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Molecular Genetics of Breast Cancer

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ABSTRACT Gene and chromosome changes in breast cancer have been analysed using molecular and cytological methods. No single gene alterations are frequent in breast cancer, but several alterations have been detected, in line with multigenetic disease, although malignant progression in relation to gene changes is poorly documented. The most common tumour suppressor gene mutations, detected in about ¼ of breast tumours are in the TP53 gene, that encodes a transcription factor. Mutations and other alterations in the CDH1 gene, encoding the E-cadherin adhesion protein, in the CHK2 gene, encoding a cell cycle checkpoint kinase, in the BRCA1 and BRCA2 genes, encoding DNA repair proteins and FHIT, encoding a diadenosine hydrolase, will be reviewed. The molecular mechanism behind the frequently detected instability of the genome of breast cancer cells is poorly understood, but some studies have associated it with mutations in the TP53, BRCA1 or BRCA2 genes.

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