



Course in Clinical Fungi

Organized by FDLC (Fungal Diagnostic Laboratory Consortium), Foundation Atlas of Clinical Fungi, and Radboud University Medical Center, Nijmegen

Nov 7 to Nov 12, 2022, Chicago, Illinois, USA

Morning sessions: 8:30a-12:45p (except Tuesday morning starts at 8:00); afternoon sessions: 1:30-5:00p (except Monday afternoon ends at 6:15). Lectures are maximally 45-60 min with 15 min break.

Course Directors:

Sean Zhang	Johns Hopkins Hospital/Johns Hopkins School of Medicine, USA
Sybren de Hoog	Center of Expertise in Mycology of RadboudUMC, Nijmegen, The Netherlands
Roxana G. Vitale	CONICET (Consejo Nacional de Investigaciones Científicas y Tecnológicas), Hospital JM Ramos Mejía, Buenos Aires, Argentina
Amanda Harrington	Loyola University Medical Center, USA

Course Faculty:

Connie Gibas	Fungus Testing Laboratory, University of Texas San Antonio
Shawn Lockhart	CDC Mycotic Diseases Branch
Hong Nguyen	University of Pittsburgh Medical Center
Gary Procop	American Board of Pathology and Cleveland Clinic
Thomas Walsh	Center for Innovative Therapeutics and Diagnostics
Nathan Wiederhold	Fungus Testing Laboratory, University of Texas San Antonio
Paschalis Vergidis	Mayo Clinic

Technical and Administrative Assistance:

Leslie Bateman	Administrative Assistance, Johns Hopkins School of Medicine
Warda Memon	Teaching Assistance, Johns Hopkins Hospital
Patricia Grajales	Teaching Assistance, Loyola University Medical Center

Venue:

Loyola University Medical Center, Chicago, Illinois, U.S.A.

Costs and requirements:

The course fee for 6 full days course is US\$ 1,000, including breakfast, luncheons, coffee/tea with snacks/cookies during breaks. The course materials are based on the Atlas of Clinical Fungi (by Sybren de Hoog, Josep Guarro, ..., and Roxana Vitale, which can be purchased at <https://webshop.atlasclinicalfungi.org> and includes an electronic searchable version), and Larone's Medically Important Fungi (by Davise Larone, Randall Hayden, and Thomas Walsh). Please bring your laptop and a lab-coat. A maximum of 50 participants is allowed.

Provisional program:

Monday 7 Nov.: The fungal Kingdom; lower fungi

Lectures: 8:30-10:30a and 10:45a-12:45p (4 hours)

- 8:30-8:45: Sean Zhang & Amanda Harrington: Welcome & Introduction.
- 8:45-9:45 & 9:45-10:30: Sybren de Hoog: General taxonomy; life cycles, pleomorphism, nomenclature.
- 10:30-10:45: Break
- 10:45-11:45 & 11:45-12:45: Sybren de Hoog: Introduction to Atlas of Clinical Fungi; diagnostic keys.

Lunch: 12:45-1:30p

Lectures: 1:30-3:30p and 3:45-6:15p (4.5 hours)

- 1:30-2:15: Tom Walsh: The host, who are at risk for fungal diseases?
- 2:15-2:30: Roxana Vitale: Biosafety classifications.
- 2:30-3:00: Roxana Vitale: Clinical sampling and processing.
- 3:00-3:30: Sybren de Hoog: Introduction to microscopic methods.
- 3:30-3:45: Break
- 3:45-4:15: Sean Zhang: Direct microscopic examination on clinical specimens
- 4:15-5:15: Sybren de Hoog: Taxonomy of the Mucorales and Entomophthorales.
- 5:15-6:15: Tom Walsh: Infections by Mucorales and Entomophthorales.

Tuesday 8 Nov.: Eurotiales

Lectures: 8:00-10:00a and 10:15a-12:45p (4.5 hours)

- 8:00-8:15: Sybren de Hoog: Short introduction to ascomycetes.
- 8:15-9:00: Sybren de Hoog: Conidiogenesis in asexual fungi: hyphomycetes and coelomycetes.
- 9:00-10:00: Sybren de Hoog: Taxonomy of Eurotiales: *Aspergillus*, *Paecilomyces*, *Talaromyces*.
- 10:00-10:15: Break
- 10:15-11:00: Nathan Wiederhold: Practice of antifungal testing, PK/PD of antifungals, antifungal Therapeutic Drug Monitoring
- 11:15-11:45: Shawn Lockhart: Antifungal drug acquired and intrinsic resistance.
- 11:45-12:45: Tom Walsh: Aspergillosis, Talaromycosis.

Lunch: 12:45-1:30p (1:00-1:15: presentation by Pearl Diagnostics)

Practice: 1:30-3:15pm and 3:30-5:00pm (3.25 hours)

- 1:30-3:15: Microscopy mucormycetes (*Lichtheimia ramosa*, *Cunninghamella bertholletiae*, *Mucor circinelloides*, *Rhizopus arrhizus*, *Syncephalastrum racemosum*, *Rhizomucor pusillus*).
- 3:15-3:30: Break
- 3:30-5:00: Microscopy of Eurotiales (*Aspergillus fumigatus*, *Aspergillus terreus*, *Aspergillus calidoustus*, *Paecilomyces variotii*, *Rasamsonia argillacea*, *Talaromyces [Penicillium] purpureogenus*).

Wednesday 9 Nov.: Onygenales

Lectures: 8:30-10:30a and 10:45a-12:45p (4 hours)

- 8:30-9:00: Sybren de Hoog: Overview of the order Onygenales.
- 9:00-10:00: Sybren de Hoog: Arthrodermataceae: dermatophytes.

- 10:00-10:30: Paschalis Vergidis: dermatophyte infections.
- 10:30-10:45: Break
- 10:45-11:45: Sybren de Hoog: Ajellomycetaceae: systemic mycoses.
- 11:45-12:45: Paschalis Vergidis: Coccidioidomycosis, Paracoccidioidomycosis, Blastomycosis, Histoplasmosis, Emergomycosis.

Lunch: 12:45-1:30p (1:00-1:15: presentation by KARIUS)

Practice: 1:30-3:15pm and 3:30-5:00pm (3.25 hours)

- 1:30-3:15: Microscopy Dermatophytes (*Epidermophyton floccosum*, *Microsporum canis*, *Nannizzia gypsea* [*Microsporum gypserum*], *Trichophyton interdigitale*, *Trichophyton rubrum*, *Trichophyton tonsurans*, *Trichophyton* [*Arthroderma*] *benhamiae*).
- 3:15-3:30: Break
- 3:30-5:00: Microscopy and histopathology review of endemic mycoses (*Histoplasma capsulatum*, *Coccidioides immitis/posadasii*, *Blastomyces dermatitidis*).

Thursday 10 Nov.: Yeasts and Yeast-like fungi

Lectures: 8:30-10:30a and 10:45a-12:45p (4 hours)

- 8:30-9:30: Sybren de Hoog: Overview of yeasts and yeast-like fungi.
- 9:30-10:30: Hong Nguyen: Candidiasis and Cryptococcosis.
- 10:30-10:45: Break
- 10:45-11:45: Sean Zhang: Current diagnostic techniques – MALDI-TOF MS & Fungal antigen, antibody and biomarkers.
- 11:45-12:45: Connie Gibas: Current diagnostic techniques – sequencing based identification and phylogenetic analysis.

Lunch: 12:45-1:30p (1:00-1:15: presentation by IMMY Diagnostics)

Practice: 1:30-3:15pm and 3:30-5:00pm (3.25 hours)

- 1:30-3:15: Microscopy of ascomycetous and basidiomycetous yeasts and yeast-like fungi (*Candida albicans*, *Nakaseomyces glabrata* [*Candida glabrata*], *Pichia kudriavzevii* [*Candida krusei*], *Candida tropicalis*, *Magnusiomyces capitatus* [*Saprochaete capitata*], *Geotrichum candidum*, *Cryptococcus neoformans*, *Malassezia furfur*, *Trichosporon asahii*, *Rhodotorula mucilaginosa*).
- 3:15-3:30: Break (presentation by Bruker Scientific)
- 3:30-5:00: Roxana Vitale: Interactive cases: discussion of real-life cases including microscopy, histology, antigen detection, radiology, MIC-testing and antifungal treatment.

Friday 11 Nov.: Black yeasts and other dematiaceous opportunists

Lectures: 8:30-10:30a and 10:45a-12:45p (4 hours)

- 8:30-9:30: Sybren de Hoog: Taxonomy of black yeasts and relatives; diagnostic overview.
- 9:30-10:30: Sybren de Hoog: Clinical pictures of black yeasts and relatives.
- 10:30-10:45: Break
- 10:45-11:45: Sybren de Hoog: Mycetoma.
- 11:45-12:45: Sybren de Hoog: Melanized opportunists.

Lunch: 12:45-1:30p (1:00-1:15: presentation by Roche)

Practice: 1:30-3:15pm and 3:30-5:00pm (3.25 hours)

- 1:30-3:15: Microscopy of traumatic / systemic Microascales (*Lomentospora [Scedosporium] prolificans*).
- Microscopy of Chaetothyriales (*Exophiala dermatitidis*, *Cladophialophora emmonsii*, *Phialophora verrucosa*, *Rhinocladiella similis*).
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- 3:15-3:30: Break (presentation by Bio-Rad Laboratories via Zoom)
- 3:30-5:00: Microscopy of Pleosporales and other melanised fungi (*Alternaria alternata*, *Curvularia geniculata*, *Bipolaris spicifera*, *Phaeoacremonium parasiticum*, *Microascus paisii [Scopulariopsis brumptii]*).

Saturday 12 Nov.: Hyaline opportunists and conclusion

Lectures: 8:30-10:30a and 10:45a-12:45p (4 hours)

- 8:30-9:00: Sybren de Hoog: Ophiostomatales: *Sporothrix* and sporotrichosis.
- 9:00-10:00: Sybren de Hoog: Hypocreales: *Fusarium* and relatives.
- 10:00-10:30: Sybren de Hoog: Microascales: *Scedosporium* and brain infection.
- 10:30-10:45: Break
- 10:45-11:45: Sybren de Hoog: Basidiomycetous filamentous fungi.
- 11:45-12:45: Gary Procop: Fungal histopathology.

Lunch: 12:45-1:30p

Practice: 1:30-2:45pm (1.25 hours)

- Microscopy of filamentous Basidiomycetes (*Schizophyllum commune*, *Phanerochaete chrysosporium [Sporotrichum pruinosum]*).
- Microscopy of Hypocreales (*Fusarium oxysporum*, *Sarocladium [Acremonium] kiliense*).
- Microscopy of Ophiostomatales (*Sporothrix schenckii*).
- 2:45-3:00: Break

Final examination. 3:00-4:15p (1.25 hours)

Certificates and Farewell 4:30-5:00pm