



2nd FDLC/ATLAS Course in Clinical Fungi

Organized by FDLC (Fungal Diagnostic Laboratory Consortium), Foundation Atlas of Clinical Fungi, Radboud University Medical Center, Nijmegen, Netherlands, and Mayo Clinic, Rochester, Minnesota, USA

September 23 – 28, 2024, Mayo Clinic, Rochester, Minnesota, 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
Paschalis Vergidis	Mayo Clinic, USA
Nancy Wengenack	Mayo Clinic, USA

Course Faculty:

Barbara Alexander	Duke University Medical Center
Esther Babady	Memorial Sloan Kettering Cancer Center
Avrom Caplan	New York University Grossman School of Medicine
Kimberly Hanson	ARUP
Shawn Lockhart	CDC Mycotic Diseases Branch
Hong Nguyen	University of Pittsburgh Medical Center
Thomas Walsh	Center for Innovative Therapeutics and Diagnostics
Nathan Wiederhold	Fungus Testing Laboratory, University of Texas San Antonio
Elitza Theel	Mayo Clinic
Andrew Norgan	Mayo Clinic
Gary Procop	American Board of Pathology
Roxana G. Vitale	CONICET (Consejo Nacional de Investigaciones Científicas y Tecnológicas), Hospital JM Ramos Mejía, Buenos Aires, Argentina

Technical and Administrative Assistance:

Susan Reigel	Administrative Assistance, Mayo Clinic
Melissa Frechette	Teaching Assistance, Mayo Clinic
Amber Milone	Teaching Assistance, Mayo Clinic
Warda Memon	Teaching Assistance, Johns Hopkins Hospital
Rachel Green	Teaching Assistance, Johns Hopkins Hospital

Venue:

Mayo Clinic, Rochester, Minnesota, 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://www.atlasclinicalfungi.org/> and includes an electronic searchable version). Please bring your laptop and a lab-coat. A maximum of 60 participants is allowed.

Provisional program:

Monday (9/23): The fungal Kingdom; Introduction

Lectures: 8:00-9:35a and 9:45a-12:45p (4.5 hours)

- 8:00-8:05: Course Directors: Welcome & Introduction.
- 8:05-9:05: **Sybre de Hoog**: General taxonomy; life cycles; pleomorphism, nomenclature
- 9:05-9:35: **Sybre de Hoog**: Fungal diseases of animals & Zoonoses
- 9:35-9:45: Break
- 9:45-10:45: **Sybre de Hoog**: Introduction to Atlas of Clinical Fungi; diagnostic keys
- 10:45-11:45: **Sybre de Hoog**: Taxonomy and solutions for nomenclatural stability.
- 11:45-12:45: **Thomas Walsh**: The host, who are at risk for fungal diseases?

Lunch: 12:45-1:45p (presentation by a commercial company)

Lectures: 1:45-3:15p and 3:30-5:30p (3.5 hours)

- 1:45-2:15: **Nancy Wengenack**: Principles and procedures for detection and culture of fungi in clinical specimens
- 2:15-2:45: **Sybre de Hoog**: Introduction to microscopic methods.
- 2:45-3:15: **Sean Zhang**: Direct microscopic examination on clinical specimens
- 3:15-3:30: Break
- 3:30-4:30: **Nathan Wiederhold**: Practice of antifungal testing, PK/PD of antifungals, antifungal Therapeutic Drug Monitoring
- 4:30-5:30: **Shawn Lockhart**: Antifungal drug acquired and intrinsic resistance.

Tuesday (9/24): Mucorales and Entomophthorales & Eurotiales

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

- 8:00-9:00: **Sybre de Hoog**: Taxonomy of the Mucorales and Entomophthorales.
- 9:00-10:00: **Thomas Walsh**: Infections by Mucorales and Entomophthorales.
- 10:00-10:15: Break
- 10:15-10:30: **Sybre de Hoog**: Short introduction to ascomycetes.
- 10:30-11:00: **Sybre de Hoog**: Conidiogenesis in asexual fungi: hyphomycetes and coelomycetes.
- 11:00-11:45: **Sybre de Hoog**: Taxonomy of Eurotiales: *Aspergillus*, *Paecilomyces*, *Talaromyces*.
- 11:45-12:45: **Barbara Alexander**: Aspergillosis.

Lunch: 12:45-1:45p (presentation by a commercial company)

Practice: 1:45-3:30pm and 3:45-5:15pm (3.25 hours)

- 1:45-3:30: Microscopy mucormycetes (*Lichtheimia ramosa*, *Cunninghamella bertholletiae*, *Mucor circinelloides*, *Rhizopus arrhizus*, *Syncephalastrum racemosum*, *Rhizomucor pusillus*).
- **3:30-3:45: Break**
- 3:45-5:15: Microscopy of Eurotiales (*Aspergillus fumigatus*, *Aspergillus terreus*, *Aspergillus calidoustus*, *Paecilomyces variotii*, *Rasamsonia argillacea*, *Talaromyces [Penicillium] purpureogenus*).

Wednesday (9/25): Onygenales

Lectures: 8:30-9:45a and 10:00a-12:45p (4 hours)

- 8:30-9:00: **Sybre de Hoog**: Overview of the order Onygenales.
- 9:00-9:45: **Sybre de Hoog**: Arthrodermataceae: dermatophytes.
- 9:45-10:00: Break
- 10:00-11:00: **Avrom Caplan**: Dermatophyte infections.
- 11:00-11:45: **Sybre de Hoog**: Ajellomycetaceae: systemic mycoses.
- 11:45-12:45: **Paschalis Vergidis**: Coccidioidomycosis, Paracoccidioidomycosis, Blastomycosis, Histoplasmosis, Emergomycosis, Talaromycosis.

Lunch: 12:45-1:45p (presentation by a commercial company)

Practice: 1:45-3:30pm and 3:45-5:15pm (3.25 hours)

- 1:45-3:30: Microscopy Dermatophytes (*Epidermophyton floccosum*, *Microsporum canis*, *Nannizzia gypsea* [*Microsporum gypserum*], *Trichophyton interdigitale*, *Trichophyton rubrum*, *Trichophyton tonsurans*, *Trichophyton* [*Arthroderma*] *benhamiae*).
- **3:30-3:45: Break**
- 3:45-4:45: Microscopy review of endemic mycoses (*Histoplasma capsulatum*, *Coccidioides immitis/posadasii*, *Blastomyces dermatitidis*).
- 4:45-5:15: **Andrew Norgan**: Histopathology review of endemic mycoses (Histoplasmosis, Coccidioidomycosis, Blastomycosis, Paracoccidioidomycosis, Talaromycosis, Emergomycosis)

Thursday (9/26): Yeasts and Yeast-like fungi

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

- 8:30-9:30: **Sybre de Hoog**: Overview of yeasts and yeast-like fungi.
- 9:30-10:30: **Hong Nguyen**: Candidiasis
- 10:30-10:45: Break
- 10:45-11:45: **Kimberly Hanson**: Cryptococcosis
- 11:45-12:45: **Esther Babady**: Pneumocystis

Lunch: 12:45-1:45p (presentation by a commercial company)

Practice: 1:45-3:30pm and 3:45-5:15pm (3.25 hours)

- 1:45-2:45: Microscopy of ascomycetous yeasts (*Candida albicans*, *Candida glabrata* [*Nakaseomyces glabrata*], *Candida krusei* [*Pichia kudriavzevii*], *Candida tropicalis*, *Magnusiomyces capitatus* [*Saprochaete capitata*], *Geotrichum candidum*
- 2:45-3:30: Microscopy of basidiomycetous yeasts (*Cryptococcus neoformans*, *Malassezia furfur*, *Trichosporon asahii*, *Rhodotorula mucilaginosa*).
- **3:30-3:45: Break**
- 3:45-4:30: **Elitza Theel**: Fungal serology
- 4:30-5:15: **Sean Zhang**: Current diagnostic techniques – MALDI-TOF MS, fungal biomarkers, molecular and sequencing identification

Friday (9/27): Black yeasts and other dematiaceous opportunists

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

- 8:30-9:30: **Sybre de Hoog**: Taxonomy of black yeasts and relatives; diagnostic overview.
- 9:30-10:30: **Sybre de Hoog**: Clinical pictures of black yeasts and relatives.
- 10:30-10:45: Break
- 10:45-11:45: **Roxana Vitale**: Chromoblastomycosis & Emerging and common mycoses in South America
- 11:45-12:45: **Sybre de Hoog**: Mycetoma, melanized opportunists in Pleosporales (dematiaceae, coelomycetes).

Lunch: 12:45-1:45p (presentation by a commercial company)

Practice: 1:45-3:30pm and 3:45-5:15pm (3.25 hours)

- 1:45-3:30: Microscopy of traumatic Chaetothyriales (*Exophiala dermatitidis*, *Cladophialophora emmonsii*, *Phialophora verrucosa*, *Rhinoctadiella similis*).
- **3:30-3:45: Break**
- 3:45-5:15: Microscopy of Pleosporales and other melanised fungi (*Alternaria alternata*, *Curvularia geniculata*, *Bipolaris spicifera*, *Phaeoacremonium parasiticum*, *Phoma herbarum*).

Saturday (9/28): Hyaline opportunists and conclusion

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

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

Lunch: 12:45-1:45p

Practice: 1:45-3:15p and 3:30-5:00 (3 hours)

- Microscopy of filamentous Basidiomycetes (*Schizophyllum commune*, *Phanerochaete chrysosporium* [*Sporotrichum pruinosum*]).
- Microscopy of Hypocreales (*Fusarium oxysporum*, *Sarocladium* [*Acremonium*] *kiliense*).
- Microscopy of Microascales (*Lomentospora* [*Scedosporium*] *prolificans*), *Scedosporium apiospermum*, *Microascus paisii* [*Scopulariopsis brumptii*]).
- Microscopy of Ophiostomatales (*Sporothrix schenckii*).
- 3:15-3:30: Break
- 3:30-5:00: **Sean Zhang & Paschalis Vergidis**: Case studies

Certificates and Farewell 5:00-5:15pm