



Contents

Preface	xii
1 General Metabolic Characteristics in Cancer	
I. Introduction	1
II. Protein Metabolism	1
III. Carbohydrate Metabolism	13
IV. Lipid Metabolism	21
V. Cachexia	27
References	29
2 General Aspects of Enzymes in Cancer:	
The Glycolytic Sequence	
I. Introduction	33
II. The Glycolytic Sequence	34
References	57
3 Enzymes in Cancer: The Phosphohydrolases	
I. Introduction	61
II. Acid Phosphatase	61
	vii

III. Alkaline Phosphatase	71
IV. 5'-Nucleotidase	85
References	89
4 Miscellaneous Enzymes in Human Cancer	
I. Introduction	93
II. Amylase	93
III. Leucine Aminopeptidase	96
IV. Serum Arylamidase	98
V. Aspartate and Alanine Aminotransferases	99
VI. Additional Serum Enzymes	104
VII. Summary	105
References	107
5 The Neoplastic Immunoglobulinopathies	
I. Introduction	109
II. Human Immunoglobulins	110
III. Immunoglobulins in Cancer	117
IV. Multiple Myeloma (Myelomatosis)	119
V. Other Immunoglobulinopathies	123
VI. Biochemical Consequences of Abnormal Proteinemia	127
VII. Immunological Deficits in Malignancy	129
References	131
6 Tryptophan Metabolism: Cancer of the Bladder; the Carcinoid Syndrome	
I. Introduction	134
II. Cancer of the Bladder	135
III. Carcinoid Tumors and the Carcinoid Syndrome	145
References	155
7 Amino Acid Metabolism and Tumors of the Neural Crest	
I. Introduction	158
II. The Normal Tyrosine-Epinephrine, -Norepinephrine Metabolic Pathway	159
III. Methionine Metabolism	164
IV. Biochemistry of Pheochromocytoma and Pheochromoblastoma	165
V. Biochemistry of Sympathocytoma (Ganglioneuroma) and Sympathoblastoma (Neuroblastoma)	173
References	181

8 Gastrointestinal Tract, Liver , and Pancreas

I. Introduction	184
II. Neoplasms of the Stomach	185
III. Neoplasms of the Small Intestine	191
IV. Neoplasms of the Colon and Rectum	193
V. Neoplasms of the Liver	200
VI. Neoplasms of the Pancreas	208
VII. Extrapancreatic Tumors Producing Hypoglycemia	223
References	225

9 The Leukemias and Lymphomas

I. Introduction	232
II. Total and Isoenzyme Activity of Leukocytic Acid Phosphatase	233
III. Leukocytic Alkaline Phosphatase	236
IV. Lysozyme	237
V. Metabolism of Purines and Pyrimidines in Cancer	243
References	268

10 Neoplasms of the Bone

I. Introduction	272
II. Chemical Composition and Structure of Bone	273
III. Calcium, Magnesium, and Phosphorus Metabolism in the Normal Individual	277
IV. Parathyroid Adenomas and Carcinoma	290
V. Primary Neoplasms of the Bone	303
VI. Skeletal Metastases	310
VII. Hypercalcemia in Neoplastic Disease without Evidence of Bone Metastases (Ectopic Hyperparathyroidism, Pseudohyperparathyroidism)	317
References	324

11 Neoplasms of the Pituitary Gland

I. Introduction	330
II. Classification of Pituitary Tumors	332
III. Acidophilic Tumors: Acromegaly and Gigantism	333
IV. Cushing's Syndrome	345
V. Chromophobe Adenoma	347
VI. Craniopharyngiomas	351
VII. Pituitary Tumors and Hypopituitarism	353
References	353

12 Neoplasms of the Adrenal Cortex

I. Introduction	356
II. Steroids of the Adrenal Cortex	357
III. Cushing's Syndrome	373
IV. The Neoplastic Adrenogenital Syndrome	384
V. Tumors of Aldosterone Excess	391
VI. Nonfunctioning Adrenocortical Neoplasms	398
References	399

13 Neoplasms of the Thyroid

I. Introduction	402
II. Biochemistry and Physiology of the Thyroid Hormones	405
III. Biochemistry of Thyroid Neoplasms	428
References	445

14 Neoplasms of the Testis

I. Introduction	451
II. Biochemistry of the Normal Testis	453
III. Biochemistry of Testicular Tumors	463
References	479

15 Neoplasms of the Ovary

I. Introduction	483
II. Biochemistry of the Normal Ovary	485
III. Biochemistry of Ovarian Neoplasms	499
References	524

16 Neoplasms and Ectopic Humoral Syndromes

I. Introduction	528
II. Syndrome Resulting from Ectopic ACTH	530
III. Ectopic Melanocyte-Stimulating Hormone Syndrome	537
IV. Ectopic Gonadotropic Syndrome	539
V. Ectopic Antidiuretic Hormone Syndrome	541
VI. Ectopic Thyrotropin Syndrome	543
VII. Ectopic Syndromes Resulting from Human Chorionic Somatomammotropin, Human Placental Lactogen, and Human Growth Hormone	545
VIII. Ectopic Gastrin (Zollinger-Ellison) Syndrome	547
IX. Ectopic Erythropoietin Syndrome	549
References	549

17 Neoplasms of the Breast

I. Introduction	553
II. Steroid Metabolism	554
III. Prolactin and Carcinoma of the Breast	575
IV. RNA-Dependent DNA Polymerase and RNA Homologies in Carcinoma of the Breast	579
V. Other Biochemical Aspects of Breast Cancer	583
References	588

**18 Hydatidiform Mole, Choriocarcinoma, and Neoplasms of
the Uterus**

I. Introduction	592
II. Hydatidiform Mole	593
III. Choriocarcinoma	603
IV. Nongestational Choriocarcinoma	610
V. Enzymes in Uterine Neoplasms	613
VI. Hormonal Aspects of Uterine Neoplasms	621
VII. Receptors in Uterine Carcinomas	629
References	632

Subject Index	637
---------------	-----