

Meiosis disorders

Disorders of meiosis are divided into:

- disorders in the structure of the chromosome,
- disorders in the segregation of gametes.

During mitosis, the consequences of deviations are manifested in the clone of the offspring (incompatible with life - the clone dies, compatible with life - cellular chimerism arises in the body of a higher animal).

During meiosis, the disorders affect the entire newly conceived organism. Severely affected zygotes end their life in early embryonic or fetal development = spontaneous abortion. Defects compatible with life: postnatal congenital malformation + varying degrees of mental or physical disability.

Synaptic disorders

Pairing disorders of *prophase I* homologous chromosomes are most often caused by the fact that one of the homologues has been structurally rearranged and, in a smaller or larger section, does not match its gene loci to the normal homologous partner

- **deficiency** (loss)
- **duplication**
- **translocation** (transfer to another chromosome)
- **inversion** (reversal of gene loci)

Kinetochores disorder

In metaphase I and II, it leads to the fact that in anaphase I or II, the standard separation of homologous chromosomes (anaphase I) or sister chromatids (anaphase II) does not occur. This means that both homologues get into one gametocyte and are missing in the other - **nondisjunction** (nonseparation).

Disomy: carries two instead of one chromosome (gives rise to trisomies).

Nullisomy: does not carry any chromosome (they give rise to monosomies, the only known non-lethal one is Turner syndrome).

Fertility disorders

- insufficient gamete equipment (male sterility).

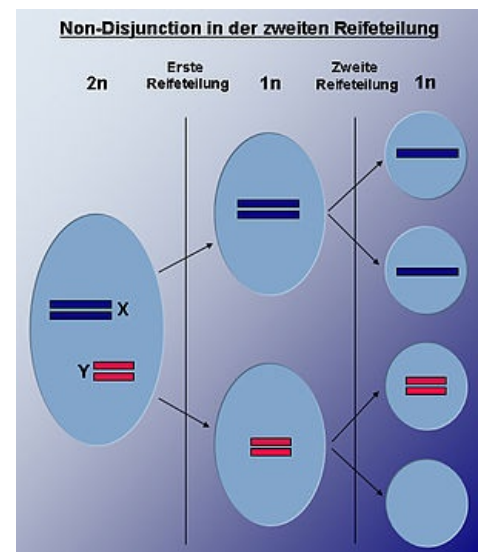
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Source

- OTOVÁ, Berta. *Lékařská biologie a genetika : 1.díl*. Praha 2008 edition. Nakladatelství Karolinum, 2008. ISBN 978-80-246-1594-3.



Meiosis II Non Disjunction