

## A modest proposal regarding gene symbols

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## A modest proposal regarding gene symbols

### Abstract

Proposal regarding gene symbols

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classes of genes concerned with nutritional requirements or resistance, whose symbols differ in Neurospora and the bacteria, although the traits are the same (Table 1). We suggest that Neurospora workers make the minor change necessary in order for the symbols in Table 1 to correspond. Such a change would require minimal effort and adjustment on our part, and would perhaps aid comprehensibility and communication between workers using various organisms. It would also follow the lead of the yeast geneticists, who have recently adopted many of the E. coli symbols (1969 Microbial Gene+. Bull. 31, suppl.), and it would use, in most cases, the three-letter amino acid abbreviations familiar to biochemists and officially adopted in biochemical nomenclature. In Neurospora, such a change has already been anticipated by some workers for a few loci (e.g., his, pro).

Table 1. Symbols that now differ for corresponding classes of mutant genes in Neurospora and in bacteria and for which it is Proposed to adopt the bacterial symbol.

| Neurospora symbol | Bacterial symbol | Phenotype*                |
|-------------------|------------------|---------------------------|
| ac                | ace              | acetate                   |
| act               | cyh              | cycloheximide (actidione) |
| arom              | aro              | aromatic amino acids      |
| asp               | asn              | asparagine                |
| aspt              | asp              | aspartate                 |
| glm               | gln              | glutamine                 |
| hist              | his              | histidine                 |
| hs                | hom              | homoserine                |
| inos              | inl              | inositol                  |
| iv                | ilv              | isoleucine and valine     |
| meth              | met              | methionine                |
| phen              | phe              | phenylalanine             |
| prol              | pro              | proline                   |
| tryp              | trp              | tryptophane               |

\* All are nutritional requirements except act/cyh resistance.

Numerous gene symbols designating nutritional requirements and other traits are the same in Neurospora as in Escherichia coli, Salmonella typhimurium or Bacillus subtilis. This is true for acr, arg, cys, leu, lys, mtr, nic, nit, pan, pdx, pyr, rec, rib, ser, suc, thi, thr, tyr, val. There are other classes of genes concerned with nutritional requirements or resistance, whose symbols differ in Neurospora and the bacteria, although the traits are the same (Table 1). We suggest that Neurospora workers make the minor change necessary in order for the symbols in Table 1 to correspond. Such a change would require minimal effort and adjustment on our part, and would perhaps aid comprehensibility and communication between workers using various organisms. It would also follow the lead of the yeast geneticists, who have recently adopted many of the E. coli symbols (1969 Microbial Gene+. Bull. 31, suppl.), and it would use, in most cases, the three-letter amino acid abbreviations familiar to biochemists and officially adopted in biochemical nomenclature. In Neurospora, such a change has already been anticipated by some workers for a few loci (e.g., his, pro).

The symbols for asparagine and aspartate present the only problem of ambiguity, because asp now signifies asparagine in Neurospora but aspartate in the bacteria. However, asp is the 3-letter symbol for aspartate under rules for biochemical nomenclature, and it is established in bacterial genetics. The sooner the change is made in Neurospora, the better.

A few symbols are different for similar classes of genes in Neurospora and in the bacteria; for example, uvs = uvr and su = sup. Here, there seem to be good reasons to retain the present Neurospora symbols. It is preferred to name a locus for the mutant trait (UV-sensitivity) rather than the wild type; su follows long-standing Drosophila usage for suppressors.

In a few instances, identical symbols are now used where the meaning is different in Neurospora and bacteria. Examples are mel (melon morphology in Neurospora vs. melibiore utilization in bacteria), mod (permeability modification vs. phage modification), tol (tolerance to heterokaryon-incompatibility alleles vs. tolerance to colicins), tre (trehalose electrophoretic mobility vs. trehalose utilization). These differences seem unlikely to confuse, and no change seems necessary. Also, there seems no reason to substitute the bacterial system of distinguishing loci by means of letter suffixes (A, B, C, etc.) for the present Neurospora usage (-1, -2, -3, etc.). The original justification of the bacterial system - to facilitate computerization of stocks and pedigrees - is hardly an issue with Neurospora, and use of the suffix A in locus symbols would seem confusing in an organism where A is already used to designate mating type.

In summary, 20 symbols already correspond for identical classes of genes in Neurospora and bacteria. Fourteen additional symbols can readily be made to correspond, with little or no confusion, and it is proposed that the 3-letter E. coli symbols be adopted for them. Comments and suggestions from Neurospora workers will be taken into consideration before any change is implemented by the Fungal Genetics Stock Center. ■ ■ ■ Department of Biological Sciences, Stanford University, Stanford, California 94305 and Fungal Genetics Stock Center, California State University, Humboldt, Arcata, California 95521.