

ment support of scientific research will become increasingly necessary and important in the future, and the manner in which this support is administered will become increasingly significant.

The firm stand taken by the National Academy of Sciences and groups like the Federation of American Scientists is, in my opinion, excellent. But, unless their position is supported by individual action, I believe it will lose significance. Therefore, I wish this resignation to be recorded as the protest of one student against a ruling that I believe to be directed against the freedom of the individual scientist and the interest of our society as a whole.

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### Nomenclature of the Rh-CDE System

In a recent paper by E. F. Ducey and R. I. Modica on the amendment of the nomenclature of the Rh-CDE System (*Science*, 1950, 111, 466) several errors are to be noted in the use of the Wiener Rh-Hr nomenclature:

1. Table 1 indicates the following under Wiener's antigens: Rh<sub>0</sub>, rh', rh'', Hr<sub>0</sub>, rh', and rh''. The last two antigens should correctly read hr' and hr''. Likewise, under Wiener's agglutinins, the last three indicated as Anti-Rh<sub>0</sub>, Anti-rh', and Anti-rh'' should correctly read Anti-Hr<sub>0</sub>, Anti-hr', and Anti-hr''.

2. In the sentence "For example, Wiener must use a different set of terms for the genotypes and the phenotypes (Rh<sub>1</sub>, Rh<sub>0</sub> and R<sub>1</sub>, R<sub>0</sub>, etc.)," the order of "genotypes and phenotypes" implies a respective arrangement in the symbols appearing in the parentheses, "(Rh<sub>1</sub>, Rh<sub>0</sub> and R<sub>1</sub>, R<sub>0</sub>, etc.)." Concerning the latter, it is to be noted that symbols Rh<sub>1</sub> and Rh<sub>0</sub> represent phenotypes and not, as implied, genotypes; also, contrary to the implication, symbols R<sub>1</sub> and R<sub>0</sub> represent neither phenotypes nor genotypes. According to the Wiener nomenclature, a genotype consists of two italicized symbols (a symbol for the gene contributed by each parent). Therefore, the possible genotypes falling under phenotypes Rh<sub>1</sub> and Rh<sub>0</sub> would correctly be *R'R'*, *R'r'*, *R'R''*, *R'r''*, *R''R'*, and *R''R''*, respectively.

3. It is further stated that the Wiener symbol Rh<sub>1</sub> does not indicate whether the individual is homozygous or heterozygous, and that the corresponding Race symbol CDe/CDe or CDe/cde does. In this case a comparison has been made between a phenotypic symbol (Rh<sub>1</sub>) and a genotypic symbol (CDe/CDe or CDe/cde). A valid comparison would have been made had genotypic symbols representing both systems of nomenclature been used, e.g., CDe/CDe = *R'R'* and CDe/cde = *R'r'*.

4. For the sake of comparing Wiener's symbols against those of Race, the possible progeny resulting from the mating of an Rh<sub>1</sub> individual with an rh individual is discussed. Here again there exists a situation similar to that mentioned in (3); i.e., Wiener's phenotypes are compared with Race's genotypes. Also, it is stated that in the above-mentioned mating the possible progeny are Rh',

Rh<sub>1</sub>, Rh<sub>0</sub>, and rh''. The Rh' is incorrect and should read rh'.

Employing several symbols mentioned above, the following table may serve to depict a more complete comparison between the Wiener and Race nomenclatures.

Phenotypes		Genotypes	
Wiener	Race	Wiener	Race
rh	cde	<i>rr</i>	cde/cde
		<i>R'R'</i>	CDe/CDe
		<i>R'r'</i>	CDe/Cde
		<i>R'R''</i>	CDe/cDe
		<i>R'r''</i>	CDe/cde
		<i>R''R'</i>	cDe/Cde
		<i>R''R''</i>	cDe/cDe

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Ducey and Modica actually recommend the abandonment of the Wiener nomenclature and a modification of the Fisher-Race terminology. The gist of the latter is the substitution of D', C', and E' for d, c, and e, because "the use of the lower case letters c, d, and e, to denote the Hr antigens leads to ambiguity when it is remembered that in the major groups, a and b indicate agglutinins." Therefore, the lower-case letters are to be reserved for agglutinins, the capital letters for antigens. The agglutinins are to be labeled anti-d, anti-c, anti-e, anti-d', anti-c', and anti-e'.

I do not wish to enter the controversy on the respective merits of the two main systems of Rh nomenclature, but would like to call attention to one major defect in the recommendation of Ducey and Modica. It is true that a and b denote agglutinins in the ABO blood group system, but many objections have been raised against their use, because it is misleading. The modern tendency followed in most textbooks and scientific papers is to use anti-A and anti-B instead of a and b, as the only clear designations of these two isoagglutinins. Therefore, to be consistent, Ducey and Modica's recommendation for the agglutinins would have to label them as anti-D, anti-C, etc. Otherwise the proposed amendment would, I am afraid, only add to the confusion.

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The recent criticism of current *Rh* terminology by Ducey and Modica correctly points out the comparative simplicity of teaching and understanding the Fisher-Race scheme but misses a far more significant fact, i.e., the possibility that Wiener's hypothesis of a series of multiple alleles at one locus on homologous chromosomes may be correct. The only method apparent at present of coming to any decision concerning relative correctness of