



## UFPR/Curitiba- EAE CAPES on MEDICAL MYCOLOGY 2017

Morning sessions: 8.30-12.00; afternoon sessions: 14.00-18.00. Lectures are maximally 45 min with 15 min break.  
**Lectures (Auditorium – Anf. Rosa, Botânico, UFPR) and Practice (laboratory Botânico, UFPR).**

### Course directors and instruction:

- Prof. Dr. G.S. de Hoog Westerdijk Fungal Diversity Institute, Utrecht, The Netherlands / Center of Expertise in Mycology of Radboudumc / CWZ, Nijmegen, The Netherlands.
- Dr. Flavio Queiroz Telles Lab. of Expertise in Mycology, HC/UFPR, Curitiba, Brazil.
- Dr. Vania A. Vicente Lab. of Expertise in Mycology, UFPR, Curitiba, Brazil.
- Dr. Roxana Vitale Ramos Mejia Hospital, Mycology Branch, Buenos Aires, Argentina.

**Support material:** The course is based on the electronic version of the Atlas of Clinical Fungi (G.S. de Hoog et al., Edition 4, online version, 2016), which will be offered as didactic material for course students. Lectures are in English.

**Contact Address:** Centro Politécnico/UFPR – Caixa Postal 19031 – CEP: 81531-990 – Curitiba/PR; Tel.:(41) 3361-1695 – Fax (41) 3266-2042 – [posmpp@ufpr.br](mailto:posmpp@ufpr.br).

**Registrations:** via *on line* <http://www.prppg.ufpr.br/siga>. No enrolment fees with selection based on academic output.

**Registration number (Vacancies):** 40 for graduate students and 10 for technicians and professors from the associated institutions.

**Duration:** 60 hours; number of credits: 4.

### Invited speakers

**USP-IMT:** Carlos P. Taborda CV: <http://lattes.cnpq.br/8901498333813231>.

**UnB:** Anamelia Bocca CV: <http://lattes.cnpq.br/7426592963217111>.

**UERJ:** Leila M. Lopes Bezerra CV: <http://lattes.cnpq.br/8692762060973151>

**HC-UFPR:** Flávio Queiroz Telles CV: <http://lattes.cnpq.br/0111936868262951>.

**UFPR- Basic Pathology Dept.** CV: Patricia F. Herkert: <http://lattes.cnpq.br/2919370485435028>

**UFPR-Biochemistry Dept.** CV: Emanuel M. Souza: <http://lattes.cnpq.br/7436135069574190>.

**UNIFESP:** Arnaldo Colombo CV: <http://lattes.cnpq.br/4512261018429681>.

**HC-UFPR:** Marisol D. Muro CV: <http://lattes.cnpq.br/9690678154653832>.

**UNIFESP:** Anderson M. Rodrigues CV: <http://lattes.cnpq.br/4150370898980718>.

**UFPR- Basic Pathology Dept.** Renata R. Gomes CV: <http://lattes.cnpq.br/4672669767697565>.

**UNIFESP:** Daniel W.C.L. Santos CV: <http://lattes.cnpq.br/9535568373737991>.

**UFPR- Bioinformatics Dept.:** Vinícius Weiss CV: <http://lattes.cnpq.br/8361575031451205>.

**UFPR- Bioinformatics Dept.:** Mauro A. Alves Castro CV: <http://lattes.cnpq.br/6484877487662355>

**USP- Clinical and Pharmacological Analysis Dept.:** Sandro R. Almeida CV: <http://lattes.cnpq.br/8629829687150335>

### Technical and administrative assistance:

- Marisol Dominguez Muro, Regielly Cogniali e Rosangela Pinheiro (HC/UFPR)
- Renata R. Gomes, Amanda Bombassaro and Anielle Leao; Amanda Bombassaro, Flávia de Fátima Costa, Aniele Leão;

## COURSE PROGRAM

Monday, January 22, 2018

**Lectures: Auditorium/ Setor Botânico, Anfiteatro Rosa.**

**14.00-14.30:** Vania Aparecida Vicente: opening ceremony *EAE CAPES on MEDICAL MYCOLOGY 2017* and Sybren de Hoog: **overview of the course.**

**14.30-15.30:** Sybren de Hoog: General taxonomy; sexual life cycles.

**16.00-17.00:** Flavio Q. Telles: Neglected endemic mycoses in the clinical practice

**Happy hour: 17.00-19.00**



Tuesday, January 23, 2018

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**8.30-10.30 Sybren de Hoog:** Pleomorphism and nomenclature; biosafety classifications; introduction to microscopical methods; Introduction to the electronic Atlas of Clinical Fungi

<http://www.clinicalfungi.org/demo/Atlas.html>.

**11.00-12.30: Sybren de Hoog:** Taxonomy of the zygomycetes and infections by zygomycetes.

**Lunch: 13.00-14.00**

**14.00-16.00 Practice: Lab. Pharmacy Dept.**

- Identification of Zygomycetes down to genus level;
- Microscopy Zygomycetes (*Lichtheimiacorymbifera*, *Basidiobolushaptosporus*, *Basidiobolusranarum*, *Cunninghamellabertholletiae*, *Conidioboluscoronatus*, *Mucorhiemalis*, *Phycomycesblakesleeana*, *Rhizopusoryzae*, *Rhizopusstolonifer*).

Wednesday, January 24, 2018

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**8.30-9.30: Sybren de Hoog:** Introduction to Ascomycota; Conidiogenesis in Hyphomycetes and Coelomycetes.

**9.30-10.30: Sybren de Hoog:** Eurotiales: Taxonomy of *Aspergillus*, *Penicillium*, *Talaromyces*, and relatives.

**11.00-12.00: Flávio Queiroz Telles:** Aspergillosis: Clinical cases and antifungal treatment.

**Lunch: 12.00- 13:30**

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**14.30-15.00: Vania Vicente and Renata Gomes:** Identification based on DNA: DNA extraction a PCR and Sequencing.

**15.00-17.00 Practice: Lab. Pharmacy Dept.**

- Microscopy of Eurotiales (*Aspergillusclavatus*, *Aspergillusflavus*, *Aspergillusfumigatus*, *Aspergillusniger*, *Aspergillusterreus*, *Aspergillusversicolor*, *Aspergillusnidulans* (*Emericellanidulans*), *Eurotiumchevalieri*, *Neosartoryafischeri*, *Paecilomycesvariotii*, *Talaromycesmarneffeii*, *Aspergilluslentulus*).

Thursday January 25, 2018

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**8.30-9.30: Sybren de Hoog:** Introduction to Onygenales; practical demonstration of identification keys.

**10.00-12.00: Carlos Taborda:** Systemic infections: Histoplasmosis, Coccidioidomycosis, Paracoccidioidomycosis, Blastomycosis;

**Lunch: 12.00-13.00**

**14.00-15.30 Practice: Lab. Pharmacy Dept.**

Histopathology and microscopy systemic infections. (*Blastomyces dermatitidis*, *Histoplasma capsulatum*, *Emergomyces pasteurianus*, *Coccidioides immitis*, *C. posadasii*, *Paracoccidioides brasiliensis*).

**16.00-19.00: Anderson Rodrigues:** Molecular tools in the diagnosis of mycoses: Specific primers; RCA, LAMP.

**Renata Gomes and Vania Vicente:** Clinical cases: sequences analysis, identification of species and phylogenetic analysis.

Friday, January 26, 2018

**8.30-10.00: Roxana Vitale and Sybren de Hoog** Taxonomy, identification and clinical aspects of dermatophytes.

**10.15-12.00 Practice: Lab. Pharmacy Dept.**

Microscopy of dermatophytes (*Epidermophytonfloccosum*, *Microsporumcanis*, *Paraphytoncookei*, *Trichophytoninterdigitale*, *Trichophytonrubrum*, *Trichophytonschoenleinii*, *Trichophyton soudanense / violaceum*, *Trichophyton tonsurans*, *Trichophyton verrucosum*, *Trichophyton erinacei*). Microscopy non-dermatophytic skin infections (*Scopulariopsis brevicaulis*, *Nattrassiamangiferae*).

**Lunch: 12.00-13.00**

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**13.30-15.00: Flavio Queiroz-Telles: Systemic Antifungals drugs in the clinical practice**

**15.15-16.00 Roxana Vitale:** antifungal susceptibility testing: summary of laboratory procedures.

**Break**

**16.15-17.00: Arnaldo Colombo:** Taxonomy and diagnostics of yeast and yeast fungi.

**17.00-19.00: Arnaldo Colombo:** *Candida* and candidiasis.

**20:00 Dinner**



Saturday January 27, 2018

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**8.30-9.30: Patricia F. Herkert:** Cryptococcosis: *Cryptococcus neoformans* and *C. gattii*

**09.45-11.00: Daniel Wagner:** Brain infections in immunocompetent individuals.

**11.15-13.00 Practice: Lab. Pharmacy Dept.**

Microscopy of yeasts (*Candida albicans*, *C. dubliniensis*, *C. glabrata*, *C. parapsilosis*, *C. krusei*, *Clavisporalutitanae*, *Cryptococcus neoformans*, *Geotrichum capitatum*, *Malassezia furfur*, *Pichia anomala*, *Saccharomyces cerevisiae*, *Sporobolomyces roseus*, *Trichosporon inkin*, *Yarrowialipolytica*).

Identification with chromogenic agars; physiology with API, gel electrophoresis, genotyping.

**Lunch: 12.00-13.00**

**Lectures: 14h00minh -16:30 h00min (Auditorium/Botânico)**

**14.00-15.00: Anderson Rodrigues:** Ophiostomatales: *Sporothrix* species: Phylogeny Species delimitation, new markers and molecular epidemiology.

**15.15-17.00: Sybren de Hoog:** Microascales: *Scedosporium* and *Scopulariopsis*.

**17.00-18.00: Daniel W. Santos:** Hypocreales: *Fusarium*, *Acremonium* and relatives.

**18.00-19.00: Sybren de Hoog:** Practical demonstration of identification keys.

**20:00 Dinner**

Monday, January 29, 2018

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**8.00-9.30: Anamelia Bocca and Sandro Rogério Almeida:** Immunology of fungal infections.

**9.30-11.00: Leila L. Bezerra:** New approaches on *sporotrichosis* Disease: Pathology, epidemiology and treatment; Diagnostic, vaccine and host response.

**11.15-12.30 Practice: Lab. Pharmacy Dept.**

Microscopy of Ophiostomatales (*Ophiostomatales* (*Ophiostomatales*, *Sporothrix schenckii*), Microascales (*Scedosporium*, *Lomentospora*), Hypocreales (*Fusarium oxysporum*, *Acremonium kiliense*, *Trichoderma harzianum*).

**Lunch**

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**14.00-15.30: Sybren de Hoog:** Black yeast and related opportunists, taxonomy and clinical aspects.

**15.40-17.30: Flavio Telles and Daniel Wagner:** Clinical images of black yeasts and related species; diagnostics in clinical practice.

**17.30-18.30: Flavio Telles:** Antifungal treatment of black yeasts and related fungi.

**Dinner : 19.00**

Tuesday, January 30, 2018

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**8.30-10.00: Sybren de Hoog and Daniel Wagner:** Opportunistic filamentous fungi (*Pleosporales*: *Alternaria*, *Dothideales*: *Phoma*, *Calosphaerales*: *Phaeoacremonium*; *Basidiomycetes*: *Coprinus*, *Schizophyllum*, *Tritirachium*).

**10.15-12.00: Flavio Telles:** Clinical aspects of mycetoma and mycetoma agents.

**Lunch**

**14.00-18.00 Practice: Lab. Pharmacy Dept.**

**14.00-15.30:** Microscopy of black yeasts and related fungi (*Aureobasidium pullulans*, *Cladophiala phorabantiana*, *Cladophiala phoracarrionii*, *Cladosporium cladosporioides*, *Exophiala dermatitidis*, *Exophiala jeanselmei*, *Fonsecaea monophora*, *Fonsecaea pedrosoi*, *Hortaea werneckii*, *Verrucosporium gallopavum*, *Phialophora* (*Cyphellophora europaea*, *Phialophora verrucosa*).

**15.40-17.00:** Microscopy of *Pleosporales* and *Coelomycetes* (*Alternaria alternata*, *Curvularia geniculata*, *Bipolaris hawaiiensis*, *Bipolaris spicifera*, *Phaeoacremonium parasiticum*, *Curvularia lunata*, *Phialophora richardsiae*, *Phoma glomerata*, *Scopulariopsis brumptii*).

**17:15- 19.00:** Mycetoma demonstration (*Neotestudina rosatii*, *Madurella mycetomatis*).

Microscopy of filamentous basidiomycetes: *Psilocybe pseudobulbacea*, *Schizophyllum commune*, *Tritirachium oryzae*.

Wednesday, January 31, 2018

**Lectures: Auditorium / Setor Botânico, Anfiteatro Rosa.**

**08.30-09.30: Anderson Rodrigues:** Molecular clinical mycology.

**09.30-10.30: Emanuel Maltempi:** New methods of diagnosis in fungi: diagnosis MALDI-TOF, with demonstration.

**10.30-11.30: Mauro Castro:** Transcriptome as a tool in fungal study.



**11.30-12.30:** Emanuel Maltempi and Vinicius A. Weiss: Genomic sequencing of filamentous and yeast-like fungi.  
**Lunch: 12.30-13.30**  
**13.30-16.00 Practice:** Lab. Pharmacy Dept.  
**13.30-15.00:** Part I - Final examination Certificates and farewell.

Thursday, February 1st, 2018

**Part II- Molecular clinical mycology: Fungal Genomic analysis - Sybren de Hoog, Vania Vicente and Emanuel Maltempi;**

**08.30-12.30:** Genomic DNA extraction, sequencing and assembly;  
Comparative genomic analysis and Mitochondrial genomes.

**Lunch: 12.30-13.30**

**13.30-16.00 Practice:** Lab. Pharmacy Dept.

Friday, February 2nd, 2018

**08.30-18.00:** Sybren de Hoog, Emanuel Maltempi and Vinicius Weiss-Orthologous gene comparison  
Genome expansions and contractions based on functional domains and Gene prediction and annotation

Monday, February 5 to Thursday 8, 2018- Analyzes exercises via web and closure of activities ( via web)

**08.30-18.00:** Sybren de Hoog, Emanuel Maltempi and Vinicius Weiss; Anielle Leao; Amanda Bombassaro, Flávia de Fátima Costa, Aniele Leão;

Comparative genomic analysis

Mitochondrial genomes

Orthologous gene comparison

Genome expansions and contractions based on functional domains

Prediction of genes related to pathogenicity

Friday, February 9, 2018

**13.30-15.00:** Part II - Final examination and closure of activities (via web)