

**Encyclopedic Dictionary
of Genetics**

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R. C. King
W. D. Stansfield

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Encyclopedic Dictionary of Genetics

With German Term Equivalents
and Extensive
German/English Index



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Preface

Anyone who has tried to write a scientific text in German will appreciate what a problem this can be. The specialist literature is mostly in English and it is often very difficult to find the German equivalent of the expressions used there. This is especially true in the rapidly developing fields of genetics and molecular biology. The fact that most new terms are first defined in English has led to total confusion in the few German textbooks available on these subjects. New German words have been invented in an attempt to translate the terms more or less correctly, or the English expression has been used - often uncritically. The jargon used in laboratories is a combination of colloquial German and specialist English - a mixture which often causes difficulties even for those familiar with it. Translating a text or writing a dissertation can therefore cause many problems.

This dictionary hopes to alleviate these problems. It contains a wide selection of English specialist terms, defined in English and followed by the German equivalent. German-English word lists at the end of the book complete the text. It is therefore assumed that the reader is familiar with colloquial English as only the specialist terms are defined. An exact translation was not deemed necessary in all cases. Rather, the German expressions which is most often used to describe the relevant English terms is given. New words have been created in some cases, in others it was deemed more useful to retain the English expression or to admit that there is no exact equivalent.

Of course, a dictionary of this kind can only be an experiment which will certainly provoke some contradiction. It is not always easy to define what a standard specialist term is and what is laboratory jargon. Some will find expressions lacking which they consider common, in other cases the German expression may seem daring or uncommon. Both publisher and editor nevertheless hope that this dictionary will assist the user in writing German texts and, moreover, that it will contribute to standardizing German specialist language in the field of genetics and molecular biology.

Köln, Spring 1990

Sebastian Vogel

Vorwort

Jeder, der schon einmal naturwissenschaftliche Sachverhalte in deutscher Sprache darstellen wollte, kennt das Problem: Die Fachliteratur, aus der man seine Informationen bezieht, ist meist englisch abgefaßt, und oft herrscht große Ratlosigkeit, wenn man das deutsche Gegenstück zu den dort verwendeten Ausdrücken sucht. Insbesondere zeigt sich dieses Dilemma in einem sich so schnell entwickelnden Gebiet wie der Genetik und Molekularbiologie. In den wenigen deutschsprachigen Lehrbüchern dieser Thematik führte die Tatsache, daß fast alle neuen Begriffe im angelsächsischen Sprachraum gebildet wurden, zu einer völligen Begriffsverwirrung. Oft werden mehr oder weniger glückliche Wortschöpfungen versucht, oder es wird der englische Ausdruck - oft unkritisch - übernommen. Der Jargon in den Labors schließlich setzt sich ohnehin aus deutscher Umgangssprache und englischen Brocken zusammen - es entsteht ein Kauderwelsch, das selbst für „Eingeweihte“ manchmal nur noch schwer verständlich ist. Beim Abfassen eines deutschen Textes, z.B. einer Dissertation oder einer Übersetzung, treten dann ebenfalls häufig große Schwierigkeiten auf.

Das vorliegende Buch möchte hier eine Hilfestellung bieten. Es enthält ein breites Spektrum englischer - und englisch erklärter - Fachbegriffe, denen jeweils das entsprechende deutsche Wort gegenübergestellt ist. In der „Gegenrichtung“ wird der Text durch deutsch-englische Wortlisten erschlossen. Die Kenntnis der englischen Umgangssprache wird also beim Benutzer vorausgesetzt, die Hilfestellung bezieht sich vor allem auf die Fachbegriffe. Dabei wurde nicht in allen Fällen eine genaue Übersetzung angestrebt; aufgeführt ist vielmehr der deutsche Ausdruck, der für die Darstellung des jeweiligen Sachverhalts am gebräuchlichsten ist. Gelegentlich wurden neue Wortschöpfungen gewagt, in anderen Fällen erschien es auch hier sinnvoller, den englischen Begriff beizubehalten oder einzugestehen, daß es keine genaue Entsprechung gibt.

Natürlich kann ein solches Wörterbuch nur ein Versuch sein, der sicherlich auch manchen Widerspruch provozieren wird. Problematisch ist insbesondere die Abgrenzung zwischen „Standard-Fachsprache“ und Laborjargon. Mancher wird Begriffe vermissen, die ihm geläufig erscheinen, in anderen Fällen mögen die deutschen Ausdrücke gewagt oder ungebräuchlich erscheinen. Verlag und Bearbeiter hoffen dennoch, daß dieses Lexikon dem Benutzer das Abfassen deutscher Texte erleichtert und darüber hinaus einen Beitrag zur Vereinheitlichung der deutschen Fachsprache im Bereich der Genetik und Molekularbiologie leistet.

Köln, Frühjahr 1990

Sebastain Vogel

How to Use the Dictionary

The main part of the book contains English headwords, the corresponding German translation and a definition in English. A list of words containing German terms and their English equivalents is also included at the end of the book to assist the user in finding the terms which appear in the main part of the book.

The headwords in both parts are listed alphabetically. In the German list the mutated vowels ä, ö and ü are classified as a, o and u. Figures and Greek letters are not taken into account in the alphabetical list. Abbreviations placed before chemical formulae (e.g. D-, L-) are also not taken into consideration. Hyphenated compounds and entries which consist of more than one word are treated as single words.

In the main text the English headwords are printed in **secondary bold type**, followed by the German equivalent <in pointed brackets>. The symbol <®> indicates that there is no German equivalent. German translations of English terms used in the definitions are given <in pointed brackets> directly behind the English terms which are printed in **secondary bold type** (however, a different typeface is used to distinguish them from the English headwords). Terms which appear both in the definitions and as headwords in the main text are marked thus (→). Further → references to additional headwords may follow the definitions.

Latin names etc. are printed in *italics*.

The German translations of the English headwords used in the main text are listed alphabetically at the end of the book. This list also includes many terms used in the definitions. The English equivalents to be found in the main text, either in the definition or as headwords, follow the German term which is printed in **secondary bold type**.

Benutzungshinweise

Das Buch besteht aus einem Hauptteil, der englische Stichwörter und deren deutsche Übersetzungen mit englischen Erklärungen enthält, und einer Wortliste, die deutsche Begriffe und ihre englischen Äquivalente umfaßt, um dem Benutzer den Zugriff zum Hauptteil zu ermöglichen.

Die Stichwörter sind in beiden Teilen nach dem Alphabet geordnet. In der deutschen Wortliste gelten die Umlaute ä, ö, ü wie die Buchstaben a, o, u. Zahlen und griechische Buchstaben wurden bei der Alphabetisierung nicht berücksichtigt. Ebenso wurden vorgestellte Abkürzungen bei chemischen Formeln (z.B. D-, L-) nicht beachtet. Zusammengesetzte Wörter mit Bindestrich und Einträge, die aus mehr als einem Wort bestehen, wurden wie ein Wort behandelt.

Im Haupttext sind die englischen Stichwörter **halbfett** gedruckt, dahinter steht <in spitzen Klammern> die deutsche Übersetzung. <Ø> bedeutet, daß es für dieses englische Wort keine deutsche Übersetzung gibt. Auch die in den Erklärungen übersetzten englischen Begriffe sind **halbfett** gedruckt, jedoch mit anderer Schriftart, gefolgt von dem deutschen Begriff <in spitzen Klammern>. In den Erklärungen verwendete Begriffe, die auch als Stichwörter im Buch vorkommen, sind mit Pfeil (→) markiert. Anschließend an die Erklärung folgen gegebenenfalls weitere → Hinweise auf ergänzende Stichwörter.

Lateinische Namen usw. sind durchweg *kursiv* gesetzt.

In der am Ende aufgeführten Wortliste sind die deutschen Begriffe alphabetisch geordnet. Es handelt sich um die deutschen Äquivalente der englischen Stichwörter des Haupttextes und einzelner Begriffe aus den entsprechenden Erklärungen. Hinter dem **halbfett** gedruckten deutschen Begriff stehen die im Text verwendeten englischen Übersetzungen, die auch als Stichwörter im Haupttext erscheinen können.

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A

A <A> **1. mass number** <Massenzahl> of an atom. **2. haploid set of autosomes** <haploider Autosomensatz>. **3. ampere** <Ampere>. **4. adenine** <Adenin> or **adenosine** <Adenosin>.

Å <Å> Ångstrom unit.

A₂ <A₂> → hemoglobin.

A 23187 <A23187> → ionophore.

AA-AMP <AS-AMP> **amino acid adenylate** <Aminosäure-Adenylat>.

A and B blood-group antigens <Blutgruppenantigene A und B> → **Secretor gene**.

A and B peptides <Peptid A und B> → proinsulin.

A, B, and C loci <Loci A, B und C> → **haplotype** → **linkage disequilibrium**.

A, B antigens <Antigene A und B> **mucopolysaccharides** <Mucopolysaccharide> responsible for the → **ABO blood group system**. The A and B antigens reside on the surface of **erythrocytes** <Erythrocyten, rote Blutkörperchen>, and differ only in the sugar attached to the penultimate **monosaccharide unit** <Monosaccharid-Einheit> of the **carbohydrate chain** <Kohlenhydrat-Kette>. This minor chemical difference makes the macromolecule differentially active antigenically. The **I^A** and **I^B** genes <I^A- und I^B-Gen> presumably control the formation or functioning of the → **enzymes** that add the specific sugar units to the carbohydrate chains in a preformed mucopolysaccharide molecule. The **I⁰ allele** <I⁰-Allel> is inactive in this regard, and when **homozygous** <homozygot> results in the **0 phenotype** <Phänotyp>. **Glycoproteins** <Glycoproteine> with properties antigenically identical to the A, B → **antigens** are ubiquitous, having been isolated from → **bacteria** and **plants**. Every human being more than 6 months old possesses those **antibodies** <Antikörper> of the A, B system that are not directed against its own **blood-group antigens** <Blutgruppen-Antigene>. These "pre-existing natural" → **antibodies** probably result from immunization by the ubiquitous antigens mentioned above. The I alleles reside on → **autosome 9**. → **blood group** → **H substance**.

ABO blood group <ABO-Blutgruppensystem> a system of alleles residing on human chromosome 9 that specifies certain **red cell antigens** <Antigene der roten Blutkörperchen>. → **AB antigens** → **blood groups** → **Bombay blood group**.

ABO blood group system <ABO-Blutgruppensystem> → **H substance** → **H locus**.

abdomen <Abdomen, Bauchhöhle, Hinterteil> → **testicular feminization** → **twin spots** → **ovipositor** → **amniocentesis**.

abdominal and thoracic fat bodies <Fettkörper im Brust- und Hinterteilbereich> → vitellogenin.

abdominal pouch <Beutel auf der Bauchseite> → marsupial.

Aberdeen-Angus <Aberdeen-Angus-Rind> → cattle.

aberrations <Aberrationen> → chromosomal aberration → radiation-induced chromosomal aberration.

ablation <Amputation> → regulation.

ABM paper <ABM-Papier> **aminobenzyloxy methyl cellulose paper** <Aminobenzyloxymethyl-Cellulosepapier>, which when chemically activated, reacts covalently with single-stranded → nucleic acids.

abortion <Abtreibung> → phagosome.

abortive transduction <abortive Transduktion> failure of a **transducing exogenote** <transduzierende Exogenote> to become **integrated** <integriert> into the **host chromosome** <Wirtschromosom>, but rather existing as a non-replicating particle in only one cell of a → clone. → transduction.

abortus <Abort, Fehlgeburt> a dead → fetus born prematurely, whether the abortion was artificially induced or spontaneous.

abscissa <Abszisse> → normal distribution.

absolute plating efficiency <absoluter Anteil an lebensfähigen Zellen> the percentage of individual cells that give rise to colonies when inoculated into culture vessels. → relative plating efficiency.

absorbance (also absorbency) <Absorption> a measure of the loss of intensity of → radiation passing through an absorbing medium. It is defined in **spectrophotometry** <Spektralphotometrie> by the relation: $\log(I_0/I)$, where I_0 = the intensity of the radiation entering the medium and the I = the intensity after traversing the medium.

absorption <Aufnahme> → vitamin D.

absorption of electromagnetic energy <Absorption elektromagnetischer Energie> → excitation.

abundance <Abundanz> in molecular biology, the average number of molecules of a specific → mRNA in a given cell, also termed **representation** <Repräsentation>. The abundance, $A = NR/fM$, where N = **Avogadro's number** <Loschmidt'sche Zahl>, R = the RNA content of the cell in grams, f = the fraction the specific RNA represents of the total RNA, and M = the molecular weight of the specific RNA in daltons.

Abbyssinian <Abessinische Katze> → cat.

acatalasemia <Akatalassämie> the hereditary absence of → catalase in man; inherited as an **autosomal recessive** <autosomal-rezessiv>.

acatalasia <Akatalasie> *synonym for* → acatalasemia.

acceleration <Akzeleration> → heterochrony.

accelerator <Teilchenbeschleuniger> an apparatus that imparts kinetic energy <Bewegungsenergie> to charged subatomic particles to produce a high-energy particle stream for analyzing the atomic nucleus <Atomkern>.

acceptor (splice) junctions, acceptor splicing site <Acceptor-Spleißstelle> → U1 RNA → splice junctions → right splicing junction.

acceptor stem <Acceptorstamm> the double-stranded branch of a → tRNA molecule to which an → amino acid is attached (at the 3' CCA terminus) by a specific → aminoacyl-tRNA synthetase.

accessory chromosomes <akzessorische Chromosomen> → B chromosomes.

accessory nuclei <akzessorische Kerne> bodies resembling small nuclei <Zellkerne> that occur in the oocytes <Eizellen> of most Hymenoptera <Hautflügler> and those of some Hemiptera <Schnabelkerfe>, Coleoptera <Käfer>, Lepidoptera <Schmetterlinge>, and Diptera <Zweiflügler>. Accessory nuclei are covered by a double → membrane possessing annulate pores <ringförmige Poren>. They are originally derived from the → oocyte nucleus, but they subsequently form by the amitotic division <amitotische Teilung> of other accessory nuclei.

Ac, Ds system <Ac/Ds-System> → Activator-Dissociation system.

ace ace → symbols used in human cytogenetics.

acentric <azentrisch> designating a → chromatid or a → chromosome that lacks a centromere <Centromer>. → chromosome bridge → symbols used in human cytogenetics → translocation.

acentric chromosome fragments <azentrische Chromosomenfragmente> → chromosome bridge.

acentric fragment <azentrisches Fragment> → fragile chromosome sit isochromatid break.

Acer the genus of maple <Ahorn> trees. *A. rubrum*, the red maple <Rotahorn>, and *A. saccharum*, the sugar maple <Zuckerahorn>, are studied genetically because of their commercial importance.

Acetabularia a genus of large, unicellular green algae <Grünalgen>. Grafting experiments <Transplantationsexperimente> between species of this genus have provided information on the nuclear control of cytoplasmic differentiation <cytoplasmatische Differenzierung>.

acetic acid <Essigsäure> → *Acetobacter* → aceto-carmine → aceto-orcein.

Acetobacter a genus of aerobic bacilli <aerobe Bakterien> which secure energy by oxidizing alcohol to acetic acid <Essigsäure>.

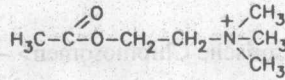
aceto-carmine <Acetokarmin> a stain used in the preparation of chromosome squashes <Chromosomen-Quetschpräparate> consisting of a 5 % solution of carmine <Karmin> in 45 % acetic acid <Essigsäure>. Largely supplanted by → aceto-orcein.

aceto-orcein <Aceto-Orcein> a fluid consisting of 1 % orcein dissolved in 45 % **acetic acid** <Essigsäure>, used in making **squash preparations** <Quetschpräparate> of → chromosomes. → salivary gland squash preparation.

acetylated serine <acetyliertes Serin> → N-acetyl serine.

acetylation <Acetylierung> → post-translational modifications.

acetylcholine <Acetylcholin> a compound playing an important role in the transmission of nerve impulses across **synapses** <Synapsen> and from nerve endings to the muscles innervated.



acetyl-coenzyme A <Acetyl-Coenzym A, aktivierte Essigsäure> → citric acid cycle → coenzyme A.

acetyl serine <Acetylserin> → N acetyl serine.

achiasmata <achiasmatisch> referring to → meiosis without → chiasmata. In those species in which → crossing over is limited to one sex, the achiasmata meiosis generally occurs in the **heterogametic sex** <heterogametisches Geschlecht>.

achondroplasia <Achondroplasie, Chondrodystrophie> a **hereditary dwarfism** <erblicher Zwergwuchs> due to retarded growth of the long bones. In humans it is inherited as an **autosomal dominant** <autosomal-dominant>. → Homozygotes die at an early age. → bovine achondroplasia → fowl achondroplasia.

achromatic figure <achromatische Figur> the → mitotic apparatus.

A chromosomes <A-Chromosomen> → B chromosomes.

acid <Säure> → gram equivalent weight.

acid fuchsin <Säurefuchsin> an → acidic dye used in → cytochemistry.

acid hydrolases <saure Hydrolasen> → lysosome.

acidic <sauer> → basophilic → hydrogen ion concentration → nonbasic chromosomal proteins.

acidic amino acid <saure Aminosäure> an → amino acid having a net negative charge at neutral pH. Those universally found in → proteins are **aspartic acid** <Asparaginsäure> and **glutamic acid** <Glutaminsäure>, which bear negatively charged **side chains** <Seitenketten> in the pH range generally found in living systems.

acidic contents of the stomach <saurer Mageninhalt> → secretin.

acidic dye <saurer Farbstoff> an organic → anion that binds to and stains positively charged → macromolecules → orange G.

acidic mucopolysaccharides <saure Mucopolysaccharide> → metachromasy.

acidic protein <saures Protein> → ubiquitin → vimentin.

acid lipase <Säurelipase> → Wolman disease.

acid specification <Aminosäuren-Codierung> → replacement sites.

Ac locus <Ac-Locus> → transposable elements.

Acoelomata <Acoelomata> a subdivision of the **Protostomia** <Protostomier> containing species in which the space between the **epidermis** <Oberhaut> and the **digestive tube** <Verdauungskanal> is occupied by a cellular **parenchyma** <Parenchym>. → classification.

acquired characteristics, inheritance of <Vererbung erworbener Eigenschaften> inheritance by offspring of characteristics that arose in their parents as responses to **environmental influences** <Umwelteinflüsse> and are not the result of gene action. → Lamarckism.

acquired characters <erworbene Merkmale> → Weismannism.

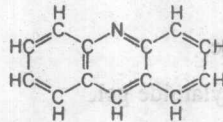
Acraniata <Acrania, Cephalochordata> a subphylum of **Chordata** <Chordatiere> containing species without a true **skull** <Schädel>. → classification.

acrasin <Acrasin> a **chemotactic agent** <chemotaktischer Wirkstoff> produced by *Dictyostelium discoideum* that is responsible for the aggregation of the cells. Acrasin has been shown to be → cyclic AMP.

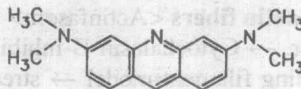
Acrasiomycota <Acrasiomycota> the phylum containing the **cellular slime molds** <einzellige Schleimpilze>. These are **prototists** <Einzeller> that pass through a unicellular stage of → amoebae that feed on bacteria. Subsequently these amoebae aggregate to form a **fruiting structure** <Fruchtkörper> that produces → spores. The two most extensively studied species from this phylum are *Dictyostelium discoideum* and *Polysphondylium pallidum*.

acridine derivative <Acridinderivat> → quinacrine.

acridine dye <Acridin-Farbstoff> any of a class of organic molecules that bind to DNA and in → bacteriophages act as **mutagenic agents** <mutagene Wirkstoffe> by causing additions or deletions in the → base sequences. → proflavin → insertion → intercalating agent → reading frame shift.

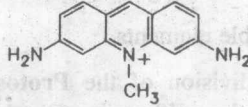


acridine orange <Acridinorange> an → acridine dye that functions both as a **fluorochrome** <Farbstoff für die Fluoreszenzfärbung> and a → mutagen. → chromosome banding techniques.



acriflavin

acriflavin <Acriflavin> an → acridine dye that produces → reading frame shifts.



acritarchs <Acritarchen> the oldest known → fossils, thought to represent the earliest eukaryotic cells <Eukaryontenzellen>, estimated to be about 1.6-1.4 billion years old. Most acritarchs were probably thick-walled, **cyst-forming** <cystenbildend>, unicellular, photosynthetic → algae of some kind. The name is a compound term from the Greek meaning "of uncertain origin."

acrocentric <akrozentrisch> designating a → chromosome or → chromatid with a nearly terminal → centromere. → telocentric chromosome → centromeric index → double X.

acrocentric chromosomes <akrozentrische Chromosomen> → centric fusion → human mitotic chromosomes.

acromycin <Acromycin> → tetracycline.

acronym <Akronym, Kürzel> a word formed by the initial letters of a compound term. → Laser, → LET, and → rep would be examples. → oncornavirus.

acrosomal enzymes <Akrosomenenzyme> → serine proteases.

acrosome <Akrosom> an apical → organelle in the sperm head secreted by the **Golgi material** <Inhalt des Golgi-Apparats>, which digests the **egg coatings** <Eihüllen> to permit → fertilization.

acrostical hairs <Acrosticalhaare> one or more rows of small **bristles** <Borsten> along the dorsal surface of the thorax of *Drosophila*.

acrosyndesis <Acrosyndese> telomeric pairing by **homologues** <homologe Chromosomen> during → meiosis.

acrotrophic <acrotroph> → meroistic.

acrylamide <Acrylamid> → polyacrylamide gel.

ACTH <ACTH, adrenocorticotropes Hormon> → hormone → adrenocorticotrop hormone.

actidione <Actidion> → cycloheximide.

actin <Actin> a family of → proteins making up 5 % - 10 % of the total protein of cells. Cytoplasmic actins from diverse species closely resemble each other and the actins from **muscle tissues** <Muskelgewebe>, so it is clear that actin has been conserved during → evolution. Under the → electron microscope **actin fibers** <Actinfasern> are seen as **microfilaments** <Mikrofilamente> 5-7 nm in diameter. → Cytochalasin B inhibits the rate of elongation of actin filaments. → intermediate → sliding filament model → stress fibers → structural protein → tropomyosin → multigene family.

α-actin <α-Actin> → gene amplification filaments → stress fibers.

actin and myosin filaments <Actin- und Myosinfilamente> → sarcomere.

actin fibers <Actinfasern> → actin.

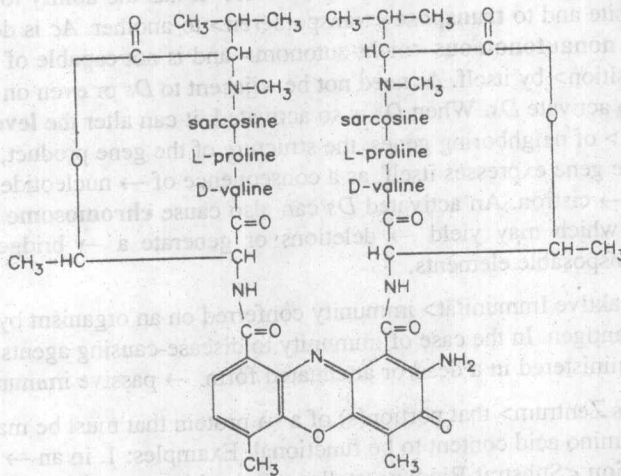
actin filaments <Actinfilamente> → troponin → vinculin.

α-actinin <α-Actinin> → stress fibers.

actinins <Actinine> muscle proteins; these have been separated into alpha and beta classes of 200 kd and 60 kd molecular weights, respectively.

actin linkages <Actin-Verbindungen> → vinculin.

actinomycin D <Actinomycin D> an → antibiotic produced by *Streptomyces chrysomallus* that prevents the → transcription of → messenger RNA. → RNA polymerase.



Actinopoda <Actinopoda> → axopodia.

activated acetate <aktivierte Essigsäure> → citric acid cycle.

activated charcoals <Aktivkohle> → Norite.

activated macrophage <aktivierter Makrophage> a macrophage which has been stimulated (usually by a lymphokine <Lymphokin>) to enlarge, to increase its enzymatic content, and to increase its non-specific phagocytic activity <Phagocytose-Aktivität>.

activated water <aktiviertes Wasser> a transient chemically reactive state produced in water by absorbed ionizing radiations <ionisierende Strahlung>.

activating enzyme <aktivierendes Enzym> an → enzyme that catalyzes a reaction involving ATP and a specific → amino acid. The product is an activated complex that subsequently reacts with a specific → transfer RNA.

activation analysis <Aktivierungsanalyse> a method of extremely sensitive analysis based on the detection of characteristic radionuclides <Radionuklide> produced by neutron activation <Neutronenaktivierung>.

activation energy <Aktivierungsenergie> the energy required for a chemical reaction to proceed. → Enzymes combine transiently with a **reactant** <Reaktionsteilnehmer> to produce a new complex that has a lower activation energy. Under these circumstances the reaction can take place at the prevailing temperature of the biological system. Once the product is formed, the enzyme is released unchanged.

activator <Aktivator> a molecule that converts a **repressor** <Repressor> into a **stimulator** <Stimulator> of **operon transcription** <Transcription eines Operons>; e.g., the repressor of a bacterial **arabinose operon** <Arabinose-Operon> becomes an activator when combined with the → substrate.

Activator-Dissociation system <Activator-Dissociation-System> **controlling elements** <Kontrollelemente> discovered by Barbara McClintock in maize. *Ac* is an **autonomous element** <autonomes Element> that is inherently unstable. It has the ability to excise itself from one chromosomal site and to **transpose** <transponieren> to another. *Ac* is detected by its activation of *Ds*. *Ds* is **nonautonomous** <nicht-autonom> and is not capable of excision or **transposition** <Transposition> by itself. *Ac* need not be adjacent to *Ds* or even on the same → chromosome in order to activate *Ds*. When *Ds* is so activated, it can alter the **level of expression** <Expressionsstärke> of neighboring genes, the structure of the gene product, or the time of development when the gene expresses itself, as a consequence of → nucleotide changes inside or outside of a given → cistron. An activated *Ds* can also cause **chromosome breakage** <Chromosomenbrüche>, which may yield → deletions or generate a → bridge-breakage-fusion-bridge cycle. → transposable elements.

active immunity <aktive Immunität> immunity conferred on an organism by its own exposure and response to → antigen. In the case of immunity to disease-causing agents, the antigenic pathogens may be administered in a dead or attenuated form. → passive immunity → immunity.

active site <aktives Zentrum> that portion(s) of a → protein that must be maintained in a specific shape and → amino acid content to be functional. Examples: 1. in an → enzyme, the **substrate-binding region** <Substrat-Bindungsstelle>; 2. in **histones** <Histone> or **repressors** <Repressoren>, the parts that bind to DNA; 3. in an → antibody, the part that binds → antigen; 4. in a → hormone, the portion that recognizes the **cell receptor** <Zellreceptor>. → Michaelis constant K_m → prosthetic group → hypervariable (hv) sites → serine proteases.

actomyosin <Actomyosin> the basic **contractile element** <kontraktilen Element> in muscle fibers; a molecular complex of the → proteins → actin and → myosin.

acute transfection <kurzfristige Transfektion> infection of cells with DNA for a short period of time.

acyl <Acyl-> → transferases.

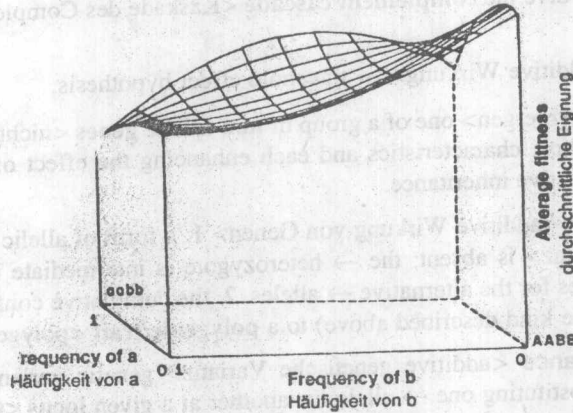
adaptation <Anpassung> 1. the process by which organisms undergo modification so as to function more perfectly in a given environment. 2. any developmental, behavioral, anatomical, or physiological characteristic of an organism which, in its environment, improves its chances for survival and of leaving **descendants** <Nachkommen>. → aptation → directional selection → Geospizinae → character displacement → competitive exclusion principle.

adaptive benefit <Anpassungsvorteil> → kairomone.

adaptive characters <angepaßte Eigenschaften> → natural selection.

adaptive enzyme <adaptives Enzym> **inducible** <induzierbar> → enzyme.

adaptive landscape <Anpassungsgebirge> a three-dimensional graph that shows the **frequencies** <Genhäufigkeit, Genfrequenz> of two genes, each present in two **allelic forms** <allele Formen> (*aA* and *bB* in the illustration) plotted against **average fitness** <durchschnittliche Eignung> for a given set of environmental conditions, or a comparable conceptual plot in **multidimensional space** <mehrdimensionaler Raum> to accommodate more than two **loci** <Genloci>.



adaptive norm <Anpassungsnorm> the array of → genotypes (compatible with the demands of the environment) possessed by a given → population of a species. → secondary speciation.

adaptive peak <Anpassungsgipfel> a high point (perhaps one of several) on an → adaptive landscape, from which movement in any planar direction (changed gene frequencies) results in lower **average fitness** <durchschnittliche Eignung>.

adaptive phenotypes <angepaßte Phänotypen> → neo-Darwinism.

adaptive radiation <adaptive Radiation> → evolution from a generalized, primitive species of diverse, specialized species, each adapted to a distinct mode of life.

adaptive surface <Anpassungsgebirge> *synonym for* → adaptive landscape.

adaptive value, adaptive significance <Anpassungswert> the property of a given → genotype when compared with other genotypes that confers **fitness** <Eignung> to an organism in a given environment. → neutral mutation → balanced polymorphism → variation.

adaptor <DNA-Linker> a short, synthetic DNA segment containing a **restriction site** <Restriktions-Schnittstelle> that is coupled to both ends of a blunt-ended **restriction fragment** <Restriktionsfragment>. The adaptor is used to join one molecule with **blunt ends** <glatte Enden> to a second molecule with **cohesive ends** <klebrige Enden>. The restriction site of the adaptor is made identical to that of the other molecule so that when cleaved by the same **restriction enzyme** <Restriktionsenzym> both DNAs will contain mutually complementary **cohesive ends**.