Course information:
Copy and paste current course information from Class Search/Course Catalog.

<table>
<thead>
<tr>
<th>Academic Unit</th>
<th>College of Liberal Arts and Sciences</th>
<th>Department</th>
<th>School of Human Evolution and Social Change</th>
</tr>
</thead>
</table>

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<tr>
<th>Subject</th>
<th>ASM</th>
<th>Number</th>
<th>Title</th>
<th>Disease and Human Evolution</th>
<th>Units:</th>
<th>3</th>
</tr>
</thead>
</table>

Is this a cross-listed course?
No

If yes, please identify course(s)

Is this a shared course?
No
If so, list all academic units offering this course

Course description:
Interaction of people and pathogens from prehistoric times to the present, with emphasis on disease as an agent of genetic selection.

Requested designation: Literacy and Critical Inquiry–L

Note: a separate proposal is required for each designation requested

Eligibility:
Permanent numbered courses must have completed the university's review and approval process. For the rules governing approval of omnibus courses, contact the General Studies Program Office at (480) 965-0739.

Area(s) proposed course will serve:
A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

Checklists for general studies designations:
Complete and attach the appropriate checklist
- Literacy and Critical Inquiry core courses (L)
- Mathematics core courses (MA)
- Computer/statistics/quantitative applications core courses (CS)
- Humanities, Fine Arts and Design core courses (HU)
- Social and Behavioral Sciences core courses (SB)
- Natural Sciences core courses (SQ/SG)
- Global Awareness courses (G)
- Historical Awareness courses (H)
- Cultural Diversity in the United States courses (C)

A complete proposal should include:
- Signed General Studies Program Course Proposal Cover Form
- Criteria Checklist for the area
- Course Syllabus
- Table of Contents from the textbook, and/or lists of course materials

Contact information:
Name: Melissa Beresford
Phone: 480-965-9649

Mail code: 2402
E-mail: melissa.beresford@asu.edu

Department Chair/Director approval: (Required)
Chair/Director name (Typed): Alexandra Brewis Slade
Date: 10/2/13

Rev. 1/94, 4/95, 7/98, 4/00, 1/02, 10/08, 11/11/ 12/11, 7/12
MEMO
To: University General Studies Council
From: Alexandra Brewis Slade, Director SHESC
Re: Retroactive General Studies Designation for ASM 345 Disease and Human Evolution
Date: October 1, 2013

Dear General Studies Council,

We are respectfully asking that the L/general studies designation for ASM 345: Disease and Human Evolution be effective Spring 2014. We are scheduled to teach this class in spring 2014.

Cordially,

[Signature]

Alexandra Brewis Slade, PhD
Director & President’s Professor
Rationale and Objectives

Literacy is here defined broadly as communicative competence in written and oral discourse. Critical inquiry involves the gathering, interpretation, and evaluation of evidence. Any field of university study may require unique critical skills which have little to do with language in the usual sense (words), but the analysis of spoken and written evidence pervades university study and everyday life. Thus, the General Studies requirements assume that all undergraduates should develop the ability to reason critically and communicate using the medium of language.

The requirement in Literacy and Critical Inquiry presumes, first, that training in literacy and critical inquiry must be sustained beyond traditional First Year English in order to create a habitual skill in every student; and, second, that the skills become more expert, as well as more secure, as the student learns challenging subject matter. Thus, the Literacy and Critical Inquiry requirement stipulates two courses beyond First Year English.

Most lower-level [L] courses are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper-division [L] courses generally are courses in a particular discipline into which writing and critical thinking have been fully integrated as means of learning the content and, in most cases, demonstrating that it has been learned.

Students must complete six credit hours from courses designated as [L], at least three credit hours of which must be chosen from approved upper-division courses, preferably in their major. Students must have completed ENG 101, 107, or 105 to take an [L] course.

Notes:

1. ENG 101, 107 or ENG 105 must be prerequisites
2. Honors theses, XXX 493 meet [L] requirements
3. The list of criteria that must be satisfied for designation as a Literacy and Critical Inquiry [L] course is presented on the following page. This list will help you determine whether the current version of your course meets all of these requirements. If you decide to apply, please attach a current syllabus, or handouts, or other documentation that will provide sufficient information for the General Studies Council to make an informed decision regarding the status of your proposal.
## ASU - [L] CRITERIA

TO QUALIFY FOR [L] DESIGNATION, THE COURSE DESIGN MUST PLACE A MAJOR EMPHASIS ON COMPLETING CRITICAL DISCOURSE--AS EVIDENCED BY THE FOLLOWING CRITERIA:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>Identify Documentation Submitted</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

### CRITERION 1:
At least 50 percent of the grade in the course should depend upon writing, including prepared essays, speeches, or in-class essay examinations. *Group projects are acceptable only if each student gathers, interprets, and evaluates evidence, and prepares a summary report.*

1. Please describe the assignments that are considered in the computation of course grades--and indicate the proportion of the final grade that is determined by each assignment.

2. Also:

   Please **circle, underline, or otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-1".

### CRITERION 2:
The composition tasks involve the gathering, interpretation, and evaluation of evidence

1. Please describe the way(s) in which this criterion is addressed in the course design

2. Also:

   Please **circle, underline, or otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-2".

### CRITERION 3:
The syllabus should include a minimum of two substantial writing or speaking tasks, other than or in addition to in-class essay exams

1. Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are included in the course requirements

2. Also:

   Please **circle, underline, or otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-3".
### ASU - [L] CRITERIA

<table>
<thead>
<tr>
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<th>NO</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CRITERION 4: These substantial writing or speaking assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments. <em>Intervention at earlier stages in the writing process is especially welcomed.</em></td>
</tr>
</tbody>
</table>

1. Please describe the sequence of course assignments—and the nature of the feedback the current (or most recent) course instructor provides to help students do better on subsequent assignments.

2. Also:

   Please *circle, underline, or otherwise mark* the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process—and label this information "C-4".

C-4
Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

<table>
<thead>
<tr>
<th>Criteria (from checksheet)</th>
<th>How course meets spirit (contextualize specific examples in next column)</th>
<th>Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1  At least 50 percent of the grade in the course should depend upon writing, including prepared essays, speeches, or in-class essay examinations</td>
<td>60% of the grade for the course is based on written assignments.</td>
<td>Class Assignments Section page 2-5 - see green highlighted sections</td>
</tr>
<tr>
<td>C-2  The composition tasks involve the gathering, interpretation, and evaluation of evidence</td>
<td>Students are required to cite and use academic sources for many of their writing assignments. Further more several of the assignments require the students to look at, evaluate, and interpret data sets and the write up their findings</td>
<td>Class Assignments Section page 2-5 - see pink highlighted sections</td>
</tr>
<tr>
<td>C-3-4 The syllabus should include a minimum of two substantial writing or speaking tasks, other than or in addition to in-class essay exams and these assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments.</td>
<td>Students complete three writing assignments, each worth 20% of their grade. These assignments will be due in weeks 4, 8, and 12 of the semester as to allow for timely feedback from the instructor on each assignment</td>
<td>Class Assignments Section page 2-5 - see yellow highlighted sections for C-3 and blue highlighted sections for C-4</td>
</tr>
</tbody>
</table>
This syllabus is subject to further change or revision, as needed, to realize best the educational goals of the course. Necessary revisions will be announced in class or on course materials with fair prior notice.

Disease and Human Evolution
ASM 345
3 credits
MASTER SYLLABUS

Course Description:
This course examines the role played by disease in human existence, from the beginnings of humanity to the present. Students will define what a disease is, learn the difference between infectious and non-infectious diseases, and see how populations and disease organisms have evolved in tandem. Infectious diseases will include those carried by animal parasites (malaria, schistosomiasis), bacteria (such as bubonic plague, leprosy, tuberculosis, syphilis, lyme disease, typhus), viruses (smallpox, influenza, AIDS), prions, and fungi (coccidiodomycosis). This course will also include a discussion of the epidemiological transition.

Pre-requisites: ASM 104 or BIO 100, or BIO 181 (or BIO 188), or BIO 182 (or BIO 187) with a D or better.

Required Course Texts/Readings: Disease and Human Evolution by Barnes and weekly readings posted on Blackboard.

Course Format: Lecture

Coursework
The final grade for the course will be based on 1,000 points total. There will be three exams, three online quizzes and three writing assignments. Each exam is worth 10% of your total grade, each quiz is worth 5% and writing assignment is worth 20% of your total grade:

- 3 Exams (3 x 10%) = 30%
- 2 quizzes (2 x 5%) = 10%
- 3 writing assignments (3 x 20%) = 60%

Extra credit will not be offered in this course.

For your own protection, you should keep a copy of everything you hand in, and you should keep your graded assignments at least until grades are finalized at the end of the semester, and in the event you wish to contest any grades.

******************************************************************************
Color Key for ‘L’ Designation Application:

- Criterion 1 – at least 50% of grade based on critical writing assignment
- Criterion 2 – students must gather, interpret and evaluate evidence
- Criterion 3- at least 2 substantive writing tasks outside of exams
- Criterion 4 – assignments arranged to get timely feedback from the instructor
Final Grades Grades will be scaled in the following manner:

- **A-** / **A** / **A+**: 89.5 - 92.4 / 92.5 - 97.4 / 97.5 - 100
- **B-** / **B** / **B+**: 79.5 - 82.4 / 82.5 - 87.4 / 87.5 - 89.4
- **C-** / **C** / **C+**: 69.5 - 77.4 / 77.5 - 79.4
- **D**: 59.5 - 69.4
- **E**: <60

**XE**: Failure due to Academic Dishonesty

Assignments

**Writing Assignment #1** *(due week 4)* – 200 points


1. What type of hookworm affected the US in the early 20th century? What is the life cycle of this hookworm?
2. What conditions fostered the high rate of infection at the time? What did the Rockefeller Foundation do to try to change this?
3. Is this species of hookworm still a problem in the US? (see the CDC web site [www.cdc.gov](http://www.cdc.gov) and look for hookworm under diseases and conditions). If not what species is present today and how common is it? From an evolutionary perspective, is it beneficial to the current hookworms to infect humans? Why or why not? What does the CDC recommend to prevent infection?
4. The World Health Organization (WHO) reports on hookworms with two other types of worms (roundworms and whipworms) as part of the more general category of helminths ([http://www.who.int/intestinal_worms/en/](http://www.who.int/intestinal_worms/en/)). According to the WHO, how many people are estimated to suffer from hookworm infections worldwide?
5. Access the data on soil-transmitted helminthiases from the WHO Global health Observatory ([http://www.who.int/neglected_diseases/en/index.html](http://www.who.int/neglected_diseases/en/index.html)) and view the interactive graph (requires flash player) about the number of children needing preventative chemotherapy for soil-transmitted helminthiases. What country has the highest number of people needing preventative chemotherapy (i.e. drug treatment) for helminthiases in Asia? How many people need treatment? What country in the Americas has the highest number of people needing treatment (and how many people)? What country in Africa has the highest number (and how many people)? (Note: under view data it tells you what their abbreviations mean and you can also get to the interactive report by clicking on “view interactive report on status of distribution and implementation”.

**Writing Assignment #2** *(due week 8)* – 200 points
As you learn about diseases and their role in human evolution in this class, you’ve mainly read about pathogens and their manifestations as we know them now. You may have noticed that the history of each disease and its role in human history have been reviewed for you in a brief format, whether in lecture modules or in readings. And yet, have you asked yourself, “How do we know what we know about diseases in the past? Aside from genetic research, (which can be expensive and very time-consuming) how can we research the role of various diseases in human evolution in order to assess their (and our) future?” For this assignment, I’m asking you to enter into my world (oh, yes, as an aside…I am a bioarchaeologist!) and learn about how researchers study disease in the past through the examination of human skeletal remains and their archaeological and historical contexts.

For this assignment, you will be asked to read two articles, one classic study regarding diagnostic material and one recent case study, and write a 3-4 page paper that answers the following question. If bullet points seem appropriate for certain answers, be sure that these are well-structured and complete answers incorporated into the body of your essay. The articles have been uploaded as PDF files and can be found in the Assignment 2 folder on course online platform. If there are terms and topics in these articles that you’re having difficulty with, chances are you don’t need to know them! Don’t get bogged down in the technical terms or clinical jargon within the methods sections of the articles, but focus on the main points and the overall discussion. Beyond a general understanding of the diagnosis of pathology in human skeletal remains, I’d like you to think about leprosy as a disease that has had a colorful history of strong social responses.

Note: You’ll want to complete Learning Module 25 and the associated readings for this assignment. As long as you’ve viewed Learning Module 23, you can skip ahead to Learning Module 25 if you need to. The order of 24 and 25 is not necessary.

Also, it’s important to realize that the human skeleton has only two possible responses to disease processes: bone apposition and bone resorption. These processes can be very generalized, but in a few cases the patterns of apposition and resorption point to very specific disease processes. Leprosy is one such case (though only lepromatous leprosy, which is the more severe form that occurs based upon a low immune response). A reaction said to be directly linked to a disease process is called a pathognomonic reaction. See the supplemental pdf if you’d like to learn more!

Part A:
This is the seminal article for the differential diagnosis of leprosy in human skeletal remains.


1. What are the criteria that Møller-Christensen suggests are indicative of leprosy in the skeleton? Be specific and thorough (e.g. don’t say: ‘skull changes’ or ‘fascies leprosa’, which just means ‘leprosy face’…what actually changes in the skeleton?).

2. Of the criteria that Møller-Christensen proposes are indicative of leprosy in the skeleton, which are the really signature changes? How do you think these changes in the skeleton contribute to the social stigma associated with lepers? Think in terms of living people…

3. What are some of the issues that Møller-Christensen discusses in terms of researching leprosy, both from a skeletal and from a historical point of view? What are some other potential issues, either methodological or social?

Part B:
Here’s a recent, somewhat groundbreaking case study. Think about Møller-Christensen’s work as you read.


1. What are some of the key similarities and differences between the Hallow Hill and Kirkhill sites, both in their past contexts (i.e. when/how used…burial layouts, location, etc.) and in their archaeological contexts (i.e. preservation, excavation, etc.)? Do you think these contexts have any key differences or implications that could affect interpretations of the burials within?

2. For each individual (i.e. skeleton), describe the similarities and differences in general burial context and condition of the skeletal remains.

3. For each individual (i.e. skeleton), what were the diagnostic criteria Lunt used to determine that leprosy had caused the skeletal changes observed?

**Part C:**

**Synthesis and Summary:**

*I want you to think about it! Using what you’ve learned about leprosy in your readings and in the lectures, as well as what you’ve learned here…what’s the point of studying leprosy? Remember, leprosy is really not that contagious and is relatively difficult to contract.*

1. Think about Møller-Christensen’s cautions of the difficulty of researching and diagnosing leprosy in archaeological contexts. Which of these applied to Lunt’s study and interpretations, if any?

2. Based upon your reading of Møller-Christensen’s diagnostic criteria for Part A, did you think that Lunt’s cases were convincing diagnoses of leprosy? That is, did his individuals exhibit the signs of leprosy that Møller-Christensen lists? If so, which ones in particular? If not, what was missing?

3. As it is such a socially charged disease, leprosy is a significant piece in of our overall goal of investigating disease and human evolution. Think about Møller-Christensen’s purpose in researching leprosy and Lunt’s suggestion for how these lepers may have been treated in life. How does their work contribute to our understanding of this disease and its social implications? What makes leprosy different, and therefore important to our understanding of human reaction to disease? Give an example of another disease that has a significant social component, whether stigmatized or otherwise.

**Writing Assignment #3 (due week 12) – 200 points:**

Note: This assignment asks you to delve into some influenza data provided by the CDC and the Arizona Department of Health. Specifically, you'll be asked to take a look at the numbers and trends for 2009-2010 in comparison with the surrounding seasons, particularly the current season. There's something strange going on in that season. What is it? I’d really encourage you to read the web pages thoroughly and take a good look at the graphs there before you try to answer the questions. This assignment will make much more sense to you if you begin having a good idea of the overall trends involved!

Go to the CDC’s Flu Activity and Surveillance web site (http://www.cdc.gov/flu/weekly/pastreports.htm) and answer the following questions in a 3-4 page paper:

1. Read the web page and look at the associated graphs for the 2009-2010 flu season. What’s different about this flu season when compared to the others noted here (hint: it has to do with H1N1…)? Take a close look at the *Number of Influenza-Associated Pediatric Deaths by Week of*...
1. During the entire 2009 influenza A (H1N1) period, the cumulative rates of hospitalization were the highest in which two age groups? Based upon what you’ve learned about the immune system and the influenza virus, how would you explain this trend?

2. During which week of the 2009-2010 season was the geographic distribution of influenza activity most extensive? How many states reported widespread influenza activity?

3. During week 40 of the 2009-2010 flu season (200940), what percentage of visits to the doctor were due to influenza-like illness? Is this above the national baseline?

4. Aside from the pandemic strain of virus in the 2009-2010 flu season (H1N1), how many novel Influenza A viruses were identified by the CDC? What was the common linkage among these?

5. Among the 2009 pandemic H1N1 viruses tested for resistance to adamantanes, how many (what %) were resistant? Read the web page and look at the associated graphs for the current (2012-2013) flu season. Has this resistance persisted?

6. Read the web page and look at the associated graphs for the current (2012-2013) flu season. Take a close look at the Number of Influenza-Associated Pediatric Deaths by Week of Death graph. How does the number of deaths reported in the 2009-2010 flu season compare to that of the 2011-2012 flu season?

7. Take a look at the Percentage of Visits for Influenza-like Illness Reported by the U.S. Outpatient... Graph. During which week of the pandemic season did the number of visits spike? How does that compare with subsequent seasons? How does it compare with the current season?

8. Why are influenza-associated deaths in adults not reportable in Arizona? What category is used instead? How many deaths have been attributed to this category since the beginning of this season? How does this compare to the 2011-2012 season? Why is the 5 year mean so much higher?

9. While these statistics are useful and helpful, why do they not present a true picture of the total number of cases of influenza occurring each year in the United States?
Incompletes
A mark of "I" (incomplete) is given by the instructor when you are otherwise doing acceptable work but are unable to complete the course because of illness or other conditions beyond your control. You are required to arrange with the instructor for the completion of the course requirements. The arrangement must be recorded on the Request for Grade of Incomplete form (http://students.asu.edu/forms/incomplete-grade-request).

Late Assignments.
Unexcused late assignments will not be accepted. Excuses for an assignment must be made an approved in advance of the due date of the assignment. Requests for excuses must be written, either on paper or email, and approval must be obtained, either by an email reply or by having the paper excuse signed. In order to get credit, with the late assignment you must turn in a copy of the email approval or signed written excuse.

Grade Appeals
ASU has formal and informal channels to appeal a grade. If you wish to appeal any grading decisions, please see http://catalog.asu.edu/appeal.

Course Policies
Please do not use cell phones during class. All cell phones and electronic devices must be turned off and out of sight during exams. If a student is spotted with a cell phone out during an exam, the student will receive an immediate grade of zero for the exam, and potentially further disciplinary action.

Student Standards
Students are required to read and act in accordance with university and Arizona Board of Regents policies, including:

   The ABOR Code of Conduct: Arizona Board of Regents Policies 5-301 through 5-308:
   http://www.abor.asu.edu/1_the_regents/policymanual/chap5/5Section_C.pdf

Academic Integrity
All students are responsible for reviewing and following ASU’s policies on academic integrity: http://provost.asu.edu/academicintegrity. If you fail to meet the standards of academic integrity in any of the criteria listed on the university policy website, sanctions will be imposed by the instructor, school, and/or dean. Academic dishonesty includes borrowing ideas without proper citation, copying others’ work (including information posted on the internet), and failing to turn in your own work for group projects. Please be aware that if you follow an argument closely, even if it is not directly quoted, you must provide a citation to the publication, including the author, date and page number. If you directly quote a source, you must use quotation marks and provide the same sort of citation for each quoted sentence or phrase. You may work with other students on assignments, however, all writing that you turn in must be done independently. If you have any doubt about whether the form of cooperation you contemplate is acceptable, ask the TA or the instructor in advance of turning in an assignment. Please be aware that the work of all students submitted electronically can be scanned using SafeAssignment, which compares them against everything posted on the internet, online article/paper databases, newspapers and magazines, and papers submitted by other students.

Student Support and Disability Accommodations
ASU offers support services through Counseling (http://students.asu.edu/counseling), the Learning Resources Center (www.asu.edu/lrc), and the Disability Resource Center (http://www.asu.edu/studentaffairs/ed/drc/). If you are a student in need of special arrangements for we
will do all we can to help, based on the recommendations of these services. For the sake of equity for all students, we cannot make any accommodations without formal guidance from these services.

Email Communications
All email communication for this class will be done through your ASU email account. You should be in the habit of checking your ASU email regularly as you will not only receive important information about your class(es), but other important university updates and information. You are solely responsible for reading and responding if necessary to any information communicated via email. For help with your email go to: http://help.asu.edu/sims/selfhelp/SelfHelpHome.seam?dept_pk=822 and file a help desk ticket by clicking on “My Help Center.”

Campus Resources
As an ASU student you have access to many resources on campus. This includes tutoring, academic success coaching, counseling services, financial aid, disability resources, career and internship help and many opportunities to get involved in student clubs and organizations.

- Tutoring: http://studentsuccess.asu.edu/node/24
- Learning Support Services: http://www.asu.edu/studentaffairs/lss/
- Counseling Services: http://students.asu.edu/counseling
- Financial Aid: http://students.asu.edu/financialaid
- Disability Resource Center: http://www.asu.edu/studentaffairs/ed/drc/
- Major/Career Exploration: http://uc.asu.edu/majorexploration/assessment
- Career Services: http://students.asu.edu/career
- Student Organizations: http://www.asu.edu/studentaffairs/mu/clubs/

For more information about the School of Human Evolution and Social Change, including our degree programs, research opportunities and advising information, please go to: http://shesc.asu.edu/undergraduate_studies. Our advisors are always willing to discuss career and guidance options with you.

Schedule of Readings and Assignments
Week by week outlines of lectures, readings and assignments will be posted on Blackboard.

Color Key:
- Criterion 1 – at least 50% of grade based on critical writing assignment
- Criterion 2 – students must gather, interpret and evaluate evidence
- Criterion 3 – at least 2 substantive writing tasks outside of exams
- Criterion 4 – assignments arranged to get timely feedback from the instructor
List of Course Topics

1. Introduction
2. Disease Concepts
3. Human Evolution
4. Human Dispersal
5. Epidemiologic Transition
6. Epidemiologic Transition (continued)
7. Parasites
8. Worms
9. Ectoparasites
10. Chagas Disease
11. Malaria Vector Borne Diseases
12. Malaria as a selective force
13. Mycotic infections
14. Parasitization paradox
15. Epidemiology
16. Water-borne diseases
17. Water-borne diseases (cont)
18. The Plague
19. Evolution of the Plague Bacillus
20. Consequences of the Plague
21. STD’s
22. STD’s (cont)
23. Mycobacterial diseases
24. Pre-Columbian TB in the New World
25. Leprosy
26. Viruses and Smallpox
27. Smallpox manifestations
28. Smallpox vaccination
29. Vaccination and ERV
30. Poliomyelitis
31. History of an epidemic
32. HIV and AIDS
33. HIV Evolution
34. Influenza virus
35. Influenza virus variation
36. Pandemic Influenza viruses
37. Prion diseases
38. Epidemiological transition 3
39. Evolutionary Medicine
40. Emerging infectious diseases
41. Viral hemorrhagic fevers
42. SARS
43. Drug resistance
44. Drug resistance (cont)