

Appendix B.—Glossary of Acronyms and Terms

Glossary of Acronyms

AABB	— American Association of Blood Banks	ISBT	— International Society of Blood Transfusion
ABC	— American Blood Commission	ISG	— Immune Serum Globulin
ABRA	— American Blood Resources Association	IVGG	— intravenous Gamma Globulin
ACT	— American Council on Transplantation	JCAH	— Joint Commission on the Accreditation of Hospitals
ADP	— Adenosine Triphosphate	KS	— Kaposi's Sarcoma
AHF	— Antihemophilic Factor	mRNA	— Messenger RNA
AIDS	— Acquired Immunodeficiency Syndrome	MWBB	— Metropolitan Washington Blood Bank
ALT	— Alanine Aminotransferase	MW	— Molecular Weight
AMA	— American Medical Association	NANB	— Non-A, Non-B Hepatitis
AMS	— Automated Microplate Systems	NBP	— National Blood Policy
ARC	— American Red Cross	NCI	— National Cancer Institute
ASCP	— American Society of Clinical Pathologists	NHF	— National Hemophilia Foundation
ATIII	— Antithrombin III	NHLBI	— National Heart, Lung, and Blood Institute
ATP	— Adenosine Triphosphate	NIAID	— National Institute of Allergies and Infectious Diseases
BTS	— Blood Transfusion Service	NIH	— National Institutes of Health
CBC	— Canadian Blood Committee	NRDC	— National Research and Demonstration Center
CCBC	— Council of Community Blood Centers	NSA	— Normal Serum Albumin
cDNA	— Complementary DNA	NTIS	— National Technical Information Service
CDC	— Centers for Disease Control	NYBC	— New York Blood Center
CFR	— Code of Federal Regulations	OoB	— Office of Biologics Research and Review
CMV	— Cytomegalovirus	OTA	— Office of Technology Assessment
CPDA-1	— Citrate Phosphate Dextrose Adenine-1	PA	— Plasminogen Activator
CRC	— Canadian Red Cross	PAF	— Platelet Activating Factor
DBDR	— Division of Blood Diseases and Resources (Division of NHLBI)	PCP	— <i>Pneumocystis Carinii</i> Pneumonia
DHEW	— (See USDHEW)	PFC	— Perfluorochemicals
DHHS	— (See USDHHS)	PPF	— Plasma Protein Fraction
DNA	— Deoxyribonucleic Acid	PTC	— Prothrombin Complex
DRG	— Diagnosis-Related Group	RBC	— Red Blood Cells
EBV	— Epstein-Barr Virus	RES	— Reticuloendothelial System
EIA	— Enzyme Immunoassay	RHo(D)	— Anti-Rh Antigen Immune Globulin
ELISA	— Enzyme-linked Immunosorbent Assay	RIA	— Radioimmunoassays
FDA	— Food and Drug Administration	RNA	— Ribonucleic Acid
FFP	— Fresh-Frozen Plasma	RSA	— Resource Sharing Agreement
GAO	— General Accounting Office	SBB	— Specialist in Blood Banking
HBIG	— Hepatitis B Immune Globulin	SFBS	— South Florida Blood Service
HBcAg	— Hepatitis B Core Antigen	STS	— Serological Test for Syphilis
HBsAg	— Hepatitis B Surface Antigen	T&S	— Type-and-Screen
HCFA	— Health Care Financing Administration	UAGA	— Uniform Anatomical Gifts Act
HLA	— Human Leukocyte Antigen	USDHEW	— U.S. Department of Health, Education and Welfare
HTLV	— Human T-cell Lymphotropic Virus	USDHHS	— U.S. Department of Health and Human Services
IATC	— Interagency Technical Committee	VZIG	— Varicella Zoster Immune Globulin
IRB	— Institutional Review Board	WHO	— World Health Organization

Glossary of Terms

- ABO blood group:** The major human blood type determined by the presence or absence of two antigenic structures, A and B, on red blood cells, consisting of four blood types (A, B, AB, and O).
- Acquired immunodeficiency syndrome (AIDS):** A disease believed to be of viral origin (human T-cell lymphotropic virus, type III) and characterized by a deficiency of the immune system, that is complicated by infections caused by organisms that usually do not produce infections in individuals with normal immunity and/or by the development of a rare type of cancer (Kaposi's sarcoma) usually seen in the elderly or in individuals who are severely immunocompromised from other causes.
- Agglutination:** A reaction in which particles (e.g., red blood cells or bacteria) suspended in a liquid collect into clumps and which occurs especially as a serologic response to a specific antibody.
- Albumin:** A small protein, synthesized in the liver, which is the principal protein in plasma and is important in maintaining plasma volume through maintenance of an osmotic gradient between plasma in the blood vessels and fluids in the surrounding tissues. Albumin also serves as the carrier molecule for fatty acids and other small molecules in plasma.
- Allogeneic:** Refers to individuals of the same species who are sufficiently unlike genetically to interact antigenically.
- Alloimmunity:** Development of immunity by one individual against the antigens of another individual of the same species; for example, development of anti-Rh antibodies in a Rh negative individual upon infusion of R(h) positive blood.
- Antibiotic:** A chemical substance used against bacterial infections which is produced by a micro-organism and has the capacity to inhibit the growth of or to kill other micro-organisms.
- Antibody:** A protein component of the immune system in mammals found in blood.
- Antigen:** A large molecule, usually a protein or carbohydrate, which when introduced into the body stimulates the production of an antibody that will react specifically with the antigen.
- Antihemophilic factor (AHF) (or Factor VIII):** A plasma coagulation factor whose congenital deficiency results in the bleeding disorder known as hemophilia A.
- Anti-inhibitor complex:** An "activated" form of Factor IX concentrate, which is used in the treatment of hemophilia A patients with inhibitors to Factor VIII. (See also "Factor IX concentrate" and "concentrate.")
- Apheresis:** A method of collecting individual components of blood instead of whole blood from the donor; e.g., plasmapheresis, plateletapheresis.
- Autologous donation:** A blood donation that is stored and reserved for return to the donor as needed, usually in elective surgery.
- Bacillus subtilis:** A common nonpathogenic, anaerobic soil bacterium that has been used industrially for the large-scale production of proteins used in detergents and in the processing of corn starch and has attracted the attention of the recombinant DNA industry because of its great biosynthetic capability.
- Bacteria:** Any of a group of microscopic organisms having round, rodlike, spiral, or filamentous single cell or noncellular bodies that are often aggregated into colonies or motile by means of flagella, living in soil, water, organic matter, or in the bodies of plants and animals.
- Bacteriophage:** Any of various viruses that multiply in bacteria. The bacteriophage, lambda, is commonly used as a vector in recombinant DNA processes.
- Biologics:** Vaccines, therapeutic serums, toxoids, antitoxins, and analogous biological products used against the agents of infectious diseases or their harmful byproducts.
- Biotechnology:** Techniques that use living organisms, or substances from such organisms, to make or modify a product.
- Blood:** A complex liquid mixture of specialized cells (white cells, red cells, and platelets), proteins and other molecules, among whose functions are the transport of oxygen and nutrients to body tissues, removal of carbon dioxide and other wastes, transfer of hormonal messages between organs, prevention of bleeding, and transport of antibodies and infection fighting cells to sites of infection.
- Blood bank:** General name for a facility or part of a facility (e.g., a hospital) that stores blood and blood components and which also may collect and process blood.
- Blood cells:** Erythrocytes (red blood cells), leukocytes (white blood cells), or thrombocytes (platelets).
- Blood center:** A facility that provides a full range of blood services, including the collection, testing, processing, and distribution of blood and blood products, to a particular geographic area (e.g., community or regional).
- Blood components:** Products separated from whole blood; i.e., red cells, white cells, platelets and plasma. Compare with "plasma derivatives."
- Bone marrow:** A highly vascular, modified connective tissue found in the long bones and certain flat bones of vertebrates that is the origin of blood cells.

- Cell line:** Living cells obtained from humans and other animals and which are cultured under special conditions so that they can multiply indefinitely in vitro.
- Centrifugation:** The rapid whirling of fluids in a machine known as a centrifuge to separate substances of different densities by centrifugal force.
- Clone:** A group of genetically identical cells or organisms produced asexually from a common ancestor. (See also “recombinant DNA techniques.”)
- Coagulation:** The process of blood clotting, in which the plasma protein prothrombin (Factor II) is converted to thrombin, which in turn converts the soluble plasma fibrinogen (Factor I) to insoluble fibrin.
- Coagulation concentrates or complexes:** Products obtained through selective precipitation of the proteins in plasma, resulting in concentrated forms of the plasma proteins that are needed for blood to coagulate (clot). Immune globulins and albumin are also obtained in this manner. See also “cold ethanol precipitation technique.”
- Coagulation factors or proteins:** Naturally occurring proteins in plasma (e.g., Factor VIII, Factor IX) that aid in the coagulation of blood. See also “Factors I-XII.”
- Cold ethanol precipitation technique:** The principal method used to separate plasma into its major protein groups. A three-variable system (temperature, ionic strength, and ethanol concentration (pH)) is used to precipitate different proteins in the following order: Fraction I (chiefly Factor VIII and fibrinogen); Fraction II (the immune globulins); Fractions III and IV (other coagulation proteins and trace components); Fraction V (the albumins); and Fraction VI (the remaining residue).
- Complementary DNA (cDNA):** DNA that is complementary to messenger RNA; used for cloning or as a probe in DNA hybridization studies.
- Components:** See “blood components.”
- Concentrates:** In general, refers to blood cells or proteins that have been separated from the rest of blood or plasma in concentrated form. For example, preparations of platelets that are separated from whole blood after donation are called “platelet concentrates” (see also “coagulation concentrates”).
- Cosmids:** Genetic hybrids constructed from plasmids and the bacteriophage, lambda, and used as vectors in DNA cloning.
- Crosshatching:** Testing to determine compatibility of blood types between donor and recipient.
- Cryoprecipitate:** A precipitate that remains after blood plasma has been frozen and then thawed. This precipitate is rich in Factor VIII (antihemophilic factor), fibrinogen, and fibronectin.
- Cytomegalovirus (CMV):** One of a group of highly host-specific herpes virus that infect man, monkeys, or rodents, with the production of unique large cells bearing intranuclear inclusions.
- Diagnosis-related groups (DRGs):** A classification system that groups patients according to principal diagnosis, presence or absence of a surgical procedure, presence or absence of significant comorbidities or complications, age, and other criteria; used as the basis for Medicare’s current hospital payment system.
- DNA:** Deoxyribonucleic acid.
- Directed donations:** Donations from identified individuals, such as family and friends, intended to be used as the sole source of blood for the patient for whom the donations were made.
- Enzyme:** Any of a group of catalytic proteins that are produced by living cells and that mediate and promote the chemical processes of life without themselves being altered or destroyed.
- Erythrocytes:** Red blood cells.
- Escherichia coli* (*E. coli*):** A species of bacteria that inhabits the intestinal tract of most vertebrates. Some strains are pathogenic to humans and animals. Many nonpathogenic strains are used as hosts in recombinant DNA technologies.
- Eukaryote:** A cell or organism with membrane-bound, structurally discrete nuclei and well-developed cell organelles. Eukaryotes include all organisms except viruses, bacteria, and blue-green algae. (Compare with “prokaryote.”)
- Exons:** Fragments of eukaryotic genes which contain the coding regions of DNA for gene expression. (See also “introns.”)
- Factors I-XII:** Refers to a classification of the multiple factors involved in coagulation. For example, hemophilia A is a result of a deficiency in Factor VIII, while hemophilia B is a deficiency in Factor IX.
- Fibrinogen:** Factor I; a plasma protein, synthesized in the liver, which is involved in coagulation as the precursor of fibrin.
- Fibronectin:** A plasma protein, synthesized in the liver, which plays a variety of roles ranging from cell adhesion to enhancing the phagocytic clearance of particulate contaminants from the body.
- Fractionation:** See “plasma fractionation.”
- Fresh frozen plasma (FFP):** Plasma that has been frozen soon after collection to preserve the activity of the coagulation proteins.
- Gene:** The basic unit of heredity; an ordered sequence of nucleotide bases, comprising a segment of DNA. A gene contains the sequence of DNA that encodes one polypeptide chain (via RNA).
- Gene expression:** The mechanisms through which

directions contained within the genes that code for the cell's products are transferred and used to direct the production process.

Genome: The genetic material of an organism.

Glycosylation: The attachment of a carbohydrate molecule (glycogen) to another molecule such as a protein.

Granulocytes: White blood cells (leukocytes) containing neutrophilic, basophilic, or eosinophilic granules in their cytoplasm; a term used to identify a particular subset of white blood cells in one of several methods of classification.

Hemagglutination: Visual clumping of red blood cells; refers to compatibility testing between donor and recipient and observation of clumping from antibodies against the red blood cells. (See also "agglutination.")

Hematocrit: The volume occupied by the cellular elements of blood in relation to the total volume.

Hematology: The science of blood, its nature, function, and diseases.

Hematopoiesis: The process by which the cellular elements of blood are formed.

Hemoglobin: The iron-containing, oxygen-carrying proteins within red blood cells.

Hemolysis: The lysis, or destruction, of erythrocytes.

Hemolytic transfusion reaction: An antigen-antibody reaction in the recipient of a blood transfusion that results in the destruction of red blood cells.

Hemophilia: A rare, hereditary bleeding disorder caused by a deficiency in the ability to synthesize one or more of the coagulation proteins; e.g., Factor VIII (hemophilia A) or Factor IX (hemophilia B).

Hemorrhage: The escape of blood from the vascular system.

Hemostasis: The arrest of a flow of blood or hemorrhage; stopping or slowing of blood circulation.

Hepatitis: Inflammation of the liver; may be due to many causes, including viruses, several of which are transmissible through blood transfusions.

Histocompatibility: The extent to which individuals (or their tissues) are immunologically similar.

Hybridoma: Product of fusion between a myeloma cell (which divides continuously in culture and is "immortal") and a lymphocyte (antibody-producing cell). Such cells are used to produce monoclonal antibodies.

Hyperimmune globulins: Immune globulin products, derived from the plasma of donors hyperimmunized against known antigens. An example is hyperimmune anti-Rh globulin for the prevention of hemolytic disease of newborns.

Immune globulins (immunoglobulins): A type of plasma protein that comprises the antibodies.

Interferon: A class of glycoproteins (proteins with car-

bohydrate groups attached at specific locations) important in immune function and thought to inhibit viral infections.

Introns: Fragments of eukaryotic genes that contain the noncoding regions of DNA for gene expression. In prokaryotes such as bacteria, genes do not consist of exons and introns but rather consist of a single coding sequence of DNA.

In vitro: Literally, in glass; pertaining to a biological reaction taking place in an artificial apparatus; sometimes used to include the growth of cells from multicellular organisms under cell culture conditions.

In vivo: Literally, in life; pertaining to a biological reaction taking place in a living cell or organism.

Lambda: A bacterial virus that infects *E. coli*; used as a vector in gene cloning.

Leukocytes: White blood cells. Lymphocytes and granulocytes are particular types of leukocytes.

Liposomes: Closed spheroidal vesicles composed of lipid molecules arranged in a bilayer structure as in a normal cell membrane and enclosing an aqueous internal compartment.

Lymphocytes: Specialized white blood cells involved in the immune response.

Lymphokines: Proteins that mediate interactions among lymphocytes and are vital to proper immune function.

Lyophilized: Freeze-dried.

Megakaryocytes: Precursors of platelets.

Messenger RNA (mRNA): RNA (ribonucleic acid) that serves as the template for protein synthesis in living organisms; it carries the transcribed genetic code from the DNA to the protein synthesizing complex to direct protein synthesis.

Monoclonal antibodies: Homogeneous antibodies derived from clones of a single cell. Monoclonal antibodies recognize only one chemical structure and thus have remarkable specificity. They are easily produced in large quantities and have a variety of industrial and medical uses.

Nonreplacement fee: An additional fee that may be charged to users of whole blood or red cells if no replacement donations are made.

Normal serum albumin: Concentrates of albumin obtained through plasma fractionation and used to maintain or restore plasma volume. The appropriateness of using albumin preparations instead of other fluids is under examination. (See also "plasma protein fraction.")

Oligonucleotides: Short segments of DNA or RNA.

Oncotic (osmotic) pressure: The maximum pressure that develops in a solution separated from a solvent by a membrane permeable only to the solvent.

Perfluorochemicals (PFCs): Organic compounds in

- which all the hydrogen **atoms** have been replaced by fluorine atoms and which are chemically inert and not metabolized by the body.
- Plasma:** The liquid portion of blood, excluding the cellular elements but including the proteins. (See also “serum.”)
- Plasma derivatives:** Products derived from the fractionation of plasma to concentrate selected proteins. Compare with “blood components.”
- Plasma fractionation:** The separation of plasma into its major proteins. (See also “cold ethanol precipitation techniques.”)
- Plasma protein fraction (PPF):** A product of plasma fractionation that is at least 85 percent albumin and used interchangeably with albumin preparations. (See also “normal serum albumin.”)
- Plasmapheresis:** Collection of plasma. (See also “apheresis.”)
- Plasmid:** An extrachromosomal, self-replicating, circular segment of DNA found in the cytoplasm of various strains of *E. coli* and other bacteria; used as a vector in gene cloning in bacterial “host” cells.
- Plasminogen activator:** A substance that converts plasminogen to plasmin, a proteolytic enzyme in plasma which degrades the fibrin network in a blood clot, leading to clot dissolution.
- Platelets (thrombocytes):** Cells (minute protoplasmic disks) in blood which are involved in blood clotting.
- Prokaryote:** A cell or organism lacking membrane-bound, structurally discrete nuclei and organelles, such as bacteria. (Compare with “eukaryote.”)
- Proteins:** Polypeptides consisting of amino acids. In their biologically active states, they function as catalysts in metabolism and as structural elements of cells and tissues.
- Prothrombin:** Factor II; an inactive plasma protein precursor of thrombin.
- Prothrombin complex (PTC):** A product of plasma fractionation consisting of Factors II, VII, IX, and X, but mostly Factor IX; also known as Factor IX complex (concentrate). Used in the treatment of hemophilia B. An “activated” form of this concentrate is used in the treatment of hemophilia A patients with inhibitor to Factor VIII. (See also “anti-inhibitor complex.”)
- Recombinant DNA (rDNA):** The hybrid DNA produced by joining pieces of DNA from different organisms.
- Recombinant DNA techniques:** Techniques that allow specific segments of DNA to be isolated and inserted into a bacterium or other host (e. g., yeast, mammalian cells) in a form that will allow the DNA segment to be replicated and expressed as the cellular host multiplies. The DNA segment is said to be “cloned” because it exists free of the rest of the DNA of the organism from which it was derived. (See also “cloned.”)
- Recovered plasma:** Plasma removed from outdated blood or remaining after the cells have been removed but not frozen in time to preserve the coagulation proteins; it is fractionated for the remaining proteins.
- Red blood cells:** The oxygen-carbon dioxide transporting cells of blood; erythrocytes.
- Restriction enzymes (endonucleases):** Enzymes that cut DNA at specific nucleotide sequences.
- Reticuloendothelial system (RES):** A diffuse system of cells arising from mesenchyme and comprising all the phagocytic cells of the body except the circulating leukocytes.
- Rh blood group:** A major blood group consisting of genetically determined substances present on the red blood cells of most persons and of higher animals and capable of inducing intense antigenic reactions. (See also “ABO blood group.”)
- Serum:** The liquid portion of blood that remains when blood clots, removing the cells and coagulation proteins.
- Source plasma:** Plasma collected directly by plasmapheresis for fractionation into plasma derivatives.
- Stem cells:** Undifferentiated cells in the bone marrow with the ability both to replicate and to differentiate into specific hematopoietic cell lines.
- Thrombin:** An enzyme which induces clotting by converting fibrinogen to fibrin; precursor form in blood is prothrombin.
- Thrombocytes:** Platelets.
- Typing and screening (T&S):** Determining ABO and Rh blood groups and screening of blood for unexpected antibodies prior to transfusion.
- Vector:** In recombinant DNA technology, refers to the DNA molecule used to introduce foreign DNA into host cells. Vectors include plasmids, bacteriophages (viruses), and other forms of DNA. A vector must be capable of replicating autonomously and must have cloning sites for the introduction of foreign DNA.
- Viruses:** A large group of submicroscopic agents capable of infecting plants, animals, and bacteria, and characterized by a total dependence on living cells for reproduction and by a lack of independent metabolism.
- White blood cells:** General description of specialized cells involved in defending the body against invasion by organisms and chemical substances and including the circulating white blood cells and the cells of the reticuloendothelial system; defenses mediated through phagocytosis and immune responses; leukocytes.