BIO 329, 51395, MEDICAL MYCOLOGY SYLLABUS SPRING 2007

- Course: Bio 329, Medical Mycology, BUR 112, TTH 9:30-10:45 AM
- **Prerequisites:** Biology 325, 325H and 226R with a grade of at least a C in each. Concurrent or subsequent enrollment in Bio 129L (Medical Mycology Laboratory) is recommended for Clinical Laboratory Science majors.
- **Instructor:** Dr. Paul J. Szaniszlo, ESB 109A, E-mail <u>pjszaniszlo@mail.utexas.edu</u> (Office Hours: Mondays from 11:30 AM-12:30 PM, or by appointment)
- T.A./Grader: Samantha Croft, MBB 2.424B, E-mail sbcroft@hotmail.com (Office Hours: T from 11 AM-12 PM or by appointment; Location MBB 2.424B). (Discussion and Test Review Sessions: Tuesday, 5-6 PM, Wednesday, 4:30-5:30 PM (Locations TBA). These sessions are optional, although quizzes **may** be given and up to 5 bonus points/exam period can be earned during these sessions. If you cannot attend either of these sessions, please let Samantha know your reasons and why you cannot rearrange your schedule, in writing, before the 12th class day (her syllabus for the Discussion Sessions can be found below and http://webspace.utexas.edu/sbc/www/.). She will then trv to at accommodate you. However, if she can't and you think you will need those potential points to pass, then you should seriously consider dropping this course.
- **Text (optional):** Dismukes, Pappus and Sobel. 2003. Clinical Mycology. Oxford Univ. Press, NY
- **Readings:** In addition, or as an alternative to the text assignments, a number of articles will be assigned during the course. **These readings are required** and are available in the Life Sciences Library as one set of uncatalogued articles. They can also be purchased at Speedway Copy and Printing, in Dobie Mall, should you want personal copies. The titles, authors and sources of the readings are listed on pages 3 and 4 in the general order they will be assigned.
- **Course Description:** This course consists of a basic introduction to medical mycology and a comprehensive study of the fungi (yeasts and molds) and mycoses (fungal diseases) likely to be encountered in clinical settings by a physician, medical mycologist, or medical technologist. Attention will be distributed as equally as possible between emphasis on the biology of the fungal zoopathogen and on its disease. A general course outline in the form of a Tentative Lecture Schedule (page 2-3) is attached, as well as a short Reserve Book List (page 4-5).

Grading and Test Policy: There will be three semester examinations and an optional comprehensive final. The exams will focus on the material covered since the last examination but the second and third exams will all require good knowledge of prior coverage, and particularly of the material covered for the first examination. Each examination will count equally (33.3%), if you opt not to take the comprehensive final. Should you decide to take the final, then it too will count 33.3% and your lowest semester exam grade will be dropped from the calculation for your final average (**Note: if you opt to take the final, then it will be one of the three scores used to calculate your final grade**). Final averages will not be curved, and generally will be assigned as follows:

$$\begin{array}{rcl} 85\text{-}100\% &=& A\\ 70\text{-}84\% &=& B\\ 55\text{-}69\% &=& C \end{array}$$

$$50-54\% = D$$

and less than $50\% = F$

Professor's Grading Philosophy: "Students earn grades, he does not give grades."

Examination Schedule: The three semester exams will be scheduled during the regular class period, but probably will be in a different room. There will be no make-up exams unless there is a **substantial legitimate and well documented, significant medical excuse or a documented personal tragedy** associated with your absence from an examination. Failure to take an examination may result in a zero grade for that exam. The date each exam will be given and the approximate materials to be covered by each exam are included in the Tentative Lecture Schedule (page 2-3). Should this schedule not be acceptable, then you should consider dropping the course immediately.

Class Web Site: To help you keep up with things in Bio 329, there is a web-site associated with Medical Mycology. Unless you are informed otherwise, the URL for this site will be http://www.sbs.utexas.edu/mycology/bio329/.

Class Notes Packet: A class notes packet will be available for your purchase at Speedway Copy and Printing, Dobie Mall. In general, these notes represent only duplicated and reformatted versions of the computer-generated overheads prepared specifically for Bio 329 from last year's Notes, but not of any figures, tables, diagrams or other items to be presented similarly, as handouts or possibly at the web-site. These notes **may** also be available at the class web site, although they may be from previous years and even less up-to-date. **The purchase of these items is totally at your discretion and they are provided only for your note-taking convenience, so you don't have to download from the web site, and can more easily take notes, make drawings, or make records of other materials (information in tables or graphs, for example) related to lecture information that is not included in these notes.**

TENTATIVE SPRING, 2007, LECTURE SCHEDULE - BIO 329

- **JAN** 16 Course Introduction (and start)
 - 18 General Introduction to Medical Mycology
 - 23 Definitions and Fungal Terminology
 - 25 Fungal Classification, Historical Overview and Chytridiomycota,
 - 30 Zygomycota Ascomycota, Basidiomycota
- **FEB** 1 Fungi Imperfecti, Conidia and Other Spores
 - 6 General Aspects of Fungal Immunology and Pathology
 - 8 Antifungal Therapeutic Agents
 - 13 Antifungal Therapeutic Agents
 - 15 The Superficial Mycoses
- FEB 20 EXAM I Over information through antifungals
 - 22 Dermatophytosis and the dermatophytes
 - 27 Dermatophytosis and the dermatophytes
- MAR 1 Introduction to Subcutaneous Mycoses, with emphasis on those caused by dematiaceous (black) fungi
 - 6 Chromoblastomycosis
 - 8 Phaeohyphomycosis, Mycetoma, Other Diseases Caused by Black Fungi

12-16 SPRING BREAK

20 Sporotrichosis

- 22 Introduction to the Pathogenic Yeasts
- 27 Candidiasis
- 29 Candidiasis & Cryptococcosis
- **APR** 3 Cryptococcosis
 - 5 EXAM II Through candidiasis
 - 10 Histoplasmosis
 - 12 Blastomycosis
 - 17 Coccidiodomycosis
 - 19 Coccidiodomycosis
 - 24 Aspergillosis
- APR 26 EXAM III Through aspergillosis
- MAY 1 Fungal Allergies, Mushrooms
- MAY 3 Mushroom Poisonings & Mycotoxins
- MAY 12 Optional Comprehensive Final Examination (see grading and test policies on page 1 for details)

BIO 329 - RESERVE READING LIST - SPRING 2007

(In Life Science Library as a set of uncatalogued articles)

These articles are also available through Speedway Copy and Printing, Dobie Mall, and are **required** readings. Although you may not be tested directly on the details of these articles, they will help you to better appreciate the subject and to write better essay discussions, if requested. In general, after the first few, these articles provide considerably more information about fungi and the fungal agents of mycosis that will be taken up in this course than is presented in our text.

- Sz 1. Sternberg, S. 1994. The emerging fungal threat. Science 266:1632-1634.
- Sz 2. Perfect, J. R. 2005. Weird Fungi. ASM News 71:407-411.
- Sz 3. Mitchell, T. G. 1998. Medical mycological research and training: needs and opportunities. ASM News 64:17-23.
- Kwon-Chung, K. J. and B. L. Wickes. 2006. The conversion from classical studies in fungal pathogenesis to the molecular era. In: Molecular principles of Fungal Pathogenesis, ASM Press, pp. 49-70.
- Sz 5. Mendoza, L., L. Ajello and J. W. Taylor. 2001. The taxonomic status of *Lacazia loboi* and *Rhinosporidium seeberi* has been finally resolved with the use of molecular tools. Rev. Iberoam. Micol. 18:95-98.
- Sz 6. Cushion, M. T. 2004. *Pneumocystis*: unraveling the cloak of obscurity. TIM 12:243-249.
- Sz 7. Taylor, J. W. 2006. Evolution of human-pathogenic fungi: phylogenies and species. In: Molecular Principles of Fungal Pathogenesis, ASM Press, pp. 113-131.
- Sz 8. Casadevall, A. 2006. Cards of virulence and the global virulome for humans. Microb, ASM Press, 1:359-364.
- Sz 9. Szaniszlo, P. J. 1985. An introduction to dimorphism among zoopathogenic fungi. In: Fungal dimorphism, with emphasis on fungi pathogens for humans, Plenum Press, pp. 3-13.
- Sz 10. Romani, R. 2004. Immunity to fungal infections. Nature Reviews: Immunology. 4:1-12.
- Sz 11. Odds, F. C., A. J. P. Brown and N. A. R. Gow. 2003. Antifungal agents: mechanisms of action. TIM. 11:272-279.
- Sz 12. Kauffman, C. 2006. Clinical efficacy of new antifungal agents. Curr. Opin. Microbiol. 9:483-488.
- Sz 13. Gueho, E., J. Faergemann, C. Lyman and E. J. Anaissie. 1994. *Malassezia* and *Trichosporon*: two emerging pathogenic basidiomycetous yeast-like fungi. J. Med. Vet. Mycol. Suppl. 32:367-378.
- Sz 14. Weitzman, I., and R. C. Summerbell. 1995. The dermatophytes. Clin. Microbiol. Rev. 8:240-259.

- Sz 15. Kac, G. 2000. Molecular approaches to the study of dermatophytes. Med. Mycol. 38:329-336.
- Sz 16. Jacobson, E. S. 2000. Pathogenic roles for fungal melanins. Clin. Microbiol. Rev. 13:708-717.
- Sz 17. Szaniszlo, P. J., L. Mendoza and S. M. Karuppayil. 1993. Clues about chromoblastomycotic and other dematiaceous pathogens based on *Wangiella* as a model. p. 241-255. In: Dimorphic Fungi in Biology and Medicine. Plenum Press, N.Y.
- Sz 18. Szaniszlo, P. J. 2002. Molecular genetic studies of the model dematiaceous pathogen *Wangiella dermatitidis*. Int. J. Med. Microbiol. 292: 381-390.
- Sz 19. Brandt, M. E., et al. 2000. *Candida dubliniensis* fungemia: the first four cases in North America. Emerg. Infect. Dis. 6:46-49.
- Sz 20. Pfaller, M. A., and D. J. Diekema. 2002. Role of sentinel surveillance of candidemia: trends in species distribution and antifungal susceptibility. J. Clin. Microbiol. 40:3551-3557.
- Sz 21. Fidel, P. L. 2004. History and new insights into host defenses against vaginal candidiasis. TIM 12: 220-227.
- Sz 22. Hube, B. 2004. From commensal to pathogen: stage- and tissue-specific gene expression of *Candida albicans*. 7: 336-341.
- Sz 23. Sudbury, P., N. Gow, and J. Berman. 2004. The distinct morphogenetic states of *Candida albicans*. TIM (in press).
- Sz 24. Douglas, L. J. 2003. *Candida* biofilms and their role in infection. TIM. 11:30-36.
- Sz 25. Magee, P. T. and B. B. Magee. 2004. Through a glass opaquely: the biological significance of mating in *Candida albicans*. Curr. Opin. Microbiol. 7:661-665.
- Sz 26. Noverr, M. C., D. M. Lindell, G. B. Toews and G. B. Huffnagel. 2006. Fungal interactions with leukocytes. In: Molecular Principles of Fungal Pathogenesis, ASM Press, pp. 555-563.
- Sz 27. McClelland, C. M., Y. C. Chang, A. Varma and K. J. Kwon-Chung. 2004. Uniqueness of the mating system in *Cryptococcus neoformans*. TIM 12:208-212.
- Sz 28. Feldmesser, M., S. Tucker and A. Casadevall. 2001. Intracellular parasitism of macrophages by *Cryptococcus neoformans*. TIM 9:273-278; and related TIM letters 9:417-1418.
- Sz 29. Doering, T. L. 2000. How does *Cryptococcus* get its coat? TIM 8:547-553; and related 2001 TIM letters 9:112-113.
- Sz 30. Woods, J. P. 2003. Knocking on the right door and making a comfortable home: *Histoplasma capsulatum* intracellular pathogenesis. Curr. Opin. Microbiol. 6:327-331.
- Sz 31. Ignatov, A. and E. J. Keath. 2002. Molecular cell biology and molecular genetics of *Histoplasma capsulatum*. Int. J. Med. Mycol. 292: 349-361.
- Sz 32. Brandhorst, T. T., P. J. Rooney, T. D. Sullivan. and B. S Klein. 2002. Using genetic tools to study the pathogenesis of *Blastomyces dermatitidis*. TIM 10:25-30.
- Sz 33. Kirkland, T. N. and J. Fierer. 1996. Coccidioidomycosis: a remeerging infectious disease. Emerg. Infect. Dis. 2:192-199.
- Sz 34. Abuodeh, R. O., J. N. Galgiani and G. M. Scalarone. 2002. Molecular approaches to the study of *Coccidioides immitis*. Int. J. Med. Microbiol. 292:373-380.
- Sz 35. Latgé, J-P. 2001. The pathobiology of Aspergillus fumigatus. TIM 9:382-389.
- Sz 36. Tekaia, F, and J-P. Latgé. 2005. *Aspergillus fumigatus*: saprophyte or pathogen? Curr. Opin. Microbiol. 8:385-392.
- Sz 37. Andrianopoulos, A. 2002. Control of morphogenesis in the human fungal pathogen *Penicillium marneffei*. Int. J. Med. Microbiol. 292: 331-347.
- Sz 38. McGinnis, M. R. 2004. Pathogenesis of indoor fungal diseases. Medical Mycology. 42:107-117.

RESERVE BOOK LIST - Spring 2007 - Paul J. Szaniszlo

These books are on reserve in the Life Science Library and should be of help should you need

supplemental reading on certain topics introduced in Bio 329.

Medical Mycology

<u>Clinical Mycology</u>, Dismukes, Pappas and Sobel QR 245, C566, 2003 <u>Medical Mycology</u>, Kwon-Chung and Bennett QR 245, K86, 1992 <u>Atlas of Clinical Mycology, deHoog et al., QR 245, K86, 2000.</u> <u>Molecular Principles of Fungal Pathogenesis</u>, Heitman et al., ed., QR 245, M65, 2006 Fungal Pathogenesis; Principles and Clinical Applications, Calderone & Cihlar, ed., RC117, f864, 2000

General Mycology

<u>Ainsworth & Bisby's Dictionary of the Fungi</u>, 8th ed., Hawksworth, Krik, Sutton & Pegler QK 603, A5, 1995 <u>Dictionary of the Fungi</u>, 9th ed., Hawksworth et al., QK 600.35, A5 <u>The Fifth Kingdom</u>, 3rd ed., Kendrick QK 603, K46, 1992 <u>Introductory Mycology</u>, 4th ed., Alexopoulos, Blackwell and Mims QK 603, A55, 1996 <u>Fundamentals of the Fungi</u>, 4th ed., Moore-Landecker QK 603, M62, 1996

Additional references, which are available at the UT Science Library, but are not on reserve.

The Fungi, 2nd ed., Watkinson, Carlile and Gooday QK 603, C257, 2001 Microbiology and Microbial Infections, Topley and Wilson's, 9th ed., Vol. 4. Medical Mycology, OR 46, T6, 1998 A Practical Guide to Medically Important Fungi and The Diseases They Cause, Sugar and Lvman RC 117, S84, 1997 Dimorphic Fungi in Biology and Medicine, Vanden Bossche, Odds and Kerridge (eds) QR 245, D55, 1993 Medical Mycology: A Practical Approach, Evans and Richardson OR 248. M43. 1989 Medical Mycology and Human Mycoses, Beneke and Rogers QR 245, B46, 1996 <u>Medical Mycology</u>, 3rd ed., Rippon RC 117, R5, 1988 Fungal Dimorphism: With Emphasis on Fungi Pathogenic for Humans, Szaniszlo OR 245. 1985 Laboratory Handbook of Medical Mycology, McGinnis RC 117, E56, 1980 Identifying Filamentous Fungi: a Clinical Laboratory Handbook, St. Germain and Summerbell QR 248, F55, 1996