Evaluation of CD304 (Neuropilin-1) as a Novel Marker for Detection of Minimal Residual Disease in Childhood B-Acute Lymphoblastic Leukemia

Thesis

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تقييم CD304 (Neuropilin-1) كعلامة جديدة لاكتشاف المرض المتبقي الأصغر في سرطان الدم الحاد - ب في الأطفال

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To My parents, Mahmoud & Hoda.

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Laila Annaka

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LIST OF ABBREAVIATIONS

-ve ····· Negative

+ve ····· Positive

Ab ····· Antibody

ABL····· Abelson murine leukemia viral oncogene homolog 1

AF4 ····· Asymmetric flow field flow fractionation

AFF1 ····· AF4/FMR2 Family member 1

AL……....Acute leukemia

ALL…….Acute lymphoblastic leukemia

ALT····· Alanine aminotransferase

AML1 ····· Acute myeloid leukemia protein 1 (Runt related transcription factor 1)

BACs ····· Bacterial artificial chromosome

BAL····· Biphenotypic leukemias

BCL-xl ····· B-cell lymphoma extra large (BCL2-like isoform 1)

BCR ····· Break point cluster region protein

BDCA4.....Blood dendritic cell antigen 4

BIM…….....BCL2 interacting mediator of cell death

BM…….....Bone marrow

BUN…….Blood urea antigen

CAE ····· Chloracetate esterase

CALLA ……...Common acute lymphoblastic leukemia-associated antigen

CBC ····· Complete blood count

CBFA2 ····· core binding factor subunit alfa 2

CD ····· Cluster of differentiation

CDK……Cyclin dependant kinase

c-DNA ····· Complementary deoxy ribose nucleic acid

CGH ····· Comprehensive genomic hybdization

CLL····· Chronic lymphoid leukemia

CLL/SL ····· Chronic lymphocytic leukemia/small lymphocytic lymphoma

CML ……Chronic myelogenous leukemia

c-myc ····· Cellular myelocytomatosis viral oncogene homolog

CNS····· Central nervous system

CR ····· Complete response

CSF……..Cerebrospinal fluid

Cy or c ····· cytoplasmic

DAPI……4',6-diamidino-2-phenylindole

DIC ····· Disseminated intravascular coagulation

DLBCL ····· Diffuse large B cell lymphoma

DNA ····· Deoxy ribose nucleic acid

DW····· Distilled water

E2A (TCF3)····· Transcription factor 3

EBV····· Epstein-Barr virus

ECs ····· Endothelial cells

EDTA ····· Ethylene diamine tetra-acetic

EGIL……European Group for the Immunological Characterization of Leukemias

ENL…… Eleven nineteen leukemia (MLL)

ETP…… Early T-cell precursor

F…… Female

FAB……..French-American-British

Fc…… Fragment crystalliable

FCM…… Flow cytometry

FISH…… Fluorescence in situ hydridization

FITC …….. Fluorescein isothiocyanate

FLT3 …… Fms-like tyrosine kinase 3

GAP …… GTpase activating protien

G-CSF…… Granulocyte colony-stimulating factor

GIT …… Gastrointestinal tract

GTPase ……...Guanosine triphosphatase

GUT …… Genitourinary tract

Hb……Hemoglobin

HCL …… Hydrochloric acid

HLA-DR…… Human leukocyte antigen-DR

HLF…….....Hepatic leukemia factor

HS……Highly significant

HSCT…… Hematopoietic stem cell transplantation

HTLV …… Human T-cell leukemia/lymphoma virus

HTRX…… Human thioredoxin

Ig…… Immunoglobulin

IHC ····· Immunohistochemistry

IPT····· Immunophenotype, immunophenotyping

ISS ····· International Staging System

ITP····· Immune (idiopathic) thrombocytopenic

IV ……Intravenous

JAK2……Janus kinase 2

kb ····· Kilo base

KCL ····· Potassium chloride

kd, kDa····· Kilo dalton

KDR ····· Kinase insert domain containing receptor

LAP…….Leukemia associated phenotype

LDH……Lactate dehydrogenase

Lin…….....Lineage specific antigen

LN……Lymph nodes

LSI……Locus specific identifier

M ····· Male

MALT····· Mucosa associated lymphoid tissue

MAM……Meprin A5 and receptor tyrosine phosphatase μ

M-bcr····· Major break cluster region

m-bcr……Minor break cluster region

MCA ……Monoclonal antibody

MDM2 ……Mouse doubles minute 2 homolog

MFI ····· Mean fluorescent intensity

M-FISH ····· Multicolor fluorescence in situ hydridization

MLL ····· Myeloid lymphoid leukemia, mixed lineage leukemia

MN1 ····· Meningioma 1

MPO……Myeloperoxidase

MRD……Minimal residual disease

mRNA ····· Messenger ribonucleic acid

NaOH……..Sodium bicarbonate

NIP····· Neuropilin interacting protein-1

NK ····· Natural killer

No, n ····· Number

NOS…….....Not otherwise specified

NP-40 ····· Nonyl phenoxypolyethoxylethanol

NRP, Npn……Neuropilin

NS ····· Non-significant

NSE ……Non specific esterase

P53……..Cellular tumor antigen, phosphor-protien, tumor suppressor

PAS ····· Periodic acid Schiff

Pax-5 ····· Paired box protein-5

PB ……...Peripheral blood

PBS ····· Phoaphate buffered saline

PBX1 ····· Pre B cell leukemia homebox 1

PC ····· Plasma cell

PC5 ····· Phycoerythrin cyanine 5.1

PDCs.....Plasmacytoid dendritic cells

PDGF……..Platelet derived growth factor

PDZ…….PSD-94/D1g/ZO-1

PE ····· Phycoerythrin

PGF……..…Placental growth factor

Ph ····· Philadilphia

PLT …….Platelet

PMTs ····· Photo multiplier tubes

PO……Per-oss

PSI……Plexins, semaphorins and integrins

RAS……..Rat sarcoma

RBCs ····· Red blood cells

RPMI ……..Roswell Park Memorial Institute medium

RQ-PCR ····· Real time quantitative reverse transcriptase polymerase chain reaction

RT-PCR ····· Reverse transcriptase-polymerase chain reaction

RUNX ····· Runt related transcription factor 1

S ····· Significant

SBB ····· Sudan black B

SCLC ····· Small cell lung cancer

SD ····· Standard deviation

SEMA ····· Semaphorin

SGOT ····· Serum glutamic pyruvic transaminase

Sig ····· Significance

sIg/smIg ····· Surface immunoglobulin

SKY ……Spectral karyotyping
SSC……..Saline sodium citrate
t…… Student's t test
TBX1 …… T-box transcription factor 1
TCF3 …… Transcription factor 3
TCR …… T-cell receptor
TdT …… Terminal deoxynucleotidyl transferase
TEL (ETV6) ….. ETs variant 6
TLC…… Total leucocytic count
TM…… Transmembrane
USA…… United States of America
VDJ…… Variable Diversity Joining regions
VEGF …… Vascular endothelial growth factor
VPF…….....Vascular permeability factor
WBCs …… White blood cells
WHO …… World Health Organization
$\mathbf{X^2}$…… Chi-square
YACs …… Yeast artificial chromosome
Z…… Mann-Whitney U test

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