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Abstract Papers

A STUDY OF MAN'S TOLERANCE TO POSITIVE ACCELERATION (CENTRIFUGAL FORCE) IN AIRCRAFT

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FAMILY HISTORY ANALYSIS AS A HELP WITH PERSONAL PROBLEMS

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ABSTRACT

The presence of a particular trait in several members of a family does not signify that the trait is a result of heredity. On the other hand, its occurrence in only one member of a family is not conclusive evidence that it is accidental or caused by environment. It may still be hereditary. Even if a person has an inherited trait, his children will not necessarily develop it. The probability can be determined only after an analysis of the family history.

In making a genetic analysis of a family history, certain steps are necessary. First, the possibility that the trait was caused by some environmental factor must be eliminated. If the trait is the result of inheritance, full and accurate data about all available members of that family, the non-affected and affected, are essential. These data should include variability of the trait among the affected members. The method of inheritance of the trait in this family can then be determined. The trait in this family should be compared to similar traits reported in other families. From this data a geneticist is able to predict the probable occurrence of the trait in any particular member of the family.

Cerebellar ataxia, for example, is inherited dominantly. One person age 26 with an ataxic parent knew he had a 50:50 chance of developing ataxia. He believed that he might become ataxic at any time during his life. Therefore, he wanted to be sterilized. A genetic analysis indicated that in this family a person who has the potentiality will become ataxic by age 30. If he is not then ataxic, he will not become ataxic. The member was advised not to become sterilized but merely to postpone having children for four more years, and then have children if he had not become ataxic. It was good eugenics to advise here against sterilization, but that was possible only after a genetic analysis of his family history.

Other diseases must be handled individually. Members of a

family with mongolism, for example, should be advised to have their children early in life. This is due to the fact that age of mothers increases the probability that they will produce a mongol child.

THE EFFECT OF HEPARIN AND DICUMAROL ON BLOOD COAGULATION

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FERNS AND FLOWERING PLANTS OF BEAVER ISLAND, LAKE SUPERIOR, MINNESOTA*

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STUDIES ON FROST-BITE WITH SPECIAL REFERENCE TO TREATMENT AND THE EFFECT ON MINUTE BLOOD VESSELS**

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NOTES ON AQUATIC AND PRAIRIE VEGETATION IN SOUTHWESTERN MINNESOTA***

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THE INFLUENCE OF THYROXIN ON THE DEVELOPMENT OF EXPERIMENTAL GOITER

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THE PRODUCT METHOD OF CALCULATING LINKAGE FROM F_2 DATA INVOLVING SEMISTERILITY: AND ITS APPLICATION TO A BARLEY TRANSLOCATION*

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ABSTRACT**

In Barley linkage between genetic characters and partial sterility associated with chromosomal interchange furnishes a case in which it is necessary to utilize F_2 data.

Since semisterility behaves differently from other genetic characters in inheritance, the theoretical expectancies were calculated for linkage with a simple pair of characters for F_2 in repulsion using p as the recombination value.

The expected frequencies for the four phenotypic classes in the F_2 involving a simply inherited factor pair (dominant vs. recessive) and semisterility are:

Dominant semisteriles	$n/4\ (2-2p+2p^2)$
Dominant normales	$n/4\ (1+2p-2p^2)$
Recessive semisteriles	$n/4\ (2p-2p^2)$
Recessive normales	$n/4\ (1-2p+2p^2)$

To facilitate use of the product method, tables of the bc/ad ratios for recombination values from 0 to independence were calculated using the above formulae. These ratios are the same for coupling and for repulsion. Factors for use in calculating standard errors are included and the percentages of plants homozygous for the interchange in the normal (non-sterile) classes for coupling and repulsion were also calculated.

In the linkage studies using Smith's translocation A stock, partial sterility showed no linkage with black vs. white pericarp and lemma (Bb) in linkage group 2, hooded vs. awned (Kk) in linkage group 4, or long vs. short haired rachilla (Ss) in linkage group 5.

Partial sterility was linked with 2-row vs. 6-row (Vv) in linkage group 1, the recombination value for repulsion by the product method being $7 \pm 3.9\%$. The second linkage group remains to be identified. As found by Smith, partial sterile plants have a ring of four chromosomes plus five pairs. The chromosome with the large satellite is not involved in the ring.

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