

term "isochromatid break" is used, indicating that the lesion was one introduced in chromatids, but that both chromatids were affected at the same point. This is distinguished from chromosome breaks only by the fact that other lesions in the same material are predominantly chromatid breaks.

An additional type of breakage using these criteria has been described by Ostergren and Wakonig and termed a "delayed isolocus break". These authors described a typical example of this kind of breakage as a secondary constriction in one chromatid with a corresponding break in the isolocus position in the other. In addition to this typical lesion, other chromosomes would exhibit everything from only a secondary constriction in one chromatid to a complete break in both chromatids. At the time of the description of this type of breakage, the authors felt that a partial defect was produced in the chromosome when it was a single unit, and then this partial defect was reproduced in both chromatids at the isolocus point during DNA synthesis. Mitotic forces and pressures subsequent to this were thought to produce the variety of possible changes at the isolocus spots in the chromatids.

An alternative explanation would be that this type of breakage occurred during the period of DNA synthesis and affected different chromosomes differently, depending on the state of synthesis of that particular chromosome.

A second important characteristic that has been used in classification of chromosome breaks is dependent on whether or not healing or reunion has occurred. If there is no healing, an open break or defect is the result, and this has also been termed a "simple break" and a "terminal deletion". In this type of breakage, a significant problem arises in distinguishing between a break which is defined as a "complete discontinuity" between the two chromosome pieces, and a "gap", which is defined as an achromatic or unstained area in which chromatin still exists but is difficult to see. Various methods have been used to make this distinction. Some authors insist on displacement of the distal fragment before considering it a break, while others, have established an arbitrary distance between the two stained chromosome pieces as the distinguishing factor. We recommend that any defect separated by at least the width of one chromatid be regarded as a break, and anything less than this as a gap. This is admittedly arbitrary, and undoubtedly frequently incorrect, but serves as a basis of comparison between experimental material and control material. It is fortunate that in most systems, gaps and breaks seem to increase and decrease in parallel, so that the methods such as described although arbitrary and inaccurate in the literal sense, enable valid comparisons between various test materials.