed B cell migration; Clone=360242
 *BL34=RGS1=regulator of G-protein signaling which inhibits SDF-1 directed B cell migration; Clone=686248
 *76 kDa tyrosine phosphoprotein SLP-76; Clone=1415419

Cluster_07: 15 genes

(KIAA0086=homologue of DNA cross-link repair protein SNM1; Clone=1235193)
*Immunoglobulin-related 14.1; Clone=344134
*Immunoglobulin-related 14.1; Clone=344134
*Immunoglobulin lambda light chain; Clone=1240959
*Immunoglobulin lambda light chain; Clone=1240590
*Immunoglobulin lambda light chain; Clone=1240959
*Immunoglobulin lambda light chain; Clone=1241741
*Immunoglobulin lambda light chain; Clone=771065
(TEK=tyrosine kinase; Clone=162165)
(EGR-1=Early growth response protein 1=zinc finger protein; Clone=162772)
(EGR-1=Early growth response protein 1=zinc finger protein; Clone=162772)
(Unknown UG Hs.136345 ESTs; Clone=746300)
*p16-INK4a=Cyclin-dependent kinase 4 inhibitor A=Multiple tumor suppressor 1=MTS1;
Clone=510467
(Unknown UG Hs.230171 ESTs; Clone=825006)
*RIZ=zinc finger protein; Clone=156111

Cluster_08: 56 genes

*Similar to axonemal dynein heavy chain; Clone=1340739
(Unknown; Clone=712107)
*Unknown UG Hs.118550 ESTs; Clone=1351296
(Putative ribulose-5-phosphate-epimerase; Clone=1319248)
(Unknown UG Hs.38900 ESTs; Clone=1352550)
(ATP-dependent RNA helicase #46; Clone=1318279)
*FBP2=FUSE binding protein2=KSRP=KH type splicing regulatory protein; Clone=1336701
*PKC theta=Protein kinase C, theta=mediator of TCR signaling; Clone=205239
*LAT=linker for activation of T cells=36 kDa phosphotyrosine protein; Clone=345831
*CD2; Clone=1326652
(CD3 delta=T cell surface glycoprotein; Clone=377560)
*CD3E antigen, epsilon polypeptide (TiT3 complex); Clone=1130062
*T cell receptor beta chain; Clone=505569
*fyn=syn=slk=Tyrosine protein kinase; Clone=240997
*fyn=syn=slk=Tyrosine protein kinase; Clone=240997
*purinergic receptor P2Y5=RB intorn-encoded putative G-protein coupled receptor; Clone=196488
*CD5; Clone=724070
*Low-affinity IgG Fc receptor II-B and C isoforms (multiple orthologous genes); Clone=145409
(Unknown UG Hs.192878 ESTs; Clone=160263)
*Interferon-induced guanylate-binding protein 2; Clone=545038
(dek=translocated in t(6;9) acute myeloid leukemia; Clone=815145)
(cdk2=Cyclin-dependent kinase 2; Clone=1185629)
*mitotic feedback control protein Madp2 homolog; Clone=302185
*Cyclin A; Clone=950690
*Cyclin A; Clone=824709
*pLK=homologue of Drosophila polo serine/threonine kinase; Clone=809515
*nek2 protein kinase; Clone=1422081
*SRPK1=serine kinase; Clone=1352658
(40S ribosomal protein S2=S4=LLREP3 protein AND alpha enolase (Double Hit); Clone=512247)
*tubulin-alpha; Clone=1240595
(Similar to MCM2 = DNA replication licensing factor; Clone=1356512)
*Similar to NSD1=nuclear SET and PhD domain protein that interacts with the ligand-binding domain of several nuclear receptors; Clone=1352302
*PKC zeta=Protein kinase C, zeta; Clone=131239
*Hemoglobin, alpha 1; Clone=1372455
(Unknown; Clone=1672461)

*CD62P=P-selectin=gmp140=PADGEM; Clone=182264
 (Unknown UG Hs.3337 transmembrane 4 superfamily member 1; Clone=1341319)
 (Proteasome chain 7=LMP2=major histocompatibility complex encoded proteasome subunit;
 Clone=1337069)

*IL-15 receptor alpha chain; Clone=488019

*Exodus-2=SLC=6Ckine=chemokine targeting T cells; Clone=666773

*CD106=VCAM-1; Clone=49164

*FCERI=Fc epsilon receptor gamma chain=High affinity immunoglobulin epsilon receptor gamma-subunit precursor; Clone=145932

*CD115=fms=CSF-1 receptor; Clone=713974

*NK4=Natural killer cells protein-4=increased after activation of T cells by mitogens or activation of NK cells by IL-2; Clone=302394

*NK4=Natural killer cells protein-4=increased after activation of T cells by mitogens or activation of NK cells by IL-2; Clone=1355635

*NK4=Natural killer cells protein-4=increased after activation of T cells by mitogens or activation of NK cells by IL-2; Clone=810859

*allograft-inflammatory factor-1=interferon gamma induced macrophage protein=lba1=ionized calcium binding adapter molecule 1; Clone=343867

*Unknown UG Hs.185058 ESTs; Clone=686554

*STRL33.1=Putative chemokine receptor; Clone=486696
 (14-3-3 sigma; Clone=346610)

*PIGF=placenta growth factor; Clone=213797
 (Unknown; Clone=1350572)
 (stk2 = serine / threonine kinase 2; Clone=345600)

*76 kDa tyrosine phosphoprotein SLP-76; Clone=1415419

*microsomal glutathione S-transferase 2 (MGST2); Clone=344432
 (Unknown UG Hs.87807 ESTs; Clone=1271704)

Cluster_09: 3 genes

*Immunoglobulin lambda light chain; Clone=683670

*Immunoglobulin lambda light chain; Clone=683670

*Nak1=TR3 orphan receptor=homologue of Nur77/NGIF-B/N10 anti-apoptotic gene; Clone=309893

Cluster_10: 11 genes

*Unknown UG Hs.108327 damage-specific DNA binding protein 1 (127kD); Clone=279482

*Heregulin alpha=neu=glial growth factor 2; Clone=52193
 (Unknown UG Hs.49614 ESTs; Clone=814622)

*SA3=nuclear protein; Clone=683405

*SLAM=signaling lymphocytic activation molecule; Clone=814251

*SLAM=signaling lymphocytic activation molecule; Clone=814251

*Cyclin D2/KIAK0002=3' end of KIAK0002 cDNA; Clone=1357360

*Potassium voltage-gated channel, shaker-related subfamily, member 3; Clone=1337856

*Unknown UG Hs.191322 ESTs; Clone=1287536
 (Similar to Rattus norvegicus B/K protein.; Clone=1318616)

*vinculin; Clone=826479

Cluster_11: 6 genes

*LYSP100=SP140; Clone=229723

*Similar to retinol dehydrogenase type I (RODH I); Clone=814655
 (Unknown UG Hs.119410 Homo sapiens cytokine receptor related protein 4 (CYTOR4) mRNA,
 complete cds; Clone=701122)

*Unknown UG Hs.149342 ESTs; Clone=825645

*Unknown UG Hs.105533 EST; Clone=826619
 (Unknown UG Hs.123160 EST; Clone=1334288)

Cluster_12: 5 genes

(Unknown; Clone=1356707)

*CD21=B-lymphocyte CR2-receptor (for complement factor C3d and Epstein-Barr virus); Clone=814917

*CD21=B-lymphocyte CR2-receptor (for complement factor C3d and Epstein-Barr virus); Clone=1351751

*CD21=B-lymphocyte CR2-receptor (for complement factor C3d and Epstein-Barr virus); Clone=824695

*CD21=B-lymphocyte CR2-receptor (for complement factor C3d and Epstein-Barr virus); Clone=101

Cluster_13: 45 genes

(Unknown; Clone=825920)

(Unknown UG Hs.122407 EST; Clone=1287789)

(Unknown UG Hs.231798 ESTs; Clone=827169)

(Unknown; Clone=2005)

*FMR2=Fragile X mental retardation 2=putative transcription factor=LAF-4 and AF-4 homologue; Clone=1352112

*Unknown UG Hs.105261 EST; Clone=824088

(Unknown UG Hs.169565 ESTs, Moderately similar to !!!! ALU SUBFAMILY SB WARNING ENTRY !!!! [H.sapiens]; Clone=825217)

(Unknown UG Hs.136345 ESTs; Clone=746300)

(Unknown UG Hs.224323 ESTs, Moderately similar to alternatively spliced product using exon 13A [H.sapiens]; Clone=1338448)

*Unknown; Clone=825199

(Unknown UG Hs.208410 EST, Moderately similar to !!!! ALU SUBFAMILY SB WARNING ENTRY !!!! [H.sapiens]; Clone=1353036)

(Unknown UG Hs.120716 ESTs; Clone=1334260)

(Unknown UG Hs.88102 ESTs; Clone=685312)

*myb-related gene A=A-myb; Clone=1367994

*myb-related gene A=A-myb; Clone=825476

*Unknown UG Hs.192708 ESTs, Highly similar to A-myb N-terminal region)2341 is 2nd base in codon [H.sapiens]; Clone=745995

*Unknown UG Hs.161905 EST; Clone=814601

*Unknown UG Hs.222808 ESTs; Clone=815273

(Unknown UG Hs.124049 ESTs; Clone=1337820)

*BCL-6; Clone=1340526

*BCL-6; Clone=712395

*Unknown; Clone=1353041

*Unknown; Clone=1353015

(APAF-1=ced-4 homologue; Clone=700709)

*PKU-beta=KIAA0137=protein kinase; Clone=825383

*PKU-beta=KIAA0137=protein kinase; Clone=563451

*BMI-1; Clone=1301610

*BMI-1; Clone=1048586

(Unknown; Clone=1355877)

*HEB=HLH protein that cooperates with E2A=HTF4=helix-loop-helix protein transcription factor; Clone=1292606

(Unknown; Clone=1240688)

*CD44=Pgp-1=extracellular matrix receptor-III=Hyaluronate receptor; Clone=713145

*CD44=Pgp-1=extracellular matrix receptor-III=Hyaluronate receptor; Clone=713145

*SRPK2 serine kinase; Clone=21899

*Deoxycytidylate deaminase; Clone=489681

*Deoxycytidylate deaminase; Clone=489681

*Deoxycytidylate deaminase; Clone=1185959

*Deoxycytidylate deaminase; Clone=1302032

(Unknown UG Hs.82911 protein tyrosine phosphatase type IVA, member 2; Clone=1671743)
*DNA (cytosine-5-)-methyltransferase; Clone=1320361
*RPD3L1=homologue of yeast RPD3 transcription factor; Clone=814080
(Unknown; Clone=1338436)
*Unknown; Clone=684877
(Unknown; Clone=1339043)
*TTG-2=Rhombotin-2=translocated in t(11;14)(p13;q11) T cell acute lymphocytic leukemia=cysteine rich protein with LIM motif; Clone=712829

Cluster_14: 21 genes

(Unknown UG Hs.188732 ESTs; Clone=815165)
(Unknown; Clone=685368)
*Unknown UG Hs.186709 ESTs, Weakly similar to !!!! ALU SUBFAMILY SB WARNING ENTRY !!!!
[H.sapiens]; Clone=825852
*3-phosphoinositide dependent protein kinase-1 (PDK1); Clone=1335725
*Unknown UG Hs.46913 ESTs; Clone=1340103
*Unknown UG Hs.118550 ESTs; Clone=1351296
(Unknown UG Hs.193922 ESTs, Weakly similar to !!!! ALU SUBFAMILY SP WARNING ENTRY !!!!
[H.sapiens]; Clone=825692)
*CD44=Pgp-1=extracellular matrix receptor-III=Hyaluronate receptor; Clone=713145
*IRF-4=LSIRF=Mum1=homologue of Pip=Lymphoid-specific interferon regulatory factor =Multiple
myeloma oncogene 1; Clone=1272196
*Ikb epsilon; Clone=1351795
*Elongin A=SIII p110 subunit; Clone=1268677
*CD71=Transferrin receptor; Clone=824051
*CD71=Transferrin receptor; Clone=588191
(protocadherin 43 for abbreviated PC43; Clone=381327)
(Unknown UG Hs.123307 ESTs; Clone=1251563)
*SRPK1=serine kinase; Clone=1352658
*Casein kinase II alpha chain; Clone=194147
(Similar to D123= responsible for temperature-sensitive G1-phase arrest in a mutant of rat fibroblast
line 3Y1; Clone=1338730)
*pyruvate dehydrogenase alpha subunit; Clone=489212
(Unknown UG Hs.123319 EST, Weakly similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!!
[H.sapiens]; Clone=1367888)
(Unknown UG Hs.31443 ESTs; Clone=815231)

Cluster_15: 8 genes

*Unknown; Clone=1339325
(Unknown; Clone=1671647)
*CD83=B-G antigen IgV domain homolog=B-cell activation protein=HB15; Clone=269295
*CD83=B-G antigen IgV domain homolog=B-cell activation protein=HB15; Clone=685695
(Similar to spi-1=PU.1=ets family transcription factor; Clone=1336894)
*CD83=B-G antigen IgV domain homolog=B-cell activation protein=HB15; Clone=564503
*RDC-1=POU domain transcription factor; Clone=773568
(Unknown; Clone=1357367)

Cluster_16: 75 genes

(Similar to CD64=high affinity immunoglobulin gamma FC receptor I A form precursor=FC-gamma
RI=FCRI=IGG FC receptor I; Clone=264606)
*FGR tyrosine kinase; Clone=347751
(Unknown UG Hs.172550 polypyrimidine tract binding protein (heterogeneous nuclear
ribonucleoprotein I); Clone=1371619)

(p120E4F transcription factor; Clone=1339393)
(IL-17 receptor; Clone=1204618)
*Unknown UG Hs.105102 ESTs; Clone=1353411
*Interferon-induced guanylate-binding protein 2; Clone=545038
*IL-2/IL-4/IL-7/IL-9/IL-15 receptor common gamma chain; Clone=1353859
*IL-2/IL-4/IL-7/IL-9/IL-15 receptor common gamma chain; Clone=244355
(Similar to VP40_BDV 40 KD PROTEIN (L27077) orfl [Borna disease virus]; Clone=1333840)
(CA150=putative transcription factor; Clone=1234137)
*CD27 Binding Protein=Siva=proapoptotic protein; Clone=1352797
(ckshs1=homolog of Cks1=p34Cdc28/Cdc2-associated protein; Clone=1306021)
*mitotic feedback control protein Madp2 homolog; Clone=302185
*mitotic feedback control protein Madp2 homolog; Clone=814701
*Cyclin A; Clone=950690
*pLK=homologue of Drosophila polo serine/threonine kinase; Clone=809515
(CENP-F kinetochore protein=mitosin=cell-cycle-dependent 350K nuclear protein=AH antigen;
Clone=124345)
*nek2 protein kinase; Clone=1370467
*nek2 protein kinase; Clone=1422081
*Casein kinase II beta chain; Clone=347132
*IMP (inosine monophosphate) dehydrogenase 2; Clone=292008
*Acid phosphatase 1, soluble; Clone=815196
*Acid phosphatase 1, soluble; Clone=209798
*CRM1=putative soluble nuclear transport factor that interacts with the nuclear pore
complex=homologue of yeast chromosome region maintenance protein 1; Clone=321717
(Similar to ribosomal protein S5; Clone=1241660)
(Similar to ribosomal protein L10; Clone=1241811)
*Unknown; Clone=1241577
(N-Cadherin=Neural cadherin precursor; Clone=1218963)
*Unknown UG Hs.126733 ESTs; Clone=1372076
*Unknown UG Hs.13623 ESTs; Clone=1335125
*Smad7=Homologue of Mothers Against Decapentaplegic (MAD)=negative regulator of TGF beta
signaling; Clone=148968
(Unknown; Clone=1370915)
*CD11C=leukocyte adhesion protein p150,95 alpha subunit=integrin alpha-X; Clone=1306024
*MHC Class I=HLA-A2; Clone=203527
*beta-2-microglobulin; Clone=324872
*Interferon, alpha-inducible protein (clone IFI-6-16); Clone=324912
(Proteasome chain 7=LMP2=major histocompatibility complex encoded proteasome subunit;
Clone=1337069)
(Unknown; Clone=1372915)
(Unknown; Clone=1371537)
*STAT4; Clone=183407
*TRAIL=Apo-2 ligand; Clone=1251947
*TRAIL=Apo-2 ligand; Clone=203132
*Similar to ferritin H chain; Clone=1334575
(KIAA0324; Clone=489453)
(KIAA0324; Clone=489453)
*Cyclin D1=BCL1=PRAD1=Translocated in mantle cell leukemia; Clone=841641
*RANTES=chemokine; Clone=1219244
*CD63 antigen (melanoma 1 antigen); Clone=769861
*Guanylate binding protein 1, interferon-inducible, 67kD; Clone=1270912
(Thy-1; Clone=382714)
*RANTES=chemokine; Clone=1071581
*MMP-9=Matrix metalloproteinase 9=92 kD Gelatinase B=92 KD type IV collagenase;
Clone=526335

(Cytochrome P450, subfamily XXVII (steroid 27-hydroxylase, cerebrotendinous xanthomatosis);
Clone=195269)
*CD115=fms=CSF-1 receptor; Clone=713974
(osteonectin=SPARC=basement membrane protein; Clone=487878)
*NK4=Natural killer cells protein-4=increased after activation of T cells by mitogens or activation of
NK cells by IL-2; Clone=302394
*NK4=Natural killer cells protein-4=increased after activation of T cells by mitogens or activation of
NK cells by IL-2; Clone=1355635
*NK4=Natural killer cells protein-4=increased after activation of T cells by mitogens or activation of
NK cells by IL-2; Clone=810859
*DAP-kinase; Clone=364934
*Receptor protein tyrosine kinase TKT precursor=Tyrosine protein kinase TYRO 10=Nuerotrophic
tyrosine kinase receptor-related 3; Clone=236420
*R-PTP-mu=receptor protein tyrosine phosphatase mu; Clone=162199
(Carboxypeptidase M; Clone=1367527)
(Unknown UG Hs.123369 ESTs; Clone=1320419)
(Unknown; Clone=1350572)
*Estrogen receptor; Clone=725321
(stk2 = serine / threonine kinase 2; Clone=345600)
*76 kDa tyrosine phosphoprotein SLP-76; Clone=1415419
(homologue of yeast sec7 expressed in cytolytic NK/T cells; Clone=705014)
*Vitamin D (1,25- dihydroxyvitamin D3) receptor; Clone=843037
*Vitamin D (1,25- dihydroxyvitamin D3) receptor; Clone=843037
*Vitamin D (1,25- dihydroxyvitamin D3) receptor; Clone=704485
*alpha-galactosidase A; Clone=684879
(Unknown UG Hs.203750 EST; Clone=1316627)
*Unknown UG Hs.126733 ESTs; Clone=1335809

Cluster_17: 3 genes

*p16-INK4a=Cyclin-dependent kinase 4 inhibitor A=Multiple tumor suppressor 1=MTS1;
Clone=1056369
*p16-INK4a=Cyclin-dependent kinase 4 inhibitor A=Multiple tumor suppressor 1=MTS1;
Clone=510467
*p16-INK4a=Cyclin-dependent kinase 4 inhibitor A=Multiple tumor suppressor 1=MTS1;
Clone=1174836