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Basque Blood Groups

WE have determined the full ABO, Rh and MN blood groups of 167 Basques. The persons examined were selected as being of unmixed Basque descent, mostly by the Rev. Prof. J. M. de Barandiaran. None of the persons examined was known to be a blood relation of any of the others. The accompanying tables give a summary of our results.

ABO GROUPS

Group	Number	Frequency observed	Frequency expected	Gene frequencies	
O A_1 A_2 B	85 67 6 7	$0.5090 \\ 0.4012 \\ 0.0359 \\ 0.0419$	$0.5071 \\ 0.4002 \\ 0.0359 \\ 0.0418$	$A_1 0.2343$ $A_2 0.0248$ B 0.0288 Q 0.7121	
A_1B A_2B	$\frac{2}{0}{167}$	$0.0120 \\ 0.0000 \\ \hline 1.0000$	$0.0135 \\ 0.0014 \\ 0.9999$	1:0000	

MN GROUPS

Group	Number	Frequency observed	Frequency expected	Gene frequencies	
M MN N	55 75	0.3293	0.3068	M 0.5539	
	37	0.2216	0.1990	N 0.4461	
	167	1.0000	1.0000	1.0000	

Rh GROUPS

Rh phenotype frequencies

г с	leac an D	tions ntise Anti E	s wit ra i- c	e e	Commonest genotype in each phenotype	Number	Frequency observed	Frequency expected
-++-+++	++++ ++	++ +	++ +++++	+++++++++++++++++++++++++++++++++++++++	$\begin{array}{c} cde/cde & (rr) \\ CDe/cde & (R_1r) \\ CDe/CDe & (R_1r_1) \\ cDE/cde & (R_2r) \\ CDe/cDE & (R_1R_2) \\ Cde/cde & (R'r) \\ cDe/cde & (R_0r) \\ cDE/cde & (R_0r) \\ cDE/cDE & (R_0R_2) \\ cda/(Cd_0 & (P'P)) \end{array}$	48 79 13 13 10 3 1 0	$\begin{array}{c} 0.2874 \\ 0.4731 \\ 0.0778 \\ 0.0778 \\ 0.0599 \\ 0.0180 \\ 0.0060 \\ 0.0000 \end{array}$	$\begin{array}{c} 0.3275\\ 0.3904\\ 0.1246\\ 0.0795\\ 0.0487\\ 0.0180\\ 0.0064\\ 0.0064\\ 0.0077\end{array}$
				т	Cue/Cue (RR)	167	1.0000	1.0000

Frequencies of gene combinations

cde	(r)	0.5723
CDe	(R_1)	0.3376
cDE	(R_2)	0.0688
Cde	(R')	0.0157
cDe	(R_0)	0.0056
cdE	(R'')	0.0000
		1.0000

The high frequency of Rh-negative (*D*-negative) persons (30.5 per cent) and of the *d* gene (58.8 per cent) are in agreement with the findings of Etcheverry¹ and support the views recently put forward by one of us² regarding the history of the *d* gene. The low frequency of *cDE* is another notable feature. The excess of *Dd* heterozygotes and the deficiency of *MN* heterozygotes are clearly due to unavoidable errors of sampling. For this and other reasons steps are being taken to examine more persons. The combined results and a full discussion of them will be published elsewhere.

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¹ Etcheverry, M. A., Día. méd., 17, 1237 (1945).

² Mourant, A. E., Nature, 160, 505 (1947).

Evolution of Hydrogen from Ferrous Hydroxide

It is generally supposed that ferrous hydroxide in aqueous suspension can decompose, according to the equation

$$3Fe(OH)_2 = Fe_3O_4 + 2H_2O + H_2.$$

The experiments of Schikorr¹ suggest that this can occur, but only in presence of metallic iron or excess of ferrous salt in solution.

The matter is important in connexion with the attack of iron by pure oxygen-free water. Warner² showed that a reaction such as

$$Fe + 2H_2O = Fe(OH)_2 + H_2$$

is permissible on grounds of energy; it might, however, be precluded on grounds of geometry if a continuous film of ferrous hydroxide were built up, separating the iron from the water. Possibly this protection might fail if the hydroxide were converted to anhydrous magnetite (a denser substance, commonly produced in granular form).

Actually, Murata³ found that oxygen-free water acting on iron powder evolved hydrogen for a month, yielding ferrous hydroxide crystals ; but Thompson4, also using iron powder, reported the formation of magnetite on the glass apparatus; Corey and Finnegan⁵, starting from iron rods, obtained nonadherent magnetite. Gould⁶, working in this laboratory, observed no granular magnetite when water at the boiling point acted on steel with exclusion of oxygen; hydrogen was evolved at first, but attack soon became negligible, evidently owing to the formation of a protective film. In other experiments, where oxygen was intentionally admitted, a mass of magnetite and rust was found adhering to the metal at a few points only; it was probably formed by secondary oxidation of the ferrous hydroxide, mainly at a distance from the metal; its removal revealed deep corrosion-grooving. There is no necessary inconsistency between these various results, but it is clearly important to decide under what conditions Schikorr's reaction can occur; hence some new experiments have been carried out.

Ferrous hydroxide, pure enough to be almost colourless, was precipitated by mixing ferrous chloride and potassium hydroxide solution in an atmosphere of hydrogen. These solutions were prepared by the electrolysis of a de-aerated potassium chloride solution between a platinum cathode and a pure iron anode; the design of the apparatus was such that premature mixing of anodic and cathodic products did not occur and that the two solutions could be mixed in any desired proportions. The deaeration was carried out by boiling followed by the