

a role in mediating the reaction. — Doses to 18,000r (delivered at 600r/min.) were received by roots of germinating bulbs, treatment exceedingly detrimental to nuclei and subsequent root growth, while excised tips received up to 480,000r (at 6000r/min.). For 2-3 days after exposure (18,000r), growing root meristems showed the color reaction with the intensity and speed of controls. Reduction of the salt falls off by 4-5 days postirradiation, but the reaction is still evident 20 days after x-raying. Excised roots given 240,000r could reduce neotetrazolium as fast and as intensely as controls, but other tips tested 4 and 24 hours after treatment gave a diminished reaction. Only with 480,000r was an effect on the indicator apparent in roots tested within a few minutes postirradiation. 48 hours after this massive dose cells could still reduce the dye but with decidedly lessened ability. — Damaging x-radiation (many times above lethality) does not prevent neotetrazolium reduction in *Allium* cytoplasm.

STONE, W. H. and M. R. IRWIN, Department of Genetics, University of Wisconsin, Madison, Wisconsin. Immunogenetic studies on the J character of cattle blood groups. — The antigenic character of the erythrocytes of cattle called J is detectable only by means of interaction with normal antibodies from the serum of cattle lacking the factor. — Recent observations show that a soluble substance with serological activity specific for the J character may occur in the serum of cattle whose cells may or may not possess the character. An extensive analysis has shown that the bloods of cattle may be divided into at least three major phenotypic classes: (a) J^{CS} —those with J substance on the cells and in the serum, (b) J^S —those with J substance in the serum only, and (c) j^a —those lacking demonstrable J substance. Individuals in this last class are the potential possessors of the normal J antibodies. — The distribution of the three phenotypes in the offspring from different kinds of matings provided evidence consistent with the hypothesis that these characters are controlled by a series of allelic genes arranged in a descending order of dominance, i.e. J^{CS} , J^S and j^a . Further, the concentration of J substance in the serum of J^{CS} individuals was usually significantly higher than that of J^S individuals. These data suggest that the concentration of soluble J substance determines, in large part, the reactivity of the cells. The present hypothesis is that when the concentration of J substance is above a definite threshold, the cells may acquire enough J substance to become reactive with J antibodies. Consequently, the genes J^{CS} and J^S are examples of allelic genes with different quantitative effects.

STONE, W. H. and W. J. MILLER, Department of Genetics, University of Wisconsin, Madison, Wisconsin. A New Normal Antibody of Cattle Serum. — A normal antibody of cattle serum has been discovered which detects the antigenic factor of cattle erythrocytes called U_2 . Previously, the U_2 factor has been detected only by means of isoimmune sera. The standard reagent (typing fluid) containing a single specificity for the factor U_1 (U_1 -reagent) has been obtained routinely by absorbing anti- U_1 isoimmune serum with erythrocytes containing the factor U_2 . The standard U_2 -reagent

has been an unabsorbed anti- U_1 isoimmune serum containing specificities for both of the factors U_1 and U_2 . Thus, the standard U_1 -reagent reacts only with cells containing the factor U_1 , while the standard U_2 -reagent reacts with cells containing either or both of the factors U_1 and U_2 . — This new normally occurring antibody reacts as a U_2 -reagent, but is unique from the isoimmune U_2 -reagent because it contains but a single specificity for the factor U_2 . Thus, this new normal antibody reacts only with cells containing U_2 and consequently is useful in distinguishing cells containing U_1 alone from those containing both U_1 and U_2 . — Using the standard U_1 -reagent and this new normally occurring U_2 -reagent, it is possible to distinguish cells of individuals which are heterozygous for the causative genes (U_1U_2) from those of either homozygotes (U_1U_1 and U_2U_2). — A distinctive characteristic of this normal antibody is that it fails to cause hemolysis of cells containing the factor when used at high concentrations, but causes complete hemolysis at high dilutions. This may explain why this antibody was not discovered previously.

SRB, A. M., Cornell University, Ithaca, N. Y. Shifts in heterocaryotic dominance relations effected by modifier genes in Neurospora. — Arginineless and lysineless mutants of Neurospora have been obtained on identical genetic backgrounds by treating wild-type conidia with ultraviolet light and utilizing the technique of filtration followed by selective plating. Growth of arginineless mutants is inhibited by lysine, and lysineless mutants are sensitive to arginine. Heterocaryons between an arginineless and lysineless strain occasionally grow on minimal agar medium at approximately the rate of wild type. When conidia from such heterocaryons are crossed onto wild type, the relative frequencies of ascospores of the two mutant types indicate that wild-type growth rate is achieved only when precise mutant nuclear ratios are maintained. — By plating irradiated conidia of an arginineless strain onto medium supplemented with arginine plus an inhibitory concentration of lysine, arginineless strains relatively insensitive to lysine can be selected. Analogous procedures permit the recovery of lysineless strains relatively insensitive to arginine. In either instance, an alteration in amino acid sensitivity has been identified with mutation at a single gene locus. — Heterocaryons between arginineless and lysineless strains carrying these modifier genes almost always give wild-type growth rate on minimal agar. Estimates of nuclear ratios, based on the procedure utilized with the original mutant strains, indicate that wild-type growth rate may occur under fairly wide latitude of nuclear proportions. Although the method of estimating nuclear ratios is in certain respects unsatisfactory, the results indicate that heterocaryotic dominance relations among the two biochemical mutant genes and their wild-type alleles have been altered by modifying genes.

STALLWORTHY, W. B. and R. H. BUKER, (Introduced by B. R. Speicher), University of Maine, Orono, Me. Respiration of Habrobracon juglandis (Ashmead) for various sex types. — Oxygen uptake of individual wasps was followed in a modified Gerard-Hartline respirometer. The