

Diagnostic Cytology

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Dedicated to

*Shree Shree Satyananda Giri,
Rini,
Madhumanti,
and
my mother*

PREFACE

Cytology is an integral part of pathology curriculum and it is very important to have working knowledge in this area. I designed this book in four sections: general cytology, clinical cytology (exfoliative cytology), laboratory techniques in cytology and fine needle aspiration cytology. I hope that this present book will help immensely all the postgraduate students in pathology, students of cytology (both BSc and MSc), cytology practitioners and all others who are interested in clinical cytology. I have tried to explain various areas of cytology by simple language, tables and illustrations (both line diagrams and microphotographs). All the line diagrams are drawn by me. I hope that these figures are satisfactory. There are multiple boxes in this book which convey the essential and important messages. I will be glad if this book is helpful to the students, teachers and practitioners of cytology.

Pranab Dey

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ABBREVIATIONS

Acquired immunodeficiency syndrome	AIDS
Acute lymphoblastic leukemia	ALL
Acute myeloblastic leukemia	AML
Adenoid cystic carcinoma	ACC
Adenomatous polyposis coli	APC
Adenosine triphosphate	ATP
Adrenocortical carcinomas	ACC
Allophycocyanin	APC
Alpha fetoprotein	AFP
American Cancer Society	Acs
Anaphase promoting complex	APC
Anaplastic large cell lymphoma	ALCL
Anaplastic lymphoma kinase	ALK
Androgen receptor	AR
Aneurysmal bone cyst	ABC
Angiomyolipoma	AML
Apoptosis activating factor	APAF
Apoptosis inducing factor	AIF
Argyrophilic nucleolar organizer region	AGNOR
Artificial neural network	ANN
Atypical ductal hyperplasia	ADH
Atypical glandular cells	AGC
Atypical glandular cells of undetermined significance	AGUS
Atypical lipomatous tumor	ALT
Atypical squamous cell	ASC
Atypical squamous cell cannot exclude HSIL	ASC-H
Atypical squamous cell of undetermined significance	ASC-US
Autophagy related gene	ATG
Bacillus Calmette-Guérin	BCG
Bacterial vaginosis	BV
Barrett's esophagus	BE
Basal cell adenoma	BCA
Basal cell carcinoma	BCC
Bayesian belief network	BBN
Bladder tumor antigen	BTA
Bromodeoxyuridine	BrDU
Bronchioloalveolar carcinoma	BAC

Bronchoalveolar lavage	BAL
Burkitt lymphoma	BL
Carcinoembryonic antigen	CEA
CDK inhibitor	CKI
Cerebrospinal fluid	CSF
Cervical intraepithelial neoplasia	CIN
Chromosomal instability	ChIN
Chondrosarcoma	CHS
Chronic lymphocytic leukemia	CLL
Chronic myeloid leukemia	CML
Clear cell sarcoma of kidney	CCSK
Clinical Laboratory Improvement Amendments	CLIA
Cluster of differentiation	CD
Coenzyme A	CoA
Comparative genomic hybridization	CGH
Computerized tomography	CT
Conventional preparation	CP
CpG island methylator phenotype	CIMP
Cyclin-dependent kinase	CDK
Cytokeratin	CKI
Cytomegalovirus	CMV
Cystosarcoma phyllodes	CP
Dense fibrillar component	DFC
Deoxyribonucleic acid	DNA
Desmoplastic small round cell tumor	DSRCT
Diffuse large B cell lymphoma	DLBCL
Disseminated peritoneal adenomucinosis	DPAM
DNA methyltransferases	DNMT
Ductal carcinoma in situ	DCIS
Endodermal sinus tumor	EST
Endoplasmic reticulum	ER
Endoscopic retrograde cholangiopancreatography	ERCP
Endoscopic ultrasound guided FNAC	EUG FNAC
Eosin azure	EA
Epithelial growth factor	EGF
Epithelial membrane antigen	EMA
Epithelial mesenchymal transition	EMT
Epithelioid sarcoma	EST
Epstein-Barr virus	EBV
Estrogen receptor	ER
Ewing's sarcoma	EWS
Fas-associated death domain	FADD
Fibrillar center	FC
Fibrin degradation product	FDP
Fibroadenoma	FAD
Fibroblast growth factor	FGF

Fibrocystic diseases	FD
Fine needle aspiration biopsy	FNAB
Fine needle aspiration cytology	FNAC
Fine needle sampling	FNS
Flow cytometry	FCM
Flow cytometry immunophenotyping	FCI
Fluorescein isothiocyanate	FITC
Fluorescence in situ hybridization	FISH
Focal nodular hyperplasia	FNH
Follicular adenoma	FA
Follicular carcinoma	FC
Follicular center cell lymphoma	FCC
Follicular lymphoma	FL
Follicular neoplasm	FN
Follicular variant of papillary carcinoma of thyroid	FVPTC
Food and drug administration	FDA
Forward light scatter	FCS
Gastrointestinal stromal tumor	GIST
Gastrointestinal tract	GIT
Giant cell tumor	GCT
Giant cell tumor of tendon sheath	GCTTS
Glial fibrillary acidic protein	GFAP
Glucose-transport protein-1	GLUT-1
Golgi complex	GC
G-protein-coupled receptors	GPCR
Granular components	GC
Granulomatous mastitis	GM
Guanosine diphosphate	GDP
Guanosine triphosphate	GTP
Hepatocellular carcinoma	HCC
Herpes simplex virus	HSV
Heterochromatin protein	HP
High grade squamous intraepithelial lesion	HSIL
High mobility group box 1	HMGB1
High power	HP
Histone deacetylase	HDAC
Histone methyltransferase	HMTase
Hodgkin's lymphoma	HL
Homogenously staining region	HSR
Human chorionic gonadotropin	hCG
Human herpes virus	HHV
Human immunodeficiency virus	HIV
Human leukocyte differentiation antigen	HLDA
Human papillomavirus	HPV
Hyaluronic acid	HA
Hybrid capture	HC

XX	Image cytometry	ICM
	Immunocytochemistry	IC
	Infiltrating duct carcinoma	IDC
	Inner nuclear membrane	INM
	Insular carcinoma	IC
	Internal quality control	IQC
	International Society of Urologic Pathologists	ISUP
	Intranuclear pseudoinclusions	INI
	Intrauterine contraceptive devices	IUCD
	Invasive lobular carcinoma	ILC
	Lactate dehydrogenase	LDH
	Lamin B receptor	LBR
	Lamina associated polypeptide	LAP
	Langerhans cell histiocytosis	LCH
	Large cell carcinoma	LCC
	Laser scanning cytometry	LSC
	Leiomyosarcomas	LMS
	Liposarcoma	LPS
	Liquid based cytology	LBC
	Loss of heterozygosity	LOH
	Low grade squamous intraepithelial	LSIL
	Low power	LP
	Lupus erythematosus	LE
	Lymphoblastic lymphoma	LBL
	lymphocytic and/or histiocytic	L & H
	Lymphoepithelial sialadenitis	LESA
	Lymphoglandular body	LG
	Lymphoplasmacytic lymphoma	LPL
	Malignant fibrous histiocytoma	MFH
	Malignant mesothelioma	MM
	Malignant peripheral nerve sheath tumor	MPNST
	Malignant round cell tumor	MRCT
	Mantle cell lymphoma	MCL
	Marginal zone lymphoma	MZL
	Matrix attachment region	MAR
	May-Grünwald Giemsa	MGG
	Mediator of DNA damage checkpoint 1	MDC1
	Medium power	MP
	Medullary carcinoma	MCL
	Messenger RNA	m-RNA
	Micro-RNA	miRNA
	Micronucleus	MN
	Microsatellite instability	MSI
	Mitochondria	MT
	Mucinous cystic neoplasia	MCN
	Mucoepidermoid carcinoma	MEC