Karyotypic Analysis

DESIGNATION OF REGIONS AND BANDS

Chromosomes has two arms- the upper short arm is called **p** and the lower long arm is called **q**. Each chromosome arm has one or more regions. Each region is delimited by specific landmarks. Landmarks include the end of chromosome arms (the telomers), centromere and also certain characteristic bands. A region consists of one or more bands and is defined as the area that lies between two adjacent landmarks. A band is defined as a chromosomal area that is distinguishable from adjacent segments by appearing darker or lighter by one or more banding techniques.

Regions and bands are numbered consequently from the centromere outward along each chromosome arm.

In designating any particular band four items are therefore required:

- The chromosome numberr
- The arm symbol
- The region number
- The band number within that region

The mitotic process is characteristic by increasing chromosomal contraction and chromosomes in prophase or early metaphase are therefore more elongated that midmetaphase chromosomes. The banding pattern of these earlier mitotic phase is more complex; several of the conventional, midmetaphase bands are split into subbands.

After the banding procedure is done, a photograph of the chromosome plate is taken and each chromosome image is cut. The chromosomes are paired and arranged according to chromosome type and an idiogram is made. A karyotype of a normal person consists of the characteristic banding pattern. Cancer (leukemia or lymphoma) is caused by translocation in certain chromosomes and also deletion. The analysis in the type of cancer. Therefore, cytogenetics helps in accurate diagnosis of the type of cancer by Karyotypic analysis. The table gives the usual translocation that are characteristic to a cancer.