

CpG Island Hypermethylation in Kallikrein-Related Peptidase 10 Gene (*KLK10*) as a Clue for Ovarian Tumor Biology, Diagnosis and Prognosis

Thesis

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To
My Parents

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List of Abbreviations

ABL1	Abelson murine leukemia viral oncogene homolog 1
ADP	Adenosine diphosphate
AFLP	Amplification fragment length polymorphism
AKT2	AKT2 gene, encoding RAC-beta serine/threonine-protein kinase
ARHI (DIRAS3)	Aplasia Ras homologue member I
ARID1	AT-Rich interactive domain 1
ARID3B	AT-Rich interactive domain 3B
ARL11	ADP-ribosylation factor-like 11
ASM	Allele-specific DNA methylation
ATP	Adenosine triphosphate
AURKA	Aurora kinase A
Bcl-2	B cell leukemia/lymphoma 2
BCL3	B cell leukemia/lymphoma 3
BORIS	Brother of the regulator of imprinted sites
bp	Base pair
Bmi-1	B-lymphoma moloney murine Leukemia virus insertion region-1
BMI	Body mass index
BRAF	V-Raf murine sarcoma viral oncogene homologe B1
BRCA1	Breast cancer gene1
BRCA2	Breast cancer gene 2
CA125	Cancer antigen 125
CA15-3	Cancer antigen 15-3
CA19-9	Cancer antigen 19-9
CA72-4	Cancer antigen 72-4
5caC	5-carboxycytosine
CBP	CREB-binding protein
CCNE1	Cyclin E1
CD95	Cluster of differentiation number 95
CGE	Capillary gel electrophoresis
CGI	CpG islands
CE	Capillary electrophoresis
CHARM	Comprehensive high-throughput arrays for relative methylation
CML	Chronic myeloid leukemia

List of Abbreviations (Continued)

CpG	Cytidine guanosine dinucleotide
CPI	Glycosyl phosphatidyl inositol
CREB	cAMP response element-binding protein
CT	Computerized tomography
CTCF	Transcriptional repressor CTCF
<i>CTNNB1</i>	Catenin (Cadherin-associated protein), beta 1
<i>DAB2</i> (<i>DOC2</i>)	Disabled homologue 2
dC	Deoxycytosine
DNA	Deoxyribonucleic acid
DNMT1	DNA methyltransferase 1
DNMT2	DNA methyltransferase 2
DNMT3a	DNA methyltransferase 3a
DNMT3b	DNA methyltransferase 3b
DNMT3L	DNA methyltransferase 3L
DMRs	Differentially methylated regions
dNTP	Deoxynucleotide triphosphate
<i>DLEC1</i>	Deleted in lung and esophageal cancer 1
Dot1	Histone-lysine N-methyltransferase
<i>DPH1</i>	Diphthamide biosynthesis protein 1
DSBs	Double strand breaks
E2F1	Transcription factor E2F4
E2F4	Transcription factor E2F4
EGF	Epidermal growth factor
<i>EGFR</i>	Epidermal growth factor receptor
<i>EIF5A2</i>	Eukaryotic translation initiation factor 5A2
ELISA	Enzyme linked immunosorbant assay
Elk-1	ETS domain-containing protein Elk-1
EM	Electron microscope
<i>ERBB2</i>	Erythroblastic leukemia viral oncogene homolog 2
Erk	Extracellular regulated kinase
<i>EVI1</i>	Ecotropic viral integration site 1
EZH2	Enhancer of zeste homolog 2
5fC	5-formylcytosine
FFPE	Formalin-fixed paraffin-embedded
FIGO	International Federation Of Gynecology and Obstetrics

List of Abbreviations (Continued)

<i>FGF1</i>	Fibroblast growth factor 1
FOS	FOS gene encodes proto-oncogene c-FOS protein
Gcn5	Histone acetyltransferase Gcn5
G9A	Euchromatic histone-lysine N-methyltransferase 2 (EHMT2)
GPI	Glycosylphosphatidylinositol
GRB2	Growth factor receptor-bound 2
H1	Histone protein 1
H2A	Histone protein 2A
H2B	Histone protein 2B
H3	Histone protein 3
H4	Histone protein 4
HATs	Histone acetyltransferases
hCG	Human chorionic gonadotropine
HDACs	Histone deacetylases
HDAC I	Histone deacetylase I
HDAC II	Histone deacetylase II
H&E	Haematoxylin & eosin
HE4	Human epididymis secretory protein 4
hK10	Human kallikrein 10
hmC	Hydroxymethylcytosine
HMTs	Histone methyltransferases
HOXA10	Homeobox A10
HOXA11	Homeobox A11
HpaII	A restriction enzyme obtained from <i>Haemophilus parainfluenzae</i>
HPLC-UV	High performance liquid chromatography-ultraviolet
HRT	Hormone replacement therapy
IGF2	Insulin-like growth factor 2
IgLON	IgLON cell adhesion molecules
IHC	Immunohistochemistry
ILK	Integrin-linked kinase
JNK	JUN N-terminal kinase
K	Lysine
kb	Kilobase
kDa	KiloDalton

List of Abbreviations (Continued)

KLKs	Kallikrein-related peptidases
KLK6	Kallikrein-related peptidase 6 protein
<i>KLK10</i>	Kallikrein-related peptidase 10 gene
KLK10	Kallikrein-related peptidase 10 protein
<i>KRAS</i>	Kirsten rat sarcoma viral oncogene
LC-MS/MS	Liquid chromatography coupled with tandem mass spectrometry
LI	Long interspersed element
LINE	Long interspersed nuclear element
LINE-1	Long interspersed nuclear element-1
LM	Light microscope
LOH	Loss of heterozygosity
LTRs	Long terminal repeats
LUMA	Luminometric methylation assay
MAL	Mal, T-cell differentiation protein
Mapk	Mitogen-activated protein kinase
MBD	Methyl-CpG-binding (domain) proteins
MBD4	Methyl-CpG-binding protein 4
MECs	Human mammary epithelial cells
MeCP2	Methyl-CpG-binding protein 2
5-MC	5-methylcytosine
MCJ	DnaJ heat shock protein family (Hsp40) member C15
MeDIP	Methylated DNA immunoprecipitation
MeDIP-seq	DNA sequencing after MeDIP
miRNA	MicroRNA
MLH1	Mutl homologue 1
MMP7	Matrix metalloproteinase-7
MREs	Methylation-sensitive restriction enzymes
MRE-seq	DNA sequencing after digestion by MRE
mRNA	Messenger RNA
MSFLAG	Methylation-specific fluorescent amplicon generation
MSH2	Muts homologue 2
MSH6	mutS homologue 6
MSP	Methylation-specific PCR
MS-MCA	Methylation-sensitive melting curve analysis
MS-HRM	Methylation-sensitive high resolution melting

List of Abbreviations (Continued)

MsPI	A methylation-insensitive DNA restriction enzyme
<i>MYC</i>	<i>MYC</i> is a family of regulator genes and proto-oncogenes
NAD ⁺	Nicotinamide adenine dinucleotide (oxidized)
<i>NES1</i>	Normal epithelial cell substance 1
NF- κ B1	Nuclear factor NF-kappa-B p105 subunit
NGS	Next generation sequencing
NOMe-Seq	Nucleosome occupancy and methylome sequencing
<i>NOTCH3</i>	Neurogenic locus notch homolog protein 3
NPV	Negative predictive value
OCP	Oral contraceptive pills
<i>OPCML</i>	Opioid binding protein/cell adhesion molecule-like
OVX1	OVX1 antigen
P21	Cyclin-dependent kinase inhibitor 1
p27	Cyclin-dependent kinase inhibitor 1B
PAX8	Paired box 8 protein
PCAF	Histone acetyltransferase PCAF
PCNA	Proliferating cell nuclear antigen
PCR	Polymerase chain reaction
<i>PEG3</i>	Paternally expressed gene 3
PGCs	Primordial germ cells
PI3	Phosphatidylinositol 3
PI3K	Phosphatidylinositol 3 kinase
<i>PIK3CA</i>	<i>PI3K</i> catalytic subunit- α
<i>PIK3R1</i>	<i>PI3K</i> regulatory subunit polypeptide 1
<i>PLAGL1 (LOT1)</i>	Pleiomorphic adenoma gene-like 1
PMS2	mutL homologue 2
Pol II	RNA polymerase II
PPV	Positive predictive value
<i>PRKCI</i>	Protein kinase C ι
PSA	Prostate specific antigen
<i>PTEN</i>	Phosphatase and tensin homolog
<i>RAB25</i>	Member RAS oncogene family
RAD51	RAD51 protein
Ras	Rat sarcoma viral oncogene

List of Abbreviations (Continued)

Ras–Mapk	Ras-MAP kinase
<i>RASSF1A</i>	Ras association domain family member 1
RFLP	Restriction fragment length polymorphism
ROC curve	Receiver operating characteristic curve
RNA	Ribonucleic acid
rpm	Revolution per minute
<i>RPS6KAZ</i>	Ribosomal protein S6 kinase 2
RRBS	Reduced representation bisulfite sequencing
RT-PCR	Real time-PCR
SAGE	Serial analysis of gene expression
SAM	S-adenosylmethionine
SAT2	Satellite 2
scBS-seq	Single-cell bisulfite sequencing
SETDB1	Histone-lysine N-methyltransferase
SINE	Short interspersed nuclear element
Sir2	NAD-dependent histone deacetylase SIR2
SLPI	Secretory leukocyte protease inhibitor
SMRT	Single-molecule real-time sequencing
SMART-MSP	Sensitive melting analysis after real-time- MSP
SNGG	Synucelin- γ
SNP	Single nucleotide polymorphism
<i>SPARC</i>	Secreted protein, acidic, cysteine-rich
STAT3	Signal transducer and activator of transcription 3
TET enzymes	Ten-eleven Translocation enzymes
TFs	Transcription factors
TSGs	Tumor suppressor genes
THF	Tetrahydrofolate
TNF α	Tumour necrosis factor- α
TP53	Transcription factor P53
TPA	Tissue plasminogen activator
TACSTD2 (TROP2)	Tumor-associated calcium signal transducer 2
TSS	Transcription start site
TUBB3	Tubulin, beta 3 class III

List of Abbreviations (Continued)

UHRF1	Ubiquitin-like, containing PHD and RING finger domains, 1
UV	Ultraviolet light
WGA	Whole genome amplification
WGBS	Whole-genome bisulfite sequencing
<i>WT1</i>	<i>WT1</i> gene; encoding Wilms tumor protein in human
<i>WWOX</i>	<i>WWOX</i> gene; encoding ww domain-containing oxidoreductase

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