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Short-term tests for carcinogens and mutagens

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* Authors of the sections on cytogenetics in the text and tables.

** See Table 1 for location in the text of specific tests discussed in each section. We have not reviewed: (1) *Short-term tests using plants or plant cells*. This is a large, important and complex area (recent reviews are Klekowski, 1978, and Nilan and Vig, 1976). Several interesting methods that have been used for screening environmental chemicals utilize plants such as *Tradescantia* (Underbrink et al., 1973; Schalrer et al., 1979), barley (Ehrenberg, 1971), pollen or soybeans (Vig, 1975); (2) *Short-term tests for promoter-carcinogens*. This is becoming an increasingly important field. In the text we have indicated several short-term tests that have been applied to the detection of promoter activity, e.g., transformation and mutagenesis in mammalian cells. Other assays developed specifically for detection of promoters are discussed by Weinstein and Wigler (1977) and in refs. 421 and 422. (3) *Host-mediated assays*. We discuss testing human or animal body fluids for mutagenesis in the Salmonella/Ames assay (see p. 142). Other tests using body fluids recently have been reviewed (Legator et al., 1978). In the classical host-mediated assay, chemicals to be tested are metabolically activated in vivo (usually in rodents), and the test organisms (usually bacteria or yeast) are exposed by injection into the rodent peritoneum or other tissues (reviewed by Legator and Malling, 1971). This general procedure has not proven very sensitive for detection of a wide range of known carcinogens and mutagens. However, developmental work has continued, and the current status of these assays has been thoroughly reviewed (Mohn, 1977). (4) *Biochemical tests*. Several assays based on the chemical properties of non-genetic effects of carcinogens have been described, such as the acridine assay, and Rabin's test measuring endoplasmic degranulation (see Purchase et al., 1976) and tests detecting the presence of radicals (electron paramagnetic response).

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