Of immediate interest, however, is the evidence suggesting that the genus *Arthrobacter* may be implicated in nitrification; moreover, it may be included among those few select genera reported capable of oxidizing nitrogen to nitrate. It is also of interest that in the oxidation of ammonia by *A. globiformis* gaseous nitrogen oxides are produced. The formation of these compounds suggests that nitrogen losses may occur through oxidative as well as reductive processes. In all these instances the relatively small experimental recovery may none the less be of considerable ecological and practical significance because of the large numbers of *Arthrobacter* in the soil[17].

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GENETICS

Inheritance of Serum Transferrins in Rhesus Monkeys

An extensive polymorphism of transferrin, the iron binding protein of plasma, has been detected among rhesus monkeys and other macaques[1–5]. In previous work[5], 19 phenotypes due to different combinations of nine molecular forms of transferrin could be distinguished by starch-gel electrophoresis. Additional transferrin variations have now been discovered (Goodman, M., unpublished data), and there are at least 28 phenotypes and 11 molecular forms of transferrin present in the genus *Macaca*, the rhesus group alone showing 21 of these phenotypes and 9 of these transferrins.

The macaque transferrin of slowest electrophoretic mobility has been labelled[5] *A* and that of fastest mobility, *H*. (H^1 migrates between *G* and *H*, the newly discovered F^1 between *E* and *F*, and *E′* between *D* and *E*.) Typically a sample of macaque serum contains either one or two molecular forms of transferrin. Thus we can suppose that the observed transferrin variation is due to an allelic series of genes and that phenotypes such as *CC* consisting of a single transferrin are controlled by homozygous combinations of genes, whereas those such as *CD* consisting of two transferrins are controlled by heterozygous combinations.

In order to investigate the inheritance of macaque transferrins, we determined by comparative one-dimensional starch-gel electrophoresis in the *tris* discontinuous buffer system[6] the transferrin phenotypes of rhesus monkeys in the breeding colony of the Primate Laboratory of the University of Wisconsin. The results are presented in Table 1. It can be seen that the four offspring of the $CC \times CC$ matings were all phenotype *CC*. (In the breeding colony, as in the rhesus monkeys from the Nepal border of India[5], the most frequently occurring transferrin type was *C*.) There were 6 offspring of $CC \times CG$ matings; 4 were phenotype *CC* and 2 were *CG*. The 2 offspring of $CG \times CG$ were *CG* and *GG* respectively. The 1 offspring of $CD \times CD$ was *DD*. The 2 offspring of $CF \times CC$ were *CC* and *CF* respectively. Finally, 1 offspring of $CD \times CG$ was *DG* and another offspring originally attributed to the same mating combination was *CH*. Thus with the exception of monkey 62 (the offspring with *CH* phenotype) each offspring always had one transferrin identical in type to one of the mother's and one transferrin identical in type to one of the father's. A re-check of the records of 270, the mother of 62, raised doubt that *R*–16 (a male with *CG* phenotype) was the sire of 62 in that the date of access of *R*–16 to 270 could not account for the pregnancy of the latter. Nor did the records show which male could be implicated.

Table 1. Transferrin Phenotypes of Parents and Offspring in a Breeding Colony of Rhesus Monkeys

Designation of animal			Transferrin phenotype		
Mother	Father	Offspring (sex)	Mother	Father	Offspring
R-3	*R*-6	32 F	*CC*	*CC*	*CC*
299	*R*-2	81 F	*CC*	*CC*	*CC*
69	*R*-2	75 F	*CC*	*CC*	*CC*
69	*R*-2	100 F	*CC*	*CC*	*CC*
248	*R*-16	49 F	*CC*	*CG*	*CC*
R-15	*R*-16	61 F	*CC*	*CG*	*CC*
R-11	*R*-16	71 M	*CC*	*CG*	*CC*
296	*R*-16	43 M	*CC*	*CG*	*CC*
R-55	*R*-6	83 M	*CG*	*CC*	*CG*
392	*R*-2	*A*-25 F	*CG*	*CC*	*CG*
292	*R*-16	35 F	*CG*	*CG*	*GG*
292	*R*-16	57 M	*CG*	*CG*	*CG*
381	*R*-64	*A*-75 F	*CD*	*CD*	*DD*
310	*R*-6	33 F	*CF*	*CC*	*CC*
310	*R*-6	82 F	*CF*	*CC*	*CF*
270	*R*-16	30 M	*CD*	*CG*	*DG*
270	(*R*-16?)	62 F	*CD*	(*CG*?)	*CH*

Discounting the transferrin results for 62, our results support the hypothesis that an allelic series of genes at a single locus controls the variation of transferrin types in rhesus monkeys, with each gene responsible for a particular transferrin and with no gene in the allelic series having dominance over another. However, the earlier anomalous finding[4,5] of a rhesus monkey serum with three molecular transferrin types (*BDG*) suggests that a more elaborate genetic hypothesis may be needed to account for the full complexity of the transferrin polymorphism of rhesus monkeys.

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Size in Relation to Development-time and Egg-density in *Drosophila melanogaster*

A recent report by Wattiaux[1] emphasizes the importance of speed of development in relation to the expression of a quantitative character in *Drosophila melanogaster*, namely bristle number. Using another such character, size of thorax, I investigated the ubiquity of the disclosed relationship. However, different sets of environmental conditions, bearing on temperature and egg density (or larval crowding), were introduced in order to test its eventual variation.