Appendix L

Acronyms and Glossary of Terms

Acronyms

AAALAC —American Association for Accreditation of Laboratory Animal Care
ACE —angiotensin conversion enzyme
ACRS —accelerated cost recovery system
ACTGs —AIDS Clinical Trials Groups (NIAID)
ADA —adenosine deaminase (enzyme)
ADAMHA —Alcohol, Drug Abuse, and Mental Health Administration (DHHS)
ADD —Anticonvulsant (or Antiepileptic) Drug Development Program
AFDC —Aid to Families of Dependent Children
AHCPR —Agency for Health Care Policy and Research
AIDS —acquired immunodeficiency syndrome
ALI —American Law Institute
AMA —American Medical Association
AMP —average manufacturer price
ANDA —abbreviated new drug application
APhA —American Pharmaceutical Association
ARIs —aldose reductase inhibitors
AWP —average wholesale price
BPS —Biophysics and Physiological Sciences Program
CANDAs —computerized new drug applications
CAPM —capital asset pricing model
CBER —Center for Biologics Evaluation and Research (FDA)
CDC —U.S. Centers for Disease Control
CDER —Center for Drug Evaluation and Research (FDA)
CF —cystic fibrosis
CMBD —Cellular and Molecular Basis of Disease Program
CNS —central nervous system
CPAC —Central Pharmaceutical Affairs Council (Japan)
CPCRA —Community Programs for Clinical Research on AIDS
CPMP —Committee for Proprietary Medicinal Products (EC)
CRADAs —cooperative research and development agreements
CRISP —Computer Retrieval of Information on Scientific Projects system
CRR —cash flow recovery rate
CSDD —Center for the Study of Drug Development of Tufts University
CSOs —consumer safety officers
DIS —Drug Information System
DHEW —U.S. Department of Health, Education, and Welfare (now DHHS)
DHHS —U.S. Department of Health and Human Services
DNA —deoxyribonucleic acid
DOE —U.S. Department of Energy
DRG —Division of Research Grants (NIH)
DTP —diphtheria-tetanus-pertussis (vaccine)
DTP —Developmental Therapeutics Program
DUR —Drug Utilization Review
EC —European Community
ED —U.S. Department of Education
EDCs —European Discovery Capability Units
ELA —establishment license application
ERTA —The Economic Recovery Tax Act
FDA —U.S. Food and Drug Administration
FD&C —Federal Food, Drug, and Cosmetic Act
FEDRIP —Federal Research in Progress database
FTT —Federal Technology Transfer Act
GAO —General Accounting Office (U.S. Congress)
GCP —good clinical practices

GLP —good laboratory practices
GSL —Guaranteed Student Loan
HCFA —U.S. Health Care Financing Administration
HGH —human growth hormone
HIB —Health Insurance Board (Japan)
HIV —human immunodeficiency virus
HMO —health maintenance organization
HRSA —U.S. Health Resources Services Administration
ICH1 —International Conference on Harmonization
IND —investigational new drug
IOM —Institute of Medicine
IPO —initial public offering
IRBs —institutional review boards
IRC —internal revenue code
IRR — internal rate of return
IRS —U.S. Internal Revenue Service
IUD — intrauterine device
IV —intravenous
JCT —Joint Committee on Taxation (U.S. Congress)
LI —licensed-in
MACS —Multiaxis Coding System
MARC —Minority Access to Research Careers program
MEA —Medical Evaluation Agency (EC)
MEDLARS--Medical Literature Analysis and Retrieval System (NLM)
MHW —Ministry of Health and Welfare (Japan)
MIDAS —Molecular Interactive Display and Simulation system,
MSP —Medical Science Partners program
MSTP —Medical Scientists Training Program
NCE —new chemical entity
NCI —National Cancer Institute (DHHS)
NCRR —National Center for Research Resources (DHHS)
NDA —new drug application
NDSL —National Direct Student Loan program
NEI —National Eye Institute (DHHS)
NEJM —New England Journal of Medicine
NHLBI —National Heart, Lung and Blood Institute (DHHS)
NHS —National Health Service (United Kingdom)
NIAID —National Institute of Allergy and Infectious Diseases (DHHS)
NICHD) —National Institute of Child Health and Human Development (DHHS)
NIDA —National Institute on Drug Abuse (DHHS)
NIDDK —National Institute of Diabetes and Digestive and Kidney Diseases (DHHS)
NIGMS —National Institute of General Medical Sciences (DHHS)
NIH —National Institutes of Health (DHHS)
NIHS —National Institute of Hygienic Sciences (Japan)
NIMH —National Institute of Mental Health (DHHS)
NINDS —National Institute of Neurological Disorders and Stroke (DHHS)
NLM —National Library of Medicine (NIH)
NMCES —National Medical Care Expenditure Survey
NME —new molecular entity
NMES —National Medical Expenditure Survey
NMR —nuclear magnetic resonance
NPV —net present value
NRSA —National Research Service Awards Act
NSAID —nonsteroidial antiinflammatory drug
NSF —National Science Foundation
NTIS —U.S. National Technical Information Service
OD —orphan drug
OECD —Organization for Economic Cooperation and Development
OIs —opportunistic infections
OMB —U.S. Office of Management and Budget
OPD —Office of Orphan Products Development (FDA)
OPE —Office of Planning and Evaluation (FDA)
OTA —Office of Technology Assessment (U.S. Congress)
OTT —Office of Technology Transfer (NIH)
PAB —Pharmaceutical Affairs Bureau (Japan)
PAC —principal activity classification (codes)
PBAC —Pharmaceutical Benefits Advisory Committee (Australia)
PBPA —Pharmaceutical Benefits Pricing Authority (Australia)
PBS —Pharmaceutical Benefits Scheme (Australia)
PCP —Pneumocystis carinii pneumonia
PCR —polymerase chain reaction
PG —purchasing groups
PHS —U.S. Public Health Service
PIs —principal investigators

PLA —product license application
PMA —Pharmaceutical Manufacturers Association
PMPRB —Patented Medicine Prices Review Board (Canada)
PPB —Patent Policy Board (NIH)
PPRS —Pharmaceutical Price Regulation Scheme (United Kingdom)
PROS —peer review organizations
PS —Pharmaceutical Sciences program
PTO —U.S. Patent and Trademark Office
PV —present value
rEPO —recombinant erythropoietin
RAs —research assistants
R&D —research and development
R&E —research and experimental
RDS —respiratory distress syndrome
RNA —ribonucleic acid
RRGs —risk retention groups
ROS —return-on-sales
SATSU —Science and Technology Studies Unit of Anglia College (England)
SBID —Small Business Innovation Development Act
SBIR —Small Business Innovation Research grants
SEC —U.S. Security Exchange Commission
SEOG —Supplemental Educational Opportunity Grants
SIC —standard industrial classification
SOI —Statistics of Income
SPAPs —state pharmaceutical assistance programs
SRT —Soribinil Retinopathy Trial
SSI —Supplemental Security Income
TAMRA —Technical and Miscellaneous Revenue Act
TDC —Technology Development Coordinator
TPA —tissue plasmiogen activator
UCSF —University of California at San Francisco
USDA —U.S. Department of Agriculture
USSF —United States Servicemen's Fund, Inc.
WACC —weighted average cost of capital
WARF —Wisconsin Alumni Research Foundation
WHO —World Health Organization

Glossary of Terms

Abbreviated new drug application (ANDA): A simplified submission to the U.S. Food and Drug Administration (FDA) for approval to market a copy of an already approved drug. An ANDA must contain evidence that the duplicate drug is bioequivalent (see "bioequivalence") to the previously approved drug.

Applied research: Research to gain knowledge or understanding necessary for determining the means by which a recognized and specific need may be met. While there is no standard definition of applied research for *pharmaceuticals,* it generally refers to all investigation targeted to the development and testing of actual pharmaceutical compounds.

Asset: Any owned physical object (tangible) or right (intangible) having economic value to its owners; an item or source of wealth with continuing benefits for future periods, expressed for accounting purposes in terms of its cost or other value (such as current replacement cost).

Average manufacturer price: The average price paid by wholesalers for products distributed to the retail class of trade.

Average wholesale price: The average price charged for a specific commodity to retailers by one or more wholesalers.

Basic research: Research performed to gain fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts, without specific applications towards products or processes in mind. Basic pharmaceutical research is aimed at understanding the underlying physiological causes, disease, or developing new techniques for use in developing pharmaceuticals.

Beta: A measure of a company's (or industry's) relative risk in capital markets. Beta measures the correlation between stock market returns to a company (or industry) and overall stock market returns. **A** value of beta close to 1 means that the company's stock has a risk profile that is average for the stock market. A beta higher than 1 means that the firm's risk is higher than the average risk of firms in the stock market.

Bioequivalence: Scientific basis on which generic and brand-name drugs are compared. To be considered bioequivalent, the rates at which the active ingredient of two drugs are absorbed by the body must not

differ significantly when they are given at the same dosage under similar conditions. Some drugs, however, are intended to have a different absorption rate, FDA may consider one product bioequivalent to another if the difference in absorption rate is noted in the labeling but does not affect the drug's safety or effectiveness, or change its effect in a medically significant way.

Biological drugs: Drug products made from living organisms and their products, including viruses, serums, toxins, antitoxins, vaccines, allergenic or analogous products. Also included are blood, blood derivatives, and diagnostic reagents that use biotechnology-derived products.

Biopharmaceuticals: Pharmaceutical products produced by the application of biotechnology.

Biotechnology: Any technique that uses living organisms, or substances from those organisms, to make or modify a product, to improve plants or animals, or to develop micro-organisms for specific uses.

Book value: The current values of capital assets claimed by a company in its financial statements after depreciation expenses. Strict accounting conventions determine what kinds of investments create a capital asset.

Brand-name: The commercial name given to a drug product by an individual company for marketing and promotion purposes.

Breakthrough drug: A new therapeutic compound whose therapeutic effects and/or mechanism of action are substantially different from any previously marketed compound. Criteria for ' 'substantially different" can vary among evaluators.

Capital asset: A tangible or intangible asset intended for long-term use.

Capital asset pricing **model:** An economic model of equilibrium in capital markets which predicts rates of return on all risky assets as a function of their correlation (or covariance) with the overall market portfolio.

Capitalized cost: The present value on a particular date of expenditures made in the past. The capitalized cost is measured by compounding the past expenditure to its present value at an appropriate interest rate.

Carry back: A tax provision that allows companies with insufficient tax liabilities in a tax period to apply credits earned during that period to tax liabilities incurred in a past tax year.

Carry forward: A tax provision allowing companies with insufficient tax liabilities in a tax period to save credits earned during that period for use in a future tax year.

Cash flow recovery rate: The rate of return on realized cash flows into and out of a firm over a defined time interval.

Clinical pharmacology: The study and evaluation of the effects of drugs in humans.

Clinical trials: Experimental research in which preventive, diagnostic, or therapeutic agents, devices, regimes, and procedures are given to human subjects under controlled conditions in order to define their safety and effectiveness. (See also phase I, II, III, and IV studies).

Constant dollars: Dollars expressed in terms of their purchasing power in a base year. Constant dollars adjust for changes in buying power due to inflation or deflation between the base year and the year of measurement.

Contribution margin: The percent of a company's sales that contributes to paying the fixed costs and profits of the enterprise after the direct costs of producing, marketing and distributing the product are deducted.

Cooperative Research and Development Agreements (CRADA): A formal agreement between a Federal laboratory and anon-Federal party (individual, university, or private firm) in which the non-Federal party provides resources in exchange for exclusive rights to license patents that result from the collaboration. Congress gave Federal laboratories the authority to enter into CRADAs **as** part of the Federal Technology Transfer Act of 1986 (Public Law 99-502).

Copayment: In health insurance, a form of cost sharing whereby the insured person pays a specified amount for the service or pharmaceutical. The copayment can be a fixed amount or a percentage of the bill.

Cost of capital: The interest rate required to induce investors to put up capital for an investment with a given level of risk.

Current dollars: The value of dollars spent or received at the time of the transaction, without adjusting for inflation or deflation since the transaction date.

Depreciation: The process of allocating the cost of tangible assets to operations over the expected life of the asset. Depreciation represents the gradual

exhaustion of the service capacity of fixed assets. It is the consequence of such factors as use, obsolescence, inadequacy, and wear.

Discount rate: The interest rate used to convert future cash flows to their present value.

Drug: In this report, any chemical or biological substance that may be applied to, ingested by, or injected into humans to prevent, treat, or diagnose disease or other medical conditions.

Drug receptor: A site or structure in or on the surface of a cell which combines with a drug to produce a specific alteration of a cell function. The vast majority of drug receptors in the body are proteins.

Drug utilization review: A review system used by health insurers to monitor the frequency and usage of prescriptions by enrollees, to identify potential interactions with other medications, or to identify alternative effective or cost-effective therapies for the patient.

Effective patent life: In this report, the length of time during which a new chemical entity is formally protected from generic competition by patent or other statutory market exclusivity provision.

Effective tax rate: The ratio of actual income tax paid to the pre-tax income of a particular taxpayer or a group of taxpayers (such as the whole pharmaceutical industry).

Enzymes: Proteins that are produced by living cells and that mediate and promote the chemical processes of life without themselves being altered or destroyed.

Establishment license application: An application to the FDA for a license to produce a biological product at a given facility.

Ethical pharmaceuticals: In this report, biological and medicinal products for use in humans and promoted primarily to the medical, pharmacy and allied professions.

Expensing: In accounting, the practice of recording an expenditure in the period in which it occurs.

Fiscal year: Any accounting period of 12 successive calendar months, or 52 weeks, or 365 days, used by an organization for financial reporting.

Follow-on product: Any new combination, formulation, or dosing strength of existing therapeutic molecular compounds that must be tested in humans before market introduction.

Formulary: A list of selected pharmaceuticals and their appropriate dosages judged to be the most useful or cost-effective for patient care from which physicians are required or encouraged to prescribe. A formulary may also be a list of drugs that may not be prescribed without special appeals.

Gene therapy: See human gene therapy.

Generic drug: A "copy" of an existing pharmaceutical compound.

Health maintenance organization: A health plan that provides a full range of health benefits to a specified group of subscribers for a fixed prepaid fee, regardless of the expense of the care needed. The fee can either be paid by the subscriber or by an employer.

Human gene therapy: Treatment of disease by insertion of new genetic material or permanent modification of existing genes.

Innovator **firm:** A drug manufacturer that invents, develops, and in most cases, markets new chemical entities.

Internal **rate of return: The** interest rate at which the present value of all net cash flows into and out of a firm over a specified time interval equals zero.

Investigational new drug (IND) (application): An application submitted by a sponsor to the FDA before beginning human testing on an unapproved drug or on an approved drug for an unapproved use.

Joint and several liability: A legal term that refers to liability of each defendant for all damages even if more than one defendant is found liable.

Licensed-in NCE: A new chemical entity acquired from the originating company through a contractual agreement.

Line extension drug: See follow-on product.

Medicaid: A government medical assistance program that pays for medical expenses for the poor and certain other classes of uninsured people, established by the Title XIX of the Social Security Act of 1965. Each State administers its own program. Medicaid is funded by both the State and Federal governments.

Medicare: A Federally administered health insurance program covering the cost of services for people 65 years of age or older, receiving Social Security Disability Insurance payments for at least two years, or with end-stage renal disease. Medicare consists of two separate but coordinated programs-hospital insurance (Part A) and supplementary medical insurance (Part B). Health insurance protection is available to insured persons without regard to income.

Marginal credit rate: For tax credits, the percentage reduction in the cost of an extra dollar of spending for a taxpayer, holding everything else constant.

Marginal incentive effect: See marginal credit rate.

Me-too drug: A new chemical entity that is similar but not identical in molecular structure and mechanism of action to a pioneer NCE.

Molecular biology: The study of biology at the level of individual molecules, such as proteins and DNA.

Multiple-source drug: A drug product not protected by patents *or* other exclusive marketing rights and marketed by more than one company.

Net present value: The difference between the present value of all cash inflows from a project or investment and the present value of all cash outflows required for the investment.

New **chemical entity: In this** report, a new therapeutic molecular compound that has never before been used or tested in humans. The term refers to both drugs and biological. (See also new molecular entity.)

New drug application: An application to the FDA for approval to market a new chemical (nonbiological) drug for human use in U.S. interstate commerce.

New **molecular entity:** A term used by FDA in its published statistical reports to describe newly developed drug compounds. The FDA includes some diagnostic agents and excludes therapeutic biologicals in the definition.

off-label use: The prescription or use of ethical pharmaceuticals for indications other than those specified in FDA approved labelling of the drug.

Opportunity cost of capital: The rate of interest that dollars invested must earn in exchange for being tied up in an investment with a given level of risk.

orphan drug: A drug product discovered and developed for the treatment of a rare disease.

overhead costs: Cost items that cannot be identified specifically with any one project or activity.

over-the-counter **drugs:** Drugs available without a physician's prescription.

Parallel-track program: A FDA program, proposed in 1990, that would allow release of investigational drugs to medical practitioners, on a case-by-case basis, for use in the treatment of AIDS or HIV-related illness for which no satisfactory alternative treatments exist or patient participation in conventional clinical trials is not possible.

Patented drugs: Brand-name drugs that are marketed by a pharmaceutical company under exclusive marketing rights.

Phase I, II, III, IV studies: Specific phases of the clinical (human) testing of new drug products.

- Phase I studies are small trials usually involving only healthy volunteers to map how the body absorbs and eliminates the drugs and to document the response it produces.
- Phase 11 studies test the drug's therapeutic effectiveness and note any adverse reactions in individuals affected by the target disease or condition.
- Phase III studies assess the drug's medical benefits and risks among a large number of patients under conditions of ordinary use.
- Phase IV studies are clinical trials conducted after a product is already approved for marketing.

Pioneer drug: A new chemical entity that has a molecular structure and/or mechanism of action that differs from all previously existing drugs in a therapeutic area, such as the first therapeutic compound to inhibit the action of a specific disease or condition.

Preclinical research: Laboratory and animal research conducted prior to the clinical testing of a new chemical entity. Preclinical research may include basic research and applied non-clinical research.

Prescription drug: In the United States, a drug dispensed by a licensed pharmacist or medical practitioner on the written order (prescription) of a medical practitioner licensed by law to administer such drugs.

Present value: The economic value today (or at some specific date) of an amount paid or received at a later date discounted at an appropriate rate.

Protein: A type of molecule composed of linked amino acids in particular sequences, which determine the structure, function, and regulation of the various cells, tissues, and organs in the body.

Product license application: An application to the FDA to market a biological product in the United States.

Rational drug design: A process of drug research focusing on the physiological basis of disease and finding or creating new therapeutic agents that interfere with the course of disease at the molecular level. It is contrasted with random screening of existing molecules in search of empirically observed action against disease. A general term that covers a

broad range of approaches to the discovery of new drugs that rely on structural analysis of target molecules and deliberate design of agents to affect their function.

Real dollars: See constant dollars.

Receptor: See drug receptor.

Research and development: In the pharmaceutical industry, the process of discovering, and developing for the market new drugs and related products.

Self-originated NCEs: A new chemical entity discovered, developed, and brought to market by a single company.

Shining new drugs: A term used in Japan to refer to drugs without any close therapeutic competition or chemical predecessor.

Single-source drug: A drug marketed under one brand name usually by one company,

Standard Industrial Classification (SIC) Code: A numerical code used by the U.S. Department of Commerce to classify firms according to their primary line of business.

Strict liability: A legal concept that states liability lies with the party best able to prevent injury or absorb its costs even if that party was not responsible for causing the specific injury in question through negligence or intent.

Technology transfer: The process of converting scientific knowledge into useful products. This most often refers to the flow of information between public and private sectors or between countries.

Therapeutic class: A group of drugs intended to treat a particular disease or group of related diseases.

Third-party payers: Private insurance companies, government agencies, and self-insured business that pay medical providers for services given to a patient.

Treatment IND: An FDA program, established in 1987, that allows the release of investigational drugs to medical practitioners, on a case-by-case basis, for use in the treatment of immediately life-threatening diseases in instances where no satisfactory alternative treatment exists.

Vaccine: A preparation of whole or parts of living, attenuated, or killed bacteria or viruses, (or synthesized antigens identical or similar to those found in the disease-causing organisms) designed to produce or increase immunity to a particular disease.

Working capital: The excess of current assets over current liabilities. Where current assets and liabilities are cash and short-term securities and current liabilities are debts owed in the current accounting period.