

When healing or reunion occurs, it is possible for restitution to occur if the broken ends reunite in their original positions. In this case no defect is visible. If they do not heal in their original positions, then a structural rearrangement is the result. These are often further divided into an intra-change if the rearrangement is within a single chromosome, or an inter-change if the rearrangement involves more than one chromosome. Both of these can be further divided into symmetrical and asymmetrical defects. A symmetrical defect is one in which no mechanical difficulty results during mitosis, and either daughter cell is deficient in chromatin material. An asymmetrical intra- or inter-change is one in which either mechanical defects arise or the resulting daughter cells are deficient in chromatin material (4).

Another term that is frequently used in a very similar context with symmetrical and asymmetrical is stable and unstable rearrangement. The primary factors that determine whether the open or simple type of breakage will result, or the rearrangement will result, seems to be whether the cell retains the ability to synthesize protein and/or DNA. If either or both of these processes are interrupted, there is evidence that reunion cannot take place and open breaks result.

In addition to these classifications used when the cells under study are examined in metaphase, which affords greater morphologic detail of individual chromosomes due to various pretreatments including colchicine, hypotonic expansion, and air drying or squashing, it is also possible to score defects in anaphase preparation. Here, none of the previously mentioned pretreatments are used and the cells are merely fixed and stained. The types of anaphase aberration that can be distinguished include an acentric fragment, which is a paired segment of chromatids left at the equator of the cell resulting from a chromosome break; an attached fragment in which a chromatid fragment is away from the main body of anaphase chromosomes, but is oriented in line with the chromosomes and seems to be attached by an attenuated portion; a chromosome bridge which results from an asymmetrical rearrangement as a dicentric chromosome or an interlocking ring chromosome; finally, pseudochiasmata, which are thought to result from two chromosomes adhering to each other *via* stickiness or some other mechanism, and may very likely not represent true defects.

CITED REFERENCES

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