IMI201a: ECOLOGY, EPIDEMIOLOGY, and CONTROL of IMPORTANT PARASITIC DISEASES of DEVELOPING COUNTRIES
Harvard School of Public Health
Department of Immunology and Infectious Diseases

General Information

1. Classes will be held Monday, Wednesday, and Friday from 2:00-3:30 PM in room G10 of the Francois-Xavier Bagnoud Building (FXB-G10).

2. A set of required readings for each class, including a background paper that covers general information for each topic and a recent scientific article, will be available on the course website. We have reduced the number of readings for the class this year. We expect that you will have read the material for each session before class.

3. Students are expected to be familiar with the life cycle and general biology of each parasite before class. Persons who do not have a background in Medical Parasitology or wish a review may consult one of several textbooks that are on course reserve at Countway Library (marked * on the following booklist). Other useful sources of background information on Parasitology include the Centers for Disease Control Parasitology website (www.dpd.cdc.gov/dpdx) and WHO's tropical diseases information pages (www.who.int/ctd/).

4. Evaluation will be based on performance on two take-home examinations (45%), a case study and group project (45%), and participation in the classroom (10%).

5. Course co-directors:
   Dyann Wirth, Department of Immunology and Infectious Diseases, HSPH Building 1, Room 703, Tel: 617-432-1563, Email: dfwirth@hsph.harvard.edu
   Manoj Duraisingh, Department of Immunology and Infectious Disease, HSPH Building 1, Room 715, Tel: 617-432-2675, Email: mduraisi@hsph.harvard.edu
   Jeffrey Dvorin, Division of Infectious Diseases, Boston Children's Hospital, Enders 878.2, Tel: 617-919-1236, Email: Jeffrey.Dvorin@childrens.haravard.edu

6. The Teaching Fellows for the course are **Kerry McGowen** (kerrymcgowen@g.harvard.edu) and **Cyrianne Keutcha** (ckeutcha@fas.harvard.edu). The course administrator is Emily Hobbs, Department of Immunology and Infectious Diseases, HSPH, telephone 617-432-2380, email: ehobbsf@hsph.harvard.edu.

7. Students are encouraged to attend seminars in the Department of Immunology and Infectious Diseases (usually Wednesdays at noon and posted on bulletin boards throughout the Department). The main office of the Department of Immunology and Infectious Diseases is on the 3rd floor of the Francois-Xavier Bagnoud Building (FXB-301), telephone 617-432-1023.

ECO, EPI, and CONTR of IMPORTANT PARASITIC DISEASES of DEVELOPING COUNTRIES

Mondays, Wednesdays, Fridays at 2:00-3:30 P.M. HSPH FXB Building, Room G10
(Preliminary Schedule)

Date	Title	Presenter
Sep 4, 2019	**Course Introduction**	**MD**
Sep 6, 2019	**Malaria: Infection and Control**	**MD**
Sep 9, 2019	**Malaria: Evaluation of elimination programs**	**Marcia Castro**
Sep 11, 2019	**Malaria: Clinical Disease and Treatment**	**JDD**
Sep 13, 2019	**Malaria: Parasite diversity/vaccines**	**DFW**
Sep 16, 2019	**Malaria: Case study/Field Experience**	**Abigail Donner**
Sep 18, 2019	**Malaria: transmission and vectors**	**Flaminia Catteruccia**
Sep 20, 2019	Class presentations/malaria control	
Sep 23, 2019	**Intestinal Protozoa: Pathology and Control**	**Ed Ryan**
Sep 25, 2019	**Modeling of Infectious Diseases**	**Caroline Buckee**
Sep 27, 2019	**Dracunculiasis: Epidemiology and Eradication**	**Don Hopkins**
Sep 30, 2019	**MIDTERM EXAM DUE**	
Oct 2, 2019	**The economic burden of infectious diseases**	**Rifat Atun**
Oct 4, 2019	**Schistosomiasis**	**Don Harn**
Oct 7, 2019	**Geohelminth Infection**	**Jamie Maguire**
Oct 9, 2019	**Cysticercosis/Echinococcosis**	**Ryan Carroll**
Oct 11, 2019	**Leishmaniasis**	**Jamie Maguire**
Oct 14, 2019	COLUMBUS DAY -- No class	
Oct 16, 2019	**Ecology and control of Filariasis**	**Peter Weller**
Oct 18, 2019	**Chagas's Disease: Epidemiology & Control**	**Barbara Burleigh**
Oct 21, 2019	**African Trypanosomiasis**	**MD**
Oct 23, 2019 **Oct 25, 2019**	**Panel Discussion on elimination of infectious diseases** **Final Exam Due**	**Regina Rabinovich**

ECO, EPI, and CONTR of IMPORTANT PARASITIC DISEASES of DEVELOPING COUNTRIES

COURSE OBJECTIVES

- Understand epidemiology and current worldwide burden of disease
- Understand parasite biology and transmission as relevant to elimination/eradication (limited focus on clinical)
- Understand natural infection and protection (especially in context of malaria) as different from sterilizing immunity
- Learn to think more critically about effectiveness of control programs and elimination/eradication campaigns
- Understand common principles for successful elimination/eradication (including importance of integrated approaches-vector control, drugs, etc.) and current challenges of specific diseases in relation to successes of previous campaigns (guinea worm, polio, etc.)
- Discuss the current situation in terms of interventions (including drugs/vaccines currently available or in the pipeline), challenges in developing/implementing these interventions, and particularly tools with population-level effects (MDA, vaccines)

READING LIST

Note: This is an extensive list of supplemental resources that are available if you need more basic/background information or if you want more in-depth information. The required readings for each class will be made available on the Canvas site. If the readings are not available, please contact the Teaching Fellows.

BOOK LIST

Parasitology and tropical medicine texts (* on reserve at Countway library):

1. * Basic Clinical Parasitology. Neva FA, Brown HW. 6th edition New York Appleton-Century-Crofts, 1994.

2. * Hunter's Tropical Medicine. Strickland GT. 8th Edition. Philadelphia: WB Saunders, 2000. ($195.00)

3. * Manson's Tropical Diseases. Cook GC. 20th Edition London: WB Saunders, 2003.

4. * Markell and Voge's Medical Parasitology. Markell EK, Voge M, John DT, Krotoski WA. 8th edition Philadelphia WB Saunders, 1999 ($49.00).

5. * Parasitic Diseases 3rd edition Despommier DD, Gwadz RW, Hotez PJ., New York: Springer Verlag, 1995.

6. Clinical Parasitology. Beaver PC, Jung RC, Cupp EW. 9th edition. Philadelphia: Lea & Febiger, 1984. (the classic text on medical parasitology- unique and invaluable reference, but out of print)

7. Tropical Infectious Diseases. Principles, Pathogens, and practice. Guerrant RL, Walker DH, Weller PF. Philadelphia: Churchill Livingstone, 1999 ($295; $236 from Amazon.com)

Suggested Reading- (General background)

1. Pathology of Infectious Diseases. Connor,DH, et al. Stamford, Connecticut: Appleton and Lange, 1997.

2. Infectious Disease Epidemiology: Theory and Practice. Graham, NM, Masters CF, Nelson KE. Aspen Publishers, 2000.

3. International Health: beyond the year 2000. Velji AM (ed). Infectious Disease Clinics of North America, volume 9, number 2, 1995.

4. Chemotherapy of Parasitic Diseases. Campbell WC, Rew RS. New York: Plenum Press, 1986.

5. WHO Model Prescribing Information: Drug Used in Parasitic Diseases. Geneva: World Health Organization, 1990

6. Pathology of Tropical and Extraordinary Diseases. Binford CH, Connor DH. Vols I and II. Washington, DC: Armed Forces Institute of Pathology, 1978.

7. Atlas of Human Parasitology. Ash LR, Orihel TC. 4th ed. Chicago: American Society of Clinical Pathologists, 1997.

8. Parasites in Human Tissues. Orihel TC Ash LR. Chicago ASCP Press, 1995

9. A Colour Atlas of Arthropods in Clinical Medicine. Peters W. London: Wolfe Publishing, 1992.

10. Arthropods of Medical Importance. 2nd ed. Goddard J. Boca Raton: CRC Press, 1996
11. Illustrated History of Tropical Diseases. Cox FEG (ed) London: The Welcome Trust, 1996

12. Infection and Environment. Kaplan C. Woburn, MA: Butterworth-Heinemann, 1997.

13. Parasitic Diseases. Maguire JH, Keystone (eds). Infectious Disease Clinics of North America, volume 7, number 3, 1993.

14. Infectious Diseases of Humans: Dynamic and control. Anderson RM, May RM. Oxford: Oxford University Press, 1991.

15. Parasitic and Infectious Diseases: Epidemiology and Ecology. Scott ME, Smith G. San Diego: Academic Press, 1992.

16. Emerging Infections. Krause RM, ed. San Diego: Academic Press, 1998

17. Parasitic disease in Water Resources development. The need for Intersectoral Negotiation. Geneva: World Health Organization, 1993.

18. Methods for field Trials of Interventions against Tropical Diseases. A toolbox. Smith PG, Morrow RH. Oxford: Oxford University Press, 1991.

19. Immunity to Parasites: How Parasitic Infections are Controlled. Cambridge: Cambridge University Press, 1996.

20. Tropical Medicine and Parasitology: Classic Investigations. Kean BH, Mott KE, Russell AJ. Vols I and II. Ithaca, NY: Cornell University Press, 1978.

21. Medical and Veterinary Entomology. 2nd ed. Kettle, DS. Wallingford, UK: CAB International, 1995.

22. Tropical Neurology. Shakir RA, Newman PK, Poser CM (eds). London: WB Saunders, 1996

23. Molecular Approaches to Parasitology. Boothroyd JC, Komuniecki R (eds). New York: Wiley-Liss, 1995.

24. Emerging Infections. Microbial threats in the United States. Lederberg J, Shope RE, Oaks Sc, Jr.(eds). Washington, D.C. National Academy Press, 1992.

Epidemiology of Infectious Diseases: (Partial) List of Courses

Infectious Disease related courses

Harvard School of Public Health

IID201 Ecological and Epidemiological Control of Parasitic Diseases
IID202 Tuberculosis
IID206 Biology and Control of Insect Vectors of Human Health
IID216 Molecular and Cell Biology of Parasites
IID 208 Immunology of Infectious Diseases
IID 232 Vector-borne and zoonotic infections
IID 233 Infections transmitted through food and water
EPI 255a Epidemiology of HIV infection I: Etiology, Natural History, and Transmission
EPI 256 Epidemiology of HIV infection II: Design and Conduct of Therapeutic and Prevention Interventions
EPI 260d Mathematical Modeling of Infectious Diseases
EPI 501 Dynamics of Infectious Diseases
EPI 519 Evolutionary Epidemiology of Infectious Disease
BIO 508 Genomic Data Manipulation
GHP 539 The Social, Economic, and Political Dimensions of Infectious Disease in Developing Countries

Harvard Medical School

Microbiology 201. Molecular Biology of the Bacterial Cell
Microbiology 202. Molecular Basis of Bacterial Pathogenesis and Host Response
Microbiology 300qc. Advanced Topics in Microbiology and Molecular Genetics
*Microbiology 205. Mechanisms of Microbial Pathogenesis
Microbiology 210. Microbial Sciences: Chemistry, Ecology, and Evolution
Microbiology 301qc. Molecular Mechanisms of Microbial Pathogenesis
Microbiology 302qc. Introduction to Infectious Disease Research: Infectious Diseases Consortium Boot Camp
Microbiology 213. Social Issues in Biology
*Virology 200. Introduction to Virology
Virology 201. Virology
Virology 330. Critical Readings in Virology
Virology 300qc. Advanced Topics in Virology
Virology 301qc. Advanced Topics in Virology - Viral Oncology
Immunology 201. Principles of Immunology
Immunology 202. Advanced Principles of Immunology
Immunology 204. Critical Readings for Immunology
Immunology 303qc. The Warring Genomes: Innate Immunity and Host Defense
Immunology 304qc. Current Concepts in Mucosal Immunology
Immunology 306qc. Systems Immunology

Harvard University

MCB 121. The Microbes
MCB 169. Molecular and Cellular Immunology
OEB 192. Microbial Evolution
OEB 221. Microbial Diversity
[OEB 279. Microbial Metabolic Systems] (2014-2015)
[OEB 282. Genomics and Evolution of Infectious Disease] (2014-2015)

MIT

7.493J	Microbial Genetics and Evolution
7.62	Microbial Physiology
7.63	Immunology
7.66	Molecular Basis of Infectious Disease
20.106J	Systems Microbiology