A limitation of the above method, namely progeny testing, is overcome if seeds, heterozygous for a marker gene, are used. This specific-locus technique was employed by Smith (*93*) on the Yg_2/yg_2 (light-green) locus in maize (*Zea mays*). The yg_2 is nonlethal in homozygous condition and the Yg_2/yg_2 seeds are produced by crossing Yg_2/yg_2 to female yg_2/yg_2. This same technique could be employed in barley, where efficient methods for production of hybrid seeds now are available (*82*). *Arabidopsis* gives the combined advantages of somatic detection, a short generation time and small size (*65*, *84*, *94*).

Root tip method for chromosome aberrations.—Root tips of certain plant species provide excellent material for chromosome aberration studies and have been extensively used for this purpose following exposure to chemical mutagens (*61*). Appropriate species are easy to obtain and grow, easy to treat with aqueous solutions, and have several large root tips providing a large cell population. Also, many have a relatively small number of large chromosomes and hence analysis of the numbers and kinds of aberrations produced is relatively easy. Treatment periods are short (minutes to hours) but fixations should be made up to 48 hours.

At the present time, chromosome scoring is done by eye but the small number of large chromosomes should make plant material excellent for computer assisted analysis. Recommended material with diploid chromosome numbers are: *Allium cepa* (*16*) *Bellevalia romana* (*8*), *Campelia zanonia* (*16*), *Crepis capillaris* (*6*), *Haplopappus gracilis* (*4*), *Hordeum* (*14*), *Lilium* (*24*), *Tradescantia* (*12*) and *Vicia faba* (*12*). Suitable cytological methods are described in various publications, *eg.*, Darling and LaCour (*15*) and Sharma and Sharma (*91*). The method can be developed for fairly rapid screening.

Somatic Mutation Methods.—*Tradescantia* plants heterozygous for flower color provide a useful test system for physical or chemical mutagens. This plant is relatively easy to grow under a wide range of environmental conditions, blooms continuously throughout the year thus providing material for somatic mutation analysis, has 12 large chromosomes and, coincidentally, has a cellular radiosensitivity similar to that of mammalian cells. Special clones, heterozygous for flower color, can be used for easy detection of somatic mutations in both petal and stamen hair tissues using only a dissecting microscope and elementary laboratory techniques (*42*, *67*, *72*, *97*). These clones can be readily propagated by cutting, and root easily to provide material for chromosome analysis (*99*). Chromosome aberrations can also be studied in various other tissues (petal, stamen hair (*17*), and during microsporogenesis (*25*)).