PARASEXUAL CYCLE

Anamorphic fungi are the fungi which have previously been named as *Deuteromycetes, asexual fungi, condial fungi . Anamorphic means asexual reproductive forms of life cycle of fungi..*

Characteristic of anamorphic fungi are-

1. These are the “fungi that are disseminated by propagules not formed from the cells where meiosis has occurred”.
2. Majority of propagules of these fungi are *conidia.*
3. Sexuality in some of these fungi is apperared to have lost, and its functions are sometimes by mechanisms such as *parasexual cycle.*

 *These are therefore fungi in which zygotes, or ascospores, or basidiospores , are not formed at any known stage in the development of fungus. Because of the absence of any perfect stage or sexual phase, these fungi are commonly called “imperfect fungi” or technically “fungi imperfecti”*

*By the perfect stage we mean the sexual stage. Therefore the characteristic features of Deuteromycotina or anamorphic fungi is the absence of sexual reproduction.*

**Parasexuality in Anamorphic fungi**

* ***Parasexuality :***relating to or being reproduction that results in recombination of genes from different individuals but does not involve meiosis and formation of a zygote by fertilization as in sexual reproductionthe parasexual cycle in some fungi
* They recombine their genes by some novel non-sexual process. That is called parasexuality
* **Guido Pontecorvo (1956)** first reported it in the mold *Aspergillus nidulans*
* Under this phenomenon, the process of **plasmogamy, karogamy and haplodization** take place, but not at specified time or specified points in the life cycle of the fungus.
* Some basic aspects of this phenomenon include-formation of heterokaryotic mycelium, karyogamy and multiplication of diploid nuclei, occurrence of mitotic crossing over, sorting out of the diploid nuclei, and final haplodization of some diploid nuclei in mycelium.
* In a typical parasexual cycle, two different hyphae of the fungus fuse together (anastomosis) to bring two different nuclei (heterokaryons) in each of the resultant fused cells.

Fusion of their cytoplasm (plasmogamy) is followed by the fusion of the heterokaryons (karyogamy).

* The diploid nuclei of the cells undergo mitosis after a time. It is mitotic crossing over. It results into recombinant chromosomes with new gene combinations.
* These haploid cells may cause growth of recombinant hyphae which further may undergo the same cycle of events leading to unique offspring (daughter hyphae) of new gene combinations all the time.

The significant properties of parasexual life cycle are –

1. The organism needs not to invest in the elaborated sexual processes.

2. Recombinant offspring are produced as more random events.

3. Processes like plasmogamy and karyogamy do occur like those of sexual mechanism but they do not occur at any definite or specific point of the life cycle.

 Parasexual mode of recombination is very useful for those fungi which lack sexual stages. In microbiology labs too, especially related to industrial purposes, the mechanism of parasexual reproduction is useful in creating strains of fungi with desirable combination of properties. Genetic engineering experiments may also employ the opportunist parasexual mode of reproduction in fungi.