Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition and discrimination between foreign and self. Concepts applied to the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease.
1. Course Information:

Immunology, BIOL 465 (3); CRN 33201
Meeting Times: Tuesday/Thursday 8-9:30, Irving 201
Prerequisites: BIOL 105X; 106X and 310 or BIOL 111X and 112X; or permission of instructor.

2. Instructor: Jonathan Runstadler, M.S., D.V.M., Ph.D., Assistant Professor of Biology & Wildlife
   Office: Arctic Health Research Building Room 104
   Research Lab: Arctic Health Research Building Room 111
   Phone: 474-7038 (office)
   E-mail: j.runstadler@uaf.edu
   Mailbox: Irving I Room 211
   Office hours: Tuesday 2-4pm, or by appointment

3. Course Readings/Materials:


The 4th and 5th editions of this text are acceptable.

Blackboard Page: Students are expected to check the course webpage on Blackboard on a regular basis.
Login at http://classes.uaf.edu/webapps/login
Click “immunology”
Contact me by email if you are unable to access this site.

Email Notifications: On occasion, students will be contacted via email. I will assume that each student will check their university-assigned email address (username@uaf.edu) on a regular basis.

Journals in Immunology:
Immunological Investigations (Taylor & Francis)
Journal of Immunology
Developmental and Comparative Immunology (Elsevier)

4. Course Description:

Welcome to Immunology. The UAF Catalogue describes the topic of this course as follows: Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition and discrimination between foreign and self. Concepts applied to the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease (AIDS).

The goal of this course is to provide a basic understanding of the immune system in vertebrates, by studying its component parts and their interactions in health and disease. **This course is designed as the first encounter with immunology for students that have taken introductory biology courses. It will cover the fundamental facts and principles of immunology.**
The vertebrate immune system is a highly complex and interactive system evolved to provide self defense against pathogens. Immunology (or Immunobiology) is the study of the biological basis and mechanisms that govern host defense against infection.

**Course Organization:** The course will consist of **5 major themes**. We will spend 1 - 3 class periods on each topic. Questions and discussion throughout the course are encouraged and this syllabus should be considered flexible. We will **begin with a general overview** of the immune system and then study the major themes in more detail. These themes include the following:

1. Innate immunity
2. Diversity of immune response
3. Cellular immunity
4. Adaptive response to infection
5. Immune-related disease

An understanding of key concepts in immunology will be gained through pursuit of several course goals.

**5. Course Goals:**

1. To identify and understand the components of the immune system.
2. To describe innate mechanisms of immune protection.
3. To explain how the diversity of immune response is generated.
4. To describe antigen recognition and processing for immune presentation.
5. To understand the basis for interaction of innate and adaptive immunity.
6. To differentiate the functions of T cell and B cell subsets.
7. To explain the molecular and cellular basis for generating an immune response that is specific and different for different infections.
8. To see how immunological mechanisms result in disease.

We will achieve these goals by implementing a variety of instructional methods.

**6. Instructional Methods:**

1. **Lecture and Discussion:** I will lecture, and we will discuss the basic concepts of immunology. An important source for this information is from written material. The 5th edition of Janeway is free at [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=books](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=books); however, the interface is somewhat different than having the text on paper and the immunobiology interactive CD is not included. A personal computer running at least Windows 95 or Mac OS 7.5.3 is required to use the immunobiology interactive CD that is included with the textbook. The CD is a useful supplement, although there will be no assigned use of the CD.

   **Discussions of Scientific papers:** On occasion we will devote class time to the discussion of current or historically or seminal papers in the field of immunology. You will receive these at least two days in advance and are expected to thoroughly read and prepare for discussion of the material.

   You are expected to read the assigned textbook chapters and take part in the class learning environment...ask questions when you have them and provide your thoughts when I ask for them. The textbook and the lectures together define the **material covered in the exams.**
Class Participation is required. If for any reason you are not able to attend a specific class meeting, you will be responsible for catching up with the material covered during the absence. I will make a subjective assessment of each student’s class participation, and assign a grade (5% of the final grade) during final evaluation. Tardiness, absenteeism, inattentiveness, and unfamiliarity with course material will all negatively impact this subjective assessment. If you are required to participate in either (a) military or (b) UAF-required activities that will cause you to miss class, you must notify me as soon as possible before your absence. Of course, these will not negatively impact the subjective assessment of class participation.

2. **Blackboard Page.** Several learning resources will be available on the course Blackboard Page:
   a. The course Blackboard Page will contain links to other instructional and informative pages on immunology. Some of these will include practice quizzes and short movie clips, which are especially good learning aids.
   b. A copy of this syllabus is posted on Blackboard.

3. **Oral Presentation.** You will be required to take part in an oral presentation that is part of a group project (these presentations will be towards the end of the semester). You must choose a disease/illness/condition with a clear link to the immune system. I will provide more details prior to the presentation dates. This presentation will count towards 10% of the final grade.

4. **Midterms.** There will be six “midterm” exams during the semester. They will test your knowledge of the lecture subjects to the depth covered in the text. You need access to the text material. The midterms will count towards 54% of the final grade. One full lecture period will be allotted for the midterm exam.

5. **Final Exam.** The final exam will be held Saturday, May 12 from 8-10 am. The final exam will be a cumulative test of your knowledge in immunology. It will count toward 31% of the final grade.
### Course Calendar (subject to change)

<table>
<thead>
<tr>
<th>Date (2007)</th>
<th>Topic</th>
<th>Relevant chapters</th>
<th>Abbas/Janeway</th>
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</thead>
<tbody>
<tr>
<td>16-Jan</td>
<td>Course introduction; Overview and history of immunity</td>
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<td>1/1, 10</td>
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<tr>
<td>18-Jan</td>
<td>Immune system components</td>
<td></td>
<td>1/1</td>
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<tr>
<td>23-Jan</td>
<td>Innate Immunity</td>
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<td>2/2</td>
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<tr>
<td>25-Jan</td>
<td>Innate Immunity</td>
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<td>2/2</td>
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<tr>
<td>30-Jan</td>
<td>Antigen recognition by B and T cell receptors</td>
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<tr>
<td>1-Feb</td>
<td>Antigen recognition by B and T cell receptors</td>
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<td>4/3</td>
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<tr>
<td>6-Feb</td>
<td>Lymphocyte receptor diversity; Exam 1</td>
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<td>4/4</td>
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<tr>
<td>8-Feb</td>
<td>Lymphocyte receptor diversity</td>
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<td>13-Feb</td>
<td>Lymphocyte receptor diversity</td>
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<td>15-Feb</td>
<td>Antigen presentation to T cells</td>
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<td>20-Feb</td>
<td>Antigen presentation to T cells; Exam 2</td>
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<td>22-Feb</td>
<td>Antigen presentation to T cells</td>
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<tr>
<td>27-Feb</td>
<td>Signalling through immune system receptors</td>
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<td>5/6</td>
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<td>1-Mar</td>
<td>Signalling through immune system receptors</td>
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<tr>
<td>6-Mar</td>
<td>Signalling through immune system receptors; Exam 3</td>
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<td>5/6</td>
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<tr>
<td>8-Mar</td>
<td>Lymphocyte development and selection</td>
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<td>6, 8/7</td>
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<td>13-Mar</td>
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<td>15-Mar</td>
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<td>20-Mar</td>
<td>Lymphocyte development and selection</td>
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<td>6, 8/7</td>
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<tr>
<td>22-Mar</td>
<td>Lymphocyte development and selection</td>
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<td>6, 8/7</td>
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<td>27-Mar</td>
<td>T cell mediated immunity; Exam 4</td>
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<td>5/8</td>
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<td>29-Mar</td>
<td>T cell mediated immunity</td>
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<td>3-Apr</td>
<td>T cell mediated immunity</td>
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<td>5-Apr</td>
<td>Humoral immune response</td>
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<td>10-Apr</td>
<td>Humoral immune response; Exam 5</td>
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<td>12-Apr</td>
<td>Humoral immune response</td>
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<td>7/9</td>
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<tr>
<td>17-Apr</td>
<td>Adaptive immunity to infection</td>
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<td>6-9/10</td>
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<td>19-Apr</td>
<td>Adaptive immunity to infection</td>
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<td>6-9/10</td>
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<tr>
<td>24-Apr</td>
<td>Adaptive immunity to infection; Exam 6</td>
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<td>6-9/10</td>
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<td>26-Apr</td>
<td>Immunity and disease; class presentations</td>
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<td>9-12/11-15</td>
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<td>1-May</td>
<td>Immunity and disease; class presentations</td>
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<td>9-12/11-15</td>
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<tr>
<td>3-May</td>
<td>Immunity and disease; class presentations</td>
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<td>9-12/11-15</td>
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<tr>
<td>12-May</td>
<td>Final Exam (8-10 am)</td>
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<td>Cumulative</td>
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JAR, 2005
8. Course Policies

As a UAF student, you are subject to the Student Code of Conduct. In accordance with Board of Regents' Policy 09.02.01, UAF will maintain an academic environment in which the freedom to teach, conduct research, learn, and administer the university is protected. Students will enjoy maximum benefit from this environment by accepting responsibilities commensurate with their role in the academic community. The principles of the Code are designed to facilitate communication, foster academic integrity, and defend freedoms of inquiry, discussion, and expression among members of the university community. You should become familiar with campus policies and regulations as published in the student handbook.

UAF requires students to conduct themselves honestly and responsibly, and to respect the rights of others. Conduct that unreasonably interferes with the learning environment or that violates the rights of others is prohibited. Students and student organizations will be responsible for ensuring that they and their guests comply with the Code while on property owned or controlled by the university or at activities authorized by the university.

Disciplinary action may be initiated by the university and disciplinary sanctions imposed against any student or student organization found responsible for committing, attempting to commit, or intentionally assisting in the commission of any of the following prohibited forms of conduct:
A. cheating, plagiarism, or other forms of academic dishonesty;
B. forgery, falsification, alteration, or misuse of documents, funds, or property;
C. damage or destruction of property;
D. theft of property or services;
E. harassment;
F. endangerment, assault, or infliction of physical harm;
G. disruptive or obstructive actions;
H. misuse of firearms, explosives, weapons, dangerous devices, or dangerous chemicals;
I. failure to comply with university directives;
J. misuse of alcohol or other intoxicants or drugs;
K. violation of published university policies, regulations, rules, or procedures; or
L. any other actions that result in unreasonable interference with the learning environment or the rights of others.

This list is not intended to define prohibited conduct in exhaustive terms, but rather to set forth examples to serve as guidelines for acceptable and unacceptable behavior.

Honesty is a primary responsibility of you and every other UAF student. The following are common guidelines regarding academic integrity:
1. Students will not collaborate on any quizzes, in-class exams, or take-home exams that will contribute to their grade in a course, unless permission is granted by the instructor of the course. Only those materials permitted by the instructor may be used to assist in quizzes and examinations.
2. Students will not represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses and other reports.
3. No work submitted for one course may be submitted for credit in another course without the explicit approval of both instructors.

 Alleged violations of the Code of Conduct will be reviewed in accordance with procedures specified in regent's policy, university regulations and UAF rules and procedures. For additional information and details about the
Student Code of Conduct, contact the Dean of Student Services or web www.alaska.edu/bor/ or refer to the student handbook that is printed in the back of the class schedule for each semester. Students are encouraged to review the entire code.

A Few Words on Plagiarism
In general, DO NOT present someone else’s ideas or data as your own: you are expected and required to give credit where credit is due. Plagiarism is a violation of the law and may lead to serious repercussions! Please follow the following guidelines: for any written assignments, if you use someone else’s ideas, data, or other information, write it in your own words and include the reference in parentheses directly following that information. Avoid copying someone else’s text. If, however, you feel you have to include an exact copy of that text, put it in quotation marks followed by the reference in parentheses. Of course, include all cited references in the Literature Cited section. During oral presentations, please acknowledge the sources by mentioning their name(s) and year of publication or by printing them on overheads, slides, or handouts. Also be aware that you need to cite earlier work by yourself. Any substantial use of any written or other materials that was used for another course or that was generated in any other circumstances will not be accepted for credit in this course. Only minor contributions from earlier work with appropriate citation(s) will be accepted.

9. Evaluation:

The class will be graded on a straight percentage basis: 90-100% is an A, 80-89.9% is a B, 70-79.9% is a C, 60-69.9% is a D, and < 60% is an F. I will not grade on a curve. This means that in principle it will be possible for everyone to get an A in this course (but of course it will also be possible for everyone to get an F). Supplemental assignments may be provided at the discretion of the instructor.

Missed assignments and exams:
Times for assignments and exams will be designated well in advance. Completion of assignments and exams at the designated time will be the responsibility of the student. Accommodations will only be made for legitimate and documented contingencies.

9. Disabilities Services:

At UAF, the Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. I will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.