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AUTHOR	Schneider, John H.
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ABSTRACT

This is a hierarchical decimal classification of information related to cancer biochemistry, to host-tumor interactions (including cancer immunology), and to occurrence of cancer in special types of animals and plants. It is a working draft of categories taken from an extensive classification of many fields of biomedical information. Because the classification identifies very small areas of cancer information, it can be used for precise matching of cancer researchers with useful documents or data in information systems, and for detailed analysis of large cancer research programs. (ED 025 270 and LI 004 018-LI 004 019 are related documents.) (Author)

CANCER BIOCHEMISTRY AND HOST-TUMOR INTERACTIONS: A DECIMAL CLASSIFICATION

(CATEGORIES 51.6, 51.7, AND 51.8)

ABSTRACT

This is a hierarchical decimal classification of information related to cancer biochemistry, to host-tumor interactions (including cancer immunology), and to occurrence of cancer in special types of animals and plants. It is a working draft of categories taken from an extensive classification of many fields of biomedical information.

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John H. Schneider, Ph.D.
Scientific and Technical Information Officer
Office of Program Planning and Analysis
National Cancer Institute
Bethesda, Maryland

April 24, 1972

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The use of this classification in an automated information system has been described in the following reference:

J. H. Schneider, "Selective Dissemination and Indexing of Scientific Information", Science 173, 300-308, 1971.

This paper describes the use of these classifications for precise matching of 103 cancer research scientists against a data base of 1,396 articles published in 12 leading cancer research journals.

The development and publication of this classification would have been very difficult without the conscientious effort of Mrs. Kathleen McManus who has worked with these categories for the past six years.

Thanks are also due to Miss Patricia Gorman and Miss Cynthia Friedman who keypunched cards from very rough drafts of the classification, and to Miss Sylvia Daves for help in some of the final stages of computer programming and printing.

John H. Schneider
April 24, 1972

MOST OF THE CATEGORIES CONTAINED IN THIS CLASSIFICATION WERE DEVELOPED IN THE EARLY 60'S. LITTLE TIME HAS BEEN AVAILABLE FOR MODIFYING THE CLASSIFICATION SINCE 1968. AS A RESULT, FAST MOVING FIELDS (SUCH AS CANCER VIROLOGY) ARE NOW CONSIDERABLY OUT OF DATE IN THAT THEY DO NOT CONTAIN CATEGORIES FOR THE MOST RECENT FINDINGS AND DEVELOPMENTS, SUCH AS SPECIFIC ANTICANCER AGENTS, VIRUSES, CARCINOGENIC AGENTS, ETC.

CANCER BIOCHEMISTRY AND HOST-TUMOR INTERACTION: A DECIMAL CLASSIFICATION
(CATEGORIES 51.6, 51.7, AND 51.8)

PREFACE

Hierarchical classifications can be used for two different but related purposes:

1) In Information Systems:

Small areas of information can be precisely identified by categories in a detailed hierarchical decimal classification. These categories can be used to:

a) Index information in published documents,

b) Index information needs of individual scientists, and

c) Match scientists with indexed information and documents.

2) For Detailed Program Analysis:

Hierarchical decimal classifications can be used to organize the scientific content and substance of research programs.

This is accomplished by using categories from the classification to group related research projects together into:

a) Small research units consisting of several related projects,

b) Research areas consisting of several research units, and

c) Large program areas consisting of several research areas.

This clustering and "treeing" of research activities is an essential component of program analysis and program management activities. In addition, the hierarchical structure permits analysis at any desired level of detail -- ranging from broad summaries and overviews to individual research projects.

CURRENT STATUS OF THIS CLASSIFICATION

A preliminary version of the entire cancer classification was published in 1968.* At that time, it consisted of typewritten pages which were subsequently modified by handwritten insertions and changes.

Since that time, it has been converted to punched cards, and an automated system called AUTOKLS has been written in PL/I to convert the cards to magnetic tape records. These records can be updated by another AUTOKLS program and can be printed out in indented, hierarchical format for use by indexers.

Still other parts of the AUTOKLS system are used for keeping track of cross-references between categories, for linking terms in alphabetic indexes to specific categories in the classification, and for updating the alphabetic index entries.

As mentioned in the abstract, this published version is a PRELIMINARY, WORKING DRAFT at a very early stage after the difficult conversion from typed and handwritten pages to punched cards.

For these reasons, there are some gaps and omissions in subject coverage, some topics covered only in broad outline with insufficient detail, some cases where several categories deal with the same topic in almost the same way, occasional cross-references that do not refer to the correct category number, and probably some spelling and simple clerical errors that have not yet been noticed. In addition, some cross-references refer to categories in portions of the classification which are not yet published.

However, because THIS CLASSIFICATION IS CONSTANTLY EVOLVING AND DEVELOPING it will never be available in final, fixed form. Instead, it will be published periodically to show current status. (Computer printouts of the most up-to-date version for use by indexers can easily be prepared weekly or monthly.) Most of the problems mentioned in the last paragraph will be corrected in the course of continuing updating and revision.

* John Schneider, Hierarchical Decimal Classification of Information Related to Cancer Research, (National Cancer Institute, Bethesda, Maryland). February 1968. 116 pp. (Available from National Technical Information Service, as PB-177-209.)

OUTLINE OF MAJOR CATEGORIES IN THIS DOCUMENT

51.6 BIOCHEMISTRY OF TUMORS AND TUMOR-BEARING HOSTS.

51.61 Nucleic acid biochemistry related to tumors and tumor-bearing hosts: DNA, RNA, nucleoside, nucleotide, purine, pyrimidine, and nucleoprotein biochemistry.

51.62 Biochemistry of proteins, amino acids, and other nitrogenous compounds in tumors and tumor-bearing hosts.

51.63 Lipid biochemistry related to tumors and tumor-bearing hosts.

51.64 Carbohydrate biochemistry related to tumors and tumor-bearing hosts.

51.65 Heterocyclic compounds (porphyrins, pteridines) in tumors and tumor-bearing hosts.

51.66 Selected areas of cancer-related biochemistry (not elsewhere classified).

51.67 Biochemistry of vitamins (content and metabolism) in tumors and tumor-bearing hosts.

51.68 Biochemistry of minerals, elements, and trace metals in tumors in tumor-bearing hosts.

51.69 Biochemistry of other substances (even if not yet characterized) related to tumors and tumor-bearing hosts.

51.7 HOST-TUMOR INTERACTIONS:
Physiological and pathological changes in tumor-bearing hosts.
Immunology of tumors.

51.71 General.

51.72 Methods: Use of tumor cells inside diffusion chambers.

51.73 Metastasis, vascularization, and invasiveness of tumors.

51.74 Immunology of tumors and tumor-bearing hosts and tumor transplantation studies.

51.75 Non-biochemical, non-hormonal tumor-induced changes in the host: Host response to tumors.

51.76 Hormone-related tumor-host interactions and nature of endocrine gland tumors.

51.77 Effect of miscellaneous agents on tumor growth.

(51.8 is continued on next page)

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51.8 CANCER IN SPECIAL AND UNUSUAL TYPES OF HOSTS.

51.81 General.

51.82 Cancer in sub-human primates.

51.83 Cancer in mammals other than man (general): Cancer in rats, mice, and domestic or farm animals such as dogs.

51.84 Cancer in non-mammalian vertebrates.

51.85 Cancer in invertebrates: Cancer in fruit flies and cockroaches.

51.86 Cancer in plants (all information about plant tumors should be listed here).

(The complete list of all sub-divisions included in this outline begins on page 1 and consists of 877 individual categories.)

OUTLINE OF ALL MAJOR CATEGORIES FOR CANCER RESEARCH INFORMATION

51.1 Selected General Topics Related to Cancer Research

51.2 Clinical Aspects of Diagnosis and Treatment

51.3 Pre-Clinical Aspects of Diagnosis and Treatment

51.4 Cancer Epidemiology and Etiology, including all types of Carcinogenesis and Co-Carcinogenesis

51.5 Cancer Pathology; Related Physiology, Cytology, and Tissue Culture Studies

51.6 Biochemistry of Tumors and Tumor-Bearing Hosts

51.7 Host-Tumor Interactions

51.8 Cancer in Specific Types of Hosts

51.6 BIOCHEMISTRY OF TUMORS AND TUMOR-BEARING HOSTS.
SEE ALSO: 51.515 FOR TUMOR PHYSIOLOGY (BLOOD SUPPLY, INVASIVENESS, METASTASIS).
SEE ALSO: 51.2124 FOR USE OF BIOCHEMICAL ALTERATIONS TO DETECT AND DIAGNOSE CANCER.
SEE ALSO: 51.3213 FOR THEORIES OF CANCER CHEMOTHERAPY BASED ON BIOCHEMICAL DIFFERENCES BETWEEN NORMAL AND CANCER CELLS.
SEE ALSO: 51.4545 FOR BIOCHEMICAL AND PHYSIOLOGICAL CHANGES IN HOSTS INFECTED WITH TUMOR VIRUSES.
SEE ALSO: 51.4552 FOR BIOCHEMISTRY OF CELLS INFECTED WITH ONCOGENIC VIRUSES.
SEE ALSO: 51.76 FOR BIOCHEMISTRY RELATED TO ENDOCRINE TUMORS AND THEIR HORMONES.
SEE ALSO: 51.513 FOR BIOCHEMISTRY OF SPECIFIC SUB-CELLULAR FRACTIONS.

51.60 GENERAL AREAS OF CANCER BIOCHEMISTRY.
51.601 GENERAL.
51.6011 NEW OR MODIFIED IN VIVO SYSTEMS FOR STUDYING CANCER BIOCHEMISTRY.
51.6012 NEW OR MODIFIED IN VIVO SYSTEMS FOR STUDYING CANCER BIOCHEMISTRY.
51.60121 GENERAL.
51.602 BROAD STUDIES OF BIOCHEMICAL DIFFERENCES (COMPOSITION, ENZYMES, METAB.) BETWEEN NORMAL CELLS OR TISSUES AND CANCER CELLSOR TISSUES.
SEE ALSO: 51.624 FOR ENZYMES LEVELS.
51.6021 GENERAL.
51.6022 ENZYMATIC DEDIFFERENTIATION OR ENZYME DELETION DURING TUMOR DEVELOPMENT. "CONVERGENCE" (GREENSTEIN).
51.6023 BIOCHEMICAL CONTROL MECHANISMS IN TUMORS; INASPPROPRIATE SYNTHESIS OF LARGE AMOUNTS OF COMPOUNDS DUE TO LOSS OF CONTROL MECHANISMS.
SEE ALSO: 51.76 FOR HORMONE-SECRETING TUMORS.
51.603 BROAD, GENERAL BIOCHEMICAL DIFFERENCES BETWEEN NORMAL HOSTS AND HOSTS WITH CANCER.
BIOCHEMISTRY OF BLOOD AND URINE IN TUMOR-BEARING VS. NORMAL HOSTS.
SEE ALSO: 51.214 FOR APPLICATION IN THE DIAGNOSIS OF CANCER.
SEE ALSO: 51.553 FOR LIVER CANCER IN GENERAL.
51.604 BIOCHEMICAL STUDIES OF MINIMAL DEVIATION TUMORS.
MORRIS HEPATOMAS (51238 78008 7288C).
51.605 UPTAKE AND TRANSPORT OF MACROMOLECULES (ALBUMIN) AND AND SMALLER MOLECULES BY TUMOR CELLS.
51.606 ACID-BASE BALANCE IN TUMORS.
PRODUCTION AND UPTAKE OF H IONS AND ACID PRODUCTION BY TUMORS.
PH OF TUMORS.
SEE ALSO: 51.6432 FOR PRODUCTION OF LACTIC AND PYRUVIC ACID.
SEE ALSO: 51.6334 FOR PRODUCTION OF KETO-ACIDS AND FOR FATTY ACIDS OF TUMORS.
51.607 CORRELATION OF GROWTH RATE WITH BIOCHEMICAL DEFICIENCIES.
51.608 BROAD BIOCHEMICAL STUDIES OF SPECIFIC TISSUES.
51.608253 LEUKEMIA.
51.608254 LYMPHOMA.
51.6083 MUSCLE.
51.6084 KIDNEY.
51.60851 EXOCRINE GLANDS.
51.6085101 GENERAL.
51.6085102 SALIVARY GLANDS.
51.60852 LUNG.
51.60853 LIVER.
51.60854 GASTROINTESTINAL TRACT.
51.60855 FEMALE REPRODUCTIVE SYSTEM.
51.60855OV OVARIES.
51.60855UT UTERUS, CERVIX, ENDOMETRIUM.
51.60855BR BREAST.
51.60855VA VAGINA AND SECONDARY SEX TISSUE.
51.60856 MALE REPRODUCTIVE SYSTEM.
51.60856PR PROSTATE.
51.60857 OTHER ENDOCRINE GLANDS AND RELATED TISSUES.
51.6086 NERVOUS SYSTEM.
51.60865 BRAIN.
51.6087 SENSORY SYSTEMS.
51.60882 CONNECTIVE TISSUE.
51.60883 SKIN.
51.608833 MELANOMAS.
51.60884 BONE.

51.61 NUCLEIC ACID BIOCHEMISTRY RELATED TO TUMORS AND TUMOR-BEARING HOSTS.
51.610 GENERAL.
51.6101 HISTOCHEMICAL AND CYTOCHEMICAL STUDIES OF NUCLEIC ACIDS IN TUMORS.
SEE ALSO: 51.7312 FOR USE TO STUDY GROWTH RATE OF TUMORS.

51.61011 GENERAL.
51.61018 THYMIDINE UPTAKE, IN VIVO ONLY.
51.611 STUDIES INVOLVING BOTH RNA AND DNA AND NUCLEOPROTEIN.
51.6111 CHEMICAL AND PHYSICAL PROPERTIES OF NUCLEIC ACIDS AND NUCLEOPROTEINS FROM TUMORS.
OTHER NON-METABOLISM INFORMATION.
51.61117 FORMATION OF HYBRIDS.
51.61118 PROPERTIES OF TUMOR DNA.
51.61119 PROPERTIES OF TUMOR RNA.
51.6116 METABOLIC INFORMATION ABOUT TUMOR NUCLEIC ACIDS.
51.61221 METHODS FOR ISOLATING DNA.
51.61224 DNAASE IN TUMORS.
51.6126 METABOLISM AND BIOSYNTHESIS OF DNA.
51.61268 UPTAKE OF PRECURSORS INTO DNA - OVERALL LEVEL.
51.61269 GROSS ASPECTS OF DNA SYNTHESIS INVOLVING SPECIFIC ENZYME PATHWAYS.
51.6131 RNA CONTENT OF TUMOR CELLS.
51.61322 ISOLATION OF RNA.
51.61324 RNASE.
51.6133 PROPERTIES OF RNA.
51.61333 PHYSICAL PROPERTIES OF RNA.
51.6136 RNA BIOSYNTHESIS.
51.6137 DEGRADATION AND TURNOVER OF RNA.
51.614 TUMOR NUCLEOTIDES AND NUCLEOSIDES AND THEIR METABOLISM.
NUCLEOTIDE AND NUCLEOSIDE KINASES.
TRANSPHOSPHORYLATION REACTIONS.
NUCLEOTIDE REDUCTASES.
51.615 BIOSYNTHESIS AND METABOLISM OF PURINES IN TUMORS.
ADENISENE DEAMINASE.
51.616 BIOSYNTHESIS AND METABOLISM OF PYRIMIDINES IN TUMORS:
THYMIDYLATE SYNTHETASE.
ASPARTIC TRANSCARBAMYLASE.
51.617 INHIBITION OF NUCLEIC ACID BIOSYNTHESIS IN TUMORS AND TUMOR-BEARING HOSTS.
INHIBITION BY HYDROXYUREA AND BY ACETOXYUXANIDE.
51.6171 GENERAL.
51.6172 INHIBITION OF DNA.
51.6173 INHIBITION OF RNA.

51.62 BIOCHEMISTRY OF AMINO ACIDS, PROTEINS, PEPTIDES, ENZYMES, AND OTHER NITROGENOUS COMPOUNDS IN TUMORS AND TUMOR BEARING HOSTS.
SEE ALSO: 51.646 FOR NITROGENOUS POLYSACCHARIDES.
SEE ALSO: 51.6906 FOR DELTA-AMINOLEVULINIC ACID.
51.621 GENERAL; NITROGENOUS CONSTITUENTS OF TUMORS AND HOSTS (GENERAL).
AMINO ACID LEVELS IN TUMORS AND TUMOR-BEARING HOSTS AND AMINO ACID UPTAKE.
51.622 AMINO ACID BIOCHEMISTRY AND METABOLISM IN TUMORS AND HOSTS.
51.62201 GENERAL.
51.62202 TRANSAMINASES.
51.62203 AMINO ACID OXIDASES.
51.62204 AMINO ACID DECARBOXYLASES.
51.62205 OPEN.
51.62206 AMINO ACID UPTAKE AND TRANSPORT.
AMINO ACID POOLS.
51.6221 GENERAL.
51.62211 ALANINE AND BETA-ALANINE AND METABOLITES.
51.62212 OPEN.
51.62213 ARGININE, CITRULLINE, ORNITHINE, AND HOMOCITRULLINE AND HOMOARGININE AND THE UREA CYCLE AND TRANSCARBAMYLASES IN GENERAL.
51.62214 ASPARTIC ACID AND METABOLITES AND ASPARAGINE.
SEE ALSO: 51.616 FOR ASPARTIC TRANSCARBAMYLASE.
SEE ALSO: 51.32750101 FOR ANTICANCER ACTIVITY OF ASPARAGINASE.
51.62215 OPEN.
51.62216 CYSTEINE AND CYSTINE AND METABOLITES AND -SH METAB. IN TUMORS.
51.622161 GENERAL.
51.622162 CYSTEINE AND CYSTINE.
51.622163 GLUTATHIONE LEVELS.
51.62217 GLUTAMIC ACID AND METABOLITES.
51.62218 GLUTAMINE LEVELS AND METABOLISM AND GLUTAMINASE.
SEE ALSO: 51.32824 FOR USE OF GLUTAMINASE FOR TREATING TUMORS.
51.62219 GLYCINE AND METABOLITES.
51.622201 HISTIDINE AND METABOLITES (HISTAMINE) UROCANIC ACID.
SEE ALSO: 51.76181 FOR HISTAMINE LEVELS IN TUMOR-BEARING HOSTS.

51.6222011 GENERAL.
51.6222012 METABOLISM OF HISTIDINE; UPTAKE AND DEGRADATION.
51.6222013 HISTIAMINE AND TUMORS.
51.62221 HYMOCYSTEINE AND METABOLITES.
51.62222 HOMOSERINE AND METABOLITES.
51.62223 HYDROXYPROLINE AND METABOLITES.
HYDROXYPROLINE-RICH PROTEINS IN PLASMA OF PATIENTS WITH HODGKIN'S DISEASE.
INCREASED HYDROXYPROLINE EXCRETION IN BONE METASTASIS OF BREAST CANCER.
SEE ALSO: 51.623701 FOR COLLAGEN IN TUMORS.
51.62224 ISOLEUCINE AND METABOLITES.
51.62225 LEUCINE AND METABOLITES.
51.62226 LYSINE AND METABOLITES (INCLUDING HOMOCITRULLINE & HOMOARGINE).
51.62227 METHIONINE AND METABOLITES.
51.62228 OPEN.
51.62229 PHENYLALANINE AND METABOLITES.
51.62230 PROLINE AND METABOLITES.
51.62231 SERINE AND METABOLITES (CHOLINE).
51.62232 THREONINE AND METABOLITES.
51.62233 TRYPTOPHANE AND METABOLITES.
SEE ALSO: 51.6244 FOR USE OF TRYPTOPHENE PYROLASE AS A TOOL TO STUDY ENZYME INDUCTION.
SEE ALSO: 51.55421 FOR CARCINOID TUMORS.
SEE ALSO: 51.76182 FOR CARCINOID SYNDROME IN PATIENTS WITH NON-CARCINOID TUMORS.
SEE ALSO: 51.41432 FOR ROLE OF TRYPTOPHANE METABOLITES IN BLADDER CARCINOGENESIS.
51.622331 GENERAL.
51.622332 STUDIES OF PATIENTS WITH THE MALIGNANT CARCINOID SYNDROME.
51.622333 STUDIES OF PATIENTS WITH BLADDER CANCER.
SEE ALSO: 51.4043 FOR STUDIES SPECIFICALLY RELATED TO THE ETIOLOGY OF BLADDER CANCER.
51.622334 STUDIES OF MICE WITH MAST-CELL TUMORS.
TRYPTOPHANE METABOLISM.
51.622335 NAD PRODUCTION FROM TRYPTOPHANE IN TUMOR-BEARING HOSTS.
51.62234 TYROSINE AND METABOLITES.
SEE ALSO: 51.473 FOR THYROXINE BIOCHEMISTRY AND METABOLISM IN RELATION TO CANCER.
51.622341 GENERAL.
51.622343 PRODUCTION AND METABOLISM OF CATECHOL AMINES.
51.622344 TYROSINASE, DOPA OXIDASE, AND MELANIN PRODUCTION IN MELANOMAS AND PROPERTIES OF MELANIN.
51.62235 VALINE AND METABOLITES.
51.6224 COMPOUNDS RELATED TO AMINO ACIDS.
51.62241 CREATINE AND CREATININE.
51.62241 CREATINURIA IN EXPERIMENTAL ANIMALS WITH CANCER.
CREATINURIA IN THE PRE-TERMINAL STAGES OF CANCER.
51.62242 POLYAMINES AND DIAMINES (SPERMINE, SPERMIDINE AND OTHER AMINES; CHOLINE).
SEE ALSO: 51.6381 FOR OCCURRENCE OF THESE AMINES IN MALIGNOLISM.
51.623 PEPTIDES, PROTEINS, PROTEIN METABOLISM, AND PROTEIN SYNTHESIS AND BIOCHEMISTRY IN TUMORS AND TUMOR-BEARING HOSTS.
51.6231 GENERAL.
51.62322 TYPES OF TUMOR PROTEINS.
51.6232611 OPEN.
51.6232612 FACTORS TO CONTROL AND STIMULATE OR INHIBIT PROTEIN SYNTHESIS IN TUMORS.
51.623263 ENZYMATIC STUDIES OF PROTEIN SYNTHESIS.
EFFECT ON RIBOSOMES AND POLYRIBOSOMES M-RNA, S-RNA, AND NUCLEIC ACID ACTIVITY.
51.623264 INHIBITION OF PROTEINS SYNTHESIS.
51.62327 TURNOVER, UPTAKE AND RELEASE IN VIVO AND UPTAKE OF SERUM PROTEINS.
51.6233 SERUM PROTEINS (AND URINARY PROTEINS) IN TUMOR-BEARING HOSTS.
51.62331 GENERAL.
SERUM PROTEIN LEVELS IN TUMOR BEARING HOSTS AND REGULATION OF THOSE LEVELS.
51.623312 METHODS FOR FRACTIONATION AND IDENTIFICATION OF SERUM PROTEINS IN CANCER.
51.623316 BIOSYNTHESIS AND TURNOVER OF SERUM PROTEINS AND MECHANISM OF THIS SYNTHESIS.

51.623317 UTILIZATION OF SERUM PROTEINS OF CANCER CELLS (BENCE-JONES OR OTHER IMMUNOPROTEINS).
51.62332 BIOCHEMISTRY AND PROPERTIES AND PHYSIOLOGY OF BENCE-JONES PROTEINS, MYELOMA (OR PLASMA-CELL TUMOR) PROTEINS, IMMUNOGLOBULINS, AND MACROGLOBULINS AND M-PROTEIN IN CANCER PATIENTS.
TYPE I AND TYPE II BENCE-JONES PROTEINS.
CATABOLISM AND EXCRETION OF BENCE-JONES PROTEINS.
SYNTHESIS OF GAMMA GLOBULINS BY PLASMA CELL TUMORS (ADJ-PL-5).
SEE ALSO: 51.743401 FOR IMMUNITY OF THESE PROTEINS.
SEE ALSO: 47.35 FOR PROPERTIES OF GAMMA GLOBULINS IN GENERAL.
SEE ALSO: 47.853104 FOR BENCE-JONES PROTEINS AS ANTIGENS.
DIFFERENCES IN FINGERPRINT PATTERNS OF PROTEINS PRODUCED BY TUMORS INDUCED WITH CARCINOGENS (MINERAL OIL).
51.623328 MECHANISM OF SYNTHESIS OF THESE PROTEINS AND RELATED BIOCHEMISTRY.
51.623328 MACROGLOBULINS.
51.6623329 IDENTIFICATION OF THOSE TYPES OF CELLS WHICH SYNTHESIZE BENCE-JONES PROTEINS OR MYELOMA PROTEINS AND SYNTHESIS BY THESE CELLS.
51.62333 BLOOD CLOTTING PROTEINS.
LOCALIZATION AND LEVEL OF FIBRIN, FIBRINOGEN, THROMBIN, AND THROMBOPLASTIN IN TUMORS AND TUMOR-BEARING HOSTS.
51.62334 ALBUMINS AND GLOBULINS NOT INCLUDED ABOVE (LEVELS AND PROPERTIES).
ALBUMIN AND GLOBULIN LEVELS IN GENERAL AND UPTAKE OF THESE PROTEINS BY TUMORS.
SEE ALSO: 51.75565 FOR CORTICOSTEROID BINDING GLOBULIN IN CANCER PATIENTS.
51.62335 GLYCOPROTEINS AND MUCOPROTEINS (LEVELS AND PROPERTIES).
SEE ALSO: 51.645 AND 51.646 FOR POLYSACCHARRIDES AND MUCOPOLYSACCHARRIDES IN TUMORS.
HAPTOGLOBULINS, SEROMUCOIDS (SERUM ALPHA-2-GLYCOPROTEIN).
SEE ALSO: 12.322 FOR GLYCOPROTEINS AND MUCOPROTEINS IN GENERAL.
SEE ALSO: 14.5 FOR MUCOIDS AND N-COMBINED CARBOHYDRATES.
ALPHA-1-GLYCOPROTEIN LEVELS IN CANCER.
ALPHA-2-(ACUTE PHASE) GLOBULIN (G GLYCOPROTEIN).
51.62336 SPECIAL SERUM PROTEINS.
TETRACYCLINE-BINDING PROTEINS.
51.6233601 TETRACYCLINE-BINDING PROTEINS.
OTHER TETRACYCLINE-BINDING PROTEINS.
51.6233602 LIPOPROTEINS.
SEE ALSO: 51.21742 FOR USE IN DIRECT VISUALIZATION OF TUMORS (IN VIVO STIMULATION).
51.6234 PROTEINS ABSENT OR "DELETED" FROM TUMORS:
ABSENCE OF PROTEINS DETERMINED BY THE H-2 LOCUS IN SARCOMA I.
SEE ALSO: 51.460023 FOR THE DELETION HYPOTHESIS.
51.6235 PEPTIDASES, PROTEASES AND PROTEOLYTIC ENZYMES IN TUMORS AND TUMOR-BEARING HOSTS.
51.6236 SPECIFIC PEPTIDES IN TUMORS.
51.623601 GENERAL.
51.623602 TOXOHORMONE (CATALASE DEPRESSING FACTOR) IN CANCER PATIENTS (A BASIC POLYPEPTIDE IN TISSUES OF CANCER PATIENTS).
51.623603 GSH (SEE 51.62216).
51.6237 OTHER PROTEINS IN TUMORS.
51.623701 COLLAGEN IN TUMORS.
SEE ALSO: 19.15833 FOR EFFECT OF THESE ANTIBODIES ON CATALASE.
SEE ALSO: 51.62223 FOR HYDROXYPROLINE METABOLISM IN TUMORS AND TUMOR BEARING HOSTS.
51.624 ENZYMES AND ISOZYMES IN TUMORS AND TUMOR-BEARING HOSTS.
CHANGES IN ENZYME LEVELS DURING TUMOR GROWTH.
SEE ALSO: 51.4600536 FOR EFFECT OF CARCINOGENS ON ENZYMES.
SEE ALSO: 51.4601024 FOR EFFECT OF AROMATIC HYDROCARBONS ON ENZYMES.
SEE ALSO: 51.323442 FOR ROLE OF ENZYMES IN TUMOR-BEARING HOSTS IN TUMOR REGRESSION.
SEE ALSO: 51.604 FOR ENZYME LEVELS IN "MINIMAL DEVIATION" TUMORS.
SEE ALSO: 51.602 FOR BROAD STUDIES OF METABOLIC DIFFERENCES BETWEEN NORMAL CELLS AND TUMOR CELLS OR CELLS OF TUMOR-BEARING HOSTS.
SEE ALSO: 51.3212 FOR CANCER CHEMOTHERAPY BASED ON THESE DIFFERENCES.
SEE ALSO: 51.46 FOR ENZYMES INVOLVED IN THE METABOLISM OF CARCINOGENS.
SEE ALSO: 51.460124 FOR EFFECT OF AROMATIC HYDROCARBONS ON ENZYME LEVELS.
SEE ALSO: 51.214 FOR USE OF ENZYMES IN TUMOR DIAGNOSIS.
SEE ALSO: 51.460023 FOR DELETION THEORY OF CARCINOGENESIS.
SEE ALSO: 51.6235 FOR PEPTIDASES AND PROTEASES IN TUMORS.

51.624001 GENERAL.
51.6240011 GENERAL.
51.6240101 ADENOSINE DEAMINASE.
51.6240102 ALDOLASE.
51.6240501 ESTERASES.
51.6240701 BETA-GLUCINAMIDASE.
51.6240702 GLUCOSE-6-PHOSPHATE.
51.6240702 GLYCOLYTIC ENZYMES.
51.6240703 L-GLYCEROL-3-PHOSPHATE DEHYDROGENASE.
51.6240901 ISOCITRIC DEHYDROGENASE.
51.6241101 KREBS CYCLE ENZYMES.
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51.6241202 LYSOSOMAL ENZYMES AND ACID HYDROLASES.
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