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viral DNA in different cell systems; 4.3.1 Productive infection; 4.3.2 Abortive infection; 4.3.3 Transformation of cells in culture; 4.3.4 Tumor induction by Ad12 in newborn hamsters 4.3.5 Tumor cells in culture 4.3.6 Loss of previously integrated Ad12 DNA sequences; 4.4 Adenovirus infection, DNA transfection or DNA microinjection; 4.5 Integration of adenovirus DNA in human cells - significance human somatic gene therapy; 4.6 Studies on integrative recombination of adenovirus DNA in a cell-free system; 4.7 Further reading; 5 Conclusions derived from a survey of junction sites; 5.1 On the characteristics of junction sequences; 5.2 Persistence of integrated foreign DNA - a novel functional type of insertional mutagenesis 5.3 Adenovirus DNA: chromosomal association - covalent gene integration 5.4 Further reading; 6 Adenovirus-induced tumor cells and revertants; 6.1 Clonal origin of Ad12-induced tumors; 6.2 Stability - instability; 6.2.1 Hit-and-run mechanism of viral oncogenesis?; 6.2.2 General implications of a hit-and-run mechanism; 6.3 Further reading; 7 Comparisons with other viral systems; 7.1 Integration of viral DNA; 7.2 Transcription of integrated viral genomes; Color plates; 7.3 Virus-induced tumors; 7.4 Replication and integration of the retroviral genome; 7.5 Endogenous retroviral genomes 7.6 The viral archetype: integration of bacteriophage DNA 7.6.1 The most important regulatory functions in the phage genome; 7.6.2 Control of transcription at the right operator OR of phage DNA; 7.6.3 A closer look at the integration and excision of the bacteriophage genome; 7.7 Further reading; 8 Non-viral systems; 8.1 Exchange of genetic information with extracellular DNA in pneumococci; 8.2 IS elements and transposons; 8.3 Thoughts on the mechanism of foreign DNA integration; 8.4 Expression of integrated foreign DNA; 8.5 Fixation of foreign DNA in transgenic animals 8.6 Critical evaluation of the results obtained with transgenic animals

Sommario/riassunto

It is unlikely that the established genomes of present day organisms remain stable forever. It is conceivable that foreign DNA can gain entry into individual cells of an organism. Foreign DNA is defined as genetic material that derives from another organism of the same or a different species. The natural environment is heavily "contaminated" with such foreign DNA, and mammals, like other organisms, are frequently exposed to foreign DNA in their environment, notably by ingesting their daily food supply. By necessity, the gastrointestinal tract also of all mammalian organisms is constantly