

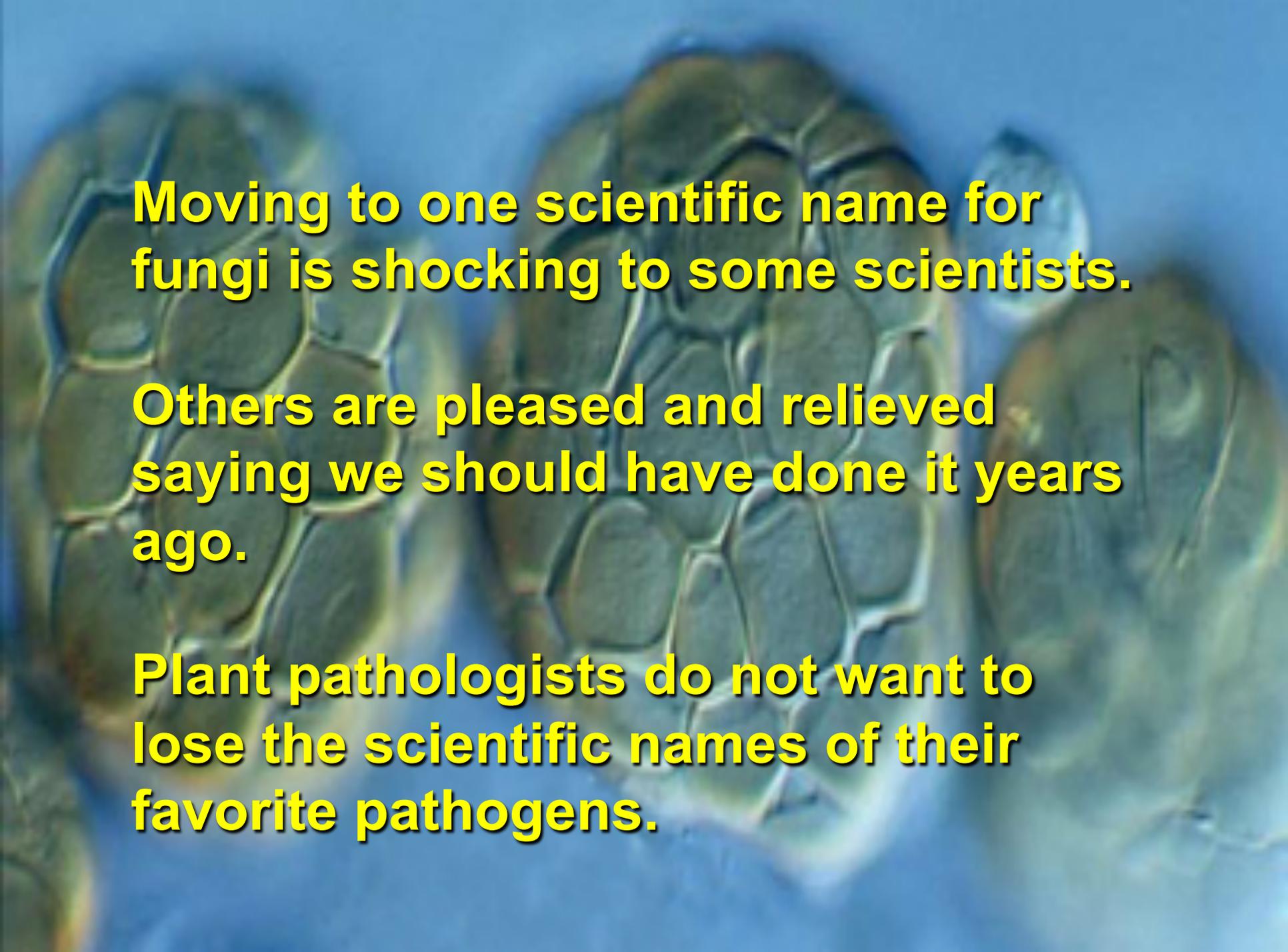
Moving to One Scientific Name for Fungi: Hypocreales and Diaporthales

(How to get there plus miscellaneous thoughts)

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A microscopic image of plant tissue cells, showing a grid-like structure of cells with thick walls. The cells are stained, and there are some darker, irregular shapes that could be fungal hyphae or spores, consistent with the text about plant pathogens.

Moving to one scientific name for fungi is shocking to some scientists.

Others are pleased and relieved saying we should have done it years ago.

Plant pathologists do not want to lose the scientific names of their favorite pathogens.

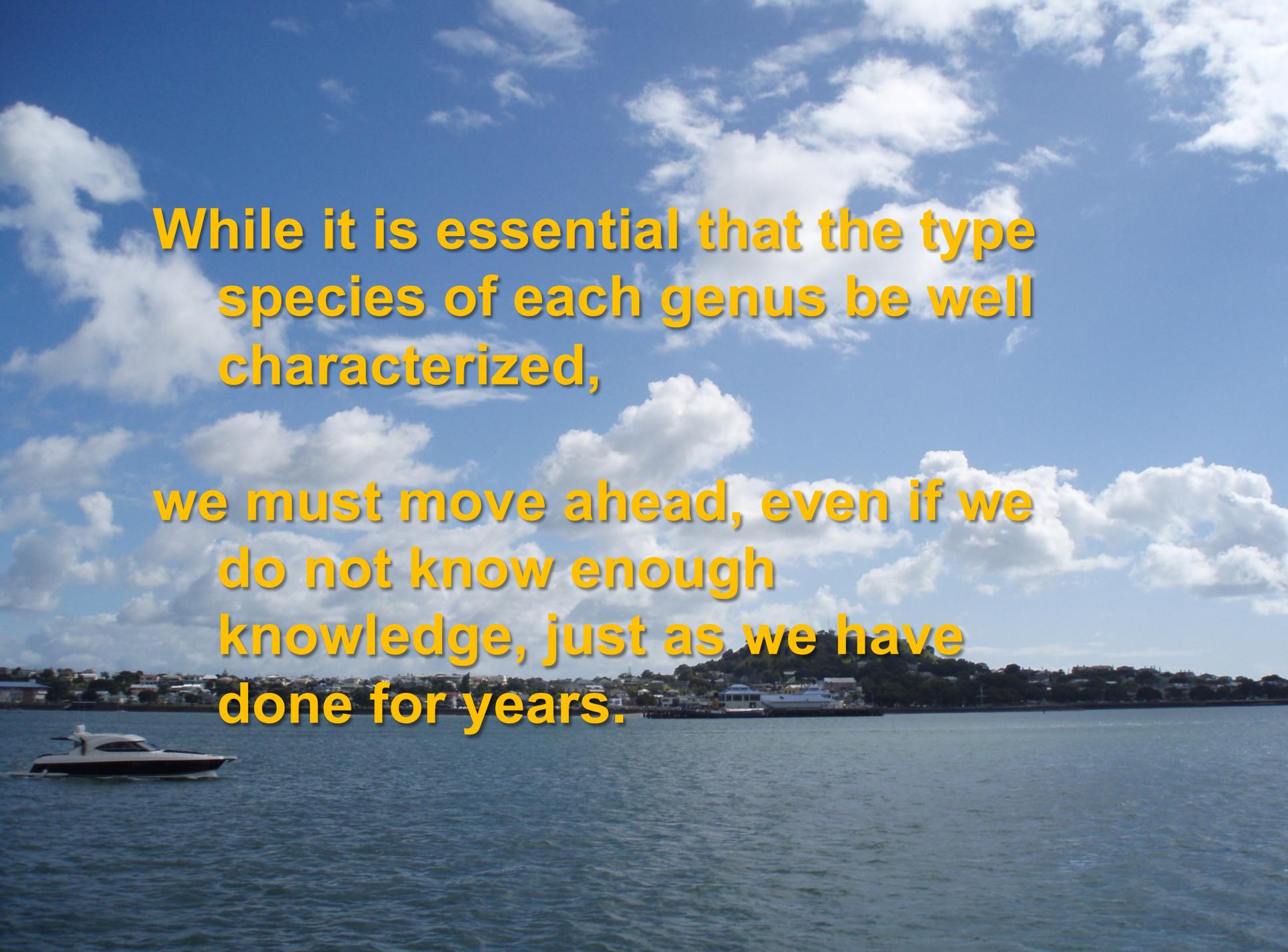
Critical to distinguish between:

- Nomenclature, which generic and species name to use, and;

- Taxonomy, the circumscription of genera and species.

**While it is essential that the type
species of each genus be well
characterized,**

**we must move ahead, even if we
do not know enough
knowledge, just as we have
done for years.**



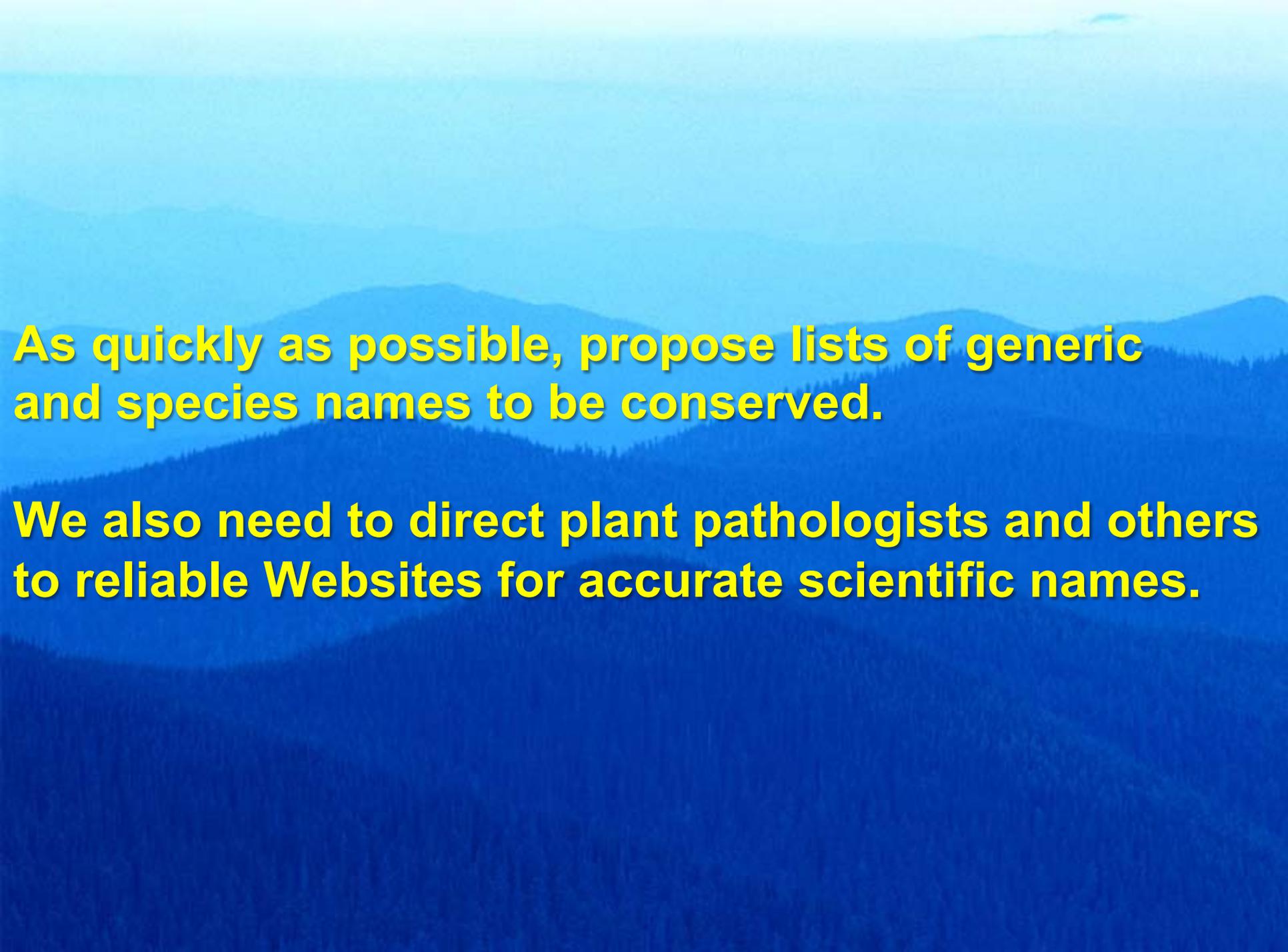
Names of genera often considered morphologies, rather than as phylogenetic taxa.

For example, the genus *Fusarium* s.s. refers only to species related to the type *F. sambucinum* having a *Gibberella* teleomorph.

However, many people think of fusarium in the morphological sense i.e. fungi having canoe-shaped conidia and are narrow at both apices.

Species having this conidial morphology are phylogenetically diverse.

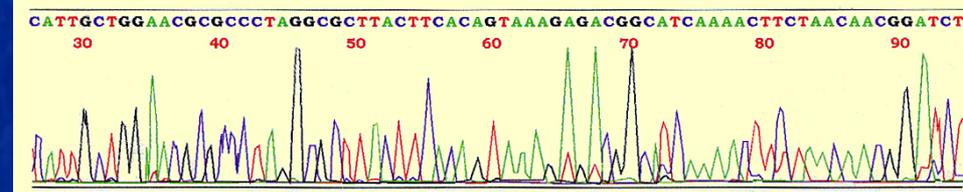
Important to distinguish phylogenetic taxa from morphologies as short hand terminology, for example, fusarium-like, nectria-like, and acremonium-like.



As quickly as possible, propose lists of generic and species names to be conserved.

We also need to direct plant pathologists and others to reliable Websites for accurate scientific names.

Assuming that every genus is “perfectly” defined, teleomorph and anamorph genera will correlate one to one. Of course, we know this isn’t true but we need to move ahead anyway.



Determining the correct scientific name to use is a two step process.

First, determine which genus has priority.

Second, compare species epithets to determine priority.



The devil is in the details!

Criteria for deciding which genus to use i.e. the basis for conservation:

- Number of species in each genus
- Number of name changes required
- Hits in Google and Google Scholar
- Well defined generic concept
- Conserve the name of a commonly known plant pathogen
- If about equal, favor the teleomorph?
- Voting among mycologists?
- Other?

Let's see how well this works!



***Bionectria* 1919 = *Clonostachys* 1839**

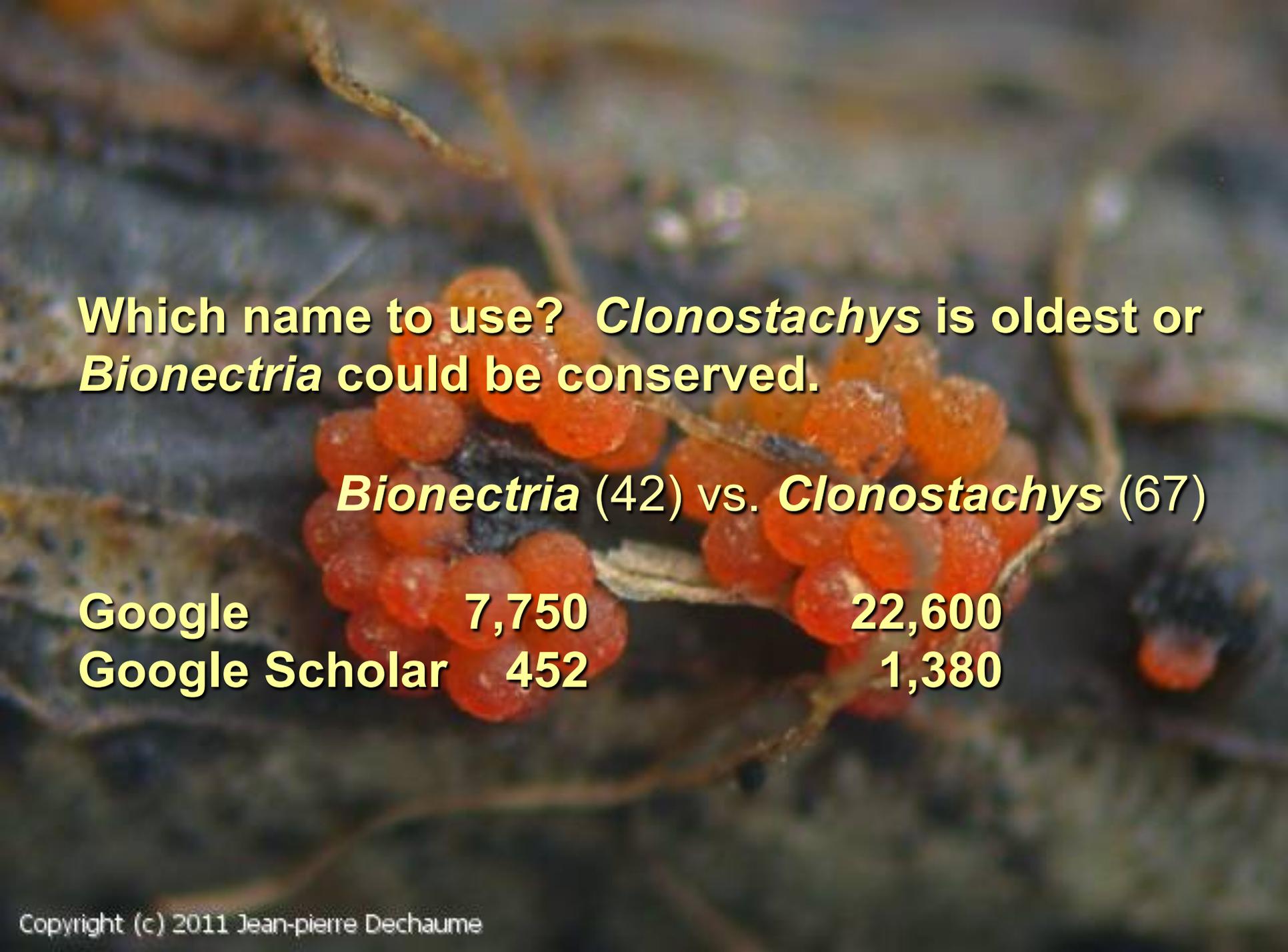
Type: *B. tonduzi* 1919

Type: *C. araucaria* 1839 = *C. rosea* 1999

= *Penicillium roseum* 1816, anamorph of *B. ochroleuca*, basionym *Sphaeria ochroleuca* 1834

Are these genera congeneric?

Lack of knowledge of *B. tonduzi* but, according to Schroers 1999, anamorph possibly *C. macrospora*-like. YES



Which name to use? *Clonostachys* is oldest or *Bionectria* could be conserved.

***Bionectria* (42) vs. *Clonostachys* (67)**

Google	7,750	22,600
Google Scholar	452	1,380

Number of species name changes based on Schroers (1999):

***B. apocyni* = *Nectria apocyni* 1873**

***C. macrospora* = *Dendrodochium macrospora* 1882**

OK if *Bionectria* conserved; name change if *Clonostachys*

***B. byssicola* = *N. byssicola* 1873**

***C. byssicola* 1999**

OK if *Bionectria* conserved; name change AND NEW NAME if *Clonostachys*

***B. capitata* 1999 = *C. capitata* 1999**

Described simultaneously

***B. ochroleuca* = *S. ochroleuca* 1834**

***C. rosea* = *Penicillium roseum* 1816**

**Name change required if *Bionectria* conserved; OK if
*Clonostachys***

***B. rhizophaga* comb. nov.**

C. rhizophaga

**Name change required if *Bionectria* conserved; OK if
*Clonostachys***

ETC.

If *Bionectria* conserved, number of name changes:

Names remaining the same: 16

New combinations needed: 16

If *Clonostachys* kept as priority genus, number of name changes:

Name remains the same: 16

New combinations needed: 16

13 names described simultaneously.

Priority to teleomorph? I lean that way but then I'm anamorphically challenged!

Geosmithia* 1979 = *Acremonium* 1816 based on *A. alternatum

However, many asexual states of *Geosmithia* considered to be *talaromyces*-like.

***Acremonium* has had a very broad concept, thus best to conserve the name *Geosmithia*.**



***Stilbocrea* 1900 ?= *Stilbella* 1900**

Type: *Stilbocrea macrostoma* = *Nectria macrostoma* 1868 for type
S. dussii 1900

Stilbella 1900 nom. cons.

Type: *Stilbella erythrocephala* = *Stilbum erythrocephalum*, now
considered a synonym of *S. fimetaria* (Seifert, 1985).

Stilbella fimetaria in the Bionectriaceae, now placed
Emericellopsis fide Summerbell et al. 2011. Thus, *Stilbocrea* is not
congeneric with *Stilbella*.

Hypocreaceae:

***Hypocrea* 1825 = *Trichoderma* 1794, 1829**

Type: *Hypocrea rufa*, basionym *Sphaeria rufa* 1796

Type: *Trichoderma viride* 1794

	<i>Hypocrea</i> (476)	<i>Trichoderma</i> (170)
Google	409,000	1,555,000
Google Scholar	4,570	128,000

Number of names and google hits in conflict.

Mycologists voting (briefly) favored *Trichoderma*.

Hypocreopsis 1873 = *Stromatocrea* 1952

Hypomyces 1860 = *Cladobotryum* 1816

Type: *H. lactiflorum* = *Sphaeria lactiflorum*

Type: *C. varium* 1816, anamorph of *H. aurantius*

Are *H. lactiflorum* and *H. aurantius* congeneric?

Probably, assume yes.

	<i>Hypomyces</i> (204)	<i>Cladobotryum</i> (67)
Google	69,500	43,900
Google Scholar	2,300	552

Recommend conserving *Hypomyces*



Nectriaceae:

***Calonectria* 1867 = *Cylindrocladium* 1892**

	<i>Calonectria</i> (290)	<i>Cylindrocladium</i> (92)
Google	34,900	105,000
Google Scholar	2,250	3.920

***Nectria* 1849 = *Tubercularia* 1790, 1821**

Type: *N. cinnabarina*, basionym *Sphaeria cinnabarina* 1791, 1823

Type: *T. vulgaris* 1790, 1832

***Nectria* sensu Hirooka, i.e. relatively few species.**

If *Nectria* conserved: names the same = 23; name changes = 4

If *Tubercularia* used: names the same = 3; name changes = 24

Google hits not useful because of old concept of *Nectria*.

Conclusion: Conserve *Nectria*

***Neonectria* 1917 = *Cylindrocarpon* 1913**

Type: *N. ramulariae* 1917

Type: *C. cylindroides* 1913

Based on Castlebury et al. (2006) and Chaverri et al. (2011), these genera are congeneric but not conspecific.

***Cylindrocarpon* sensu stricto narrow.**

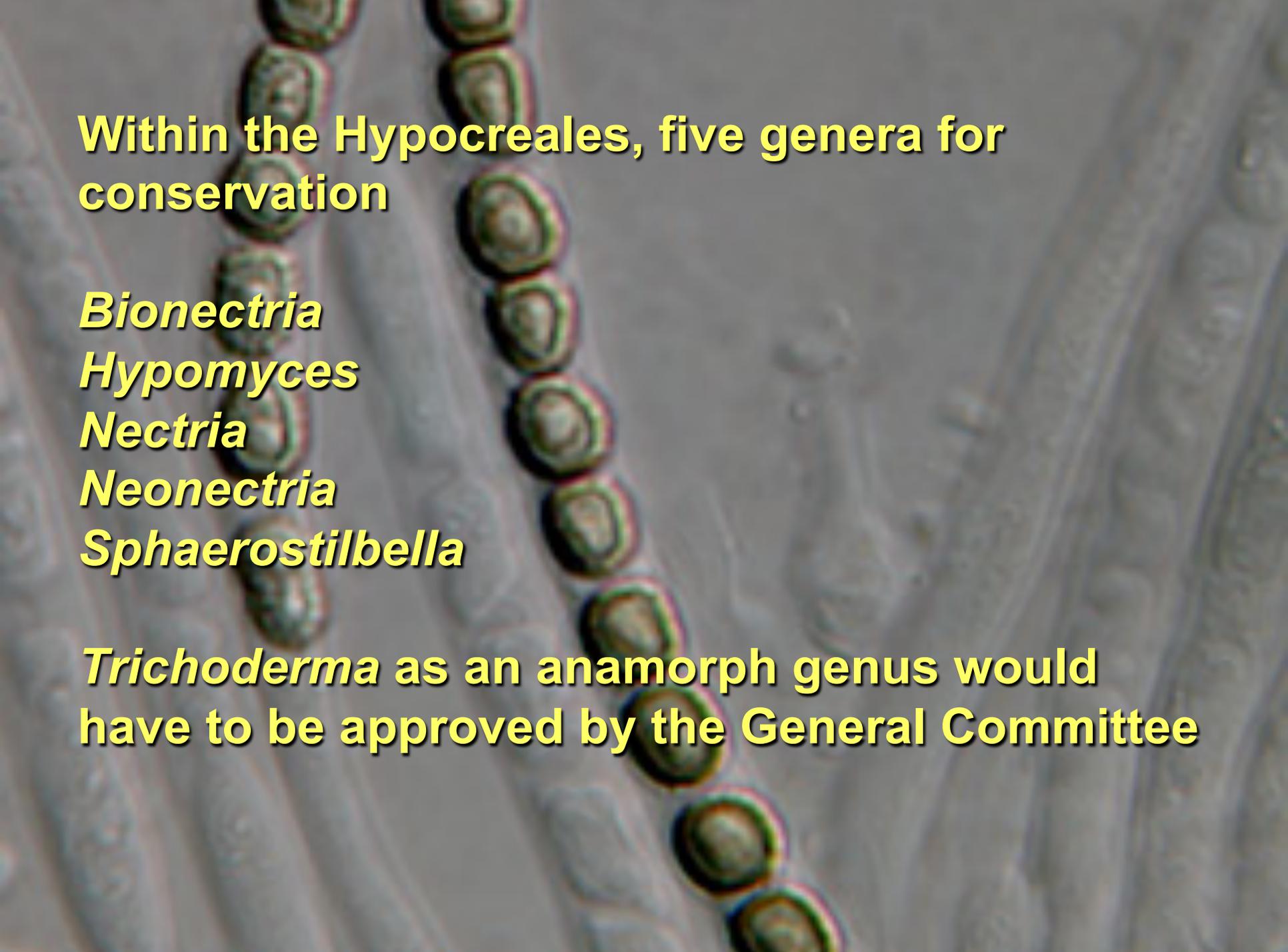
Known species is *C. destructans*, with teleomorph n *Ilyonectria*.

Conserve *Cylindrocarpon* with a new type species, *C. destructans*?

Beech bark canker, *Neonectria faginata* in North America and *N. coccinea* in Europe, and apple and birch canker, *N. ditissima*, well known diseases.

Conserve *Neonectria*

ETC.

A microscopic image of a fungal hypha, showing a long, thin, cylindrical structure. Inside the hypha, there is a chain of several oval-shaped spores or conidia, each with a distinct outer wall and a lighter interior. The background is a light, textured surface, likely the surrounding tissue or medium.

Within the Hypocreales, five genera for conservation

Bionectria

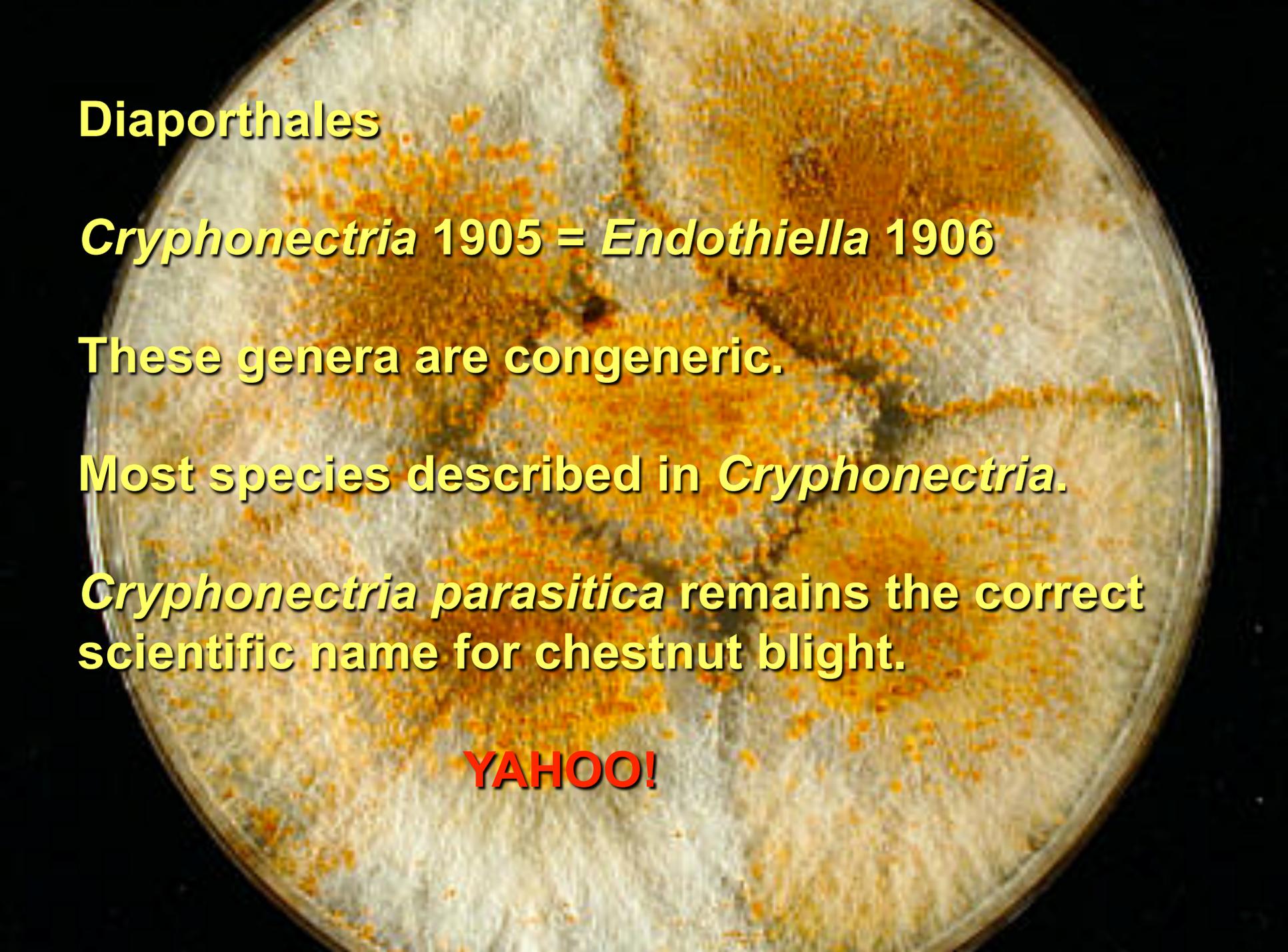
Hypomyces

Nectria

Neonectria

Sphaerostilbella

***Trichoderma* as an anamorph genus would have to be approved by the General Committee**

A petri dish containing a white, textured agar medium. The surface is covered with a dense, orange-brown, powdery fungal growth, likely a rust fungus. The growth is most concentrated in the center and spreads outwards, with some darker, more compact areas. The edges of the dish are visible, and the background is dark.

Diaporthales

***Cryphonectria* 1905 = *Endothiella* 1906**

These genera are congeneric.

Most species described in *Cryphonectria*.

***Cryphonectria parasitica* remains the correct scientific name for chestnut blight.**

YAHOO!

***Diaporthe* 1870 = *Phomopsis* 1905**

Type: *D. eres* Nitschke 1870

Type: *P. lactucae* 1905 = *Phoma lactucae* 1880

	<i>Diaporthe</i> (826)	<i>Phomopsis</i> (979)
Google	266,000	586,000
Google Scholar	7,010	16,000

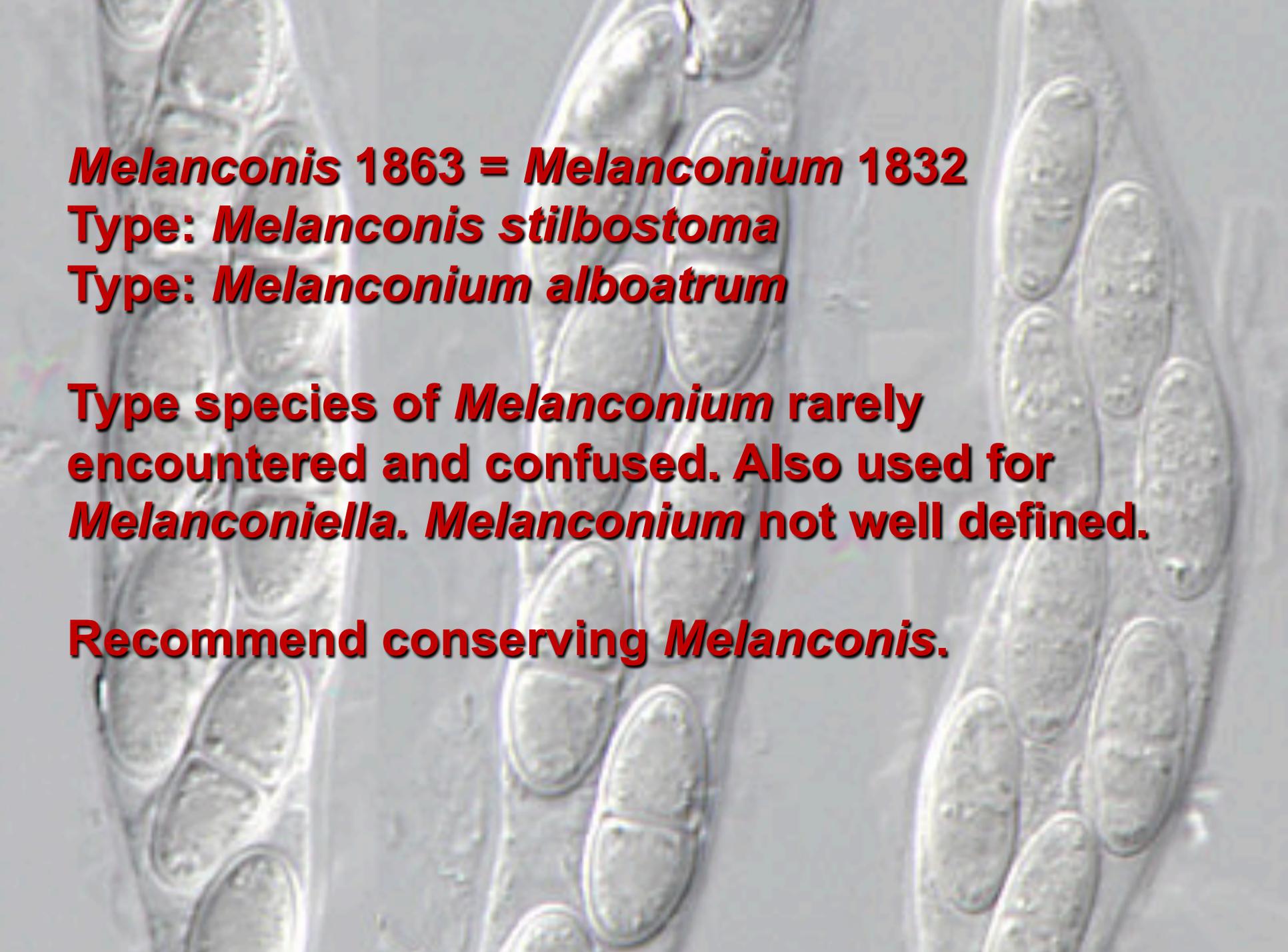
My sense is that *Phomopsis* is more commonly used and should be conserved.

***Dicarpella* 1863, 1921 non Bory de St.-Vincent
1823 = *Tubakia* 1973**

**Problem with *Dicarpella* as a name plus this
state is rarely encountered; mostly seen as
Tubakia.**

Recommend conserving *Tubakia*.

	<i>Dicarpella</i>	<i>Tubakia</i>
Google	3,320	35,300
Google Scholar	48	145

The background of the slide is a microscopic image showing several long, thin, filamentous structures. Each filament is composed of a series of oval-shaped cells. The cells are arranged in a somewhat regular pattern along the length of the filaments. The filaments themselves are slightly curved and appear to be attached to a surface. The overall appearance is that of a fungal or algal growth.

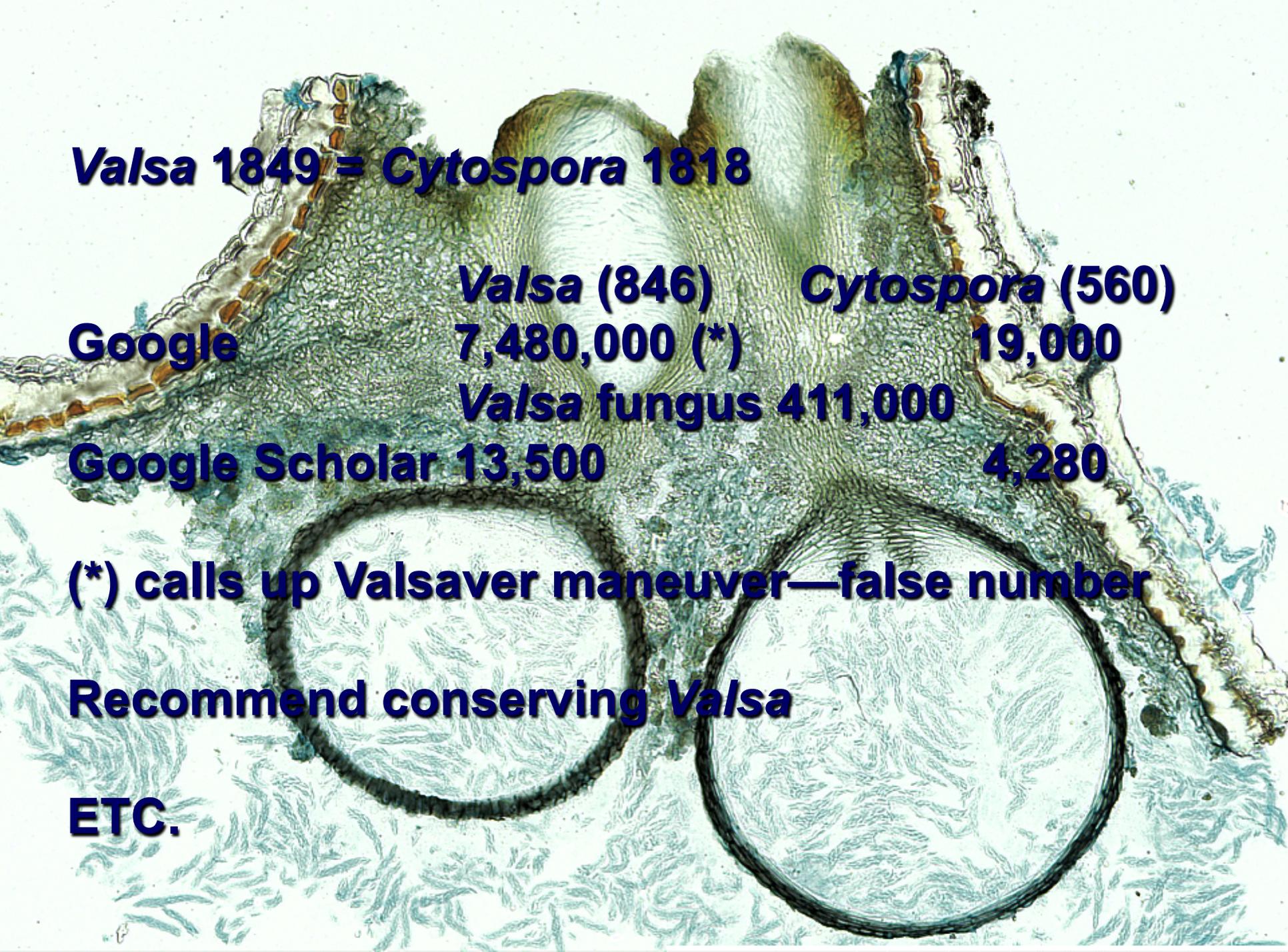
***Melanconis* 1863 = *Melanconium* 1832**

Type: *Melanconis stilbostoma*

Type: *Melanconium alboatrum*

Type species of *Melanconium* rarely encountered and confused. Also used for *Melanconiella*. *Melanconium* not well defined.

Recommend conserving *Melanconis*.

A microscopic cross-section of a plant stem, likely a tree, showing vascular bundles and a large area of fungal infection. The infection is characterized by a dense, dark, and irregular mass of tissue, possibly representing a canker or a large-scale decay. The surrounding tissue shows normal vascular structure with distinct xylem and phloem regions.

Valsa 1849 = Cytospora 1818

	Valsa (846)	Cytospora (560)
Google	7,480,000 (*)	19,000
	Valsa fungus 411,000	
Google Scholar	13,500	4,280

(*) calls up Valsaver maneuver—false number

Recommend conserving Valsa

ETC.

***Wuestneia* 1863 not = *Harknessia* 1881**

Type: *W. xanthostroma*

Type: *H. eucalypti*

***Wuestneia xanthostroma* is not congeneric
with *Harknessia eucalypti***

**No generic name for sexual states of species of
Harknessia and none is needed.**

***Harknessia* will serve as a good genus for most
of the species.**

The image shows several petri dishes containing different types of fungal cultures. The central dish features a prominent, dark brown, circular colony with a scalloped, lace-like edge. Other dishes around it show various textures and colors, including smooth, light-colored surfaces and darker, more granular or fuzzy growths. The lighting is bright, highlighting the intricate details of the fungal structures.

In Diaporthales, I recommend conserving:

***Phomopsis* (a)**

Melanconis

***Tubakia* (a)**

Valsa

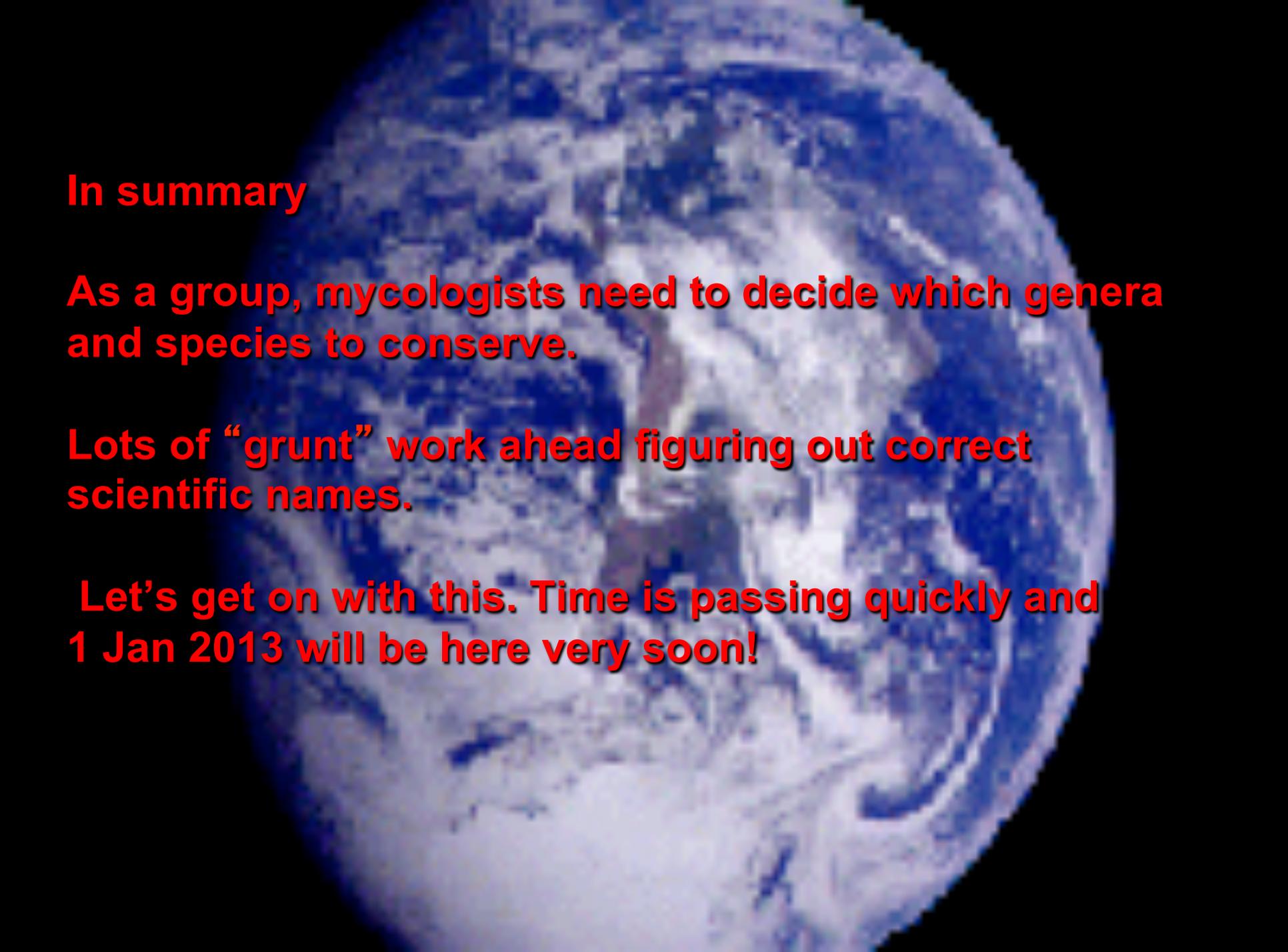
Probably others.

A close-up photograph of a plant stem, likely a tree trunk, showing several vertical, elongated, orange-brown lesions characteristic of rust fungus. The background is a soft, out-of-focus blue sky. The text is overlaid on the image in a bold, blue, sans-serif font with a black outline.

For rust fungi, always use teleomorph name because asexual state names rarely used and essentially meaningless.

Scientific name for the cause of apple scab would change to *Fusicladium pomi*.

Recommend conserving *Venturia inaequalis*. Requires conserving both the generic name and the species epithet.



In summary

As a group, mycologists need to decide which genera and species to conserve.

Lots of “grunt” work ahead figuring out correct scientific names.

Let's get on with this. Time is passing quickly and 1 Jan 2013 will be here very soon!