crown gall tumors induced by *Agrobacterium tumefaciens*, these genetic tumors do not appear to have any bacterial, viral, or plasmid agent associated with the transformed tissues.) Tumors develop in all cases when reciprocal crosses are made. AHUJA (1968) discovered that by repeatedly backcrossing a hybrid of *N. longiflora* x *N. debneyi-tabacum* to the *N. debneyi-tabacum* parent tumor formation could be shown to be correlated with a specific fragment of a single *longiflora* chromosome. In backcrosses to the other parent he found that tumor formation was lost when only a few *debneyi-tabacum* chromosomes were left in a *longiflorum* background. Ahuja suggested that *N. longiforum* and other members of the Alatae section of the genus possessed a factor, I, that caused tumor formation when put into a favorable genetic background. Such backgrounds that would allow expression, he suggested, exist in species in other sections of the genus. SMITH (personal communication), however, has found that a single *N. glauca* (Section Paniculate) chromosome in an otherwise *N. langsdorfii* (Section Alatae) background causes tumor formation. This finding is contrary to what had been predicted by Ahuja. The basic idea is nonetheless interesting because it anticipates the mechanism of hybrid dysgenesis occurring in Drosophila (KIDWELL et al. 1977; PICARD 1979).

SMITH (1968) has cited many other manifestations of instabilities arising in interspecific hybrids in the genus *Nicotiana*. These include variability in the pigmentation and shape of flowers and the lack of uniformity in the growth and habit of F_1 plants. Mutable alleles at two loci controlling flower color have been described (SMITH and SAND 1957; SAND 1976). Three alleles at one locus appeared to reversibly change state but did not mutate to either a stable recessive to a stable full color condition. In the presence of a regulatory element at the second locus, however, the timing of somatic sector formation is modified and germinal mutations to full color can be found. For unknown reasons the unlinked regulatory element could not be recovered from the revertants.

In hybrids of *N. tabacum* x *N. otophora* and subsequent backcrosses to *N. tabacum*, the dominant allele from *N. otophora* specifying carmine flower color becomes unstable and can mutate to coral (BURNS and GERSTEL 1967). Somatic sectoring and loss of carmine color was associated with the partial or complete loss of a heterochromatic block by chromosome breakage. In addition to chromosome breakage large megachromosomes are occasionally observed in these hybrids (GERSTEL and BURNS 1976).

Teosinte (*Zea mexicana*) is the closest relative of maize. In studying possible evolutionary schemes for maize MANGELSDORF (1958) and his colleagues found that maize-teosinte hybrids and their backcrosses to maize were mutagenic with over 2% of the F_1 progeny and later generations exhibiting mutations. Even in plants containing a single teosinte chromosome, mutations were induced on both the maize and teosinte homologues as well as on other maize chromosomes. Both stable and unstable mutations were found that affected the endosperm as well as other plant characters and all were recessive, simply