LONDON - 7 GRAPE STREET

W. B. SAUNDERS COMPANY
Publishers

WEST WASHINGTON SQUARE PHILADELPHIA 5, PENNA.

Office of
Dorland's Illustrated Medical Dictionary
Dorland's Pocket Medical Dictionary

May 24, 1955

Professor Joshua Lederberg
Department of Genetics
The University of Wisconsin, College of Agriculture
Madison 6, Wisconsin

Dear Doctor Lederberg:

This may be a poor way to show appreciation of your letter of May 17, to ask so much more of you. Since you mentioned these terms specifically in that letter, however, I am availing myself of your offer of further assistance.

The white cards contain the entries on the terms already in the dictionary, but we would greatly appreciate a checking of their present-day reliability. The blue cards have been made out for the terms you mention which are not as of now included therein. Although the cards are now in alphabetical arrangement, rearrangement of parallel or opposite terms may facilitate their logical consideration.

While I realize that in your particular specialty the dictionary may have only questionable usefulness, I am having a copy sent you under separate cover, and trust it will have at least some reference or curiosity value. I am also sending a stamped envelope for the return of the cards.

Thanking you very much for your suggestions in these matters.

Sincerely yours,

Jean Husted

JH:MF
Encl.

?Prescribed formula for definitions, for example:

-ploid 1. Having.....chromosomes.
2. An individual or cell having.....chromosomes.

-ploidy The state of having .....chromosomes.

Then for definition of the following terms, the phrases given would be inserted in the blanks:

aneuploid "an unbalanced set of"

diploid "two full sets of homologous"

(Should allodiploid and autodiploid be included, with the same elaboration as is given allo- and auto- on -polyploid? Are there also the terms diploidy, allodiploidy, and autodiploidy?)

euploid "a balanced set or sets of"

haploid "only one member of each set of homologous chromosomes"

hyperploid "more than the typical number of chromosomes in unbalanced sets"

?Each one of these prefixes would be adjoined to two terms:

aneuploid diploid (allodiploid autodiploid) euploid haploid hyperploid
aneuploidy diploidy (allodiploidy autodiploidy) euploidy haploidy hyperploidy

?Each -ploid term would carry the two definitions (adjective and noun) as shown above.

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polyploid 1. Having more than two full sets of homologous chromosomes.
2. An individual or cell having more than two full sets of homologous chromosomes.

polyploidy The state of having more than two full sets of homologous chromosomes.

(Does this definition allow for the usage, "a polyploid chromosome set"?)

Thus allopolyploid 1. Having a polyploid chromosome set derived from two or more parental species.
2. An individual or cell having a polyploid chromosome set derived from two or more parental species.

(Am I being too literal-minded in questioning the "two or more parental species," or do you speak in this terminology in genetics? Might "ancestral species" be better, or only absurd?)

and autopolyploid 1. Having a polyploid chromosome set derived from redoubling of chromosomes of a single species.
2. An individual or cell having a polyploid chromosome set derived from redoubling of chromosomes of a single species.

(Are there matching -ploidy terms for these--allopolyploidy and autopolyploidy?)

but endopolyploidy Reduplication of total chromatin as a result of endomitosis without visible increase in chromosome number.

(This seems a contradiction of "polyploidy," which statedly implies an increase in chromosome number. Endomitosis is also defined as "A process of chromosome duplication which takes place within an intact nuclear membrane without the formation of a mitotic spindle." On the other hand, polysomaty is defined as "Reduplication of the total chromatin in the nucleus with or without obvious polyploidy. Often used as synonym of endopolyploidy." In the terms of these definitions, I should think that when polysomaty occurs without obvious polyploidy, it would be synonymous with endopolyploidy. Is this correct? Is there possibly a term "endopolyploid," with the meanings indicated below?)

endopolyploid 1. Having a polyploid set of chromosomes as a result of endomitosis.
2. An individual or cell having a polyploid set of chromosomes as a result of endomitosis.

(But then how would it differ from "autopolyploid"? I am confused!)

-troph A.....?-trophic organism.

-trophic Requiring (or not requiring).....in nutrition.

-trophy The state of being.....?-trophic; ?-trophic nutrition.
(Is the -trophia ending ever used in regard to nutritional requirements?)

Should there then be a trio of terms (ending in each of these combining forms) for each of these prefixes:

auto-
auxo-auto-
auxo-
hetero-
meta-
and para-

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"-taxis, -taxy. A word termination meaning order, arrangement, or influence, as chemotaxis, thermotaxis, etc."

This entry in the 22nd edition does not seem adequate, and there is no comparable entry for -tropism (is -tropy also used in this sense?). Is the distinction (valid in every instance?) that -taxis connotes the movement of free-moving organisms in response to certain stimuli, whereas -tropism connotes orientation in response to the same stimuli of organisms that are not free-moving?

What is the stimulus which excites the response in "biotaxis," and "biotropism" (comparable to chemotaxis and chemotropism), surely not simply a "living organism"?

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biotype. A group of individuals possessing the same fundamental hereditary constitution, or combination of genes.
(Does this have only the one meaning?)

genotype. 1. The fundamental hereditary constitution, or combination of genes, of an individual. 2. The type species of a genus. Cf. phenotype.
(Does the "Cf. phenotype" have any significance here? Would it have more if appended to definition 1?)

karyotype. The chromosomal constitution of a cell, individual or species.
(Does this connote something different from "genotype," definition 1?)

lysotype. 1. The type of a bacterium based on its reaction to specific phages. 2. A taxonomic subdivision of bacteria based on reactions to specific phages, or a formula describing such a subdivision.
(You see the liberties I took with your definition--also with serotype. Is this restatement valid--i.e., is the concept expressed in 1 true, and is it possible to combine the two concepts expressed in 2?

phenotype. 1. The visible genetic characters common to the individuals of a species. 2. A group of individuals alike in appearance but having a different genetic constitution.
(Are these definitions correct? Would "Cf. genotype" be pertinent on either of these terms?)

phenocopy. The imitation of genic effects caused by the influence of environment and therefore not transmissible to offspring.
("The appearance of characters usually attributed to genic effects but resulting from environmental influences and therefore not transmissible to offspring." Is this definition any better? Or "Simulated genic effects caused by....."? Something in what I consider the meaning eludes me in the definition. Can you help? Does it ever mean an individual organism? I know this "-copy" does not belong among the "-types," but at the same time it must be related in some way to phenotype.)

prototype. The original type or form after which others are developed.
(or "to which they conform"--and other what? Or is this getting entirely out of your field?)

serotype. 1. The type of a bacterium based on antigenic analysis. 2. A taxonomic subdivision of bacteria based on antigenic analysis, or a formula describing such a subdivision.
(Are these definitions OK? Do lysotypes and serotypes actually enjoy the status of "taxonomic subdivisions," or are they rather categories or varieties still without taxonomic standing?)

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biopoiesis. The origin of life from inorganic matter.
(Does it occur - or is it the "alleged - postulated etc.??" origin?)

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"biparasite ?c = hyperparasite."
(Should I delete the term "biparasite" or leave it with a cross reference to "hyperparasite," to be added - "an organism living parasitically upon a parasite."?)

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chromogene. A gene which conforms to mendelian laws and therefore is chromosomal (or "located on a chromosome"?). Cf. plasmagene.
plasmagene. A gene which does not conform to mendelian laws and therefore is extrachromosomal. Cf. chromogene.
(Is it desirable to change the emphasis in the definition of chromogene in this manner to conform with the definition on plasmagene? Is addition of the "Cf. phrases" acceptable or desirable?)

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hemizygous
(Are there comparable terms for:
(1) the hemizygous individual or cell--hemizygote; and
(2) the state of being hemizygous--hemizygosity?)

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(heteroplasty)- Would you please give me the meaning of these terms in genetics?
(homoplasty)

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holandric. Inherited exclusively through the male descent; transmitted through genes located on the Y-chromosome.
hologynic. Inherited exclusively through the female descent; transmitted through genes located on the attached X-chromosome.
(Another friend submitted these revised definitions. Is there a better way to locate the hologynic genes? The male also carries the X-chromosome, which bothers me.)

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lysogenic. 1. Producing lysins, or causing lysis. 2. Pertaining to lysogenesis.
lysogenicity. 1. The ability to produce lysins or cause lysis. 2. The potentiality of a bacterium to produce a phage.
lysogeny) 1. The production of lysis, or of lysins. 2. The symbiosis of a bac-
lysogenesis) terium with phage.
(You can judge how completely I am at sea in my attempts to interpret into concrete dictionary entries your comments on this series of terms. From the terminology I assumed there might be a distinction setting apart "lysogenicity." Is this assumption wrong? On the other hand, are lysogeny and lysogenesis completely synonymous, or is there also some distinction between them? In my ignorance, I am also baffled by "the symbiosis of bacterium with phage" and "the potentiality of a bacterium to produce a phage.")

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"mutagenic; mutafacient the property or act of inducing mutations"
(Is the word "mutagenicity" ever used for this meaning or for the "potentiality" of an agent to induce mutations?)

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preprophage - "....in the life cycle of temperate phages"
(Does a "temperate phage" require elaboration or definition somewhere?)

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translocation. In genetics the joining of a broken chromosome with a part of another.

reciprocal translocation, in genetics, the mutual exchange of fragments between two broken chromosomes, one part of one uniting with part of the other.

(Is the general definition OK, to cover situation when it is not reciprocal? "reunion" of parts impossible when they were not previously united? I have a notation for the term "transgenation" [J. Clin. Investigation 33:1612, 1954]. Has this term come into usage? Is it an exact synonym of "translocation" or is it restricted to a smaller fragment, that is, only a gene?)

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X-chromosome, the differential (female-determining) sex chromosome.....
Y-chromosome, the differential (male determining) sex chromosome.....
(Is it redundant or otherwise absurd to include this parenthetical phrase?)

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xenia (ze'ne-ah) [Gr. "hospitality"]. The appearance of dominant heredity from the male (pollen) plant in the endosperm (seed) in cross pollination.
(Is this the site of proposed inclusion? Is it possible to rephrase for better definition, for example: "Appearance in the endosperm (seed) resulting from cross pollination of dominant characters inherited from the male (pollen) plant.")

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