Terms

**Accuracy**
The agreement of the test result with the true value of the sample.

**ACD**
A solution of acid, citrate, and dextrose used as an anticoagulant and preservative in storing blood for transfusions.

**Acetaminophen**
A pain reliever and fever reducer; the active ingredient in many medications. An overdose may be toxic.

**Acetic acid**
The acid found in vinegar, often used as a reagent; also used in the preparation of pharmaceuticals, and in industry.

**Acetylcholinesterase (AChE)**
An enzyme present in various tissues, including muscle and red cells, that breaks down acetylcholine (a chemical released by nerves that activates muscle contractions) and helps to maintain proper transmission of impulses between nerve cells and between nerve cells and muscles; also called true cholinesterase. Measuring acetylcholinesterase in amniotic fluid may help confirm a suspected neural tube defect in the fetus.

**Acetylsalicylic acid (ASA)**
Aspirin; salicylate. A pain reliever and fever reducer. See salicylates. An overdose can be toxic.

**Acid phosphatase (Acid phos)**
An enzyme found primarily in the prostate and semen. Increased blood serum levels may indicate cancer of the prostate or may follow prostatic massage.

**Acidosis**
A condition marked by an accumulation of acids in body tissues and blood that may result from prolonged diarrhea or disorders such as diabetes and kidney disease, when not under control. Urine tests screen for acidosis. Determination of blood pH provides more accuracy.
**Acquired immunodeficiency syndrome**  
See AIDS.

**Ad**  
Symbol for a dichromatic absorbance. It is equal to the absorbance at the secondary wavelength subtracted from the absorbance at the primary wavelength.

**Adrenal glands**  
Located near the kidneys, the adrenal glands produce a small amount of the male hormone, testosterone.

**Agar**  
A medium used to grow microorganisms.

**AIDS**  
Acquired immunodeficiency syndrome. A condition in which the normal immune system becomes depressed, rendering the affected individual unable to fight a number of serious and fatal infections. Human T-cell leukemia/lymphoma virus (HTLV-III) is associated with AIDS. The virus has been renamed human immunodeficiency virus (HIV). The presence of HIV antigen in the blood will confirm that an individual is infected with the virus and has AIDS. The presence of HIV antibody in the blood confirms that an individual has been infected with the AIDS virus. See antigen and antibody.

**AIDS-related complex**  
See ARC.

**Albumin**  
The most abundant protein component of blood. Produced primarily in the liver, albumin helps to keep the fluid portion of blood within the vessels, and helps transport drugs and other substances by way of the bloodstream. Low levels of albumin in the blood or its presence in urine may signal edema (the accumulation of fluid) as in pedal edema (in the ankles) or pulmonary edema (in the lungs), which may be symptoms of congestive heart failure, kidney or liver disease.

**Alkaline phosphatase (Alk phos)**  
An enzyme found mainly in liver and bone. Blood serum alkaline phosphatase is usually measured to detect liver or bone disease.
**Alkalosis**

A condition in which the blood and tissues contain an abnormally high level of alkali (usually too much bicarbonate), often caused by prolonged vomiting or hyperventilation. Symptoms include dizziness and jerky muscular contractions. Alkalosis can be detected in a urine test. Determination of blood pH provides more accuracy.

**Alpha-fetoprotein (AFP)**

A substance produced by the fetus that is found in fetal serum, amniotic fluid, and the mother's bloodstream. Elevated levels of AFP may indicate that the baby has a neural tube defect such as spina bifida (incomplete closure of the spinal column) which can lead to paralysis of the lower limbs, repeated urinary tract infections, mental retardation or hydrocephalus ("water on the brain"). It is also a useful nonspecific tumor-associated antigen (tumor marker).

**Alzheimer's disease**

A disorder marked by progressive mental deterioration (dementia), including memory loss, confusion, reduction of functional activity, and fluctuations in alertness, usually beginning in later middle life. Use of dexamethasone suppression test (DST) has been suggested to help in differential diagnosis of dementia and depression (also a frequent disease of later life). This is important, as adequate treatment may produce improvement in depressive disease. See [dexamethasone suppression test](#).

**Aminoglycosides**

A class of antibiotics specific for gram negative bacteria.

**Amniocentesis**

A prenatal diagnostic procedure in which a needle is inserted through the mother's abdomen into the uterus and amniotic sac to remove a sample of amniotic fluid. The fluid, containing fetal cells, proteins, and other substances, may be analyzed to detect genetic disorders, including Down syndrome (mongolism). An elevated level of AFP can indicate neural tube defects. See [neural tube defect](#).

**Amniography**
A prenatal diagnostic procedure in which X-ray of the mother's uterus, after injection of a radiopaque substance, allows visualization of the fetus, the placenta, and the uterine lining. This may be used to confirm a diagnosis of neural tube defects.

**Amniotic fluid**

The fluid surrounding the developing fetus that is found within the amniotic sac contained in the mother's womb.

**Amphetamine**

A compound (or its derivatives) that acts as a central nervous system stimulant. Used as a stimulant in depressed states, to reduce appetite, and in attention-deficit disorders, it can also alleviate nasal congestion. Amphetamine use can lead to dependence. It has a high potential for abuse. Blood and urine tests can detect amphetamine use and toxic levels.

**Amplicon**

The product of PCR or LCR; a piece of DNA that has been synthesized using amplification techniques.

**Amylase**

A digestive enzyme produced largely by the pancreas and salivary glands that converts starches to sugars. Abnormally high levels of amylase in the blood or urine may be found in patients with inflammation of the pancreas or salivary glands (mumps).

**Analyte**

A substance that is undergoing analysis or is being measured.

**Anemia**

Below normal levels of red blood cells or hemoglobin, or both, which can be caused by many different conditions, including iron deficiency. Symptoms may include fatigue, weakness, headache, and dizziness. Appropriate blood tests will confirm the diagnosis of anemia and shed light on its etiology.

**Anencephaly**

Abnormal development of the brain in the fetus accompanied by absence of the bones of the cranial vault. Children born with this severe disorder die shortly after birth.
Measurement of maternal blood and amniotic fluid levels of alpha-fetoprotein (AFP) can help diagnose this condition and other neural tube defects. See alpha-fetoprotein.

**Antiarrhythmic**

Any one of a group of drugs which prevent or control irregularities in the heart beat.

**Antiasthmatic**

Any one of a group of drugs which prevent or control spasms and narrowing of the lung's bronchi and bronchioles.

**Antibiotics**

Any substance derived from fungi or bacteria that destroys or inhibits the growth of microorganisms.

**Antibody (Ab)**

A substance produced by the body in response to an antigen that specifically reacts with the antigen to destroy, inhibit, or neutralize it. The body produces antibodies as a defense against foreign substances. Antibodies may be identified and measured to determine whether an individual has been infected by a pathogen.

**Antibody assays**

Tests to determine levels of specific antibodies in the blood.

**Anticoagulant**

A chemical used to prevent blood clotting. Examples: EDTA, heparin, sodium citrate, sodium oxalate.

**Anticonvulsant**

Any of a group of drugs that prevent seizures or control their incidence or severity.

**Antigen (Ag)**

Any substance that when introduced into the body (such as the protein coat of an invading pathogen) causes the formation of antibodies. Ag is also found on tissue and blood cells, and in body fluids. Measurement of antigen can help determine whether a particular disease will become active.

**ARC**

AIDS-related complex. A condition in which antibody tests for AIDS virus are positive and patients may exhibit enlarged lymph nodes, fatigue, fever, night sweats, weight loss, and
unexplained diarrhea, but do not have any of the more serious complications of AIDS.

**Arteriogram**

X-ray visualization of the arterial lining after injection of radiopaque dye into a specific artery or into the bloodstream. It aids in the diagnosis of vascular occlusions and of athrosclerotic plaques, as well as of other cardiovascular abnormalities.

**Assay**

Analysis of a substance, or of components in a mixture, or of the biological, chemical, or pharmacological potency of a drug. Forms of assay include: Endpoint assay — a single measurement is made at a fixed time. Kinetic assay — increasing amounts of a product are formed with time, and are monitored at multiple points. Microbiological assay — measurement of the concentration of antimicrobials in biological material. Immunological assay — analysis or measurement is based on antigen-antibody reactions.

**Assay (immunological)**

There are many types of immunological assays, including agglutination, complement-fixation, precipitation, immunodiffusion, and electrophoretic assays. Each type of assay utilizes either a particular type of antibody or a specific support medium (such as a gel) to determine the amount of antigen present.

**Assay (Indicator-labeled immunoassays)**

Indicators are attached to the antigen or to the antibody to demonstrate that the antigen-antibody reaction has occurred. These assays have enabled measurement of many substances not previously measurable. Among these assays are: Enzyme immunoassay (EIA), Enzyme-linked immunosorbent assay (ELISA), Enzyme-multiplied immunoassay technique (EMIT), Fluorescence immunoassay (FIA), Fluorescence polarization immunoassay (FPIA) and Radioimmunoassay (RIA).

**Attenuation**

A decrease in light due to absorption by a chromagen in radiative energy attenuation technologies.
**Autoimmune/autoimmunity**
A condition characterized by a specific humoral or cell-mediated immune response against constituents of the body's own tissues.

**B cells (B lymphocytes)**
Lymphocytes which transform into plasma cells and produce antibodies.

**Bacterium (plural, bacteria)**
Any microorganism of the class Schizomycetes; composed of several structures, including a nucleus, cytoplasm and cytoplasmic membrane, cell wall, and capsule. Motile forms may have flagella. Some of these one-celled organisms cause diseases.

**Barbiturates**
A group of drugs derived from barbituric acid that is used to sedate, to control convulsions, or to induce sleep. Blood and urine tests can determine toxic levels of these compounds. Barbiturates may be habit forming.

**Batch testing**
A laboratory testing procedure in which one test is done simultaneously on multiple specimens in a "batch analyzer," such as a centrifugal analyzer.

**Benign tumor**
A tumor which is noncancerous.

**Benzodiazepine**
A chemical that is often used as the active ingredient in mind-affecting drugs such as tranquilizers. Long term use can result in dependence. Benzodiazepine overdose can be determined through blood or urine tests.

**Bi-directional**
Refers to communication between an instrument and a computer that allows the computer to send instructions to the instrument and for the instrument to send results back to the computer.

**Bicarbonate**
Essential for regulating vital functions and one of the important buffers necessary to maintain normal acid-base balance in the body. Body metabolism results in mainly acid production, and neutralizing some of such acids is its constant activity, thus it plays a
key role in metabolic acidosis or alkalosis. Bicarbonate may be lost through watery feces, or can decrease when lungs cannot expel carbon dioxide.

**Bichromatics**

Spectrophotometry which uses a secondary wavelength absorbance reading subtracted from a primary wavelength absorbance reading to obtain a delta absorbance reading (Ad). The delta absorbance is used in conjunction with the calibration data to calculate concentration or activity.

**Bilirubin**

The orange-yellow pigment of bile, the green fluid that aids in digestion and that is secreted by the liver. Bilirubin is formed mainly by hemoglobin breakdown at the end of red cell life and eventually most of it leaves the body in the feces. Two types are in the blood. Water insoluble or unconjugated bilirubin refers to the pigment before it reaches the liver. In the liver it is converted to the water-soluble or conjugated bilirubin which is excreted into the bile. Blood tests for total bilirubin measure both unconjugated and conjugated bilirubin, and are performed to evaluate jaundice, anemia, various liver diseases (including hepatitis), and impaired bile excretion.

**Biochemistry**

The chemistry of living organisms and their vital processes.

**Biochromatic chemical analyzer**

Laboratory instrumentation that provides spectrophotometric-photometric monitoring at two different wavelengths to correct for background color which might interfere with measurement of an analyte.

**Biopsy**

Excision, for examination, of a small amount of tissue from a living body to determine the presence of disease. Also, the tissue excised is called a biopsy.

**Biotechnology**

Application of biological science information which can lead to the production of commercial products by biologic processes. These include recombinant DNA techniques,
development of monoclonal antibodies, as well as gene splicing.

**Brain electrical activity mapping (BEAM)**

A noninvasive diagnostic technique used to detect certain kinds of epilepsy, head injuries, dyslexia, brain tumors, dementia, and other brain diseases. This procedure utilizes a computer to convert data from brain electrical potentials into colored topographical maps of the brain which are then automatically compared with those of an appropriate control group to indicate the degree of deviation from the norm.

**Bronchoscopy**

The direct visualization of the trachea and bronchi through a rigid or flexible tube (bronchoscope). The procedure can be used to remove foreign bodies or to obtain a specimen for biopsy or other examination.

**C-reactive protein (CRP)**

A protein that appears, usually within 24 hours, in the blood during the acute stage of inflammatory disorders such as rheumatic fever, or after a myocardial infarction (heart attack). The serum level of CRP is a sensitive indicator and monitor of rheumatic activity.

**Calcium (Ca)**

An alkaline element found in most tissues, it is an abundant mineral in the body. It is essential for maintenance of bones and teeth, normal heart, muscle, and nerve functions, as well as normal blood clotting. Calcium levels can be measured in the blood or urine to help detect thyroid and parathyroid disorders, bone diseases, and certain cancers. It may also point to the presence of kidney stones.

**Cannabinoids**

The psychoactive chemical substances found in marijuana (Cannabis sativa). The presence of cannabinoids in urine or blood indicates recent marijuana use or close contact with it.

**Carbamazepine**

A pain relieving and anticonvulsant drug often used to treat trigeminal neuralgia (pain along the route of the facial nerve) and
epilepsy (a neurological disorder characterized by convulsive seizures). Blood testing can determine carbamazepine levels in the body and aid in maintaining appropriate dosage.

**Carbohydrate**

A group of organic compounds, including starches and sugars, that is a major source of body energy and is necessary for metabolism. Excessive intake is associated with tooth decay and obesity. Its concentration can be assayed in serum and urine.

**CAT scan (computer or computerized axial tomography)**

See [computed tomography](#).

**Catalyze**

To accelerate the rate of a chemical reaction by a substance that is not permanently affected in the process.

**Chemiluminescent**

Exhibiting light as a result of a chemical reaction without the production of heat; emitted from some bacteria, fungi, and fireflies.

**Chemistry**

In clinical testing, refers to the solutes dissolved in the plasma such as uric acid, etc.

**Chlamydia trachomatis**

The causative microorganism of one of the most prevalent sexually transmitted diseases, Chlamydia infection can lead to urethritis (inflammation of the urethra), pelvic inflammatory disease, ectopic pregnancy, and infertility. The infection may be asymptomatic, but patients may experience vaginal irritation or burning, discharge from penis or vagina, or pain. This microorganism is also the cause of serious eye infections. At one time testing for Chlamydia was somewhat difficult; now, however, immunoassay can detect the antigens from swab specimens.

**Chloride**

A compound in which one of the elements is chlorine (sodium chloride — table salt — is the most common example); found in the body in large amounts. It is an electrolyte,
thus is involved in water balance and acid-base balance. (Electrolytes affect movement of substances throughout the body and are crucial for normal function and metabolism.) To help determine electrolyte, fluid, kidney, and adrenal gland disorders, chloride levels usually are measured in blood, but also may be tested for in urine.

**Cholesterol**

A fat-soluble substance present in the blood and in animal fats that facilitates absorption and transport of fatty acids, and is necessary in hormone production. High levels of blood cholesterol have been linked to atherosclerosis and heart disease. See high and low density lipoprotein cholesterols.

**Chorionic villi sampling**

A means of testing the fetus for various abnormalities, such as congenital defects, blood disorders, and inborn errors of metabolism. This test can be performed during the first trimester of pregnancy, but is easier to carry out between the 14th and 16th weeks of pregnancy.

**Chromosomes**

The 46 (in human beings) structures in the nuclei of cells on which the genes, which contain hereditary information, are arranged.

**Chronic carrier**

Carrier: someone who has been infected by a pathogenic organism and has no symptoms of the illness, but has the ability to infect others.

**Chronic hepatitis B**

Long-term infection with the hepatitis B virus. (Hepatitis B also has been called serum hepatitis.) Such infection may lead to liver cell destruction and cirrhosis.

**Cirrhosis**

A degenerative disease of the liver, the organ that helps eliminate toxic materials from the body, often caused by alcoholism, but also may result from certain forms of hepatitis. Cirrhosis is characterized by formation of fibrous tissue, nodules, and scarring, which interfere with liver cell function and blood circulation. Symptoms include weakness, weight loss, fatigue,
abdominal swelling due to fluid accumulation, and tenderness and enlargement of the liver. Tests for prolonged prothrombin time and decreased albumin are among those used to detect cirrhosis. See prothrombin and albumin.

**Cocaine**

A substance used as a local anesthetic, also used as a recreational inhalant, that can lead to psychological dependence with prolonged use. Its use can cause damage to mucous membranes and cardiovascular disorders. Cocaine metabolites can be detected in urine and may indicate recent use of the drug.

**Colonoscopy**

Visualization of the lining of the anus, rectum and colon through a rigid proctosigmoidoscope or a flexible fiber optic endoscope (types of viewing tubes). This procedure allows diagnosis of tumors and inflammatory diseases.

**Colorectal cancer**

A malignant disease of the colon and/or rectum which often begins as a polyp. The first indication of colorectal cancer is usually hidden, or occult, blood in the stool. Symptoms may include changes in bowel habits (diarrhea, constipation) or in consistency or color of the stool. A stool specimen blood test is commonly performed to screen for colorectal cancer.

**Colorimetric**

Pertaining to measurement of concentration of a solution based on its absorption or transmission of light, or on the intensity of color in a liquid.

**Combination testing**

A series of independent tests done on single specimens to arrive at a medical decision.

**Competitive-binding assay**

An analytic procedure in which an unlabeled and a labeled analyte compete for sites to bind to a specific protein.

**Complement**

A group of serum proteins that destroy sensitized cells or bacteria.

**Complete blood count (CBC)**
The determination of the blood cells in a definite volume of blood that includes separate counts for red and white blood cells.

**Computer tomography (CT)**

A radiographic scanning procedure to obtain cross-sectional images. The X-ray source rotates about the patient, generating X-rays which pass through the individual and are monitored as they exit, by detectors that are linked to a computer. The computer constructs three-dimensional images for examination and analysis. CT has revolutionized the diagnosis of intracranial, intrathoracic, and intraabdominal tumors, as well as other space-occupying lesions. CAT scan (computer axial tomography), CTAT (computerized transaxial tomography), CRT (computerized reconstruction tomography), and DAT (digital axial tomography) are diagnostic radiographic tools that are now collectively called computed tomography.

**Conjugate**

An analyte or antibody which has been tagged with an enzyme tracer.

**Core window**

The period during which a person infected by the hepatitis B virus may infect others, even though blood tests show neither hepatitis B surface antigen nor antibodies to hepatitis core antigen.

**Creatine kinase (CK)**

An isoenzyme (an enzyme that appears in multiple forms) found in high concentrations in heart and skeletal muscles, and, in smaller amounts, in brain tissue. Each form of CK is predominant in specific tissues. Determining blood levels of the isoenzyme will aid in detection of myocardial infarction and muscle diseases such as muscular dystrophy.

**Creatinine**

Found in muscle and blood and excreted in urine, creatinine is the end product of muscle (creatine) metabolism. By ascertaining levels of creatinine in blood or urine or in both, presence or severity of kidney malfunction can be indicated.
Cross-reactivity

The ability of an antibody to react with or bind an antigen that did not stimulate its production.

Culture

A procedure in which material or microorganisms from varying sources are cultivated in (culture) media for diagnostic or treatment purposes. Cultures also are performed to detect whether viable microorganisms are present, and, therefore, an infection exists. Growth and identification of the organisms present allow suitable selection of treatment (antibiotics). The cultivation product or the material to be cultivated also may be referred to as a culture.

Deionized Water

Water that has had the ions removed. Used in laboratories for making reagents.

Deoxyribonucleic acid (DNA)

The carrier of genetic information, it is found on chromosomes in the cell nucleus. It is a complex protein composed of different subunits that contain nitrogen, a complex sugar, phosphoric acid, and other constituents arranged in specific sequences. Genes consist of DNA.

Dexamethasone suppression test (DTST)

A procedure to evaluate the neuroregulatory mechanism of cortisol secretion into blood plasma following the administration of dexamethasone (a synthetic steroid which normally causes decreased secretion). Cortisol levels may be determined by various immunoassay methods. DTST is often done to help identify a depression disease, as patients may not suppress cortisol secretion after dexamethasone administration.

Diabetes Control and Complications Trial

This study of 1,441 type 1 patients with diabetes over a period of nine years was completed and reported in September 1993. It conclusively demonstrated that glycemic control is a major deterrent to the development and progression of diabetic microvascular and neuropathic disease.

Diabetes Mellitus
A chronic syndrome of impaired carbohydrate, protein, and fat metabolism owing to insufficient secretion of insulin or to target tissue insulin resistance, characterized by polydipsia, polyuria and polyphagia.

**Digital rectal examination**
A common screening procedure for prostate cancer, whereby a physician inserts a gloved, lubricated finger into the rectum, in order to feel the size and shape of the prostate through the rectal wall.

**Digoxin**
A drug commonly used to treat congestive heart failure and certain heartbeat irregularities that is obtained from leaves of the Foxglove (digitalis) plant. Digoxin overdose can be toxic. The level of the drug can be obtained from blood testing, which can aid in setting appropriate dose amounts.

**Dilutions**
To mix sample with water, saline, or buffer to decrease the concentration.

**Direct fluorescent antibody test (DFA)**
A test that uses a fluorescent antibody to directly detect an antigen.

**Echocardiography**
A noninvasive procedure that utilizes reflected ultrasonic waves (echoes) directed to the heart that are converted and recorded as an image showing internal structures. It is used to study the heart structure and motion in diagnosis of pathologic cardiovascular changes.

**Ejaculation**
A sudden release of fluid, especially of semen, from the body.

**Electroblot tests**
A number of diagnostic transfer methods (blots) which allow shifting of proteins from gels to cellulose, where they are isolated and immobilized and can be detected and identified by a variety of techniques. The cellulose soaks up proteins like a blotter.

**Electrocardiogram (ECG or EKG)**
A graphic recording that shows electrical activity generated by the heart muscle. It is used to help diagnose specific cardiac
anomalies, such as disturbances of heart rhythm and conduction.

**Electrocardiograph**

The instrument used to detect and record the electrical activity of the heart muscle. It produces the ECG.

**Electroencephalogram (EEG)**

A chart that provides a record of the electrical activity of the brain, which is derived from electrodes placed on the scalp. The instrument used is an electroencephalograph. An electroencephalogram is useful in diagnosis of seizure disorders and tumor detection.

**Electrolyte**

A solution of a compound that dissociates into ions and can conduct electricity. Electrolytes affect the movement of substances between body fluids and tissues, and are crucial for normal function and metabolism. In many illnesses, monitoring proper balance among the most important ones is vital. Calcium and potassium, for example, are necessary for cardiac and skeletal contractions and relaxations, and sodium is essential for fluid balance. An electrolyte imbalance can be caused by disease conditions or medications. Electrolytes also are used as electrical conductors in electrophoretic test methods.

**Electron microscope**

An electron-optical instrument that utilizes a beam of electrons, rather than light, to focus on cell surfaces of a very thin specimen to produce an enlarged image on a fluorescent screen or photographic plate. Because resolution (the ability to distinguish adjacent objects as separate) is better and magnification 1,000 times that of an optical light microscope is possible, electron microscopy can help determine the nature of tumors and of kidney disease. See scanning electron microscope.

**Electronic fetal monitoring**

The use of external and internal devices that record the fetal heart rate. An externally applied ultrasound transducer converts sound energy into electrical energy which is recorded on a graph. After rupture of the
membranes, an electrode can be applied via the maternal vagina to the fetal scalp to obtain a fetal ECG. The maternal uterine contractions also are recorded on the graph so that they can be related to the fetal heart rate, to indicate fetal distress.

**Electrophoresis**

Movement of charged particles in an electrical field, a technique used to separate materials in a substance by placing a sample in a buffer solution through which an electrical current then is passed. Extent of migration and separation of components depends on molecular weight and electrical charge of the particles. This method often is used to determine the proportions of various proteins in serum.

**Enzyme**

A protein produced by cells that influences the speed of a specific chemical reaction without being used up or permanently changed in the process. Enzymes are catalysts.

**Enzyme immunoassay (EIA)**

An assay that uses an enzyme-bound antibody to detect antigen. The enzyme catalyzes a color reaction when exposed to substrate.

**Enzyme-linked fluorescent assay (ELFA)**

Similar to EIA except the enzyme catalyzes a fluorescence, not a color reaction.

**Enzyme-linked immunosorbent assay (ELISA)**

See assay.

**Estrogen**

A female sex hormone.

**Ethanol**

Ethyl alcohol, the type used in alcoholic beverages, medicines, and food products. Blood levels of ethanol can be ascertained by tests that indicate the degree of intoxication. Alcohol affects brain function (central nervous system depressant) and may produce chronic illness in susceptible individuals.

**Euthyroidism**

A normal thyroid hormone status most precisely defined by a normal TSH level.

**False-negative**
A test result that shows no evidence of the disease or abnormality being investigated although the condition is actually present.

**False-positive**

A test result that shows evidence of a disease or an abnormal condition although it (the condition being tested for) is not present.

**Fasting Glucose Test**

A blood test done to determine the plasma glucose concentration in the fasting state (the person has not eaten for 8 to 12 hours). A fasting plasma concentration > 140 mg/dl on at least two occasions is diagnostic for diabetes mellitus.

**Ferritin**

The primary form of storage iron.

**Fibrin**

Clot forming protein — these clots often remain suspended in the serum and cause problems within sampling.

**Flow cytometry**

A method of measuring physical and chemical attributes of cells or other biological particles by sensors, as they move by, one after the other, homogeneously suspended in fluid. This rapid (about 10,000 particles per second) analytic method allows identification of important cell types, such as malignant cells, T cells and B cells. This process also may utilize immunologic binding methods to further identify particular cell groups.

**Fluorescein**

A molecule that emits light at certain wavelengths; often used to tag antibodies or other proteins and nucleic acids.

**Fluorescence**

The emission of light of one wavelength after being exposed to light of a different wavelength.

**Fluorescence polarization immunoassay (FPIA)**

See assay.

**Fluoroscopy**

A radiologic technique in which a fluoroscope is used to visually examine the body or an organ. (A fluoroscope utilizes an X-ray tube and fluorescent screen, with the
area to be viewed placed between the screen and the tube.) This immediate imaging, when coupled with an image intensifier, is invaluable in situations such as cardiac catheterization, thin needle biopsies of tumors, and localization of foreign bodies.

**Fulminant**

Sudden, severe or rapid.

**Gamma-glutamyltranspeptidase (GGTP)**

An enzyme associated with the uptake of amino acids (protein building blocks) by cells. Elevated blood levels are frequently seen in alcoholic liver disease.

**Gastroschisis**

A congenital defect in which a fissure is present in the wall of the abdomen, often with protrusion.

**Glaucoma test**

Examination of the eye for the presence of disease that can result in complete and permanent vision loss and that is characterized by increased pressure within the eyeball and damaged optic disk. When diagnosed early, glaucoma usually can be controlled by the use of suitable eye drops. Continued use of the medication is vital for sight preservation. A test for glaucoma is advised for all adults every three to five years, as the onset of the chronic form of the disease may be without noticeable symptoms.

**Glucagon**

A polypeptide hormone secreted by the alpha cells of the islets of Langerhans in response to hypoglycemia. Can be given as an intramuscular injection to treat severe hypoglycemia.

**Glucose**

The main sugar and source of energy in blood. It is contained in common dietary sugar (sucrose). Also known as dextrose, it occurs widely in nature, especially in certain plants. Blood and urine levels of glucose can help diagnose diabetes, hypoglycemia, and hormone disorders. Glucose tests are often called tests for "sugar." A glucose tolerance test, usually performed to assist in the diagnosis of diabetes or hypoglycemia,
measures the ability of the body to metabolize a standard amount of the sugar.

**Glucose Test**
A blood test done to determine the non-fasting plasma glucose concentration. Levels of > 200 mg/dl plus classic signs and symptoms of diabetes including polydipsia, polyuria, polyphagia and weight loss are diagnostic for diabetes mellitus.

**Glycosylated hemoglobin**
The iron-containing red pigment of red blood cells (hemoglobin) combined with a glucose derivative. When glucose is elevated, more glycosylate product is formed in the cells. Measurement of this hemoglobin reflects the blood glucose level over the previous several weeks; thus, it is a good indicator of blood glucose control in diabetics.

**Goiter**
A swelling of the thyroid gland, possible symptom of hypo- or hyperthyroidism.

**Gonorrhea**
A chiefly sexually transmitted infection caused by gonococci bacteria. If left untreated, gonorrhea can result in complications including sterility, blindness (preventive treatment is thus routinely given to newborns), or spread to the heart and joints. Women with gonorrhea may be asymptomatic, whereas men often present with a noticeable discharge from the penis.

**Grave's Disease**
A disease characterized by excess thyroid hormone production, caused by a stimulation of the thyroid gland by antibodies to the TSH receptor. Ophthalmopathy may or may not be present.

**Hashimoto's Thyroiditis**
An autoimmune destructive disease characterized by atrophy of the thyroid gland.

**HDL cholesterol**
See high density lipoprotein cholesterol.

**Hemoglobin**
The oxygen-carrying pigment of red blood cells, it is manufactured in bone marrow, and composed of iron-containing heme and the protein globin. Many types of hemoglobin
have been identified, however adult (A) and fetal (F) types are considered to be normal. Tests to measure hemoglobin concentration and to determine abnormal hemoglobin types are performed to identify anemias and other blood diseases.

**Hemolysis**

When the red blood cells break apart. Hemolysis can cause interference for certain assays.

**Hepatitis**

Inflammation of the liver, usually caused by bacterial or viral infection, drugs (including alcohol), toxins, or parasites. This disease is characterized by an enlarged liver, jaundice, diminished appetite, nausea, and abdominal pain. There are at least three forms of viral hepatitis (hepatitis A, hepatitis B, and non-A, non-B hepatitis). Hepatitis A, also known as infectious hepatitis, is transmitted by contaminated food or water and personal contact, and is most often found in children or young adults. Hepatitis B, formerly called serum hepatitis, may be transmitted through contaminated blood or needles, as well as sexually, and has a longer incubation period than that of hepatitis A. Hepatitis B can result in chronic active hepatitis. Non-A, non-B hepatitis is also transmitted through blood and can cause severe liver damage. Radioimmunoassays and enzyme-linked immunosorbent assays may be used to screen for hepatitis.

**Hepatitis B surface antigen (HBsAg)**

A part of the hepatitis B virus that, when in the blood, is one of the earliest markers of infection with hepatitis B virus, appearing even before symptoms. Also found in blood of a carrier. HBsAg is tested for in the differential diagnosis of hepatitis.

**Hepatoma**

A malignant tumor of the liver (primary hepatocellular carcinoma) sometimes associated with hepatitis or cirrhosis. Elevated blood levels of alpha-fetoprotein (AFP) may indicate the presence of a hepatoma. AFP levels are useful in monitoring chemotherapeutic success in treating this condition.
**High density lipoprotein cholesterol (HDLC)**

The fraction of plasma lipoprotein cholesterol component with most density (relative weight). It is thought to affect blood cholesterol levels by removing it from plasma and tissues and carrying it back to the liver for excretion after being acted on by bile. High levels of HDLC are considered to place an individual at a lower risk for coronary heart disease (atherosclerosis). Low levels of HDLC are associated with an increased risk for the disease. The density may be established by ultracentrifugation or electrophoresis.

**Histogram**

A graphic means of comparing magnitudes of frequencies or numbers of items; usually shown in bar graphs or columns.

**Homocysteine**

Homocysteine is an amino acid derived from the digestion of protein-rich foods.

**Hormone**

Chemical substances secreted by organs or parts of the body, especially the endocrine glands, into the bloodstream. Each hormone has a specific regulatory or functional effect.

**Human Immunodeficiency Virus (HIV)**

Human Immunodeficiency Virus

**Hydrolysis**

A chemical reaction in which a compound reacts with water, resulting in its decomposition or alteration.

**Hyperglycemia (high blood sugar)**

A condition in which the blood contains an abnormally high level of glucose, characteristic of diabetes mellitus.

**Hyperthyroidism**

A condition characterized by accelerated metabolism caused by an excessive amount of thyroid hormones (overactive thyroid).

**Hypoglycemia (low blood sugar)**

A condition in which there is an abnormally diminished concentration of glucose in the blood, which may lead to convulsions or coma.

**Hypothalamus**

An area of the brain that regulates endocrine activity as well as somatic functions e.g. body
Hypothalamic neurohormones (e.g., TRH) control various functions of the pituitary gland. 

**Hypothyroidism**
A condition characterized by deficient production of thyroid hormones (underactive thyroid).

**Icteric**
A yellow color in the serum due to red cell destruction. Usually caused when the liver is not functioning properly.

**Immunoochemical**
Describing the chemistry of antigens, antibodies, and their relation to each other.

**Immunoelectrophoresis**
Pertaining to investigation of substances and their identifications by a method combining mobility in an electric field and utilizing an antigen-antibody reaction. It refers to a combination technique used to elevate proteins in a mixture, or the characteristics of a specific protein.

**Immunofluorescence**
A method of locating antigens in tissue, or of identifying an antigen by the fluorescence resulting when the antigenic material is exposed to a specific antibody coupled with a fluorescent dye. The antigen-antibody combination then is visible (luminous) using ultraviolet light. This technique is used in the diagnosis of syphilis, toxoplasmosis (a serious disease which may lead to blindness and brain defects in the congenital form, as well as myocarditis and other conditions), and other diseases.

**Immunoglobulins (Ig)**
A family of similar but distinctly different proteins which act as antibodies of five major types (IgA, IgD, IgE, IgG, and IgM). They are produced in lymphoid tissue by B lymphocytes and plasma cells, in response to the presence of antigenic substances.

**Immunology**
The study of immunity, the security or protection against a foreign organism or poison introduced into an individual.
A method of (or preparation for) using an insoluble substance combined with specific antibody or antigen for absorbing antigen or antibody components from blood. This allows determination of the amount of antigen or antibody in the specimen.

**Impotence**

The inability to have an erection.

**In vitro**

In a test tube.

**In vivo**

In a living body.

**Incontinence**

A loss of urinary control.

**Insulin**

A protein hormone secreted by the beta cells of the pancreas that signals the fed state. It is secreted in response to elevated blood levels of glucose.

**Insulin Resistance**

A defect present in the majority of individuals with impaired glucose tolerance and essentially in all patients with Type 2 diabetes and is an impairment of insulin action.

**Iron (Fe)**

An essential element enabling the oxygen-carrying capacity of hemoglobin in red blood cells. A large portion of iron in the body is found in hemoglobin, muscle and other tissues, while some of the remaining iron is bound to an iron-transporting serum protein called transferrin. Tests to measure iron are performed to detect and evaluate iron-deficiency anemias or abnormally high levels of iron found in hemochromatosis (excess iron deposits throughout the body).

**Isotopic assay techniques**

Methods of identifying and measuring substances such as hormones, by using procedures that employ labeling with material having radioactive properties (isotopes). Detection of radiation enables measurement of the desired analyte.

**Ketoacidosis**

A condition in which acidosis is accompanied by the accumulation of ketone bodies in the
body tissues and fluids as in diabetic acidosis and starvation acidosis.

**Kleihauer-Betke test**
An indicator of fetal (F) hemoglobin in red cells. The test is based on the fact that hemoglobin F is not readily dissolved in an acid buffer, unlike normal adult hemoglobin (A). Demonstration of these two hemoglobins aids in the diagnosis of a number of blood disorders, and of fetal-maternal hemorrhage.

**Lactate dehydrogenase or lactic acid dehydrogenase (LDH)**
An enzyme important in provision of muscle energy (carbohydrate metabolism), that is present in many cells, particularly those of the heart, kidneys, liver, and skeletal muscle. Elevated blood levels of LDH may confirm a suspected heart attack.

**LDH**
See lactate dehydrogenase.

**LDL cholesterol**
See low density lipoprotein cholesterol.

**LH-RH**
Man-made compounds that are similar to the natural leutinizing hormone-releasing hormone which aids in the production of testosterone.

**Ligase chain reaction (LCR)**
A method of DNA amplification similar to PCR, except that it uses four primers instead of two and uses the enzyme ligase to ligate or join two segments of DNA. It can have greater specificity than PCR.

**Lipase**
An enzyme originating in the pancreas which helps to digest fats. Measuring blood levels of lipase will help screen for disease of the pancreas.

**Low density lipoprotein cholesterol (LDLC)**
The protein-lipid combination that transports the major amount of the cholesterol in the blood. While LDLC helps in synthesis of bile acid and steroid hormones, elevated blood levels of LDLC (the "bad" cholesterol) have been linked to heart disease because it carries the cholesterol through the blood to the cells.

**Lymph nodes**
Small bean-shaped structures scattered along the vessels of the lymphatic system. The lymph nodes produce white blood cells and filter bacteria and cancer cells that may travel through the system.

**Macrovascular Disease - Large Vessel Disease**
Atherosclerosis involving the coronary, cerebrovascular, and peripheral vessels. Occurs at an earlier age and with greater frequency in those with diabetes than it does in nondiabetic individuals.

**Magnesium (Mg)**
An essential element which influences many enzymes needed to produce cellular energy and nerve and muscle message transmission. It affects nervous, muscular and cardiovascular systems. Magnesium is found mainly in bone, also in muscle and other tissues: deficiency can lead to neuromuscular and central nervous system irritability, muscle twitches and weakness. Magnesium excess has been found to result in mental depression and cardiac arrest.

**Malignant tumor**
A tumor which is cancerous.

**Mammogram**
A low voltage X-ray photograph of the breast. It allows early detection of malignant or benign tumors and other microcalcification-containing lesions.

**Metastasis**
The spread of disease from one part of the body to another.

**Microvascular Disease - Small Vessel Disease**
A group of disorders related to disease of small blood vessels particularly retinopathy and nephropathy characteristic of diabetes mellitus.

**Monoclonal antibodies**
Specific antibodies derived from a single (mono) clone of plasma cells. It may be produced in large quantities, usually for use against a specific antigen, for diagnostic and possibly therapeutic use.

**Nephropathy**
A disease of the kidneys. Commonly accompanies later stages of diabetes mellitus; it begins with hyperfiltration, renal
hypertrophy, microalbuminuria, and hypertension.

**Neural tube**

The tubular embryonic tissue from which the brain and spinal cord develop. Very serious congenital defects result from failure of this tube to close during the process of growth and differentiation.

**Neural tube defect**

A congenital defect of the central nervous system, including the spinal cord, skull and brain, resulting from failure of the neural tube to properly close during fetal development. Defects may include absence of the skull, and protrusions of the brain or spinal cord. Most such defects can be detected before birth by determination of amniotic fluid or blood levels of alpha-fetoprotein and by ultrasonic scanning.

**Neuropathy**

A functional disturbance or pathalogical change in the peripheral nervous system, the most common kind of chronic symmetrical sensory polyneuropathy affecting first the nerves of the lower limbs and often affecting autonomic nerves, characteristic of diabetes mellitus.

**NMR**

See nuclear magnetic resonance.

**Nonisotopic immunoassay**

A method of identifying and measuring substances, such as hormones, by utilizing antigen-antibody reactions without the use of radioactive material (isotopes) for labeling. Such assays may employ other kinds of reaction-monitoring signals.

**Nonthyroidal illness (NTI)**

Illness that causes abnormal thyroid function test results in the absence of thyroid disease.

**Nuclear magnetic resonance (NMR)**

The use of magnetic fields and radio waves (instead of the X-rays employed in the CT scan) to visualize body structures and how they function. The powerful magnet, large enough to enclose the body, forces the atomic nuclei in most material such as soft tissue to align themselves with the magnetic
Radio waves are aimed at the selected area to excite the atoms which, when the waves are stopped, emit signals that are converted to computer-generated pictures. NMR is used to detect diseases of soft tissues, heart, brain, and spinal cord. NMR is also called magnetic resonance imaging (MRI).

**Oncologist**

A specialist in the treatment of cancer.

**Opiates**

Drugs containing or derived from opium (a poppy juice) used to relieve pain or induce sleep. They are addictive narcotics.

**Oral glucose tolerance test**

A series of blood tests measuring plasma glucose concentration, the first after an 8 to 12 hour fast, then a liquid that contains 75 grams of glucose is ingested, after which the second blood glucose is measured at 30 minutes, the third at one hour, the fourth at two hours and the fifth at three hours. A diagnosis of diabetes is made if the venous plasma glucose level is > 200 mg/dl at 120 min. and one other blood glucose level is also > 200 mg/dl.

**Orchiectomy**

Surgical removal of the testicles.

**Panel testing**

A laboratory procedure in which a series of tests is performed on one specimen, usually related to a single condition or disease, or for differential diagnosis.

**PCP**

See **phencyclidine hydrochloride**.

**Pelvic inflammatory disease (PID)**

Ascending infection from the vagina or cervix to the uterus, fallopian tubes and broad ligaments: most often caused by bacterial infections of chlamydia and gonorrhea.

**Pelvic node dissection**

Removal of possible cancer carrying lymph nodes near the prostate or their evaluation.

**PET scan**

See **positron emission tomography**.

**Phencyclidine hydrochloride (PCP)**
An anesthetic agent used in veterinary medicine. Also an illegal hallucinogenic street drug, "angel dust." Its presence may be detected by urine testing.

**Phenytoin**

An anticonvulsant drug used to treat seizure disorders including epilepsy, as well as digitalis-induced heartbeat rhythm disturbances. An overdose can have toxic effects. A blood test can determine the phenytoin level to aid in correct dosing and avoid toxicity.

**Phosphorus (P)**

An element required for bone growth and metabolic energy. Stored in teeth and bones, mainly in combination with calcium, phosphorus blood levels are affected by parathyroid, blood, and bone diseases.

**Photon**

A unit or particle of radiant or light energy. Photons have no electric charge. Gamma and X-rays may be referred to as photons.

**Pipettes**

Calibrated devices used for liquid measurement.

**Pituitary**

A bi-lobed endocrine gland located at the base of the brain that secretes several critical hormones for the regulation of other endocrine glands, including the secretion of TSH for stimulation of the thyroid. The pituitary is regulated by the neurohormones from the hypothalamus.

**Plasma**

The watery fluid portion of blood in which the corpuscular elements are suspended. It transports nutrients as well as wastes throughout the body. Various compounds — including proteins, electrolytes, carbohydrates, minerals, and fats — are dissolved in it.

**Polydipsia**

A chronic excessive intake of water; a characteristic of uncontrolled diabetes mellitus.

**Polyphagia**

Excessive eating or hunger, a characteristic of uncontrolled diabetes mellitus.
**Polyuria**

The passage of a large amount of urine in a given period, a characteristic of diabetes mellitus.

**Positron emission tomography (PET)**

A computerized radiographic technique that shows metabolic activity occurring in various body structures (in the heart and brain, for example). A radioactive substance that emits positively charged electrons (positrons) is injected into or inhaled by the patient, in whom they combine with negatively charged electrons. The resulting gamma radiation is converted into color-coded images.

**Postpartum Thyroiditis**

An autoimmune condition resulting in transient thyrotoxicosis followed by hypothyroidism occurring after parturition (giving birth). It may recur with subsequent pregnancies.

**Potassium (K)**

An essential element found primarily in the cells of the body. It helps to maintain proper muscle and nerve function; it also helps in some important metabolic processes. Blood serum potassium levels usually are determined to help evaluate heart rhythm irregularities, neuromuscular disorders and kidney function.

**Precision**

Reproducibility, the agreement of data points (test results) when a test is run more than once.

**Primary wavelength**

The wavelength at which a chemistry has the greatest absorbance.

**Prostate specific antigen test**

A blood test which measures a patient's level of prostate specific antigen. If elevated, the antigens may be an indicator of prostate cancer.

**Prostate specific antigen(PSA)**

A substance manufactured mainly by the prostate.

**Prostatectomy**

Surgical removal of the prostate.

**Prostatic acid phosphatase test**
A blood substance that rises above normal in many patients when prostate cancer has spread beyond the prostate.

**Prothrombin**

A plasma protein, one of the coagulation factors and the precursor of thrombin, prothrombin is synthesized in the liver with the help of vitamin K. The prothrombin time (PT) test measures blood clotting time, evaluates bleeding disorders and liver damage, and monitors the use of anticoagulant drugs.

**Qualitative**

A test in which the final result is positive/negative, reactive/nonreactive, present/absent.

**Quantitative**

A test in which the final result is expressed as a specific quantity — ng, mg, mcg.

**Radioactive**

 Emitting radiation that results from atomic disintegration. The electromagnetic energy of, for example, X-rays and gamma rays is radioactive.

**Radioactive energy attenuation**

Reduction of intensity of an X-ray beam by the partial absorption of radiation, as by a radiolucent structure. Soft tissue is radiolucent to some extent. In attenuation, the number of X-rays left in an X-ray beam after penetration through matter is reduced, but never reaches zero.

**Radioactive iodine excretion test**

A test of thyroid function in which the patient is given radioactive iodine by mouth. The amount of radioactivity excreted in the urine and/or accumulated in the thyroid reflects thyroid activity.

**Radioimmunoassay (RIA)**

See assay.

**Radioisotopes**

Elements in a form with unstable nuclei that achieve a more stable nuclear configuration by emitting excess energy as radiation (radioactive decay). Radioisotopes can be used to label certain chemicals to measure body function.

**Radiopaque dye**
A substance or chemical (such as certain iodine compounds) that is given before an X-ray procedure is performed to outline the interior of hollow organs. It does not permit the passage of X-rays.

**Radiopharmaceuticals**

Drugs that spontaneously emit nuclear particles. Different radiopharmaceuticals are chosen according to the organ and purpose (diagnostic, therapeutic, or research). The radioactive material allows differentiation between healthy and diseased tissue.

**Reagent**

A substance used to produce a specific chemical reaction. It may be used to detect, measure, or prepare other substances.

**Rectum**

The last five or six inches of the intestine leading to the outside of the body.

**Reticulocyte**

A young red blood cell containing a network of basophilic substances.

**Retinopathy**

This condition of the eye is associated with diabetes mellitus and is progressively characterized by microaneurysms, intraretinal punctuate hemorrhages, yellow waxy exudates, cotton-wool patches, and macular edema.

**Rubella**

A contagious viral infection characterized by a red rash, fever, and enlarged lymph nodes. Maternal infection in the early stage of pregnancy may result in congenital defects of the fetus. Blood tests are performed to detect immunity (antibodies) to rubella. Rubella is commonly known as German measles.

**Salicylates**

The drugs or compounds derived from salicylic acid — such as aspirin — that have fever reducing, anti-inflammatory, and pain relieving properties. Toxic concentrations may lead to nausea, impaired hemostasis, and electrolyte disturbance. The serum concentration of salicylate may be measured by a blood test.

**Scanning electron microscope**
An electron microscope with a beam that scans (moves point-to-point) over the surface of a specimen, producing a lifelike, three dimensional view on film or screen. The magnification of the image is usually less than that of a non-scanning electron microscope. For visualization by a scanning microscope, tissues do not require extensive preparation and handling.

**Secondary wavelength**

A wavelength chosen because the color developed by the reaction is minimal. It is also usually the wavelength at which the common clinical interfering substances have little or no absorbance.

**Self-monitoring of blood glucose**

A means of testing levels of blood glucose via a fingerstick blood sample and a blood glucose testing meter to determine the glucose result. Regular monitoring is an essential component of any diabetes management regimen. 3 to 4 times a day is recommended by the American Diabetes Association, for those using insulin.

**Semen**

A thick, whitish fluid secreted by the prostate to carry sperm.

**Sensitivity**

The extent to which a diagnostic test correctly detects an abnormality. In defining a laboratory test's accuracy, sensitivity indicates the frequency of positive test results in patients who have the specific disease being tested for.

**Serologic testing**

An analysis of blood serum for evidence of infection by evaluating antigen-antibody reactions; used in acute and chronic stages of infection.

**Serum**

The clear, thin, watery portion of a liquid that can be separated from the more solid elements. The fluid portion of whole blood that separates after coagulation of the specimen. It is devoid of fibrinogen (a clotting protein). Serum may be separated out of whole blood by centrifugation.

**Serum glutamic oxaloacetic transaminase (SGOT)**
An enzyme present in all tissue, primarily in the liver, heart, and skeletal muscles. It is released into the bloodstream following cell death or injury. Elevated blood levels of SGOT may signal liver, heart, or skeletal muscle disease. It is also called aspartate aminotransferase (AST).

**Serum glutamic pyruvic transaminase (SGPT)**

An enzyme present in the same tissues as SGOT. Its appearance in serum is a marker of tissue damage similar to SGOT, but it is a more specific indicator of liver damage. It is also known as alanine aminotransferase (ALT).

**Sexually transmitted disease (STD)**

A disease caused by a microorganism that is passed to another person during sexual contact.

**SGOT**

See serum glutamic oxaloacetic transaminase.

**SGPT**

See serum glutamic pyruvic transaminase.

**Sodium (Na)**

A chief electrolyte that regulates the amount of fluid inside and surrounding body cells. Measuring blood or urine levels of sodium will help to evaluate electrolyte and fluid balance disorders such as those that occur in edema, kidney, and liver or adrenal gland dysfunctions.

**Sonography**

A noninvasive diagnostic technique, also known as ultrasonography, in which high frequency sound waves are aimed at a selected body area or organ, with the resulting echoes being converted to images. Diagnostic ultrasound often is employed for obstetrical conditions.

**Specificity**

The ability of a diagnostic test to rule out the presence of a disease. In defining a laboratory test’s accuracy, specificity indicates the frequency of negative test results in patients who do not have the specific disease being tested for.

**Spectrophotometric**
Pertaining to the estimation of coloring matter in a solution using a device (spectrophotometer) that compares that color to the full spectrum.

**Spina bifida**

A congenital condition that is characterized by incomplete closure of the fetal vertebral arches. Defective closure of the bony canal that encases the spinal cord allows protrusion of portions of the brain and spinal cord through the defect.

**Spinal tap (spinal or lumbar puncture)**

Entrance by needle for removal of fluid from the spinal cavity, for diagnostic tests or to allow introduction of other fluids (anesthetics, diagnostic aids, for example). Spinal or cerebrospinal fluid (CSF) bathes the brain, providing mechanical support and maintaining the chemical balance. Central nervous system diseases or injury can cause changes in CSF (elevated cell count, elevated protein, presence of tumor cells, bacteria, color change, for example) that are of diagnostic importance.

**Stage**

A term used to describe the extent of cancer.

**Staging**

Tests conducted to determine the stage of a cancer.

**Strep throat**

Infection of the throat and tonsils caused by group A streptococci. Symptoms include sore throat, fever, chills, and enlarged tonsils with white spots (pus). Strep throat or streptococcal sore throat may be detected by immunofluorescence staining of material from throat swabs. If proper treatment, including antibiotic administration, is not given, rheumatic fever can result.

**Streptococcus**

A member of a family of coccoidal (round) bacteria that can cause a variety of external and internal infections.

**%T3 Uptake**

A measurement of the unsaturated thyroxine binding sites of the serum thyroxine binding proteins.

**T-uptake**
A measurement of the total binding capacity of the thyroxine binding proteins for thyroid hormones.

<table>
<thead>
<tr>
<th><strong>T3 Thyrotoxicosis</strong></th>
<th>A condition of hyperthyroidism where FT3, but not FT4, is elevated.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Testosterone</strong></td>
<td>A male sex hormone produced mostly by the testicles with a small amount produced by the adrenal glands. Testosterone stimulates a man’s sexual activity and growth of other sex organs, including the prostate.</td>
</tr>
<tr>
<td><strong>Theophylline</strong></td>
<td>A drug used as a relaxant of bronchial smooth muscle. Toxic levels can cause increased heartbeats, nausea, and seizures. A blood test is available to monitor levels of the drug.</td>
</tr>
<tr>
<td><strong>Thyroglobulin (Tg)</strong></td>
<td>A protein found in thyroid follicular cells that catalyzes the production of T3 and T4 from MIT and DIT.</td>
</tr>
<tr>
<td><strong>Thyroglobulin antibodies (TgAb)</strong></td>
<td>Autoantibodies produced by the body against its own thyroglobulin proteins. TgAb attacks the thyroid and disrupts thyroid function.</td>
</tr>
<tr>
<td><strong>Thyroid</strong></td>
<td>A butterfly-shaped gland located at the base of the throat that controls metabolism through the secretion of T4 and T3 hormones.</td>
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<tr>
<td><strong>Thyroid cancer</strong></td>
<td>A rare thyroid disease characterized by uncontrolled tissue proliferation in the thyroid.</td>
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<tr>
<td><strong>Thyroid Hormone Binding Ratio (THBR)</strong></td>
<td>Recommended nomenclature for T3 Uptake test. A ratio of the solid matrix uptake and the serum uptake.</td>
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<tr>
<td><strong>Thyroid nodules</strong></td>
<td>Masses (usually benign) that can form in the thyroid gland and may produce excessive thyroid hormone.</td>
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<tr>
<td><strong>Thyroid peroxidase (TPO)</strong></td>
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</tbody>
</table>
A protein found in thyroid follicle cells that catalyzes the iodination of T4 and T3 in thyroid hormone biosynthesis.

**Thyroid peroxidase antibodies (TPOAb)**

Autoantibodies produced by the body against its own thyroid peroxidase enzymes. TPOAb attacks the thyroid and disrupts thyroid function.

**Thyroid stimulating hormone (TSH)**

A hormone secreted from the anterior pituitary, that stimulates the thyroid to produce thyroid hormones T4 and T3. Elevated levels of thyroid hormones suppress TSH production by a classical feedback inhibition mechanism.

**Thyrotropin releasing hormone (TRH)**

A tripeptide hormone produced by the hypothalamus which stimulates the anterior pituitary to produce TSH.

**Thyroxine (T4)**

The primary hormone produced by the thyroid. Thyroxin circulates throughout the body primarily bound to carrier proteins. Free T4 is converted to triiodothyronine (T3) in peripheral tissues.

**Thyroxine binding globulin (TBG)**

The major thyroid hormone transport protein in human serum.

**Thyroxine binding proteins (TBP)**

Three serum proteins with binding affinities for T4 and T3; thyroxine binding globulin (TBG), prealbumin, and albumin.

**Tissue**

A group of cells organized to perform a specialized function.

**Titer**

The quantity of a substance or its maximal dilution that produces a measurable reaction with another specific substance. Antibody levels (titers) are measured to determine whether they are falling or rising.

**Toxic Nodular Goiter**

Caused by autonomous production of thyroid hormone by solitary or multiple thyroid nodules.

**Toxicology**
The science that deals with the study of poisons and their effects in the body, including methods of detection and treatment.

Tricyclic antidepressants
Widely used drugs for the treatment of depression; drug overdose may cause severe toxic effects. The dexamethasone suppression test may aid in the selection of patients who might respond well to antidepressant treatment. Blood and urine tests may be used to determine levels of these drugs in the body.

Triglyceride
A major food fat and blood lipid (fatty substance) produced by the liver from fatty acids. Excess triglycerides are stored in adipose tissue and are used to provide energy. Elevated blood levels of triglycerides and of cholesterol may be associated with an increased risk for atherosclerosis and related disorders, such as coronary artery disease, heart attack, and hypertension.

Triiodothyronine (T3)
A thyroid hormone primarily converted from T4, though some excretion occurs from the thyroid directly. T3 is the metabolically active hormone.

Tumor
An abnormal growth of cells resulting from uncontrolled cell growth.

Turner syndrome
A chromosomal abnormality in women in whom only one X chromosome is present instead of the normal two. The condition is characterized by growth abnormalities such as dwarfism and underdeveloped reproductive organs. Learning problems and mild mental retardation may be present. A smear of scrapings from inside the mouth may show evidence of this condition. Culture and chromosomal analysis of fetal cells from amniotic fluid can forecast this syndrome.

Type 1 diabetes
A condition characterized by abrupt onset of symptoms, insulinopenia, dependence on exogenous insulin to sustain life and a tendency to develop ketoacidosis.
Type 2 diabetes

A disorder usually characterized by a gradual onset with minimal or no symptoms of metabolic disturbance, exogenous insulin is not required to prevent ketonuria and ketoacidosis; dietary control and exercise with or without oral diabetes medications is usually effective.

Unidirectional

Refers to one-way communication between an instrument and a computer.

Urea nitrogen

The nitrogen that is found in urea (an end product of protein metabolism) which is recognized as different from nitrogen found in blood proteins. About 50 percent of urea is nitrogen. Urea is normally present in blood and excreted in urine. Increased blood levels may be found in kidney disease, and decreased amounts are associated with liver disease.

Urethra

The canal that carries urine from the bladder and semen from the sex glands to the outside of the body.

Uric acid

A product of protein metabolism. Measurement of uric acid in the blood is most commonly performed to evaluate gout. Gout is a metabolic disease marked by an accumulation of uric acid in the blood and of its salts in joints. This causes pain and swelling in the joints, especially in the great toe.

Urinalysis

The physical, chemical, and microscopic analysis of urine to detect changes in important characteristics and values that may indicate diseases or disorders. These include protein, sugar, relative acidity or alkalinity, presence of blood and microorganisms, bilirubin, and an increased number of white cells. Special urine tests, such as tests for pregnancy, are not performed as part of a urinalysis.

Urologist

A physician and surgeon who is specially trained in the diagnosis and treatment of
diseases of the male genital tract and urinary tract in patients of any age or sex.

**Virus**

One of a group of minute infectious agents (much smaller than bacteria) lacking independent metabolism. It is able to replicate only within living host cells. A virus consists of a core of nucleic acid surrounded by an inner protein mantle, sometimes encircled by an outer protein envelope. Viral infections usually lead to the production of antibodies.

**Western blot**

A method of immobilizing viral protein fragments on a support medium where they can be identified using specific antibodies. One of the applications of the procedure is the determination of the specificity of antibodies to the AIDS virus.

**BIBLIOGRAPHY**


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