



Sporometrics

The molecular scientists changed my fungus: A Guide to the New Names in Medically Significant Fungi

Instructor: Dr. Richard Summerbell



Continuing
Education
Course Registration

Overview & Course Objectives

In mycology, as elsewhere in biology, times have changed, species have changed (!) and names have changed. From 1995 to 2010, molecular biology research has revolutionized our concepts about fungal species. Many organisms once thought to be single species are now known to be complexes of related species. Many groupings of species into genera have fallen apart, since research has shown that they are artificial. For example, the common opportunistic pathogen and indoor air mould *Paecilomyces* is split among three different families of fungi, and new names are being coined for several split-off groups. The 'bad news' is that there are many new species and names to be learned, and many difficult questions about how to deal with closely related species that seem impossible to tell apart in the lab. The good news is that most of the major medically and economically important fungi have now been analysed, and the end is in sight. The new knowledge will be very stable, since it is based on hard DNA data. It can be integrated into our regular practices with minimal disruption.

Issues discussed will include

'when is identification at full species level justified/necessary?'

'how should group-level identifications be reported?'

'when would DNA-based identification be needed?'

'how should we introduce these changes to our clients?'

Date: Tue. July 13, 2010

Time: 09:00 – 17:00

Location: Sporometrics

219 Dufferin St Ste 20C

Toronto

p: 416 516 1670

f: 416 516 1670

t: 888 516 1660

e-mail: info@sporometrics.com

For more information
please visit our website

www.sporometrics.com



Course Details

This one-day course will summarize the known and anticipated changes for the major groups of fungi of health-related interest. Examples include *Aspergillus*, *Pseudallescheria/Scedosporium*, *Candida*, *Stachybotrys*, *Paecilomyces*, *Fusarium*, *Phialophora* and *Cryptococcus*.

Course Duration: 7 hours

Intended Audience: Medical technologists, specialist physicians, consultants, and persons involved in building-related fungal studies will need to have a thorough understanding of what has happened to the fungi that are important in human health.



AGENDA

9:00 – 10:00 Strengths and weaknesses of conventional and molecular identification and classification. What molecular biologists look for in fungi, and how they make decisions about species. Determining when molecular information is of practical importance. Preservation of existing names and what is done to make a new name.

10:00 – 10:30 *Aspergillus fumigatus* vs. *Aspergillus lentulus* and other newly recognized species.

10:30 – 10:50 Coffee break.

10:50 – 11:15 More Aspergilli and related genera, including *Paecilomyces* (but only some of them!) and *Penicillium*. The 'other' *Paecilomyces* species and the connection of their status to their antimycotic drug susceptibility.

11:15 – 12:00 *Fusarium*. The single species that is now >50 species (*F. solani*). *Fusarium dimerum* the tap water hazard, a multi-species complex. *Phialemonium curvatum*, the other tap water hazard – not really a *Phialemonium* after all! *Acremonium* species – early indicators of their true natures.

12:00 – 1:00 Lunch provided

1:00 – 2:00 New species in *Stachybotrys*. Complete

About the Instructor – Dr. Richard Summerbell

Dr. Richard Summerbell is the Director of Research at Sporometrics. Prior to joining Sporometrics in 2007, Dr. Summerbell was a Senior Scientist at the Centraal bureau voor Schimmelcultures in Utrecht, The Netherlands where he served as one of the leading world experts on hyphomycetes. Dr. Summerbell is the former Chief of Medical Mycology for the Ontario Ministry of Health's Central Public Health Laboratory in Toronto. He is author of over 160 publications, including several cornerstone textbooks on medically important fungi. Dr. Summerbell is a peer a reviewer for numerous journals, and held editorships roles for several journals including Editor in Chief of the journal Medical Mycology for four years.

Dr. Summerbell is a professor in the Division of Occupational & Environmental Health at the Dalla Lana School

of Public Health, University of Toronto. His areas of research include Fungal ecology, biodiversity, evolution, medical importance: DNA barcoding, phylogeny and ecology of selected microfungi groups, especially plant endophyte groups with some members also involved in human disease, e.g., *Acremonium*, *Fusarium solani* complex, *Sporothrix*; population genetics of selected groups rich in clonal fungi (e.g., anthropophilic *Trichophyton* spp.).

2:00 – 3:00 Classic medically important fungi. The disappearance and reappearance of *Trichophyton equinum*. The hazy boundary of *Trichophyton rubrum*, has it swallowed *T. soudanense* and *T. megninii*? The many species of *Trichophyton mentagrophytes*. Can a cat ringworm fungus swallow a horse ringworm fungus? *Sporothrix schenckii* splits into multiple species! The ever-expanding genus *Malassezia*. The *Candida parapsilosis* complex. Tropical *Cryptococcus gattii* and its epidemic Canadian variant.

3:00 – 3:20 Coffee break

3:20 – 4:30 Splitting up the arthroconidial fungi: *Trichosporon* and *Geotrichum*. The most common airborne contaminants, *Cladosporium* and *Alternaria* – new concepts. The single pathogenic fungus called *Neoscytalidium*, *Scytalidium*, *Natrassia* and *Hendersonula*. The genus *Lichtheimia* pops out of *Absidia*. Finally, we have some idea what is really a *Phoma* and what is not.

4:30 – 5:00 Wrap-up and discussion

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Richard's extensive teaching experience includes courses presented through the Faculty of Medicine, University of Toronto, and Toronto Hospital; multi-week courses on medical mycology at the CBS; course at the Graduate School for Infectious Disease and Immunology; Utrecht University; presentations at the Great Lakes St. Lawrence Mycology Workshop; American Academy of Dermatology meeting; American Society for Microbiology for National Laboratory Training Network; Seminars to the Canadian Council on Dermatmycoses meeting; presentation to the US Environmental Protection Agency (EPA); and a 2-day course presented at the Michener Institute for Applied Sciences.

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Summer Session 2010

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