

School of Public Health

Syllabus and Course Information



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

PubH 6385-001

Epidemiology and Control of Infectious Diseases

Spring Semester, 2017

Credits:	2
Meeting Days:	Mondays and Wednesday
Meeting Time:	2:30-4:30 PM
Meeting Place:	Moos 1-450
Instructor:	Alan Lifson, MD, MPH
Office Address:	492 WBOB
Office Phone:	612-626-9697
E-mail:	lifso001@umn.edu
Office Hours:	By appointment
TA:	Katie Tastad
E-mail:	reinh121@umn.edu

I. Course Description

The purpose of this graduate level course is to learn more about the principles and practice of infectious disease epidemiology, including how communicable diseases and their control affects public health locally, nationally and internationally. We will explore infectious diseases from a variety of different perspectives, in different institutions, and as it affects different populations

II. Course Prerequisites

PUBH 6320 Fundamentals of Epidemiology or PUBH 6341 Epidemiologic Methods I

III. Course Goals and Objectives

Learning objectives for this course include greater appreciation and understanding of:

- General principles of infectious disease epidemiology, including: Principles of Infectious Diseases; Outbreak Investigation; Role of the Public Health Laboratory; Disease Surveillance; Principles of Screening and Screening Tests
- Major infectious diseases and modes of transmission, including: Food-borne Illness; Zoonotic Diseases; Tuberculosis; Influenza; Vector-Borne Diseases; Malaria; Other Parasitic Diseases; HIV/AIDS; Sexually Transmitted Diseases; Viral Hepatitis; Antibiotic Resistant Bacteria

- Different control and evaluation strategies for infectious diseases, including: Vaccination; Nosocomial Infections; Behavior Change and HIV/STDs; Blood Safety; Immigrant and Refugee Health; International Research in Resource Poor Settings; Critical Reading of Medical Literature

IV. Methods of Instruction and Work Expectations

Methods of instruction include lectures, in-class discussion, readings, and take-home exercises. Because this is an integral part of the class, and out of respect to the many outside lecturers who are contributing their time and expertise, all students are expected to attend class.

Over the course of this semester, students will be exposed to a variety of perspectives, reflecting different cultures, lifestyles, personal beliefs, and experiences. Students are expected to be respectful of instructors and their fellow students, and have a right to expect such respect in return. Concerns in this regard should be discussed as soon as possible with either the Instructor or TA.

V. Course Text and Readings

"Infectious Disease Epidemiology", Third Edition, edited by Kenrad Nelson and Carolyn Williams. Jones and Bartlett, 2014.

"Control of Communicable Diseases Manual", 20th Edition, edited by David L. Heymann. American Public Health Association, 2015.

"Annual Summary of Communicable Diseases Reported to the Minnesota Department of Health, 2015". Minnesota Department of Health. At: www.health.state.mn.us/divs/idepc/newsletters/dcn/sum15/2015dcn.pdf

Additional readings and handouts may be given out during the course of the class.

A copy of text texts for this course will be placed on reserve at the Biomedical Library in Diehl Hall. The MDH Disease Control Newsletter is posted to the class web site.

VI. Course Outline/Weekly Schedule

WEEK 1: Monday, 3/20/17

Speaker: Alan Lifson

Topic: Introduction to Infectious Disease Epidemiology

Time: 2:30 PM-4:25 PM

Readings:

Nelson and Williams, Chapter 2: Epidemiology of Infectious Disease: General Principles

Nelson and Williams, Chapter 13: Emerging and New Infectious Diseases

Wednesday, 3/22/17

Speaker: Alan Lifson

Topic: Outbreak Investigation

Time: 2:30 PM-4:25 PM

Readings:

Control of Communicable Disease Manual: "Botulism"

Nelson and Williams, Chapter 5: Outbreak Epidemiology

ASSIGNMENT 1 HANDED OUT

WEEK 2: Monday, 3/27/17

Speaker: Kirk Smith <kirk.smith@health.state.mn.us>

Topic: Food-borne Illness

Time: 2:30 PM-3:25 PM

Readings:

Nelson and Williams, Chapter 20: Diarrheal Diseases

Control of Communicable Disease Manual: "Campylobacter", "Salmonella"

MDH Annual Summary: Campylobacteriosis, E. coli O157, Listeriosis, Salmonella, Shigella

Monday, 3/27/17

Speaker: Alan Lifson

Topic: Disease Surveillance and Screening

Time: 3:30 PM-4:25 PM

Readings:

Nelson and Williams, Chapter 4: Prevention of Infectious Diseases

Centers for Disease Control and Prevention. Updated guidelines for evaluating public health surveillance systems: recommendations from the guidelines working group. MMWR 2001;50(No. RR-13).

Wednesday, 3/29/17

Speaker: Rich Danila <richard.danila@health.state.mn.us>

Topic: Influenza

Time: 2:30 PM-3:25 PM

Readings:

Nelson and Williams, Chapter 15: Epidemiology and Prevention of Influenza

Nelson and Williams, Chapter 19: Epidemiology of Acute Respiratory Infections

Control of Communicable Disease Manual: "Influenza"

MDH Annual Summary: Influenza

Wednesday, 3/29/16

Speaker: Alan Lifson

Topic: Tuberculosis

Time: 3:30 PM-4:25 PM

Readings:

Nelson and Williams, Chapter 18: Tuberculosis

Control of Communicable Disease Manual: "Tuberculosis"

MDH Annual Summary: Tuberculosis

ASSIGNMENT 1 DUE

ASSIGNMENT 2 HANDED OUT

WEEK 3: Monday, 4/3/17

Speaker: Alan Lifson

Topic: HIV/AIDS

Time: 2:30 PM-3:25 PM

Readings:

Nelson and Williams, Chapter 22: HIV/AIDS

Control of Communicable Disease Manual: "HIV/AIDS"

MDH Annual Summary: HIV/AIDS

Monday, 4/3/17

Speaker: Alan Lifson

Topic: Sexually Transmitted Diseases

Time: 3:30 PM-4:25 PM

Readings:

Nelson and Williams, Chapter 24: Sexually Transmitted Diseases

Control of Communicable Disease Manual: "Chlamydia" "Herpes simplex", Syphilis

MDH Annual Summary: Sexually transmitted diseases (gonorrhea, chlamydia, syphilis)

Wednesday, 4/5/17

Speaker: Dave Neitzel <david.neitzel@health.state.mn.us>

Topic: Vector-Borne Diseases

Time: 2:30 PM-3:25 PM

Readings:

Nelson and Williams, Chapter 25: Emerging Vector-Borne Diseases

Nelson and Williams, Chapter 26: Lyme Disease

Control of Communicable Disease Manual: "Lyme"

MDH Annual Summary: Anaplasmosis, Arboviral disease, Babesiosis, Lyme

Wednesday, 4/5/17

Speaker: Alan Lifson

Topic: Malaria

Time: 3:30 PM-4:25 PM

Readings:

Nelson and Williams, Chapter 27: The Epidemiology and Control of Malaria

Control of Communicable Disease Manual: "Malaria"

ASSIGNMENT 2 DUE

ASSIGNMENT 3 HANDED OUT

WEEK 4: Monday, 4/10/17

Speaker: Jeff Bender <bende002@umn.edu>

Topic: Zoonotic Diseases

Time: 2:30 PM-3:25 PM

Readings:

Nelson and Williams, Chapter 21: Transmissible Spongiform Encephalopathies

Control of Communicable Disease Manual: "Rabies"

Monday, 4/10/17

Speaker: Alan Lifson

Topic: Reading the medical literature

Time: 3:30 PM-4:25 PM

Readings:

Nelson and Williams, Chapter 3: Study Design

Wakefield AJ, et al. Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. Lancet 1998;351: 637-41

Control of Communicable Disease Manual: "Measles"

Wednesday, 4/12/17

Speaker: Alan Lifson

Topic: Viral Hepatitis

Time: 2:30 PM-3:25 PM

Readings:

Nelson and Williams, Chapter 23: Viral Hepatitis

Control of Communicable Disease Manual: "Viral Hepatitis"

MDH Annual Summary: Viral hepatitis A, B, and C

Wednesday, 4/12/17

Speaker: Alan Lifson

Topic: Parasitic Diseases

Time: 3:30 PM-4:25 PM

Readings:

Nelson and Williams, Chapter 28: Epidemiology of Helminth Infections

Control of Communicable Disease Manual: "Amebiasis" "Schistosomiasis" "Trypanosomiasis", "Giardia", "Cryptosporidiosis"

ASSIGNMENT 3 DUE

ASSIGNMENT 4 HANDED OUT

WEEK 5: Monday, 4/17/17

Speaker: Kris Ehresmann <kristen.ehresmann@health.state.mn.us>

Topic: Vaccine Preventable Diseases

Time: 2:30 PM-3:25 PM

Readings:

Nelson and Williams, Chapter 11: Vaccines: Past, Present, and Future

Nelson and Williams, Chapter 16: Measles

Control of Communicable Disease Manual: "Pertussis"

MDH Annual Summary: H. influenza, Measles, Meningococcal disease, Mumps, Pertussis, Strep. pneumoniae, Tetanus, Varicella/zoster

Monday, 4/17/17

Speaker: Jeff McCullough <mccul001@umn.edu>

Topic: Screening and Blood Safety

Time: 3:30 PM-4:25 PM

Readings:

Roberts DJ, et al. Problems and approaches for blood transfusion in the developing countries. Hematol Oncol Clin N Am 30 (2016) 477–495

Wednesday, 4/19/17

Speaker: Ruth Lynfield <ruth.lynfield@health.state.mn.us>

Topic: Invasive Bacterial Infections/Antibiotic Resistance

Time: 2:30 PM-3:25 PM

Readings:

Control of Communicable Disease Manual: "Staphylococcal Disease" "Pneumococcal Pneumonia"

MDH Annual Summary: Methicillin-resistant Staph (MRSA),

Wednesday, 4/19/17

Speaker: Joanne Bartkus <joanne.bartkus@state.mn.us>

Topic: Role of the Public Health Laboratory

Time: 3:30 PM-4:25 PM

Readings:

Nelson and Williams, Chapter 9: Molecular Epidemiology and Infectious Diseases
(technical material -- read as fits your background and understanding)

ASSIGNMENT 4 DUE

ASSIGNMENT 5 HANDED OUT

WEEK 6: Monday, 4/24/17

Speaker: Mary Ellen Bennett

Topic: Healthcare Associated Infections/Infection Prevention

Time: 2:30 PM-3:25 PM

Readings:

Nelson and Williams, Chapter 14: Healthcare-Associated Infections

Monday, 4/24/17

Speaker: Alan Lifson

Topic: Ebola

Time: 3:30 PM-4:25 PM

Readings:

Control of Communicable Disease Manual: "Ebola"

PREVAIL II Study Team. A randomized controlled trial of ZMapp for Ebola virus infection. NEJM 2016;375:1448-56.

Wednesday, 4/26/17

Speaker: Lisa Lynch-Jones <lisa.lynch_jones@parknicollet.com>

Topic: Travel Medicine

Time: 2:30 PM-3:25 PM

Readings:

Kortepeter MG et al. Health care workers and researchers travelling to developing world clinical settings: disease transmission risk and mitigation. Clin Infect Dis 2010;51:1298-305.

Freedman, Chen, Kozarsky. Medical considerations before international travel. NEJM 2016;375:247-60.

Wednesday, 4/26/17

Speaker: Alan Lifson

Topic: Bioterrorism

Time: 3:30 PM-4:25 PM

Readings:

Barras, Greub. History of biological warfare and bioterrorism. Clin Micro Infec 2014;20:497-502.

Adalja, Toner, Inglesby. Clinical management of potential bioterrorism-related conditions. NEJM 2015;372:954-62.

ASSIGNMENT 5 DUE

ASSIGNMENT 6 HANDED OUT

WEEK 7: Monday, 5/1/17

Speaker: Mike Osterholm <mto@umn.edu>

Topic: Zika

Time: 2:30 PM-3:25 PM

Readings:

Guzman, Harris. Dengue. Lancet 2015;385:453-65.

Additional reading TBD

Monday, 5/1/17

Speaker: Katie Tastad

Topic: Plague

Time: 3:30 PM-4:25 PM

Readings:

Nelson and Williams, Chapter 1: Early History of Infectious Diseases

Control of Communicable Disease Manual: "Plague"

Wednesday, 5/3/17

Speaker: Alan Lifson

Topic: Social Determinants: Poverty, culture and stigma

Time: 3:30 PM-4:25 PM

Readings:

WHO. Global Report for Research on Infectious Diseases of Poverty, 2012. Chapter 1: Why research infectious diseases of poverty, 10-40.

Wednesday, 5/3/17

Speaker: Alan Lifson

Topic: Concluding Remarks: Epidemiology of Infectious Diseases

Time: 2:30 PM-4:25 PM

ASSIGNMENT 6 DUE

VII. Evaluation and Grading

Below is a list of the activities by which you will be graded and their assigned weights:

Activity	Date due	Percent of grade
Assignment 1	March 29	14%
Assignment 2	April 5	14%
Assignment 3	April 12	14%
Assignment 4	April 19	14%
Assignment 5	April 26	14%
Assignment 6	May 3	14%
Participation	Everyday	16%

Final grades will be assigned as follows:

Percent	Grade
100.0 - 92.5	A
89.9 - 92.4	A-
87.3 - 89.8	B+
82.4 - 87.2	B
80.0 - 82.3	B-
77.5 - 79.9	C+
72.4 - 77.4	C
70 - 72.3	C-
69 or below	F

Students may elect to take the class on a S/N basis, with satisfactory achievement equivalent to a grade of C or better.

For additional information, please refer to:

<http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html>.

Assignments are take-home exercises on questions that require your thoughtful response to a public health problem or challenge related to infectious diseases. Responses should be based on applying the principles of infectious disease epidemiology to this specific situation. In some cases, there is not a single right answer, and it is important that respondents justify whatever answer they come up with. This assignment is open book. You are free to use your class notes and reading from the class. However, this take-home assignment is a solitary exercise, so each student should do their own work. Assignments are due in class on the due date indicated in the syllabus. In fairness to those who have turned in their papers on time, late papers will be penalized (1 point/day out of 10 total). We hope students will find this an interesting exercise that will stretch their thinking a bit.

Assignments are handed out at the end of class, and also posted to the class web site. Students should take time to make sure that their papers are well organized and written; written communication is important in public health.

Class Attendance

A sign-up sheet will be circulated each class, and will be counted as part of the student's overall grade in terms of participation. This reflects the core belief that coming to and participating in class is an essential part of the learning process. In addition, all of the instructors for this class typically devote considerable time and effort towards their lectures (often completely revising them each year), and having all students present for their talks is an indication of respect for their efforts in supporting student education.

Course Evaluation

The SPH will collect student course evaluations electronically using a software system called CourseEval: www.sph.umn.edu/courseval. The system will send email notifications to students when they can access and complete their course evaluations. Students who complete their course evaluations promptly will be able to access their final grades just as soon as the faculty member renders the grade in SPHGrades: www.sph.umn.edu/grades. All students will have access to their final grades through OneStop two weeks after the last day of the semester regardless of whether they completed their course evaluation or not. Student feedback on course content and faculty teaching skills are an important means for improving our work. Please take the time to complete a course evaluation for each of the courses for which you are registered.

Incomplete Contracts

A grade of incomplete "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., documented illness or hospitalization, death in family, etc.), the student was prevented from completing the work of the course on time. The assignment of an "I" requires that a contract be initiated and completed by the student before the last official day of class, and signed by both the student and instructor. If an incomplete is deemed appropriate by the instructor, the student in consultation with the instructor, will specify the time and manner in which the student will complete course requirements.

Extension for completion of the work will not exceed one year (or earlier if designated by the student's college). For more information and to initiate an incomplete contract, students should go to SPHGrades at: www.sph.umn.edu/grades.

University of Minnesota Uniform Grading and Transcript Policy

A link to the policy can be found at onestop.umn.edu.

VIII. Other Course Information and Policies

Grade Option Change (if applicable):

For full-semester courses, students may change their grade option, if applicable, through the second week of the semester. Grade option change deadlines for other terms (i.e. summer and half-semester courses) can be found at onestop.umn.edu.

Course Withdrawal:

Students should refer to the Refund and Drop/Add Deadlines for the particular term at onestop.umn.edu for information and deadlines for withdrawing from a course. As a courtesy, students should notify their instructor and, if applicable, advisor of their intent to withdraw.

Students wishing to withdraw from a course after the noted final deadline for a particular term must contact the School of Public Health Office of Admissions and Student Resources at sph-ssc@umn.edu for further information.

Student Conduct Code:

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see:

http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

Use of Personal Electronic Devices in the Classroom:

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference:

<http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Scholastic Dishonesty:

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see:

<http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

Makeup Work for Legitimate Absences:

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: <http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html>.

Appropriate Student Use of Class Notes and Course Materials:

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Sexual Harassment:

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: <http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>

Equity, Diversity, Equal Opportunity, and Affirmative Action:

The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf.

Disability Accommodations:

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center Student Services is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DRC at 612-626-1333 or drc@umn.edu to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course. For more information, please see the DS website, <https://diversity.umn.edu/disability/>.

Mental Health and Stress Management:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.

The Office of Student Affairs at the University of Minnesota:

The Office for Student Affairs provides services, programs, and facilities that advance student success, inspire students to make life-long positive contributions to society, promote an inclusive environment, and enrich the University of Minnesota community.

Units within the Office for Student Affairs include, the Aurora Center for Advocacy & Education, Boynton Health Service, Central Career Initiatives (CCE, CDes, CFANS), Leadership Education and Development – Undergraduate Programs (LEAD-UP), the Office for Fraternity and Sorority Life, the Office for Student Conduct and Academic Integrity, the Office for Student Engagement, the Parent Program, Recreational Sports, Student and Community Relations, the Student Conflict Resolution Center, the Student Parent HELP Center, Student Unions & Activities, University Counseling & Consulting Services, and University Student Legal Service.

For more information, please see the Office of Student Affairs at <http://www.osa.umn.edu/index.html>.

Academic Freedom and Responsibility: *for courses that do not involve students in research:*

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.*

OR:**Academic Freedom and Responsibility, for courses that involve students in research**

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom and conduct relevant research. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.* When conducting research, pertinent institutional approvals must be obtained and the research must be consistent with University policies.

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, (Dr Kristin Anderson, SPH Dean of Student Affairs), or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.

** Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".*

Student Academic Success Services (SASS): <http://www.sass.umn.edu>:

Students who wish to improve their academic performance may find assistance from Student Academic Support Services. While tutoring and advising are not offered, SASS provides resources such as individual consultations, workshops, and self-help materials.

"Sometimes you can get shown the light in the strangest of places if you look at it right" J. Garcia, R. Hunter