Generalized Fungi Imperfecti Rules

1. Form-generic names apply only to the state/morph represented by their type-species and not to any other of its morphs.
2. Form-genera are not mutually exclusive
3. Form-genera are not directly assignable to taxa of sexual/telomophic fungi
4. The nomenclature of the "higher fungi" is independent of the nomenclature of the form-gene
5. Although not a rule, it is most informative in today's world to refer to fungi according to their taxonomic or morph affinities: i. e. the anamophic name of ascomycete/plectomycete *Ajellomyces capsulatus* is *Histoplasma capsulatum*.

Generalized Fungal Life Cycle

1. **Period of vegetative growth (colonization and substrate exploitation)**

2. **Period of asexual reproduction (often called anamorphic phase* of fungal life cycle)**

3. **Period of sexual reproduction (often called the teleomorphic phase of fungal life cycle)**

***often the basis for the most common name of a fungus (its anamorphic name), because discovered and/or observed first.**

Importance of Spores

A. Biological

1) allow for dissemination

2) allow for reproduction

3) allow for survival

B. Practical

1) rapid identification*, (also helps with classification)**

2) source of inocula for human infection

3) source of inocula for contamination

*** of both anamorphs and teleomorphs**
****however, may soon be replaced by use of molecular biology (PCR-based) technology, which doesn't require an expert.**

Kinds of Fungal Spores

1. Mitospores - chromosomal complement directly from mitosis

2. Meiospores - chromosomal complement more or less from meiosis

3. Karyospores - chromosome complement derived more or less directly from zygote nuclei

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Fungal Spore Types

1. **endogenous mitospores* -encysted zoospores of fungal-like protists and Chytridiomycota and sporangiospores of Zygomycota**

2. **exogenous mitospores* - conidia, blastospores, teliospores**, etc. of Ascomycota, Basidiomycota, Fungi Imperfecti**

3. **endogenous meiospores^{+} -ascospores of Ascomycota**

4. **exogenous meiospores^{+} -basidiospores of Basidiomycota**

5. **karyospores^{+} - zygospores, oospores, resting spores and resting sporangia of Zygomycota, Oomycota & Chytridiomycota respectively**

6. **chlamydospores* - vegetative units that attain spore-like characteristics (dormancy qualities).**

asexual
****N+N**
$^{+}$ sexual

Hyphomycetes & Coelomycetes Identification

Saccardo ~ 1880 devised the first practical scheme for identifying fungi based on structure (morphology) of the conidium. "Sylloge Fungorum IV"

Vuillemin ~ 1910 observed that asexual reproductive cells (spores) were produced by two different basic processes:

1) **from conversion of pre-existing hyphal units to spores "Thallospores"***

2) **blastic (budding) mechanisms = "conidia"**

***mostly also called conidia today. e.g. thalloconidia & blastoconidia.**

Taxonomic Systems for Identification of the Anamorphs of Conidiogenous Fungi

The Hughes-Tabaki-Barron system (~1968+)

based primarily on mechanism of conidium development

Ellis (Cole, Kendrick & Sampson) Systems (~1971+)

based on both mechanisms of conidium development & conidiophore development (combination of all earlier systems)