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SHORT NOTE

A Revised Nomenclature for the Mouse Transferrin Locus

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In independent investigations, reported almost simultaneously (Cohen, 1960; Shreffler, 1960), the authors have described a protein variant system in the serum of mice, involving an electrophoretic difference in the iron-binding beta-globulin component, transferrin, and have shown the difference to be genetically determined by a pair of co-dominant alleles at a single locus. Both reports introduced the same gene symbol, *Trf*, for this locus, but in one, letter designations were used (Cohen, 1960), making the allele symbols Trf^A and Trf^B, and the three phenotypes TrfA, TrfAB and TrfB, while in the other, number designations were used (Shreffler, 1960), with the corresponding symbols Trf^1, Trf^2, Trf-1, Trf-1·2 and Trf-2. To avoid confusion in future reference to this locus, due to the two differing systems of nomenclature, the authors have agreed upon the revised nomenclature proposed in this communication.

Well-established precedents for both letter and number systems in designating haemoglobin and serum protein phenotypes and the alleles controlling them may be found in work with this and other species. In the only pertinent protein variant system in the mouse, the haemoglobin system, number designations have been used (Russell & Gerald, 1958). With all of the well-studied transferrin variant systems in other species, letter designations have been used (for references, see Cohen, 1960; Shreffler, 1960). In order to be consistent with the established nomenclature for transferrin polymorphisms in other species, and with a view to simplifying the possible addition of new alleles, we have decided to use letter designations for the mouse transferrin variants.

Furthermore, because of the nature of the system; the lack of any criterion more compelling than frequency among inbred lines for assigning a type allele; and the possibility of additional alleles, it seems advisable to base the nomenclature upon the rules for multiple allelic systems in the mouse. These rules, recently set forth by the Committee on Standardized Genetic Nomenclature for Mice (1959), state that, 'To differentiate members of an allelic series letters, numbers, or letters and numbers may be used as superscripts. Where letters are used they should be lower case and placed before the numbers.' Therefore the revised allelic designations that we now propose for the transferrin locus have lower-case superscripts, and in accordance with this convention, the designations for phenotypes are also written in lower case. The proposed symbols are thus Trf^a and Trf^b for the two alleles, and Trf-a, Trf-ab and Trf-b for the three known phenotypes. The two previous and the newly proposed designations are summarized and compared in Table 1. In addition to use as phenotypic symbols, the symbols Trf-a and Trf-b are valuable as designations for the two differing proteins themselves. The convention introduced by Shreffler (1960), in designating the minor transferrin components, seems useful also. Thus the minor components previously designated as Trf-1′ and Trf-2′, would now become Trf-a′ and Trf-b′. The still faster and fainter minor components detected by Cohen (1960) would be Trf-a″ and Trf-b″.

Table 1. *Summary of revised and former nomenclature systems*

Designations	Revised	Cohen (1960)	Shreffler (1960)
(i) *of Alleles*			
In CBA lines	Trf^a	Trf^A	Trf^1
In other lines	Trf^b	Trf^B	Trf^2
(ii) *of Genotypes and the corresponding Phenotypes*			
Trf^a/Trf^a	Trf-a	TrfA	Trf-1
Trf^a/Trf^b	Trf-ab	TrfAB	Trf-1·2
Trf^b/Trf^b	Trf-b	TrfB	Trf-2

If new electrophoretic types of transferrins are found, these should be designated alphabetically in order of discovery. If the same letter should happen to be assigned to two different types, these might be distinguished by prefacing the duplicated letter with another, designating, for example, the laboratory which reported it. Thus, Trf^{hc} and Trf^{jc}, Trf-hc and Trf-jc could be used for two different hypothetical variants found at Harwell and Jackson laboratories, and both initially designated Trf-c. If variant types should be recognized upon other criteria than electrophoretic mobility, these may be simply handled by adding number subscripts for the new phenotypes to the letter designating the electrophoretic mobility of the protein, and number suffixes to the allelic superscript. For example, if Trf-b should be found divisible into two groups on the basis of antigenic differences, the appropriate phenotypic symbols should be Trf-b_1 and Trf-b_2, and the allelic symbols, Trf^{b1} and Trf^{b2}. Such usage is in accordance with the rules previously cited, and has been the basis for our choice of letter symbols for this system.

It is suggested that the system of nomenclature proposed here could serve as a model for nomenclature in other protein variant systems in the mouse. Other systems have already been found (Cohen, Shreffler, unpublished) and still others will doubtless be detected in the future.

For the information of those who may wish to use the transferrin system, we have listed in Table 2 the lines which we have screened to date, and the alleles found in them.

Table 2. *Inbred lines and sublines classified for transferrin type*

Line	Allele	Line	Allele
A/Jax	b	A/Fa	b
A/HeJax	b	A/Lab	b
AKR/Jax	b	A/2GLab	b
BALB/cJax	b	AKR/Lab	b
CBA/Jax	a	BALB/cLab	b
C3H/?*	b	C3H/HeLab	b
C57BL/6Jax	b	CBA/Fa	a
C57BL/10Gn-lu	b	CBA/Lab	a
C57Br/cdJax	b	C57BL/Fa	b
DBA/1Jax	b	C57BL/Lab	b
DBA/2Jax	b	C57BL/6Lab	b
RF/Jax	b	C57BR/cdLab	b
WB/Re	b	C57L/Lab	b
WC/Re	b	CE/Lab	b
		KL/Fa	b
		RIII/Fa	b
		Ju/Fa	b

* Commercially obtained, subline not known.

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