



**FIGURE 14.9.** Epistasis and dominance for metabolic characters in *Drosophila*. For each of eight pairs of transposable element insertions, the nine different genotypes were measured. The measured traits included weight (WT), soluble protein (PRO), triglyceride and glycogen contents (TRI, GLY), and the activities of 12 metabolic enzymes, of which four (fatty acid synthase [FAS], glucose-6-phosphate dehydrogenase [G6PD], glycogen phosphorylase [GP], and  $\alpha$ -glycerol-3-phosphate dehydrogenase [GPDH]) are shown. For each trait and each pair of transposable elements, the nine phenotypes were plotted as in A. If the genes had independent effects, the three lines would be parallel. Dominance between alleles A and a would show as deviations from a straight line, whereas dominance between B and b would show as an uneven spacing of the three lines. (In the example shown in A, there is no epistasis or dominance for A and a, but allele B is more or less dominant over allele b.) The results show a wide variety of patterns (B). For example, cross 2 shows strong **overdominance** for several traits, because the heterozygote Aa is often outside the range of the homozygotes. In cross 1, GPDH shows epistasis, because differences between bb, Bb, and BB are seen only when combined with genotype aa (*bottom left*).

14.9A,B, redrawn from Clark A.G. et al., *Genetics* **147**: 157–164, © 1997 Genetics Society of America