

Abstract Title: Chromosomics Databases

Author Name: Prof. Thomas Liehr, Professor

Author Institute: University Hospital Jena, Institute of Human Genetics, Jena, Germany.

Abstract: The term "chromosomics" was introduced to draw attention to the three-dimensional morphological changes in chromosomes that are essential elements in gene regulation. Chromosomics deals with the plasticity of chromosomes in relation to the three-dimensional positions of genes, which affect cell function in a developmental and tissue-specific manner during the cell cycle. It also deals with species-specific differences in the architecture of chromosomes, which has been overlooked in the past. Chromosomics includes research into chromatin-modification-mediated changes in the architecture of chromosomes, which may influence the functions and life-spans of cells, tissues, organs and individuals. It also addresses the occurrence and prevalence of chromosomal gaps and breaks. Accordingly, the yet 6 Chromosomics Databases available at <https://cs-tl.de/DB.html> provide details on chromosomal alterations like constitutional chromosomal breakpoints (CCPBs), chromosomal heteromorphisms (HMs), including UBCAs and EVS, small supernumerary marker chromosomes (sSMCs) and uniparental disomy (UPD). Furthermore, there is a small database on karyotypes of human and murine cell lines, which have been studied in the lab of the author. The sixth database was the starting point of the Chromosomics Databases, which includes a literature collection of articles dealing with multicolor-fluorescence in situ hybridization. Overall, the Chromosomics Databases close a gap in the field of available, less chromosome oriented databases.

Area of expertise: Chromosomal breakpoints, small supernumerary marker chromosomes, chromosomal heteromorphisms, uniparental disomy, celllines, multicolor-fluorescence in situ hybridization.