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Abstract
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In 1952 a group at Stanford University informally consulted geneticists and biochemists using Neurospora in 18 laboratories concerning nomenclature. While no specific and rigid se+ of standard rules emerged, a set of recommendations drawing on suggestions from various workers was prepared (Barratt 1954 Microbial Genet. Bull. 9:20). A brief section on nomenclature ond symbols was also included in a 1954 review paper (p.28, Barratt et al. Advan. Gene+. 6: 1). Terminology hos since evolved, and it is perhaps time to restate the principles of nomenclature used by the Fungal Genetics Stock Center (FGSC) in the preparation of stock lists (Barratt and Ogata 1964 NN#5:24).

1. Mutant phenotype ond symbol: Each new mutant when first described in publication is given a descriptive name and a symbol derived from the name. The stock from which the mutant was obtained should also be specified, together with the mode of origin (spontaneous, specific mutagen, etc.), evidence for a single-gene difference from the parent stock, ond a unique isolation number (see section3). The mutant name is preferably a single descriptive word, e.g. albino, adenine. Nutritional or biochemical mutants ore named for the terminal compound in the series, e.g. all mutants in the ornithine-arginine pathway ore named arginine. (In publication, where it is desirable to indicate metabolic block involved, ony convenient code symbols moy be used, provided synonymy with established locus symbols is given once in the paper (e.g. "In this paper org-3 will be colled cit, and org-6 will be called orn."). Where the biosynthetic pathway is not clear, a mutant is named for the defined substance first recognized to fulfill t&-requiremene.g. pnen-r. (For brevity, the suffix "less" is omitted from the names of nutritional mutants.) Strains differing from wild type inability to utilize a specific substance (e.g. nitrate) ore now simply colled nitrate, rather than "nitrate non-utilizer". Similarly, loci governing resistance to drugs are named after the drug, omitting "resistant", e.g. caf-1 for a locus governing caffeine resistance and sensitivity. (Sensitive, resistant, ond dependent alleles ore best distinguish- the superscripts s, r and d; see section3).

Mutant symbols ore constructed to contain two or more letters. Exceptions ore the letters A and a used to designate the mating type alleles, and C,c; D,d; E,e used by Garnjobst et al. for heterokaryon compatibility genes. In general, symbols have been chosen to achieve a balance between brevity, unambiguity, and pronounceability. Super- or subscripts should be avoided in locus symbols (thi, not B_1; rib, not B_2). Current practice in Genetics ond in Neurospora Newsletter is that locus symbols but not locus names ore italicized in print and underlined in typing. The symbol un is reserved for nutritional mutants having on unknown requirement. In practice these mutants now ore nearly all temperature or pH mutants growing on a minimal medium in one environment and requiring a complete medium in another. Suppressors ore given the symbol of the suppressed locus prefixed by su-, e.g. su-tryp-3, suppressor of tryptophon-3 alleles. Symbols for mutants ore given in small letters (exception: R for round ascospores = dominant in the zygote).

2. Designation of loci: Mutant strains having the some phenotype but representing mutations at different loci (mimic loci) ore distinguished by a number following the locus symbol on the same line, and separated from it by a hyphen, e.g. nit-1, nit-2. In the case of nonallelic morphological mutants having similar phenotypes, some workers prefer to use the system above (as col-1, col-2, col-3, for colonial-l, etc.), while others prefer to follow the Drosophila usage (as fl, fld for fluffy and fluffyoid). (Where new numbers ore to be added to a preexisting series, it would be desirable to check with the FGSC prior to publication, to avoid duplicate assignments of a given number.) Where assignment of a locus number following the symbol is not yet warranted, because adequate tests hove not been completed, the locus is designated provisionally by the mutant symbol followed by the isolation number in parenthesis, as arg(S1229T) or cys(UT156). New locus numbers should be specified only when adequate proof has been obtained of nonallelism with already/numbered loci in the series. 'This is preferably recombinational evidence of a different mop location, but may be functional difference, though the latter is risky because of known cases of allelic complementation (e.g. ad-4), and of alleles having apparently different metabolic block, (e.g. tryp-3 indole utilizers and non-utilizers).

3. Designation of alleles: Wild-type alleles ore designated simply as +, or where ambiguity might result the specific locus symbol is used, followed by a superscript +, e.g. $arg\text{-}9^+$ to specify the wild-type allele at the orginine-9 locus. Mutant alleles at a given locus ore identified by isolation numbers, e.g. od-6 (28610) and ad-6 (35301).

Each mutant of independent origin should be assigned a unique isolation number by the investigator concerned, at the time of first publication. Numbers without prefixes or underlines indicate the original isolation series of Beadle and Tatum. Subsequently many laboratories or independent workers hove used an identifying prefix letter or letters, e.g. S for Stanford, K for Cotcheside. (A list of these prefixes is given in NN#5:78, 1965.) The lower case letters p and t are used after the isolation number to indicate pH- and temperature-sensitive alleles. Other lower case letters following the isolation number ore used to distinguish between two or more mutants recovered from the some isolate, e.g. Y30539r f or riboflavin end Y30539y for yellow. Capitol T or ob after the isolation number indicates that the stock contains a translocation or unspecified aberration.

Alleles governing differences in sensitivity and resistance ore best distinguished by raised lower case letters s or r, inasmuch as it is usually not clear to a reader which is the mutant and which the wild type: e.g. acr-2^{sensitive}, acr-2^{resistant}, eth-1^r, eth-1^s. Similarly the sulfanilamide dependent strain becomes sfo^d.

In publication, each significant mutant used should be identified in each poper by isolation number; locus number alone is not adequate for most purposes in view of differences between alleles. Where a series of alleles is used, any convenient abbreviated code moy be used to distinguish alleles, provided that actual isolation numbers ore specified at least once in the paper.

4. Multiple mutant stock: In designating genotypes of multiple mutant stock, loci ore listed in their order on the mop from left to right, beginning with linkage group I. Markers in different linkage groups ore separated by a semicolon. The mating type allele symbol (A or a) is often listed lost in a series, without regard to mop order.

5. Heterocaryons: The genotypes of the components of a heterocaryon should be clearly designated and connected by a plus sign (+), e.g. (ad-3 pe, fl) + (nic-1; inos).

6. Aberrations: Stocks which are known to contain aberrations are designated by the symbols ob. or T or In (if known to be a translocation or inversion) placed after the isolation number. When the nature of a chromosome rearrangement is known, the aberration itself is symbolized, adapting to Neurospora the conventions used for Drosophila (Bridges and Brehme 1944 Carnegie Inst. Wash. Publ. 552: 4). For example, al-1 strain 4637T contains a reciprocal translocation between linkage groups I and II, which has never been separated from the albino-1 phenotype; it is symbolized: T (I,II) al-1. The original arg-1 strain H4250 contains a pericentric inversion in linkage group I (separable from the requirement). The inversion free of the arginine requirement is symbolized: In (I) (H4250). T (III; VI) 1 is the first translocation identified involving linkage groups III and VI. (This aberration possesses no phenotype or isolation number.) In cases where the aberration is reparable from a mutant locus, derivative stocks with and without the aberration ore often both in the FGSC.

Depending on the context ond on existing knowledge, the arms of the linkage groups may or may not be designated, e.g. T (IR; IIR) al-1 or T (IIIR; VIL) 1. The numbers used ore those of linkage groups, rather than chromosomes, because unambiguous genetic identification has preceded reliable cytological identification.

7. Priority in nomenclature: In general, the first published and substantiated locus name, symbol, and locus number should be considered as having priority, and should be adopted for general use. (This applies for publications since 1954 .) Prior to 1954, several competing symbols were often in use. Inasmuch as no uniform usage had been established at the time, rules of priority were in many cares violated by Barratt et al. (1954 Adv. Genet. 6: 1) in an attempt to introduce a coherent system: thus for example tit-1 and orn-2 become arg-3 and arg-6. With a few exceptions, the symbols adopted at that time have proved acceptable and are in general use.

Inasmuch as Neurospora Newsletter is generally available to all Neurospora workers, it should probably be considered a publication for purposes of establishing priority.

Changes of nomenclature. Some locus names, symbols and numbers, although validly established by priority, will inevitably be found unsuitable, either because of incorrect or incomplete information at the time of first publication, or for reasons of convenience or general preference. In such cases, a new symbol can be proposed and substituted, e.g. G for Gulliver is now gul-1 and s is now an allele of arg-12. Reasons for doing so should be clearly stated. The old symbol and locus number should clearly be stated to be synonymous with the new one, and to avoid confusion the old symbol and number should never be reused to designate any new mutant, i.e., a locus symbol once used in publication should never be considered to be vacated and available for reuse. Examples: me-4 (39814) (Barratt et al. 1954) is really a cyrteine mutant, not a methionine mutant; it has been renamed cysteine-10 (cys-10) by Murray (1965 Genetics 52: 801). me-4 and cys-10 are synonyms. Although cys-10 is preferred for 39816, the symbol me-4 should never in the future be used to designate another locus in the methionine series. Similarly, cyr-6 (86801), cyr-7 (P120), and cyr-8 (P160) have been lost, and their allelism with other cyrteine loci can never be checked. These locus-notions, having once been used, ore preempted and should never be used to designate new mutants in the future (see Murray 1965).

In some cares, genes assigned separate locus numbers hove subsequently either turned out to be alleles at the same locus, or it becomes uncertain whether they ore at the same or at distinct but adjacent loci (e.g. al-l, al-2; thr-2, thr-3; pdx-1, pdx-2; me-i', me-9; arg-4, arg-7.) Suggestions for appropriate nomenclature revisions con best be made by the investigators concerned as each such situation is clarified. If both genes prove to be at a single locus, one of the locus numbers should be retained and the other relegated to synonymy.

8. Wild-type and inbred strains: From the outset, wild-type strains of widely differing genetic backgrounds have been used (see Barratt 1954 Microbial Genet. Bull. 11: 5). In the early research many of these strains were intercrossed more or less at random and the pedigree of many of the stocks containing widely used reference alleles is uncertain.

The wild types now most commonly used are:

E5256A and E5297a (Emerson wild types)

EmA and Ema (Derived from the above by D. G. Catcheside)

LA and Lo (Called Lindegren wild types)

ST74A and ST73a (St. Lawrence's "standard" stocks, commonly called St. Lawrence wild types)

74-OR23-1A and 74-OR8-1a (Oak Ridge wild types, derived from the above by F. J. deSerres)

The origin of various wild-type strains is summarized in NN#2: 24 (1962). (See also correction of 74A23-1A (incorrect) to 74-OR23-1A in NN#3: 19 (1963).)

In designating generations of inbreeding, the first generation progeny from an intercross between two p_1 strains is designated f_1 (lower case because haploid). Progeny of $f_1 \times f_1$ are f_2; of f2 x f2 are f_3, etc.

Progeny of $f_1 \times p_1$ ore designated b_1 (backcross generation1); of $b_1 \times p_1$ are b_2, etc. (please note correction: In Barratt 1962 NN#2: 25, F_{10} should read b_9.)

Great strides hove been made toward a uniform terminology for Neurospora. However, the reader may note that certain ambiguities still exist, especially in the case of suppressors. Suitable terminology will evolve as the need becomes critical.

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