

Environment and Disease

Fall 2002

<http://biology.bard.edu/tibbetts/EnvDis/>

Instructors:

Michael Tibbetts - Hegeman 301
Craig Anderson - Hegeman 205
Sven Anderson - Albee 304
Matthew Deady - Hegeman 108
John Ferguson - Hegeman 304
Mark Halsey Albee 315
Felicia Keesing - Hegeman 310
Frank Scalzo - Preston 127

Text:

Ecosystem Change And Public Health. eds. J.L. Aron & J.A. Patz. The Johns Hopkins University Press. © 2001

Exams:

65% of the final grade will be based upon four equally weighted exams - all except the last will be held during laboratory periods. *Exams will not be given after their scheduled date! No excuses and no exceptions!*

Laboratory:

25% of the final grade will be based upon laboratory performance, which will be assessed by 6 lab reports.

Paper:

The final 10% of your grade will be based upon a paper. You will be expected to report - in no more than 5 pages - on an article or set of related articles from either the popular or technical literature on a subject relating to one of the topics we cover this semester. Your charge is to convince us that you understand the article and all of its implications. Write it assuming the reader is as familiar with the topic as one of your classmates. You should hand the article in with your paper, and yes, spelling and grammar count. Feel free to ask any of us for help finding an article but get a final O.K. from Mike before beginning to write!



Global Warming and Malaria		
9/3	<p>Introduction (Tibbetts)</p> <p>A guide to the climate change convention and its Kyoto protocol [http://unfccc.int/resource/guideconvkp-p.pdf]</p> <p>Epstein, P.R. Is global warming Harmful to Health? <i>Sci Am.</i> 283 : 50-57 (2000)</p>	Aron and Patz, Chapter 6
9/5	<p>Malaria: symptoms & natural history (Ferguson)</p> <p><i>It is important that you read these articles before coming to class and that you read the Desowitz article first!!</i></p> <p>Desowitz, R.S. In another village a mother dies. Chapter 8 of <i>The Malaria Capers: More Tales of Parasites and People, Research and Reality</i>. New York: W. W. Norton, 1991, pp. 107-122.</p> <p>Roueché, B. Shiver and burn. <i>The Orange Man and Other Narratives of Medical Detection</i>. Boston: Little, Brown, 1971, pp. 39-68.</p>	
9/10	<p>Greenhouse gasses and the CO₂ cycle (C. Anderson)</p> <p><i>Read these articles before coming to class!</i></p> <p>Pocklington, R., Drinkwater, K. and Morgan, R. Reasons for Scepticism about Greenhouse Warming Canadian Chemical News. October 1993; pg.19-22</p> <p>Karl, T.R., Nicholls, N. and Gregory, J. The coming climate. <i>Sci Am.</i> 276: 78-83 (1997)</p>	Aron and Patz, Chapters 7 & 8
9/12	The dynamics of global warming (Deady)	
9/17	The physics of climate (Deady)	
9/19 & 9/24	<p>Models: what are they, why are they useful (S. Anderson)</p> <p>McGuffie, K. and Henderson-Sellers, A. A History of and Introduction to Climate Models. Chapter 2 of <i>A Climate Modelling Primer</i> 2nd edition. John Wiley and Sons Inc. © 1999</p> <p>Smith, T.M., Karl, T.R. and Reynolds, R.W. How Accurate Are Climate Simulations? <i>Science</i> 296: 483-484 (2002)</p> <p>Grassl, H. Status and Improvements of Coupled General Circulation Models <i>Science</i> 288: 1991-1997 (2000)</p>	
10/1 - 10/8	The relationship between climate change and the distribution of <i>anophles</i> (Keesing)	<i>for 10/3-</i> Aron and Patz,

	<p><i>Read these articles before coming to class on the dates indicated!</i></p> <p>for 10/8 - Reiter, P. From Shakespeare to Defoe: Malaria in England in the Little Ice Age. <i>Emerging Infectious Diseases</i> 6:1-11 (2000)</p> <p>for 10/8 - Zucker, J.R. Changing Patterns of Autochthonous Malaria Transmission in the United States: A Review of Recent Outbreaks <i>Emerging Infectious Diseases</i>. 2:37-43 (1996)</p> <p>for 10/10 - Garrett, L. Health Transition: The age of optimism - setting out to eradicate disease. From: <i>The Coming Plague: newly emerging diseases in a world out of balance</i>. Farrar Straus and Giroux ©1994</p> <p>for 10/10 - Sachs, J. and Melaney, P. The economic and social burden of malaria. <i>Nature</i> 415: 680-685 (2002)</p> <p>optional - Martens, W.J.M., Niessen, L.W., Rotmans, J., Jetten, T.H., and McMichael, A.J. Potential Impact of Global Climate Change on Malaria Risk. <i>Environ. Health Persp</i> . Volume 103 (1995)</p> <p>Rogers, D.J. and Randolph, S.E. The Global Spread of Malaria in a Future, Warmer World <i>Science</i> 289:1763-1766 (2000)</p> <p>Dye, C & Reiter, P. Temperatures Without Fevers? <i>Science</i> 289 : 1697-1698 (2000)</p>	Chapter 12
10/2	Exam I (covers lecture and laboratory material from and including 9/3 - 9/24)	
10/17	<p><i>Plasmodium</i> and <i>Anopheles</i> genomes sequenced (Tibbetts)</p> <p><i>Read these articles before coming to class!</i></p> <p>Butler, D. What difference does a genome make? <i>Nature</i> 419: 426-428 (2002)</p> <p>Miller, L.H. and Brian Greenwood, B. Malaria - a Shadow over Africa. <i>Science</i> 298:121-122 (2002)</p> <p>Clarke, T. Mosquitoes minus malaria. <i>Nature</i> 419: 429-430 (2002)</p>	

Persistent Organic Pollutants		
10/22	The chemistry of these compounds: focus on structure. (C. Anderson)	
10/24	Protein structure and steroid hormone receptors	
10/29	What do they do: basic toxicology & endocrinology (Scalzo) estrogen receptor web site http://www.ks.uiuc.edu/Research/pro_DNA/ster_horm_rec/dbd/	
10/30	Exam II (covers lecture and laboratory material from and including 9/26 - 10/24)	
10/31	What do they do: the evidence (Scalzo) <i>Read these articles before coming to class</i> Safe, S.H. Endocrine disruptors and human health - Is there a problem? <i>Environ Health Perspect.</i> 108 487-493 (2000) Longnecker, M.P., Rogan, W.J. and Lucier, G. The human health effects of DDT (dichlorodiphenyl-trichloroethane) and PCBs (polychlorinated biphenyls) and an overview of organochlorines in public health. <i>Annu. Rev. Public Health.</i> 18 : 211-44 (1997)	
11/5	How do they get into us: bioaccumulation (Keesing)	
11/7	Case study: polychlorinated biphenyls (PCBs) (Keesing)	
11/12	Case study: aldrin and dieldrin (Tibbetts) Fisher, B.E.. Most Unwanted persistent organic pollutants. <i>Environmental Health Perspectives</i> Volume 107, Number 1, January 1999	

Ozone Depletion & Skin Cancer		
11/14	Introduction (Tibbetts) <i>Read this article before coming to class!</i> Leffell, D.J. and Brash, D.E. Sunlight and Skin Cancer. <i>Sci Am.</i> 275 :52-59 (1996)	
11/19	Atmospheric chemistry: focus on reaction mechanisms (C. Anderson)	
11/20	Exam III (covers lecture and laboratory material from and including 10/29 - 11/19)	
11/21	Definition of the different "spheres," em spectrum & U.V. absorption (Deady)	
11/26	Cancer as a non-genetic disease (Tibbetts)	Aron and Patz, pages 201-208
12/3 & 12/5	Cancer as a genetic disease (Tibbetts) <i>Read this article before coming to class!</i> Harvard Health Letter. July 2000. Skin Cancer: Is Sunscreen an Enabler?	
Biodiversity Loss & Lyme Disease		
12/10 - 12/17	The relationship between habitat fragmentation and Lyme disease (Keesing) <i>Read these articles before coming to class!</i> Ostfeld, R. The ecology of Lyme-disease risk. <i>American Scientist</i> , 85:338-346 (1997) Ostfeld R. and Keesing F. Biodiversity and disease risk: the case of Lyme Disease Conservation <i>Biology</i> , 14 : 722-728 (2000)	
12/19	Exam IV (covers lecture and laboratory material from and including 11/21 - 12/17)	