Medical Entomology
BIMS 4333.001
Department of Life Sciences
Fall 2017

A. COURSE INFORMATION

<table>
<thead>
<tr>
<th>Course number/section:</th>
<th>BIMS 4333.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class meeting time:</td>
<td>MWF 10:00pm – 10:50pm</td>
</tr>
<tr>
<td>Class location:</td>
<td>Lecture: CS 101</td>
</tr>
<tr>
<td>Course Website:</td>
<td><a href="https://bb9.tamucc.edu/">https://bb9.tamucc.edu/</a></td>
</tr>
</tbody>
</table>

B. INSTRUCTOR INFORMATION

| Instructor:           | Dr. Judy Metcalf |
| Office location:      | EN 309 |
| Office hours:         | MTR 3:30 – 4:30pm; W 11:30-1:30, or by appointment |
| NOTE: From Dec 6 – Dec 15, office hours are by appointment only |
| Telephone:            | 361-825-3959 |
| e-mail:               | judy.metcalf@tamucc.edu |
| Appointments:         | A student may make an appointment to see me at times other than the scheduled office hours. I am available for consultation and extra help, but it is the student's responsibility to request such help. *If I am unavailable during office hours, I will post a note on my office door.* |

All communication with me via email must be through your school email address (yourname@islander.tamucc.edu). I will communicate with you through this email, so you must set up your account and check it regularly. It is your responsibility to check email frequently for important course announcements and updates. Confidential information will not be shared to any non-TAMU-CC email addresses.

C. COURSE DESCRIPTION

Catalog Course Description
An introduction to arthropods of medical and veterinary importance with particular emphasis on the critical roles that they play in their host group's health and well-being. GOALS AND

PREREQUISITES AND COREQUISITES

Prerequisites - Prerequisite: **Biol 1407 - Biology II.**

D. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook:

**Top Hat**
We will be using the Top Hat (www.tophat.com) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or via text message (SMS).
You can visit [http://tinyurl.com/THStudentRegistration](http://tinyurl.com/THStudentRegistration) for the Student Quick Start Guide which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system. An email invitation will also be sent to your email account once the course is created on Top Hat.

Top Hat will require a subscription. There are three options to choose from:
- $26 for 1 semester of unlimited access
- $38 for 1 year of unlimited access
- $75 for lifetime* access

E. **STUDENT LEARNING OUTCOMES AND ASSESSMENT**

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By successfully completing the requirements of this course, the student will:

F. Understand the variety of roles that arthropods play in regards to medical/veterinary health.

G. Understand the various areas of study within medical entomology.

H. Have learned specific facts regarding the natural history; morphology; physiology; and behavior of medically important arthropods.

I. Have learned about current disease issues such as St. Louis encephalitis and West Nile viruses in the United States through lecture information and by students’ literature reviews as out of class assignments.

J. Have learned about current disease issues on an international scale such as malaria, plague, yellow fever, dengue fever, typhus, and various arboviruses.

K. Understand past and current project strategies for controlling arthropods of medical importance.

L. Understand the role of certain arthropods as employed in forensic applications.

M. Development in leadership skills as a project team leader.

N. **INSTRUCTIONAL METHODS AND ACTIVITIES**

Instructional methods may include PowerPoint lectures, videos, group activities, quizzes, supplemental questions and homework, and weekly review sessions via supplemental instruction.
0. **MAJOR COURSE REQUIREMENTS AND GRADING**

Grades will be determined using the following grading distribution:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Exams</td>
<td>55%</td>
</tr>
<tr>
<td>Final Exam (100 points)</td>
<td>10%</td>
</tr>
<tr>
<td>Assignments &amp; Quizzes (including TopHat)</td>
<td>15%</td>
</tr>
<tr>
<td>Group Presentation</td>
<td>10%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
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</table>

**Lecture Examinations:** I will give four examinations, taking questions for these tests primarily from material covered in the lectures, from handouts and other assignments, and from readings in Mullen. Examinations may consist of essay, short-answer, compare-contrast, fill-in-the-blank, multiple-choice, matching, making and/or labeling drawings, and/or various types of “flex” questions (i.e., anything is fair game). The first three examinations are sequential (i.e., each examination covers material from one specific section of the course). The final examination is comprehensive (i.e., covers material from the entire course), accounts for 10% of your overall grade and is redemptive (i.e., it can replace single examination; or it can be your *entire* Lecture examination grade). Thus, your examination grade can come from a percentage derived from...

1) the final examination alone...

or 2) the average of the three examinations...

or 3) the average of the two highest examinations with the final used to replace the lowest examination...

... whichever method gives you the highest percentage.

**Lecture:** Assignments and Quizzes will be assigned through Blackboard, TopHat and in class. All lecture assignments and quizzes combine to form a Quiz and Assignment grade that will account for 15% of your overall grade.

**Group Presentations:** Students will research vectors and disease combinations in groups of 4 and will present their findings to the class via 15 minute presentations (10 minute presentation with 5 minutes for questions). Students grades will be based on the quality of the material presented, the quality of the presentation and overall participation in the group. This will account for 10% of your overall grade.

**Letter Grades:** Your final letter grade is based on your overall lecture grades (See above distribution). Statistical manipulations (e.g., curving) may be performed once—at the end of the semester—*not* for each examination. The final grading scale will also be determined at the end of the semester, but the cut-off for each grade will be *no higher* than the following:

A $\geq$ 90% > B $\geq$ 80% > C $\geq$ 70% > D $\geq$ 60% > F
I will rectify any clerical, mathematical, and/or other errors. However, you have one (1) week to notify me of such errors after an assignment, quiz or examination is returned.

I will not change a legitimate course grade just because you “need” it (for financial aid, to get into professional school, etc.). The grading section of this syllabus describes how I assign grades. Please be sure you earn enough points to get the grade you want. There will always be someone who just missed a D, or a C, or a B, or an A. Although I reserve the right to curve, doing so is usually not necessary. (Curves are based on statistical analysis of the entire class’s performance, not on the needs of individual students.) I have to draw lines between grades, and no matter where I draw them, someone is on the wrong side. Don’t let that someone be you. You have plenty of help in my class. Take advantage of the resources I offer. The reasons for receiving a grade of “I” (incomplete) are clearly defined in the University Catalog; this “grade” cannot be used simply to prevent a student from receiving an unwanted grade in a class.

I only discuss grades in person (i.e., I do not discuss grades or matters relating to grades over the telephone or by e-mail). If you wish to know your final grade before the official grade report is available on Sail, please see me in person or provide me with a self-addressed, stamped envelope.

P. COURSE POLICIES

• Attendance/Tardiness

Attendance is mandatory. All students are expected to attend all classes and labs. Should you miss a lecture or lab session, it is YOUR RESPONSIBILITY to find out what you missed, get notes, learn about changes in the syllabus, etc. There are no excused absences. Additionally, routinely being tardy to class is inconsiderate to me and to your classmates. Repeated lateness can result in dismissal from class. On time means being in your seat and being prepared to take notes, quizzes, or exams promptly at the starting time.

Once enrolled in a class, it is the student’s responsibility to arrange his or her schedule (work and personal) so that no regularly scheduled class or examination time is missed. Only unavoidable absences are excused, so routine personal events (e.g., vacations, weddings, birthday celebrations, reunions, non-emergency medical or dental visits, parent-teacher conferences, household or auto repairs) should be scheduled to avoid conflicts with classes. Oversleeping is never an acceptable excuse. Employment conflicts and school (including professional school) or work interviews should be arranged to avoid conflicts with your classes and are not acceptable excuses for absences, tardiness, or leaving class early. Texas waives jury duty for students, so jury duty is not an acceptable excuse.

• Late Work and Make-up Exams

You may always turn in assignments early. A missed grade due to absence or lateness will result in a score of ‘0’ for that assignment. Late work will not be accepted. There will be no make-ups for missed exams. If you know in advance that you will have an absence when an assignment is due, you must turn in that assignment before its due date.

For some university approved, scheduled events (athletics, military duty, etc.), you may arrange to take a lecture examination before (but not after) its scheduled date. (You should take a test as close to its originally scheduled time as possible, but you may not take a test more than one week before its originally scheduled time. You must obtain your instructor’s
approval at least one week before you wish to take the pre-test.) If you arrange to take any test at an alternate time and do not show for that appointment, then you forfeit the opportunity to take the test except at its originally scheduled time. Students who do not arrange to take examinations in advance will not be eligible for this special consideration. A written excuse from the university department involved or from the Office of Student Engagement and Success is required.

- **Extra Credit**
  No individual extra credit assignments will be available in this class. The grading scale is NOT subject to discussion. In other words, begging for points or last minute extra credit will get you nowhere. There are ample opportunities for improving your grade throughout the course.

  If you find yourself struggling with class, please come talk to me during office hours and we will review concepts that may be challenging. The sooner you see me, the better.

- **Cell Phone Use**
  Cellular Phones may be used to manipulate the TopHat software (although you may find laptops more effective). Other social use of the technology in class is strictly prohibited. (I will make exceptions for certain “emergency” personnel, but you must see me to obtain this). I will remove points if the rules are not respected.

- **Laptop Use**
  You may use your laptop to manipulate the TopHat software or to take notes. Any disruptive behavior on your computer (facebook, games, etc) will result in loss of points.

- **Food in Class**
  Please respect other students and limit your eating food in the class. I reserve the right to restrict food in the classroom if items are left behind or the room is left unclean.

- **Missed Exam**
  See section H.

- **Classroom/Professional Behavior**
  You are responsible adult university students. I will treat you as such, and I will expect you to act as such.

  Scholastic dishonesty will not be tolerated. It will be prosecuted to the full extent of university regulations. In addition, the following procedures will be enforced:
- You must be prepared to present a photo ID at all examinations.
- Different test forms may be prepared for a single examination. To ensure that the appropriate key will be used to grade your answer sheet, always follow instructions on the test or answer sheet, or given orally by the instructor.
- If you leave an examination room—for any reason—you must hand in your answer sheet and you will not be allowed to resume the examination. Attend to personal matters (e.g., rest room visits) before the examination.
- Be on time! Anyone arriving after the first test-taker has completed an examination and left the room will not be allowed to take that examination.
- Cheating and plagiarism are unacceptable behaviors.
• Students are not to give or receive help during testing
• Students are not to submit any work that is not their own product
• You will act with courtesy and common sense. I will not tolerate disruptive, disrespectful, or abusive behavior/language (including comments made on class assignments) directed toward anyone in this class (i.e., student or instructor). Violations range from talking during class to outright insubordination, and will result in penalties that range from the student being asked to stop to the student being “escorted” from the class—permanently. Children are not allowed in the rooms during lecture periods, or when the child’s guardian is working or studying “after hours.” Use of tobacco products (of any kind) is forbidden in lecture.

• You are responsible for your own education. You should not expect an instructor to take you by the hand, show you everything you need to know, and then have you regurgitate this information on an examination. This is not an effective way for self-motivated adults to learn. Students are responsible for all class and lecture notes; required assignments in the textbook and any additional handouts or assignments given by an instructor. This includes (but is not limited to)...
  o Knowing and meeting university-imposed deadlines (e.g., withdrawal dates of various types). This information is found in the online University Catalog, Course Schedule or elsewhere on the University website.
  o Knowing and meeting assignment dates and times—including any changes that may occur during the semester.
  o Checking your answers against a key as soon as possible. By all means check for any clerical errors, but a test score is not the end of the learning process. Always review your tests to determine why you missed questions. Making—and correcting—mistakes is an effective, natural way to learn material. Educators have a fancy term, reflective learning, for this simple process.
  o Keeping track of your progress (i.e., your grades, points you earn, and averages).
  o Asking for help. Instructors are available for consultation and extra help, but it is the student’s responsibility to request help.

Q. COLLEGE AND UNIVERSITY POLICIES

• Academic Integrity/Plagiarism.
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a grade of 0 for all involved on the first instance, subsequent issues could result in an automatic failing grade and reporting to appropriate university officials.

• Dropping a Class
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT
automatically result in your being dropped from the class. November 15, 2017 is the last day to drop a class with an automatic grade of “W” this term.

- **Classroom/professional behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Grade Appeals***
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Dean’s office in the college in which the course is taught or the Office of the Provost.

- **Disabilities Accommodations***
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at
Statement of Academic Continuity
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

R. OTHER INFORMATION

• Supplemental instruction (SI), Tutoring, and Other Services: To be successful in this course, and most others, you must cultivate good note-taking skills, organization skills, study habits, and test-taking strategies from the very beginning. Your lecture and laboratory instructors are always available for help, but don’t wait until it is too late! Students who have done well in this class in the past may have been hired to lead Supplemental Instruction (SI) sessions outside of class meeting times. You will receive a schedule of SI sessions separately from this syllabus. Please take advantage of your SI leader’s expertise. Attend SI sessions on a regular basis; don’t wait until the session before an examination to start attending SI sessions. A great way to prepare for the comprehensive final is to attend the SI session just after an examination. At these sessions, your SI leader can review any questions you had difficulty answering correctly. Asking questions about the questions you did not answer correctly will help you answer other questions about that concept correctly if they appear on the comprehensive final. The Center for Academic Student Achievement (CASA) (825-5933) provides free tutoring, test-taking strategies, and extra help. Take advantage of this service! The center is an invaluable source for help. Should you have test anxiety, stress problems or need help with study skills, the University Counseling Center (University Center, 825-2703) also provides a free service.

• Academic Advising: The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

• Follow instructions! The most common mistakes that cost students points result from failure to follow instructions.

• Bring two #2 pencils to each lecture examination (including the final examination); I neither provide nor sell pencils. (I will provide Scantron sheets for you.)

GENERAL DISCLAIMER
Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.
### S. Tentative Lecture Schedule

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>CHAPTER(S)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/4-9/8</td>
<td>Labor Day 9/4/17 – No Class</td>
<td>1 and 2</td>
</tr>
<tr>
<td></td>
<td>Course Overview, requirements, Introduction and Morphological adaptations</td>
<td></td>
</tr>
<tr>
<td>9/11-9/15</td>
<td>Epidemiology of vector-borne disease</td>
<td>3</td>
</tr>
<tr>
<td>9/18-9/22</td>
<td>Cockroaches (Blattaria), Lice (Phthiraptera)</td>
<td>5 and 6</td>
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<tr>
<td>9/25-9/29</td>
<td>True Bugs (Hemiptera); Beetles (Coleoptera); Fleas (Siphonaptera)</td>
<td>7, 8, and 9</td>
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<tr>
<td>10/2-10/6</td>
<td>Flies (Diptera), Moth Flies &amp; Sand Flies (Psychodidae), and Biting Midgest (Ceratopogonids)</td>
<td>Ch 10,11,12</td>
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<tr>
<td>10/9-10/13</td>
<td>Exam 1 – 10/13/17</td>
<td>13 &amp; 14</td>
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<tr>
<td></td>
<td>Black Flies (Simulidae), Start Mosquitoes (Culicidae)</td>
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<tr>
<td>10/16-10/20</td>
<td>Continue Mosquitoes (Culicidae); Horse Flies &amp; Deer Flies (Tabanidae)</td>
<td>14 &amp; 15</td>
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<tr>
<td>10/23-10/27</td>
<td>Muscid Flies (Muscidae); Tsetse Flies (Glossinidae)</td>
<td>16 &amp; 17</td>
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<tr>
<td>10/30-11/3</td>
<td>Myiasis, Forensic Entomology, Ants, Bees and Wasps (Hymenoptera)</td>
<td>18 &amp; 4, 21</td>
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<tr>
<td>11/6-11/10</td>
<td>Scorpions (Scorpiones) and Solpugids (Solifugae), Spiders (Araneae)</td>
<td>21, 22 &amp; 23</td>
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<tr>
<td>11/13-11/17</td>
<td>Exam 2 – 11/17/17</td>
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<td></td>
<td>Mites (Acari); Ticks (Ixodida)</td>
<td>24 &amp; 25</td>
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<td>11/20-11/24</td>
<td><strong>No Classes:</strong></td>
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<td></td>
<td>11/20/17 – Online Assignment TBD</td>
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<td></td>
<td>11/22-11/24 – Thanksgiving</td>
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<tr>
<td>11/27-12/1</td>
<td>Presentations (groups 1-3)</td>
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<td></td>
<td>Presentations (groups 4-6)</td>
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<td></td>
<td>Presentations (groups 7-9)</td>
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<tr>
<td>12/4</td>
<td>Presentations (groups 10-12)</td>
<td></td>
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<tr>
<td><strong>Finals</strong></td>
<td><strong>EXAM 3 &amp; FINAL EXAM: 12/13/17 (8:00am – 10:30am)</strong> (Comprehensive)</td>
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SUGGESTIONS FOR POSSIBLE RESEARCH PRESENTATION TOPICS (See Appendix at end of textbook for an additional list of Arthropod-Related viruses of Medical and Veterinary Importance)

1) *Anopheles quadrimaculatus* and *Plasmodium vivax* transmission in the US.
2) *Anopheles gambiae* and *P. falciparum* in tropical Africa.
3) *Anopheles albimanus* and malaria transmission in central America.
4) *An. Pseudopunctipennis* and malaria in South America.
5) *Ixodes scapularis* and transmission of babesiosis in northeastern US.
6) *Leishmania Mexicana* and *Lutzomyia sp.* in Mexico.
7) *L. donovani* and *Phlebotomus celiac* in Kenya.
8) *L. chagasi* and *Lutzomyia longipalpus* in central America.
9) *Glossina palpalis* and *Trypanosoma brucei* in equatorial Africa.
10) *Rhodnius prolixis* and Chagas disease in Brazil.
11) Black flies and Onchocerciasis in the Americas.
12) *Wuchereria bancrofti* and *Cx. Pipiens pallens* in the Western Pacific.
13) *Wuchereria bancrofti* and *Cx. Quinquefasciatus* in Africa.
14) *Wuchereria bancrofti* and *Aedes polynesiensis* in the South Pacific.
16) *Mansonella ozzardi* and *Culicoides furens* in the Americas.
17) *Dirofilaria immitis* and mosquitoes in the northeastern US.
18) Lyme disease in the north central US, and *Ixodes scapularis*.
19) Plague in the US today (northern rat flea).
20) Tularemia and *Chrysops discalis* in the US.
21) Scrub typhus in Southeast Asia (and mite that transmits).
22) Rickettsial pox and its mite vector.
23) Western equine encephalitis and either *Cx. Tarsalis* or *Aedes dorsalis*.
24) Venezuelan equine encephalitis in the US.
25) Yellow fever and *Aedes aegypti*.
26) Dengue in the Caribbean and *Aedes aegypti*.
27) St. Louis encephalitis and *Culex nigripalpus* in Florida (or same disease and *Culex pipiens* in the northeast.
28) LaCrosse encephalitis and *Aedes triseriatus* (in the Midwest or North Carolina).
29) Eastern equine encephalitis and *Culiseta melanura/Aedes sollicitans*.
30) Chikungunya virus and *Aedes albopictus* in East Africa and adjacent Islands.
31) West Nile virus and *Culex pipiens* (eastern US) or *Culex tarsalis* (western US).
32) Rift Valley fever in Africa.
33) Zika in the New World and *Aedes aegypti*. 