

Each cell contains a complete copy of the entire genetic equipment of the organism. However not all genes are expressed, cells are differentiated in higher eukaryotes and only certain proteins are transcribed in each cell. This is possible thanks to a gene silencing, that is stable throughout the whole cell cycle and epigenetically inherited from one generation to another. Gene silencing serves also in the maintenance of the chromosomal integrity, it is connected with the right progression of the cell division. It even enables mating type switching and ensures right cells' identity in yeasts. The basis is compact and a higher-ordered structure of chromatin called heterochromatin. The mechanism is common to many various organisms, although the proteins, which ensure silencing, are different.