Table A.1 Internet databases useful for biocatalysis (selection).

Searching for	Database name and web site	Comments
Articles in journals	Chemical Abstracts Service at http://www.cas.org	For all areas of chemistry and related sciences like the materials sciences and the environmental sciences (with user interface SciFinder perhaps in your local intranet)
	PubMed at http://www.ncbi.nlm.nih.gov/pubmed	Interdisciplinary for medicine; also of great importance for biotechnology as it allows search of nucleotide or protein sequences, genome data and is linked to enzyme structure databases. Free access
	"Science Citation Index" in the "Web of Knowledge" from Thomson Reuters (formerly Institute of Scientific Information, ISI) at http://wokinfo.com/	Interdisciplinary citation database where you can search with documents as "search terms" and answer questions such as Who have cited a specific document? How often is a document cited?
	SciVerse Scopus of the publisher Elsevier at http://www.scopus.com	Interdisciplinary citation database; compared to Web of Knowledge, it also contains proceedings and its contents as well as more publications in other languages than in English
	CEABA (Chemical Engineering and Biotechnology Abstracts – Verfahrenstechnische Berichte) at http://www.wti-frankfurt.de/index.php/datenbanken, see also http://www.wti-frankfurt.de/images/stories/download/en-ceab.pdf	Produced in Germany by the Dechema until May 2011, now by WTI-Frankfurt
	COMPENDEX (COMPuterized ENgineering InDEX) at http://www.ei.org/compendex	Most important and comprehensive database for general engineering

(continued)

Table A.1 (Continued)

Searching for	Database name and web site	Comments
	INSPEC (Information Service in Physics, Electrotechnology, Computer and Control) at http://www.theiet.org/publishing/inspec/index.cfm	Of importance because information technology plays a considerable role in all areas of engineering today
	WTI-Frankfurt (Wissenschaftlich Technische Information, formerly Fachinformationszentrum, Specialized Information Center of Technology) at http://www.wti-frankfurt.de	Databases also contain German resources
	Agricola at http://agricola.nal.usda.gov Ulidat at http://doku.uba.de	For agricultural sciences. Free access German database for the environmental sciences. Free access
Patents	DEPATISnet at http://depatisnet.dpma.de	The German patent information system contains the full text of every German and American patent in pdf format, also patents from other countries. You have to know the exact patent number. Searching in other database fields – for example, title, patent inventor, or abstract field – is possible. Available data in a respective search field may vary. Free access
	Esp@cenet, at http://worldwide.espacenet.com/ US Patent and Trademark Office at http://patft.uspto.gov	European patents (European Patent Office). Free Access Example for full text access to national patents. Free Access
Chemicals	ChemBioFinder at http://chemfinder.camsoft.com ChemSpider at http://www.chemspider.com/	Meta-search engine for chemical substances information. Free access Meta-search engine for chemical substances information. Free access

Table A.1 (Continued)

	NIST Webbook at http://webbook.nist.gov/chemistry/	Detailed data for many common substances. Free access
	InfoTherm by FIZ Chemie at http://www.infotherm.de	Thermophysical experimental data for the daily use of process engineers, tables, and charts for about 34 000 mixtures and 9000 pure substances
	Physical Properties Sources Index (PPSI) at http://www.eqi.ethz.ch/en/	Lists recommended databases, handbooks, and web sites (data, definition, and measurement) for physicochemical and other material properties. Free access
	PubChem at http://pubchem.ncbi.nlm.nih.gov/	Provides information about chemicals especially relevant for medical sciences. Free access
	ChEMBL at https://www.ebi.ac.uk/chembldb/	A database on properties of chemicals where also pK-values are given. Free access
Hazardous substances	GESTIS at http://www.dguv.de/ifa/en/gestis/stoffdb/index.jsp	Information system of the German institutions for statutory accident insurance and prevention (English version available). Free access
	TOXNET, Toxicological Data Network, of the US National Library of Medicine at http://toxnet.nlm.nih.gov	Toxicology and hazardous substances. Free access
	International Chemical Safety Cards (ICSCs): International Programme on Chemical Safety at http://www.cdc.gov/niosh/ipcs/icstart.html	Available in a lot of languages. Free Access
Enzyme manufacturers (see also Table 7.4)	Association of Manufacturers and Formulators of Enzyme	Contains information on enzymes, safety rules for their use, and links to similar

(continued)

Table A.1 (Continued)

Searching for	Database name and web site	Comments
	Products at http://www.amfep.org	organizations, the companies, and organizations of importance for the regulation of enzymes (EU, FAO, FDA, WHO, etc.) Free Access
Enzyme classification and structure	Enzyme nomenclature by the International Union of Biochemistry and Molecular Biology at http://www.chem.qmul.ac.uk/iubmb/enzyme	Enzyme classification. Free access
	ExPASy, Bioinformatics Resource Portal, of the Swiss Institute of Bioinformatics at http://www.expasy.ch	Extensive information on all aspects of proteins/enzymes. Includes enzyme nomenclature database and links to more specialized databases on enzymes. Free access
	RSCB Protein Data Bank at http://www.rcsb.org/pdb	A database for 3D structures of proteins/enzymes and cofactors important for structure and function. Free access
	CATH protein Structure Classification at http://www.cathdb.info	A database on enzyme classification based on 3-D structures. Free access
Enzyme properties	BRENDA, The Comprehensive Enzyme Information System at http://www.brenda-enzymes.org	A comprehensive database on enzyme properties (k_{cat}, K_m for different substrate, cofactors, inhibitors, stability, etc.) Free access
Enzyme catalyzed reactions	Thermodynamics of Enzyme-Catalyzed Reactions at http://xpdb.nist.gov/enzyme_thermodynamics	NIST Standard Reference Database 74. Free access
	KEGG LIGAND Database at http://www.genome.jp/kegg/ligand.html	A database to find an enzyme that can catalyze the biotransformation of a compound (ligand). Links to metabolic charts that show the enzyme that catalyzes the metabolic reactions. Free access

Table A.1 (Continued)

Enzymes, specific	MEROPS – The peptidase database at http://merops.sanger.ac.uk	A database for peptides. Free access
	The Lipase Engineering Database: http://www.led.uni-stuttgart.de	A database for lipases. Free access
	CAZy Carbohydrate-Active enZYmes Database at http://www.cazy.org	A database on enzymes catalyzing reactions with carbohydrates. Free access
Bioinformatics	EMBL-EBI from the European Bioinformatics Institute at http://www.ebi.ac.uk	A database from the European Bioinformatics Institute on the bioinformatics of proteins/enzymes with links to the main databases and tools for sequence and structure analysis (gene or protein), alignment of enzyme sequences, and so on. Free access
Biocatalysis	UM-BBD University of Minnesota Biocatalysis/Biodegradation Database at http://umbbd.msi.umn.edu	Biocatalysis/biodegradation database. Free access
National laws and regulations and international conventions influencing the production and use of enzymes and cells as biocatalysts	Laws and regulations based on the Cartagena protocol on biosafety for most countries can be found in the homepage of the Biosafety Clearing House http://bch.cbd.int/about Additional Internet resources for laws and regulations of importance can be found in Section 6.6	