Recipient of Governor’s Award
Nomination for Chancellor’s Award for Excellence to a Non-Tenure Track Faculty Member
April, 2013

Nominee:
Marc Spingola
Associate Teaching Professor
Department of Biology
UMSL

Nominator:
Patricia Parker
E. Desmond Lee Professor
Chair, of Biology Department
UMSL
Checklist

• Nomination letter ................................................................. page 3
• Curriculum Vitae ............................................................... pages 4-11
• Teaching Philosophy ......................................................... pages 12-14
• Supporting Material ........................................................... pages 15-70
  Representative syllabi ....................................................... pages 15-28
    Genetics 2011 ................................................................. pages 15-19
    Virology 2011 ................................................................. pages 20-28

Wiki instructions with sample Wikis from students ....................... pages 29-35
Cell Bio online 2011 ............................................................ pages 36-39
Sample Genetics Laboratory Exercise ......................................... pages 40-45
Spingola in the Current: Swine Flu 2009 ..................................... page 46
Spingola in the UMSL Newsroom: Collegiate Readership Program ...... page 47
Spingola in the New York Times College Website: UMSL Virology Course page 48
Tutoring Teaching Assistantship Program: Outcomes and Effectiveness .... pages 49-50
Student survey and course evaluation for Cell Bio online ................. pages 51-52
Mid-Semester Feedback Results: ............................................. pages 53-66
  B4602 Sp2010
  B3622 Sp2011
  B2482 Sp2011
  B4652 Sp2011

• Standard Course Evaluations .............................................. pages 66-68
• Letters of Support ........................................................... pages 69-78
To the Awards Committee:

It is my great pleasure to nominate Dr. Marc Spingola for the Chancellor’s Award for Excellence in Teaching by a Non-Tenure-Track Faculty member. I have worked with Marc in UMSL’s Department of Biology for more than 10 years, and I recall the day about six years ago when we had a conversation that led to his switching from a tenure-track (emphasizing research) to a non-tenure-track (emphasizing teaching) appointment, as this was clearly where his passions lay. Since that day he has taught more UMSL Biology students than any other professor, taught more different courses than any other professor, and brought more positive attention to the teaching mission of our department and our campus than any other professor of whom I am aware in any department.

Dr. Spingola has enlivened his classes through innovation, employing measures that captivate the students' interest and participation. Some include the latest teaching technology, like clickers and wikis, and some are based on materials as ordinary as newspapers, but they all seem to work. These innovations have received attention nationally and at home; in our department I often ask Marc to give us some tips in faculty meetings on using technology or on class management. He is tough, as you will see by reading his syllabi included in this nomination package. He makes his expectations for student behavior in his classes clear, and his students regard him with a level of professional respect that his colleagues all admire. He is not their pal; he is their professor. When our graduating seniors are asked during their capstone experience to tell us which was the best professor they had in our program, I hear Dr. Spingola's name more often than all the others combined.

I present this nomination package with pride, and would be happy to answer any questions if you would contact me through any of the methods listed above.

Sincerely,

Dr. Patricia G. Parker
Des Lee Professor of Zoological Studies and Chair, Department of Biology
University of Missouri – St. Louis
St. Louis, MO 63121
Teaching Philosophy

How many instructors encourage the students to use their phones during class? I do, but only in my Immunology class when the class is working on case studies. I employ a wide variety of methods and techniques in my courses. An effective strategy in one particular course may not be effective for a different course. An effective strategy for one student may not be effective for others. Thus, no two of my courses are taught alike, and I try to use a variety of methods in each course. Regardless of the strategies or techniques that I employ, the goals are always the same. Obviously, students must show comprehension the material. But more importantly, learning only occurs when the student can apply their knowledge to new situations or problems.

My pedagogy includes a variety of strategies and techniques to promote learning. The strategies I find most effective are ones that engage students during class in active learning. Some of the strategies and technologies I employ are problem solving, peer instruction or group work, online quizzes with immediate feedback, discussions of news events with a focus on rhetoric, internet discussion boards (peer instruction), Wikis, classroom responders (clickers), real case studies, and academic alerts. While there are some teaching strategies I employ only in select classes, I try to provide all my students with individualized assistance, ongoing assessment and prompt feedback, and allowing sufficient time on each task. I also use a number of techniques to assess my teaching including mid-semester feedback, course evaluations, surveys, and measures of student performance.

Problem Solving: As I have matured as an educator, I try to spend less time lecturing and more time engaging students in active learning. For example, students learn genetics by doing genetics problems, not listening to me explain genetics. It is critical to efficiently use class time and balance explaining content with problem solving and applying the content. Each week in Genetics, students must come to class prepared by first taking a quiz online. When students come to class prepared it allows me to spend less time explaining content that can be comprehended without my assistance and more time for demonstrating strategies in genetic analysis and letting students solve problems in class. I don’t expect every student to be able to apply his or her knowledge immediately in class. But by watching me solve a
problem and then attempting to solve problems with their peers in class, students begin to form the foundations they need to solve problems.

Not all of my classes are as based on problem solving as Genetics. The above approach works well not only in Genetics, but also in Molecular Biology. In Molecular Biology I also use online quizzes due before the start of class. During class I will briefly present a model for mechanism in gene expression. Then I present the experiments that were used to build these models. I explain some experiments in detail, but then students are asked to analyze additional data in groups and explain the results to the class and synthesize a conclusion. We can’t do molecular biology experiments in class, but we can analyze the data and experiments that have been done. True learning comes when students can critically analyze experiments we did not cover during class (but are on the exams or assignments) and synthesize supportable models.

Real World Examples of Biology: In Virology it is often difficult to engage students on the molecular biology of viral replication and cell biology of viral transmission. But spending 20 minutes discussing news and reports on viruses from the mass media engages the students and makes them realize that they cannot critically analyze or understand issues in virology like the demographics of HIV infections or HIV therapies without understanding the molecular biology of viral replication. As a moderator of these discussions I ask questions that students cannot answer without knowing the molecular and cellular biology. Through these discussions, I can also develop better skills in communication and rhetoric.

Mass Media and Teaching: Learning also means that students can make informed decisions. I develop better judgment skills in students by requiring them to read newspapers, and I take advantage of UMSL’s Collegiate Readership Newspaper Program. My undergraduate Virology students have to write several 500-word Media Reports on news from a print newspaper or news magazine (not from the internet). When students actually have to flip through a print newspaper looking for news on viruses, epidemics, vaccines, etc., they are more likely to read adjacent articles and become informed on issues other than biology. Plus they get to learn about viruses and illnesses that I do not have time to cover in class.
**Teaching with Technology:** Students are much more likely to be engaged during class and after class if they can use the technologies that they enjoy and are a part of their everyday life. In Immunology, every other class period is devoted to case studies that require internet searches to complete. After presenting the details of the case, I pose several questions that students can work in groups in class to answer. Their textbook will have very few of the answers to these questions, so I encourage students to work in small groups to find the answers on the internet using their laptops, iPads, smart phones or other devices. Most students have at least one of these devices that they bring to class, and those who don’t can join a group with someone who does. Students are thoroughly engaged, and I am pleased to see students using a smart phone to learn instead of distract.

**Electronic Discussion “chat” Boards:** My Online Cell Biology students must participate in online chats every week by posting several questions for their peers and answering several questions asked by their peers. They are graded on quantity and the quality of their posts. Chat boards are a great way to foster interaction among students on problem sets or assignments and promote peer instruction. Chat boards also eliminate any nervousness that would come from asking the instructor a question during class. At first I was surprised how elegantly some students could answer their peers’ questions and how insightful some questions were. I certainly never or rarely got asked insightful questions nor got brilliant answers to my questions during a face-to-face class. After teaching Cell Bio online several times now, I realize student just need a different medium to ask and answer questions.

**Classroom Responders (clickers) and Wikis:** A Wiki is a web page that can be edited by users. My Virology and Immunology students create several new Wiki pages and edit several of their peers’ Wikis. To create a Wiki, students must search the internet for news on the given topic (pathogens, for example). Students then write a short paragraph on the news in the Wiki tool in MyGateway, create a hyperlink to the original source, and usually uploaded a picture or a video. They are graded by quantity, accuracy, professionalism, and obscurity. I tell my students if you can use Facebook, you can use the Wiki tool.
# Example Syllabus

**GENETICS BIO2012 INSTRUCTOR:**
**DR. MARC SPINGOLA Fall 2012**

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTERS</th>
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<tbody>
<tr>
<td>8/24</td>
<td>Intro to genetics and genes</td>
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<tr>
<td>8/26</td>
<td>DNA structure and replication</td>
<td>7</td>
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<td>8/31</td>
<td>Gene Expression: transcription</td>
<td>8</td>
</tr>
<tr>
<td>9/2</td>
<td>Gene Expression: translation</td>
<td>9</td>
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<td>9/7</td>
<td>Regulation of gene expression</td>
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<td>9/9</td>
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<td>Single-gene inheritance</td>
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<tr>
<td>9/30</td>
<td>Independent assortment</td>
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<td>Extensions of Mendelian principles: gene interactions</td>
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<td>11/2</td>
<td>Recombinant DNA technology and genomics</td>
<td>20 + 13</td>
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<td>11/11</td>
<td>DNA mutation and repair</td>
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<td>12/2</td>
<td>Chromosomal changes</td>
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<td>12/7</td>
<td>Population and evolutionary genetics</td>
<td>17-19</td>
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<tr>
<td>12/14</td>
<td><strong>Exam 4p  10-11:15am</strong></td>
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</tr>
</tbody>
</table>

7
Instructor: Marc Spingola Ph.D.
Office: Research Building R242
Office Hours: M 4:30–5:25pm; Th 12:20–1:20pm
Phone: 516-6749
Email: spingola@umsl.edu


Exams: 4 total, 4th exam during final exam period (not comprehensive)
100 points each
Exams usually consist of short answer and problem solving types of questions.

You may not keep your exams. They must be returned to me in class after we briefly go over them. If you need more time to look over your graded exam, make an office appointment with me. If you leave class with your exam, I will replace your grade with a zero.

Problem Sets: I will indicate which problems at the end of each chapter you need to be able to answer. Since the Solutions Manual comes bundled with your textbook, I will not collect the assigned problem sets, and they will not count toward your grade. We will work frequently work on some of these problems in class. However, if you can’t do the problem sets, you will fail the exams!!!

Quizzes: It has been my experience that students will not keep up with problem sets or studying until the night before the exam unless I force them in to doing it. Routine quizzes are the best way to ensure that students dedicate time every week to studying genetics. On most weeks when we do not have an exam, we will have a quiz. It will be an on-line quiz that you can take when convenient, but before a deadline. You may attempt the quiz as many times as you need before the deadline. Quizzes will be worth 10 points.

Grades: standard 10 point system (90-100%=A, 80-89%=B, etc) based on 4 exams and quizzes. I do not curve exams or final grades. I do give plus and minuses. Weighing of exams: I will count your lowest exam for only half of the others. So if your lowest exam is a 50/100, I will only count it as 25/50 for your final grade. Approximate total points = 430 (4 exams = 350 pts, 8 quizzes for ~ 80pts). There are no extra credit assignments. Sometimes there will be a few extra credit points on the exams.

Make-up Exam Policy: There are no make-up exams or quizzes. If for ANY reason you miss class on the day of an exam or quiz, you will automatically receive a score of zero. THERE ARE NO MAKE-UP EXAMS.

Attendance and office hours: Since my lecture notes/power point presentations will be posted on MyGateway prior to each class, some students are tempted to skip class. While
you will not receive (or lose) points for attendance, you will certainly benefit from regular attendance. My office hours are only for students who attend class. I will not personally tutor you during my office hours because you felt compelled to skip class.

**Studying habits and workload:** Genetics is probably the most difficult course you have enrolled in to date. It is not an easy ‘A’, and for that matter it is not an easy ‘C’ either. You will work hard to pass this class. This class involves a tremendous amount of memorization, which is the easy part. It also requires the ability to solve problems and a foundation in math and logic. The former Carnegie Institute for Education suggests that college students spend approximately 2 hours per credit hour studying each week for a particular class. Some students will need more and some less. Think that’s unreasonable? Then I suggest you consider another major.

**Help Sessions:** UMSL has made available to you a graduate student tutor who will conduct group help sessions twice a week plus some office hours. This valuable resource is provided to you at no charge! Do not wait until you do poorly on exam to take advantage of service. Details of times and location will be provided in class.

**Withdrawal from course**
The last day to drop the course without it appearing on your transcript is September 20th. The last day you can drop with an excused grade is Nov 15th. **I will not sign withdrawal forms after Nov 15th**

**Classroom Behavior**
Please be punctual. Please be respectful to me and to your fellow students by being quiet. If you are disruptive in class I will ask you nicely, once, not to be disruptive. I will not ask you a second time – I will call campus police and have them escort you out of my class. Judicial Affairs will then deal with you however they find fit.

**Cell Phones**
Cell phones are great when emergencies arise, and that is the only time they should be touched during class time. It is very distracting to other students and to me when students play with their phones in class. It is also very disrespectful. If an emergency arises and you need to use your phone, step out of the classroom. If you distract me or your classmates by playing with your phone, I will single you out in front of the entire class and ask you to leave.

**Campus Security**
Campus police phone number is 516-5155. Please program it into your cell phone. Campus red phones ring campus police when you dial 911. Please note the location of the nearest red phones to your classrooms. Blue light intercoms on campus pathways outside connect you to campus police and indicate your location. Make note of the intercoms between your parking lot and classrooms.
Feeling unsafe? Is someone threatening you or making you feel uncomfortable? Immediately contact campus police. If it is not an emergency the police will transfer you to Judicial Affairs and they will investigate the matter.

**Stressed out? – Can’t deal with it? – Don’t know what to do?????**
Contact the UMSL Health, Wellness, and Counseling Services at 516-5711 (www.umsl.edu/~uhwcs/) for free help.

**What am I going to do with my degree?**
Career Services host workshops, job fairs, and may be able to help you find how to be most fulfilled with your degree and career prospects. (www.umsl.edu/depts/career/index.html)

**Academic dishonesty**
This title covers the following activities:
1. Cheating on an exam.
2. Copying work that is not your own. This includes copying published work of others, but changing a few words, or changing the order of the words, so that the instructor will think that you actually wrote it.
3. Collaborating with others on an assignment that is to be turned in for a grade, unless instructed to do so.
4. Plagiarism; that is, failing to use quotation marks for direct quotes from another’s work, or failing to give proper credit for information or ideas obtained from others.
5. Cheating with clickers: giving your clicker to a fellow student to bring to class to answer problems for you in your absence.

Any evidence of these activities will result in a grade of zero for the work involved, and the student(s) can be expelled for academic dishonesty.

**Students with disabilities** who believe that they may need accommodations in this class are encouraged to contact the Disability Access Services Office in 144 Millennium Student Center at 516-5228 as soon as possible to ensure that accommodations are arranged in a timely fashion.

*This syllabus is subject to changes as I deem necessary.*

**Dr Spingola’s Research Interests**
I obtained my Ph.D. in Biomedical Sciences and Molecular Biology from the University of New Mexico. For my PhD work I studied the RNA-binding properties of bacteriophage (viruses that infect bacteria) proteins. My postdoctoral studies were performed at the University of California Santa Cruz and focused on the molecular mechanisms of RNA splicing. I have been on the faculty here at UMSL since Fall 2001, and I teach Genetics, Molecular Biology, Advanced Molecular Biology, Cell Biology, Virology, and Senior and Graduate Seminars. Although I just recently curtailed my research efforts here at UMSL, I was studying the mechanisms of RNA splicing in my laboratory. In particular, I
was studying how a specific protein regulates the alternative splicing of several transcripts produced in baker's yeast during meiosis. I have trained several graduate students and undergraduate students here at UMSL over the past years.

**Letters of Recommendation**

I have written many letters of recommendation for students wanting to pursue medical school, dental school, veterinary school, graduate school, or seeking employment. Seeing you get into the school of your choice or get a good job and begin to fulfill your dreams is really one of the most rewarding aspects of my job. A typical letter may take me 2-4 hours or more to write because I take it very seriously and want to do the best job I can for you. Frequently these letters will have to be updated over several years as students try repeatedly to get into school. My letter writing responsibilities have grown out of control with students from years ago still asking me to revise letters and new ones asking for a letter. Hence, I have decided that I must limit my letter writing. If you want me to write you a letter, the following criteria must be met so I can write you the best letter: You must have scored a letter grade of A or A- in at least one of my classes. You must have a major GPA of 3.5 or better. You must distinguish yourself in my class so I can remember who you are. Finally, you must have been enrolled in one of my courses in the last two years.
EXAMPLE SYLLABUS

BIO 4652/6652 VIROLOGY/ADVANCED VIROLOGY
Spring 2013

Course Objectives: 1. To understand the structure, replication, pathogenesis, evolution, and control of animal viruses. 2. To use the mass media and wikis to learn about and discuss civilly the health and social impacts of viruses and virus control. 3. To improve your composition and web design skills.

Instructor:
Marc Spingola Ph.D.
Office: Research Building R242
Office Hours: M 3-4, Th 4:30-5:30
Phone: 516-6749 (email is preferred)
spingola@umsl.edu


Exams:
4 total, 4th exam during final exam period (not cumulative). 100 points each.

Weighing of exams: At the end of the semester I will weigh your lowest exam at a rate of 50%. For example, if you scored a 60 from a total 100 points on your worst exam, I will give you 30 points out of 50 points instead. This is the only curving I will provide.

Exams questions will consist of listing, short answer, and long answer essays/explanations. Graduate student exams have some different questions and more rigorous grading.

You may not keep your exams. They must be returned to me in class after we briefly go over them. If you need more time to look over your graded exam, make an office appointment with me. If you leave class with your exam, I will replace your grade with a zero.

Graduate Student Presentations and Research Reports: Presentation of peer-reviewed scientific article on original research. Each graduate student will find a peer-reviewed article from a reputable journal, published no earlier than 2008, on a plant or microbial virus, or an animal virus not discussed at length in class, or on viral biotechnologies to present to the class as a 15-20 minute PowerPoint presentation (last 4 days of class). The first half of your presentation will cover the fundamentals - molecular biology, pathogenesis, evolution, epidemiology, etc. of that virus - and the second half will cover the most significant aspects of the selected article. The idea is not to present every figure in the article, but to extract the most significant work from the paper and to explain its importance and methodology convincingly to your classmates. Your article must be
approved by me first. Submit to me by email two articles that interest you, and indicate your preference, by Feb 14. I will try to give each student his/her first choice, but no two students will be able to present on the same virus. The presentation is worth 40 points.

In addition to your presentation you will need to write a short report that covers your presentation. It needs to be at least 1200 words in length and no more than 2000. You will be graded on your composition skills and comprehension skills. Your paper is due on the day of your presentation. It is worth 20 points.

**Optional first draft due date.** I am willing to read and grade a first draft of your paper. If you are not satisfied with the grade, you can address my comments in a final revision due on the date of your presentation. Or, you can keep that grade if you are satisfied with it.

**First drafts due on March 23.**

**Undergraduate Media Project:** Each undergraduate will need to peruse newspapers or popular magazines (like *Newsweek* or *Time*, NOT like *Science*) to find articles on viruses. UMSL is a participant of the [Collegiate Readership Program](https://www.collegiate-readership.com), which provides for free several newspapers including the *St Louis Post-Dispatch*, *USA Today*, and *New York Times* each weekday to many locations on our campus. Clip out three articles out of the paper or magazine and submit them to me with a 500-word summary. Tell me something about the basics of the virus, or related ones, if not already covered in your summary. You will need to use sources additional to the newspaper for this part; textbooks, Wikipedia and review articles from scientific journals are acceptable. Include your opinion if the topic is controversial, and intelligently support your opinion. Speculate on why the virus is emergent in the population, and possible consequences. Your final report should be around 500 words using a word processor. No hand written reports. See the schedule for due dates, and a more specific set of instructions is posted in the **Course Documents folder on MyGateway**. Each report is worth 20 points. Late projects will not be accepted.

**Graduate and Undergraduate Wiki Projects - WikiVirus:** You will contribute to forming wikis (a website that links many web pages and can be easily edited by users). You will have to contribute new pages and edit pages. Detailed instructions are posted in the Course Documents folder on MyGateway. This project is worth 40 pts.

**Reading List:** Here are several texts that I occasionally use for this class:

**Textbooks:**
- *Understanding Viruses*, by Terri Shors, 2009

**Nonfiction:**
- *Hot Zone*, by Richard Preston (a terrifying tale of Ebola)
- *The Demon in the Freezer*, by Richard Preston (Smallpox)
- *Polio: An American Story*, by David Oshinsky
- *The Great Influenza: the story of the deadliest pandemic in history*, by John Barry
Grades: Based on 4 exams (350 pts), presentations (grads only) or projects (undergrads only) (75 pts), and written questions on grad presentations (14 pts) and clicker points (~40 pts) for a total ~489 points

I assign minuses and pluses to final grades. An example:

Final score:  
- 80-82% = B-  
- 83-86% = B  
- 87-89% = B+

CLASS FORMAT
My lecture notes will be posted on Gateway in advance of each class, along with a set of study questions that you may see on the exams. To keep students engaged during class, I will divide class time between lecturing and class exercises or discussions. The emergence of viruses and public health issues pertaining to viruses are controversial topics that we will discuss in class. At the beginning of each class I will ask the class what they’ve read or heard in the news. Bring in your newspaper article if you want to talk about it. I hope to engage the class in intelligent discourse. The success of this relies on your participation (I assure you I will remember when I have to assign final grades). Would you rather discuss mandating HPV vaccinations to all schoolgirls or have 75 minutes of lecture on excruciating molecular details on viral replication? The choice is yours.

ATTENDANCE POLICY AND CLICKERS CLASSROOM RESPONDERS
I have decided to try using clickers for this class this semester. We will do a fair amount of discussion and poll taking, which is where clickers come in. Buy your clicker at the bookstore and register it in the Tools folder in MyGateway. Select CPS connection in Tools folder, then click on My CPS link. Select this class from the drop-down menu and then click Add a Pad. BRING YOUR REGISTERED CLICKER TO THE FIRST CLASS! Clicker exercises/polls will be worth 2 points for each class, about 40 total over the course of the semester. You cannot earn clicker points if you don’t attend that class.

PREPAREDNESS
Please come to each class prepared. The Carnegie Institute for the promotion of higher education generally recommends that a college student spend a minimum of 2 hours per week per credit hour studying. This means at least 6 hours per week on this course alone. If we have exams every 5 weeks, that’s 30 hours of studying, not 3 hours the night before. Make sure you read your text and any supplementary materials between each class and be ready to discuss it at some level.

STUDY HABITS
Don’t know how to effectively study? Please visit the center for student success at http://www.umsl.edu/services/css/. They offer many workshops (free) that will help you
learn how budget your time and study effectively. For workshops offered please visit http://www.umsl.edu/services/css/workshops/workshops.html

MAKE-UP EXAMS
There are no make-up exams. If class is canceled because of snow on an exam day, the exam will be given the next time the class meets.

WITHDRAWAL FROM COURSE
Students may withdraw from the course with a grade of “excused” up to April 9. I will not sign drop forms after April 9th. The last day to drop without a grade appearing on your transcript is Feb. 14.

CLASSROOM BEHAVIOR
Please be punctual. Please be respectful to me and to your fellow students by being quiet. The classroom is not a dining area. Eating in class distracts other students, and it is not possible to provide your undivided attention if you are eating. If you get up to leave the room, it should be for an emergency (bathroom or family crisis), not because you are hungry, thirsty, or want to chat with a friend. Cell phone usage: unless I ask you to use your cell phone it must remain in your pocket or bag at all times. It is extremely distracting to me when students start playing on their phones.

CAMPUS SECURITY
Campus police phone number is 516-5155. Please program it into your cell phone. Campus red phones ring campus police when you dial 911. Please note the location of the nearest red phones to your classrooms.
Blue light intercoms on campus pathways outside connect you to campus police and indicate your location. Make note of the intercoms between your parking lot and classrooms.

Feeling unsafe? Is someone threatening you or making you feel uncomfortable? Immediately contact campus police. If it is not an emergency the police will transfer you to Judicial Affairs and they will investigate the matter.

STRESSED OUT? – CAN’T DEAL WITH IT? – DON’T KNOW WHAT TO DO?????
Contact the UMSL Health, Wellness, and Counseling Services at 516-5711 (www.umsl.edu/~uhwcs/) for free help.

WHAT AM I GOING TO DO WITH MY DEGREE?
Career Services host workshops, job fairs, and may be able to help you find how to be most fulfilled with your degree and career prospects. (www.umsl.edu/depts/career/index.html)

ACADEMIC DISHONESTY
This title covers the following activities:
1. Cheating on an exam.
2. Copying work that is not your own. This includes copying work of others, but changing a few words, or changing the order of the words, so that the instructor will think that you actually wrote it.

3. Collaborating with others on an assignment that is to be turned in for a grade, unless instructed to do so.

4. **Plagiarism; that is, failing to use quotation marks for direct quotes from another’s work, or failing to give proper credit for information or ideas obtained from others. Cutting and pasting even a portion of sentence from a published work into “your” paper is plagiarism.**

5. Using a clicker for someone who is not in attendance.

Any evidence of these activities will result in a grade of zero for the work involved, reporting of the incident to the provost, and possible expulsion from the university. The consequences for signing in for a missing student are that both the missing student and the signing student will have their final grades docked by one letter.

**Students with disabilities** who believe that they may need accommodations in this class are encouraged to contact the Disability Access Services Office in 144 Millennium Student Center at 516-5228 as soon as possible to ensure that accommodations are arranged in a timely fashion.

**Dr Spingola’s Research Interests**

I obtained my Ph.D. in Biomedical Sciences and Molecular Biology from the University of New Mexico in 1997. For my PhD work I studied the RNA-binding properties of bacteriophage (viruses that infect bacteria) proteins. Protein-RNA interactions are important means of regulating gene expression in organisms as simple as bacteria or as complex as humans.

My postdoctoral studies were performed at the University of California Santa Cruz and focused on the molecular mechanisms of RNA splicing. In the course of gene expression, RNA is made using DNA as a template. These RNA molecules are then translated into proteins. But before translation occurs in eukaryotes, the RNA must be extensively processed. A major processing event is splicing – the removal of intervening sequences from RNA – and without it the RNA cannot be translated into the specified protein. Splicing is an important step in the expression of genes. My studies focused on how a protein produced only during meiosis, Mer1p, activates the splicing of several mRNAs. (I am no longer participating in research – just teaching).

I have been on the faculty here at UMSL since Fall 2001, and I teach Genetics, Genetics Lab, Molecular Biology, Advanced Molecular Biology, Cell Biology, Virology, and Seminars.
### Virology B4652/6652 Course Schedule

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAN 19</td>
<td>Introduction and Basic Virology</td>
<td>1</td>
</tr>
<tr>
<td>JAN 24</td>
<td>Basic Virology</td>
<td>1-2</td>
</tr>
<tr>
<td>JAN 26</td>
<td>Basic Virology</td>
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<td>JAN 31</td>
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<td>FEB 2</td>
<td>snow</td>
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<tr>
<td>FEB 7</td>
<td>Genomes and structure</td>
<td>3-4</td>
</tr>
<tr>
<td>FEB 9</td>
<td>Genomes and structure</td>
<td>3-4</td>
</tr>
<tr>
<td>FEB 14</td>
<td>Entry</td>
<td>5</td>
</tr>
<tr>
<td>FEB 16</td>
<td>Replication of RNA genomes</td>
<td>6</td>
</tr>
<tr>
<td>FEB 21*</td>
<td>Reverse Transcription and Integration</td>
<td>7</td>
</tr>
<tr>
<td>FEB 23</td>
<td><strong>Exam 1</strong></td>
<td>1-6</td>
</tr>
<tr>
<td>FEB 28</td>
<td>Transcription of DNA viruses</td>
<td>8</td>
</tr>
<tr>
<td>MAR 2</td>
<td>Replication of DNA genomes</td>
<td>9</td>
</tr>
<tr>
<td>MAR 7</td>
<td>Viral control of translation</td>
<td>11</td>
</tr>
<tr>
<td>MAR 9</td>
<td>Assembly and maturation</td>
<td>13</td>
</tr>
<tr>
<td>MAR 14</td>
<td><strong>Exam 2</strong></td>
<td>8, 9, 11, 13</td>
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<tr>
<td>MAR 16</td>
<td>Virulence and epidemiology</td>
<td>Vol II 1-2</td>
</tr>
<tr>
<td>MAR 21</td>
<td>Host defense against viruses</td>
<td>Vol II 3-4</td>
</tr>
<tr>
<td>MAR 23*</td>
<td>Infection patterns</td>
<td>Vol II 5</td>
</tr>
<tr>
<td>MAR 28</td>
<td>SPRING BREAK</td>
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</tr>
<tr>
<td>MAR 30</td>
<td>SPRING BREAK</td>
<td></td>
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<tr>
<td>APR 4</td>
<td>HIV pathogenesis</td>
<td>Vol II 6</td>
</tr>
<tr>
<td>APR 6</td>
<td>Oncogenesis</td>
<td>Vol II 7</td>
</tr>
<tr>
<td>APR 11</td>
<td><strong>Exam 3</strong></td>
<td>Vol II 1-6</td>
</tr>
<tr>
<td>APR 13</td>
<td>Oncogenesis</td>
<td>Vol II 7</td>
</tr>
<tr>
<td>APR 18</td>
<td>Prions, vaccines and antivirals</td>
<td>Vol II 8-9</td>
</tr>
<tr>
<td>APR 20</td>
<td>Evolution and emergence</td>
<td>Vol II 10</td>
</tr>
<tr>
<td>APR 25</td>
<td>Graduate Student presentations</td>
<td></td>
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<tr>
<td>APR 27*</td>
<td>Graduate student presentations</td>
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<tr>
<td>MAY 2</td>
<td>Graduate student presentations</td>
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<tr>
<td>MAY 4</td>
<td>Graduate student presentations</td>
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<tr>
<td>MAY 9</td>
<td><strong>Exam 4</strong></td>
<td>2:45-4pm</td>
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</tbody>
</table>

*Due dates for undergraduate media projects

* Due date for optional first draft of graduate reports

**Please note:** The syllabus and schedule may change during the course of the semester.
UNDERGRAD MEDIA REPORTS AND WIKI PROJECT FOR VIROLOGY B4652/6652

**Undergraduate Media Project:** Each undergraduate will need to peruse newspapers or popular magazines (like *Newsweek* or *Time*, NOT like *Science*) to find articles on viruses. UMSL is a participant of the **College Readership Program**, which provides for free several newspapers including the *St Louis Post-Dispatch, USA Today*, and *New York Times* each weekday to many locations on our campus. Clip out three articles out of the paper or magazine and submit them to me with a 500-word summary. Tell me something about the basics of the virus, or related ones, if not already covered in your summary, including genome type, capsid symmetry, virus family, presence of envelope, etc. You will need to use sources additional to the newspaper for this part; textbooks, Wikipedia, reliable internet sites, and review articles from scientific journals are acceptable. Include your opinion if the topic is controversial, and intelligently support your opinion. Speculate on why the virus is emergent in the population, and possible consequences. Your final report should be around 500 words. Each report is worth 20 points. Late projects will not be accepted.

**Restrictions on your three articles:** Your media articles must cover a virus – not microbes!!! However, articles on viral biotechnologies and vaccines (even if they’re vaccines for microbes) are acceptable. Two of your articles must be genuine newspaper articles, not the same article printed off from the publisher’s web site. Your third media report must be from another type of media: TV, internet news site, radio, podcast, magazine. You may use a magazine’s website to print off articles; you don’t have to buy a hard copy. If you use a media source on the internet, it must come from a bona fide news organization, not from a blog, Wikipedia, or religious organization’s web site. You can also read one of the nonfiction books in my syllabus.

**Any media article that you use must be published during the dates of this semester!!!!!**

**Before writing your media reports, make sure you can answer each of the following questions:**

1. What is an independent clause? What is a dependent clause?
2. What is a comma splice error?
3. What is a run-on sentence?
4. What is a sentence fragment?
5. Should a comma be used between two independent clauses that are separated by a conjunction?

If you make any of the above mistakes (#2-5) I will deduct several points from your report.

**I will also deduct points every time you use the following words:**

- Article
- I
- My
- Any contraction (it’s, can’t, don’t, etc.)
- Important enough to publish
The author says/mentions/states

**Other guidelines for your media reports:**

You **must** cite sources *in your text*. Where did you get the information about the virus in the report? Your book or Wikipedia are fine to use as sources, but you must cite the source in your text and have a complete reference for it in the bibliography. Use either footnotes or the following style for citing in your text.

**Example for citing sources in text:**

Adenoviruses have a DNA genome and lack an envelope (Flint et al, 2009). Their capsids show icosahedral symmetry, and there are dozens of serotypes. Adenoviruses are responsible for approximately 10% of all colds in children (Wikipedia, 2009).

Notes: If there are only 1-2 authors of your cited (published) source, use all of their names in the citation: Example: (Spingola and Ares, 2000). You can use *et al* when the cited source has 3 or more authors (only in citation, NOT in the bibliography). The Wikipedia date corresponds to the latest update when you accessed it, not the date you accessed it.

**Example bibliography that should appear at the end of the report:**
Your references should be listed in the order that they appeared in your text.


You may underline *or* italicize the book title.


The date used is the last date that this page was updated. You do not need to indicate when you accessed the information.

If you cite different pages from Wikipedia, use the following citations: (Wikipedia, 2010a), (Wikipedia, 2010b), (Wikipedia, 2010c). Make sure a, b, c etc. appear in your bibliography so I can distinguish which source you are referring to in your text.

If you cite any literature from journals, use the following style, including the names of all authors:


You do not need to include bibliographical information for your newspaper/magazine article in the bibliography/references/literature cited section.
Failure to include adequate and correct citations in your text, and failure to include a correct bibliography will result in deduction of points. (Notice that I did not use a comma splice error above.)

Use the following header for your Media Reports

Your Name  
Media Report #  
“The title of your article”  
Author (if one is named)  
The source (newspaper) and date it was published

Example:

Marc Spingola  
Media Report 1  
“Chickenpox reported in west St. Louis County”  
Blythe Bernhard  
The St. Louis Post-Dispatch, February 28, 2009

Last but not least, do not plagiarize. This includes plagiarizing from the internet or Wikipedia. We will work on a plagiarism assignment early in the semester so everyone understands what is plagiarism. If you plagiarize any part of your report, you will receive a score of zero on it. Upon turning in a second report with plagiarism, I will have to report you to the Office of Academic Affairs.

How to turn in your media reports. You will have to print out each of your media reports and turn them in to me in class with your media article. In addition, you will have to submit your report before it is due to the SafeAssign link in MyGateway. SafeAssign is a plagiarism detection program that will cross-check your writing against anything and everything that has an electronic version available on the internet and against other media reports turned in from your classmates. I will give you instructions on how to use SafeAssign in class.
Wiki Project

WikiViruses: You can find a link to WikiViruses on the left tab on the MyGateway site for this course. Click on it. From there you can find links to pages that I have already added. You may prefer to search through all of the pages via an RSS using the RSS button. An RSS is a "Really Simple Syndication" and is a family of web feed formats used to publish frequently updated works—such as blogs and wikis. You cannot edit from the RSS format. To edit or add a new wiki or comment on one (wikis are not intended to have opinions – just facts and statistics), click the appropriate button and start adding text. It’s not much harder than using Facebook. To add a hyperlink to a website, copy and paste in the URL to the text box, then highlight it, then click on the chain-link icon above the text box that says “add a link” when you scroll the cursor over it. A box opens up and you can select the correct one.

This will be a learning experience for all of us including me. I hope it is both enjoyable and promotes learning.

What should I be adding? Scholarly information about viruses or vaccines from sources that you have found on the internet and have “doctored up” with information from other sources, books or references.

Grading Wikis. 40 points total. You will have to add at least four new pages and edit at least four existing pages. Half of the assignment (add 2, edit 2) is due by March 11th, 5pm. The second half is due April 22nd. When you have found something about viruses on the web that you want to start a wiki for, add a new wiki and write a short paragraph on it. Please include at least 3-5 sentences. Obviously you cannot explain everything about the virus and article in a short paragraph, but this leaves room for your peers to come in and edit it. Add information from the article/linked site and add details about the virus that are not in the article/link.

I will grade you on the quantity and quality of your work. I will especially appreciate the obscure and unusual. No opinions! These are not blogs!

Warning: I may have to change the grading rubric for wikis or nature of the assignment depending on how it progresses.

Warning: never plagiarize on a wiki. It is copyright infringement, and you could be sued by the author.

More on Grading: you will be graded on the quality of your work, although a minimum quantity is necessary. You can score the maximum 20 points on each half assignment if your two posts are obscure/exciting articles and your posts and edits are intelligent, and show evidence of diligent work. Spelling and grammar will be graded! You will receive no points if you plagiarize anything from the source or make the wikis look like a blog. Bonus for quantity: If you’re not sure that your posts will earn maximum credit, you can post or edit more than the minimum. But unprofessional posts will not help you earn the maximum points. Please do not add more than 4 new posts for each half semester.

21
Representative Wikis (3)

Here are a few wikis created by my students for B4652 Virology. After creation of a Wiki by one student, the typical Wiki is edited by one or more other students. In this view (the RSS view) it is not possible to identify the contributors.

West Nile Virus

The West Nile Virus belongs to the flaviviridae family. It uses a single positive sense RNA strand which is about 11000-12000 nucleotides long and housed in a spherical capsid coated with a membrane envelope and has a diameter between 45-50nm. The virus is replicated in the cells cytoplasm. Its positive sense RNA genome acts like the hosts mRNA and uses the hosts ribosomes to produce proteins essential to the viruses replication. Like many of its relatives such as yellow fever virus and dengue fever virus it requires a arthropod for transmission, in the case of the West Nile virus it uses mosquitoes. Even though majority of transmissions involves an arthropod intermediate, the virus can be transmitted through contact of infected food stuffs, blood transfusions, and childbirth. The virus has a very broad host range as it can infect many types of animals such as horses, various rodents, alligators, cats, dogs, birds as well as humans.

http://en.wikipedia.org/wiki/West_Nile_virus
Individually infected with the virus will either be:

- Asymptomaitic: Roughly around 80-90% of individuals who had been infected with the virus will present no symptoms.
- Develop West Nile Fever: Out of the 10-20% of individuals who had been infected will most present flu like symptoms such as: headaches, bodyaches, fever, nausea. But as it is not a respiratory infection, coughing and sneezing that is usually expected from the flu will not usually be present. Other symptoms like rashes could also be present.
- Develop encephalitis (acute swelling of the brain): Like many viruses of the flavivirdae family, the West Nile virus has a small chance to cause encephalitis which is a very serious symptom a infected individual can acquire. The individual will experience decrease level of conscienecness, coma and mobility problems.

The symptoms described above will usually show around 3-14 days after transmission.

The only way the combat the effects of the the West Nile Virus today is to manage the symptoms and wait the disease out.

All prevention methods used to curb West Nile outbreaks involve the reducing mosquito populations.

http://en.wikipedia.org/wiki/West_Nile_virus
http://www.cdc.gov/ncidod/dvbid/westnile/wnv_factsheet.htm
http://en.wikipedia.org/wiki/Flavivirus
HeLa cells were critical for the studies of several viruses and vaccines. HeLa Cells originated from a black woman named Henrietta Lacks. These cells derived from the cervical cancer that was diagnosed to Henrietta Lacks. HeLa cells were thoroughly studied by George Otto Gey (without consent) and were proven to be the first in vitro cell line.

HeLa cells are understood to be “immortal” due to their ability to divide infinitely in laboratory cell cultures under sustainable conditions. They were initially found from a biopsy analysis of an incision of Henrietta Lacks's cervix. Today, several strains of HeLa cells have been harnessed from laboratory-controlled cell growth. Rebecca Skloot, who wrote The Immortal Life of Henrietta Lacks, stated that the HeLa cells contain an active version of Telomerase during the cells’ division. The presence of Telomerase prevents Telomeres from shortening - which in turn prevent cell aging and eventual death.

In somatic cell replication, telomeres are sort of a "cap" on our chromosomes that contain non-coding repetitive DNA. This protects the encoding DNA from degradation. After each replication, approximately 100-200 nucleotides are lost. Once division has occurred enough times to eliminate the telomere, the cell will stop replicating after encoding DNA begins to be shaved off after replication. Telomerase is an enzyme that's not present in normal human somatic cells. Its job is to repair the telomere after each replication thus preventing the cell from activating natural cell death. If a cell mutates to encode for telomerase it is said to become cancerous.
http://www4.utsouthwestern.edu/cellbio/shay-wright/intro/facts/sw_facts.html

In current research, the prolific division ability of the cell line has been utilized to conduct the first polio vaccine in the 1950s and the effects of radiation and gene-mapping today.

For further information, please visit:
http://en.wikipedia.org/wiki/HeLa

Here is a clip from Radiolab on NPR about Hela cells:
Sin Nombre Hanta Virus carried by deer mice in areas with Declining Aspen population

Aspen Decline increases virus host deer mouse: [http://www.sciencenews.org/view/generic/id/68478/title/Aspens_bust%2C_diseased_miceBoom](http://www.sciencenews.org/view/generic/id/68478/title/Aspens_bust%2C_diseased_miceBoom)

Aspen Decline deer mouse increase: [http://www.durangoherald.com/article/20110124/NEWS01/701249951/Aspen_die_off_developing_hantavirus-linked](http://www.durangoherald.com/article/20110124/NEWS01/701249951/Aspen_die_off_developing_hantavirus-linked)

The name Sudden Aspen Decline is given to the large areas of Aspen trees deaths of the American West, especially in Colorado, Utah and Nevada. There are various theories regarding the causes of the Aspen deaths, including fungal attack, and some climate issues. The decline of the Aspen trees has resulted in a shift in population of various animals that live in the Aspen woods from those that aren’t good virus and disease carriers (such as voles) to those that are (such as deer mice). The areas with the most Aspen deaths have seen a rise in the percentage of deer mice. The deer mice carry the Sin Nombre Virus and close contact between deer mice can easily transmit the virus from one mouse to the next. The Sin Nombre Hanta Virus belongs to the family Bunyaviridae and are negatively stranded RNA viruses. In the mouse the Sin Nombre Hanta Virus does not do much harm. It can easily be transmitted to humans via inhaling the virus from mice urine, feces and saliva and from bites. In humans it can be very deadly. It can cause hantavirus pulmonary syndrome which can rapidly progress through various stages of aches and pains and fever to gastrointestinal upset and respiratory problems. It can be fatal to one third to half of victims so this is a real concern and threat.


Sin Nombre Hanta Virus carried by deer mice in areas with Declining Aspen population

Healthy Aspen Trees (Genus *Populus*)

http://en.wikipedia.org/wiki/Aspen

Sudden Aspen Decline - Large areas of tree deaths

Deer Mouse (Genus *Peromyscus*)  http://en.wikipedia.org/wiki/Deer_mouse

Vole (Genus *Arvicolinae*)  http://en.wikipedia.org/wiki/Vole
CELL BIOLOGY ONLINE Bio3622
Syllabus
Spring 2012

Marc Spingola, Ph.D.
Office: R242 Research Bldg
(□) 314-516-6749
□ spingola@umsl.edu

Virtual Office Hours
T/Th 4-5pm via Wimba Classroom. To use Wimba Classroom to text/video chat with me, click on
TOOLS folder, find Wimba Classroom and follow the instructions. If you prefer, we can use Apple’s
FaceTime.

Texts
Cummings Press. ISBN-10: 0321716027
Also available as a loose leaf three hole punch package and e-book
Students Solutions Manual for above (special bundled pricing) – optional
The 7th edition is ok to use, but I recommend the 8th. You will not be able to sell back the 7th ed.

Course Objectives
The primary objective is to understand the essential functions of eukaryotic cells. By the end of this
course you should be able to explain the structure and function of membranes, organelles,
cytoskeleton, tissues, and mechanisms of cell growth, immune systems, cell–cell signaling and signal
transduction. By using problem solving and critical analysis you will be able to relate basic cell
functions to human diseases and understand the mechanism of drugs that treat these diseases.
Finally, an objective for this class is to become competent with computer technologies and web
applications that will facilitate your learning online.

Study Aids on MyGateway
PowerPoint slides for each chapter and presentation
Videos and animations
Study guides and recommended end-of-chapter problems (at the end of each PowerPoint file)
Panopto files (see below) and Podcasts
Discussion “chat” boards (see below)

Panopto Course Files
Panopto is a computer application that allows me to record my presentation in my office in front of
my desktop computer. When you play back a Panopto file, you will see a video of me in front on my
Mac from my webcam in one window on your screen, a live screen capture of the PowerPoint
presentation in another window with the cursor used to highlight objects, and a couple of slide
indexes that allow you to fast forward or rewind to any particular point or slide in my presentation.
Each chapter or typical 75 min class will have 1 or more Panopto files. The Panopto files are found
in the TOOLS folder, in the link Panopto CourseCast Content, under the heading Completed
Recordings

Podcasts
You can also download a podcast of the audio portion of my presentation (or video) for playback on
your iPod/MP3 player or personal computer. To download podcasts, go to the TOOLS folder, select
Panopto CourseCast Content. Under Podcast feeds, click the RSS link for Audio Podcasts. Then you can select which chapter podcast to download. If you just select the Audio Podcast link, only the last podcast uploaded will be downloaded. The video podcast is just recordings from my webcam without PowerPoint files.

Problem Sets
Problem sets are assigned for almost every chapter. They are found in the red PROBLEM SETS folder/link on the left of your MyGateway screen. In this folder is another titled Downloadable Problem Sets. Open this folder and download the problem sets for the chapters we will cover for your next exam. Complete them, and then submit your answers online. In the parent folder PROBLEM SETS, there will be links to submit your answers for each problem set online with automatic scoring. They will be worth 10 points each and your score immediately reported. Problem Sets for the appropriate chapters are due at 5pm on Firday of the week they are assigned (see schedule below). On the following day I will post the correct answers. Absolutely no late problem sets will be accepted. Note: I will use some of these questions on the exams.

Discussion (chat) Boards
This is not an independent distance course, nor is it a video course. You must interact with your classmates online each week via the DISCUSSION BOARDS link/folder. The discussion board can be used to ask a question, to make comments, and to answer questions. You will be graded on your discussion board use and content each week (14 weeks total – excluding spring break week) for up to 10 points each week. For grading rubric and proper use of the discussion boards, please read the “Online Discussion Rubric, Protocol and Netiquette” document.

Exams
Your exams will be taken online on the dates below. You must start the exam between 11 and 11:30 am. This is to prevent one student from taking the exam for multiple people. If you cannot take the exams on those times, you must contact me at once – today, the first day of class, not the second week or on the day of the exam. I have chosen exam dates that were originally scheduled for the hybrid face-to-face exam dates. So I know the vast majority of you do not have conflicts with the exam times. You will find that I am inflexible about allowing you to take the exam at other times. Once you begin the exam you will only have 50 minutes to complete it. Exam questions will consist of multiple choice, multiple answer, true-false, matching, listing, and short answers. You may use your book and your notes during the exam, but you may not collaborate with other students. While the exams are “open book” you simply will not have enough time to look up many answers. Exams will have about 60 questions, but you will only have 50 minutes to complete the exam. You must study intensively to complete the exam. You can take the exam on the scheduled exam dates from any computer with reliable internet access by logging onto MyGateway and clicking on the EXAMS folder for this course on the menu bar on the left. You must complete the exam once you start it – you cannot save a partially completed exam and come back later to finish it. Exam questions will be randomly selected from a bank of questions. The computer will provide you with one question at a time, not all questions at once in page format. If your computer loses power or internet access you are out of luck. I cannot allow you to retake an exam for any reason once you have activated it. Use a reliable computer and internet provider!

Exam Dates
You must start the exams between 11-11:30am on the following Mondays:
February 7th, Exam 1
March 7th, Exam 2
April 11th, Exam 3
May 2nd, Exam 4
Each exam is worth 125 points. **Note: the content and the material steadily become more challenging and complex over the semester. Hence, so do the tests.**

**Total points**
500 points from 4 exams, plus 125 points for problem sets, plus 140 for discussion boards = 765 points

**Grades**
Grades are based upon total accumulated points. I do not curve grades, even if the exam averages are in the 40s. The 125 points for problem sets are easy grade-boosting points. All of your scored assignments and exams are recorded in the **GRADE CENTER** folder in MyGateway.

711-765 points = A  
688-710 points = A-  
665-687 points = B+  
635-664 points = B  
612-634 points = B-  
589-611 points = C+  
558-588 points = C  
535-557 points = C-  
512-534 points = D+  
482-511 points = D  
459-481 points = D-  
<459 points = F

**Study Habits**
The former Carnegie Institute for Higher Education and other educational organizations recommend that college students spend about two hours studying each week for every credit hour. That's 6 hours each week for this course alone, not including the time it takes to watch Panopto files (averages 100 mins per week). Think that's too much for this course? Change majors immediately.

**How to study for my course**
Watch the Panopto files for each chapter. You may want to view them multiple times or listen to the podcasts after. Read the pages of the chapters that I cover, at least once. Answer and understand any end-of-chapter problems that I assign. Study my slides and thoroughly and answer all the questions in my study guides. If you can answer all of those without assistance, you will be prepared for exams. Make sure you understand the concepts of the processes and the pertinent details in each chapter. Watch any movies or animations that that I load on MyGateway. If you can't answer a particular question or are confused on a concept, use the discussion board. Help explain what you know to your classmates that need help on the Discussion Board. **Do not wait until the weekend before the exam to start studying.** You will be overwhelmed with the amount of material and will fail miserably. Finally, repetition is the key to success in a course like this. Finally, repetition is the key to success in a course like this. Finally, repetition is the key to success in a course like this.

**Technical Support**
- My Gateway (Blackboard)
• If you have problems logging into you online classroom please contact the Technology Support Center by phone, 314-516-6034, email, helpdesk@umsl.edu.

  - Wimba
  • If you have any questions regarding Wimba Classroom and Wimba Voice Tools you may contact the Faculty Resource Center by phone, 314-516-6704 or email, frc@umsl.edu. They will provide support and assist you with using these features.
    Wimba has 24/7 assistance available: email: technicalsupport@wimba.com
    phone: (866) 350-4978

Withdrawal from course
The last day to drop the course without it appearing on your transcript is ???. The last day you can drop with an excused grade is April 9th. I will NOT sign withdrawal forms after April 9th!

Stressed out? - Can't deal with it? - Don't know what to do?????
Contact the UMSL Health, Wellness, and Counseling Services at 516-5711 (www.umsl.edu/~uhwcs/) for free help.

What am I going to do with my degree?
Career Services host workshops, job fairs, and may be able to help you find how to be most fulfilled with your degree and career prospects. (www.umsl.edu/depts/career/index.html)

Academic dishonesty
This title covers the following activities:
1. Cheating on an exam. This includes collaborating or communicating with another student during an online exam. **Note: I use multiple tests for each exam. You will not have the identical test as your classmates.** Do I even need to insult your intelligence by stating that having someone else take the exam for you is flagrant cheating?
2. Copying work that is not your own. This includes copying published work of others, but changing a few words, or changing the order of the words, so that the instructor will think that you actually wrote it.
3. Allowing another student to complete or submit any of the assignments or exams for you.

Any evidence of these activities will result in a grade of zero for the work involved, and the matter will be turned over to Academic Affairs for investigation and punitive action. Students can be expelled for academic dishonesty. I will give you an F for the course if you cheat on an exam.

**Students with learning or physical disabilities** who believe that they may need accommodations for this course are encouraged to contact the Disability Access Services Office in 144 Millennium Student Center at 516-5228 as soon as possible to ensure that accommodations are arranged in a timely fashion. After registering with DAS, please email me or see me.

31
Deviations to Investigation on $\beta$-galactosidase

**Purpose:** To study the effect of various mutations in the lac genes on $\beta$-galactosidase expression and regulation.

**Background:**
In 1961, Francois Jacob and Jacques Monod proposed a molecular model of gene control in E. coli. An operon is a set of closely related genes encoding enzymes or structural proteins, expression of which is regulated by molecular signals acting on a DNA element called an operator. The advantage of the operon system is its ability to coordinate the expression of several functionally related genes.

The lac operon of E. coli encodes proteins that catalyze lactose import into the cell, and its subsequent degradation. This operon has been extensively studied because of the convenient colorimetric assays available for the enzyme required for lactose breakdown, $\beta$-galactosidase. Synthesis of $\beta$-galactosidase can be induced by addition of IPTG (isopropyl-B-D-thiogalactoside) to growing cells. IPTG is a synthetic analog of the normal substrate lactose, but cannot be cleaved by the $\beta$-galactosidase enzyme. $\beta$-galactosidase activity can be observed either on plates containing specific color reagents, or by enzyme assays with colorimetric substrates. To assay for the enzyme, another analog of lactose, ONPG (orthonitrophenyl $\beta$-D-galactoside) is used. Hydrolysis of this colorless compound by the enzyme results in the production of the intensely yellow nitrophenolate ion, which can be measured using a spectrophotometer.

**Part 1: Measurement of $\beta$-galactosidase from liquid cultures**

Instead of working with 6 different cultures as in the book, we will only work with two:

- LacZ- cells growing in LB broth (30SO strain)
- LacZ+ cells growing in LB with IPTG (CA800 strain)

IPTG is an analog of lactose that cannot be hydrolyzed by beta-galactosidase, so the operon is always induced in its presence (mutants excepted).

The above cultures correspond to cultures numbers 2 and 5 in your lab book.

The cultures will have been seeded prior to lab and should be growing in the exponential phase when you start class. You will add IPTG to a final concentration of 1 mM to both cultures immediately after removing the Time 0 samples. Carefully follow the procedures starting on pg 30.
Here’s what you’re doing: the cultures are growing at 37°C. At various times (every 30 minutes) you will remove a 5ml sample from the culture flask and return the flask to the 37°C water bath to continue growing. For the 5ml sample that you just removed, follow the instructions on pg 31, #4a, b, c and record on Table 1 below. Note it takes about 20 mins to do the β-gal assay on these samples.

After 30 minutes has elapsed from taking your last sample, take another 5ml sample from the master cultures. Perform steps 4a-c again with this time point and record in Table 1. Continue taking samples every 30 mins up to 120 mins (possibly 150 mins).

Do not mix up your time courses! You are removing cells every 30 mins from the master cultures, and then you are performing a 20-minute assay on them for β-gal enzyme production. The 20-minute enzyme assay does NOT factor into your time course/plotting data.

**Part 2: genotyping 4 lac strains**

In this part of the lab, we will use wild-type *E. coli* and some mutant strains that affect components of the *lac* operon. By streaking these strains on various indicator plates, and by assaying β-galactosidase activity in the presence and absence of IPTG, you will genotype four unknown strains (one WT and three mutants).

The strains we will be using are:

- **CA800** - *lacZ* (wild type): has functional *lacOZYA* genes.
- **30SO** - *lacZ* strain: because of a frameshift mutation in the *lacZ* gene, this mutant cannot make the enzyme β-galactosidase, the protein that cleaves lactose into the monosaccharides glucose and galactose.
- **CA7089** - *lacO*: this mutant has a mutation in the *lac* operator gene/operator site (*O*), meaning that the repressor cannot bind the *O* site and repress transcription, so *lacZ* expression is constitutive.
- **YA694** - *lacI*: this mutant has a point mutation in the *lacI* gene, which prevents the repressor from binding the inducer (a "superrepressor" mutation). Since the *lacZ* gene is functional, this mutant may make a very small amount of β-galactosidase (particularly in the absence of glucose), but is unable to up-regulate expression in response to lactose or inducer.

The 2 types of indicator plates we will be using are:
**LB/Xgal plates:** The compound Xgal (5-bromo-4-chloro-3-indolyl- β-D-galactoside) is cleaved by the enzyme β-galactosidase (the product of the lacZ gene) to give galactose and a blue dye.

- On these plates, lacZ+ colonies turn blue, while lacZ- colonies remain white.
- Xgal plates are extremely sensitive. One molecule of β-galactosidase/cell is all that is needed to cleave enough Xgal to turn the colony blue.

You will use two types of LB/Xgal plates to examine regulation:

- **LB/Xgal plates:** these plates do not contain an inducer of the lac operon, so in the WT, the lac repressor should repress lacZ expression.

- **LB/Xgal+IPTG plates:** IPTG (isopropyl-β-D-thiogalactoside) is a synthetic analogue of lactose, which binds to and inactivates the repressor. IPTG is not cleaved by β-galactosidase, so it is not depleted by growth of the strain. In addition, IPTG does not require the permease protein in order to enter the cell. Thus, IPTG will promote high lacZ expression even in permease mutants.

The Xgal plates will answer two questions:

i. Can the strain make any β-galactosidase? (does it have a functional copy of lacZ?)

ii. Is β-galactosidase activity constitutive, or does expression depend on the presence of IPTG? (does the strain correctly regulate lacZ expression?)

Careful analysis of the color of the colonies on Xgal plates will tell you whether the lac operon is constitutive or inducible in that strain. Remember that even in the wild-type repressed lac operon, there will be a few molecules of β-galactosidase in the cell, which will be enough to turn the colony light blue. So for each strain, be sure to look at the relative intensity of the blue color in the colonies +/- IPTG.

**Procedure**

1. Streak the unknown strains 1-4 on the sectors of 2 different indicator plates. You should have one of each kind of plate, streak all 4 strains onto each plate.

   - **LB/Xgal** - Xgal no IPTG plates
   - **LB/Xgal+1** - Xgal + IPTG plates

   Divide the plates into four sectors or wedges, and use a sterile toothpick or loop to spread the bacteria on the plates. **Streak so that you dilute the cells and will end up with single colonies on the plates (dilution streaking). Watch your instructor for a demo.**

   For each type of plate, streak your strains as shown:
2. Label the plates with your initials, and place them in the 37°C incubator overnight (inverted).

3. Examine all of your plates **no more than** 24 hours later. Note the relative intensity of the colony color for each strain at this time (examine plates carefully: differences may be subtle). You may be able to deduce the identity of the strains at this stage. **It is important that you look at your plates the day after the lab. You will miss the differences in the color intensity if you forget to check your plates at the appropriate time.** Fill in your data in Table 2 below.

**Table 2.** Record the intensity of color of the bacterial colonies in Table 2 below (use + to ++++ scale):

<table>
<thead>
<tr>
<th>Growth medium</th>
<th>Strain 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>Xgal</td>
<td></td>
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<tr>
<td>X-gal+IPTG</td>
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<tr>
<td>Genotype? (lacZ*, lacZ-, lacO*, or lacI*)</td>
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**Table 1.**

<table>
<thead>
<tr>
<th>Time</th>
<th>Lac&lt;sup&gt;+&lt;/sup&gt; culture</th>
<th>O.D.</th>
<th>O.D.</th>
<th>mmols ONP</th>
<th>mmols/20min β-gal units</th>
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<tbody>
<tr>
<td>0</td>
<td>(a) O.D. 600</td>
<td>(b) O.D. 420</td>
<td>(c) O.D. 420</td>
<td>(b-c)/.004</td>
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**Lac− culture**

<table>
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<tr>
<th>Time</th>
<th>O.D. 600</th>
<th>O.D. 420</th>
<th>O.D. 420</th>
<th>(b-c)/.004 mmols ONP</th>
<th>mmols/20min β-gal units</th>
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**Post-lab assignment:** do not answer any of the questions in the manual. Plot the data: OD600 vs time, and mmols ONP vs time for each culture (total of two graphs with two traces on each)

**Questions:**
1. What does toluene do?
2. What is IPTG and why is it used?
3. What is ONPG and why is it used?
4. Illustrate an ideal growth curve for bacteria (OD600 vs time) and indicate lag, exponential, and stationary growth phases.
5. Comment on the quality of your graphs. What should they look like, and do they deviate from expected? If so, propose possible explanations.
TA's instructions.

Start a 50ml culture of CA800 in LB (label Lac+) and a culture of 30SO in LB (label Lac-) the night before each class, grow 37°C in shaking incubator.

1 hour before the beginning of each lab class, use the O/N cultures to seed 0.5 liters of fresh media (LB, same as above) to an OD<sub>600</sub> = 0.1 (one for culture 2 and one for 5). Grow in shaking incubator until class starts. Label these cultures Lac+ and Lac-.

How to dilute: \( \frac{\text{OD}_{\text{final}}}{\text{OD}_{\text{starter culture}}} \times 500\text{mls} = \text{volume of starter culture to use.} \) OD final = 0.1, you must measure OD of overnight starter (most likely need to dilute 10-fold first to read OD). So if starter OD is 3.0, then 1/3.0 × 500 = 16.6mls of cells in 500mls LB

At the beginning of class, when students are ready to take their first aliquot of cells (time zero) add IPTG to 1mM only to both cultures (TA's or instructor do this).

Dedicate 1-2 people in your class to remove 1 aliquot for the entire class at each time point! We cannot have 12 groups of students trying to take aliquots from 1-2 flasks in a timely fashion. Have 1-2 students remove about 75mls of culture (to sterile conicals) of each culture at the correct times. They can place those on ice and then the remaining students can take 5 ml samples from them. This will minimize the time that the cultures are out of the incubator.

Each group of two students will use 5mls x 6 time points = 30 mls

ONPG, 13mM in 25mM PB: We need 0.2mls x 2 cultures x 6 time points x 12 pairs of students per section = 28.8 mls per section. I suggest making 150mls and dispensing 10mls in 15ml conical tubes

We need about 1L of 1M Na2CO3 per section, aliquot to 100 ml or 500ml bottles. We need 2 mls of 1M IPTG per section for the cultures.

We also need toluene in dropper bottles, 2 spectrophotometers per bench set at 600 and 420nm, p1000 pipettors, plenty of 5ml glass/plastic pipets.

LB: 5 L total
- 8 x 500 mls in large Erlynmyers for class cultures
- 1 liter in bottles or flasks for starter overnight cultures for each section

Plates: each section will need 12 LB+X-gal plates and 12 LB+X-gal+IPTG plates
For 4 sections: 1.5 L of each should be plenty ~50-60 plates for each.
Please mark the xgal+iptg plates with a blue stripe
X-gal: 2 soln in DMF (does not need filtration/sterilization), use 2mls per L, add after autoclaving
IPTG: 1M soln in water, filter sterilized, use 1ml/L, add after autoclaving
Swine Flu vaccine could be available as soon as next week

CASS MARQUIS
Associate Editor

There is some encouraging news from the Centers for Disease Control and Prevention on novel H1N1 influenza A virus, or swine flu, vaccine:

"The vaccine against novel H1N1 will actually become available in some states as soon as next Tuesday," Kirsten Nordlund, press assistant in the Division of Media Relations, Centers for Disease Control and Prevention, said.

Nordlund supplied a list of 21 states and four cities that will receive H1N1 flu vaccine on Tuesday.

While Illinois and Missouri were not among those states, Chicago was one of the cities listed although St. Louis was not.

"As of October 1, Missouri is one of the states that [has] ordered the vaccine. It should arrive sometime next week," Nordlund said.

Several companies are making the vaccine.

"The four manufacturers are: Novovax, MedImmune (FluMist), CSL Biotherapies and Sanofi Pasteur," Nordlund said.

According to CDC websites, the priorities are pregnant women, people caring for young children, health care workers, persons between ages of 6 months and 24 years old, and people with chronic health disorders or compromised immune systems.

The calls are Health, Wellness & Counseling Services plans to offer the H1N1 vaccine as students return to campus as soon as next week by the Department of Health, although the vaccine becomes available to them.

Some viruses have a genome made out of DNA and some have a genome made of RNA. Influenza A has a genome made out of RNA instead of DNA. RNA viruses are prone to changing their DNA viruses," Marc Spingola, affiliated assistant professor of biology, said.

Spingola usually reaches individual students or small groups of H1N1 students.

"This season the flu shot does not protect against H1N1. This strain presented some extra challenges. The students had different strains of the virus, and to make a vaccine against the virus, they inject a live virus into embryonated chicken eggs. It replicates in the chicken eggs, after there is a sufficient quantity of virus in the eggs, they harvest the virus and make vaccines worthless. Antigens are the proteins or other substances on the surface of the immune system that make it recognize the virus as the vaccine. There are a couple of other steps involved as well," Spingola said.

"The H1N1 does not seem to grow as rapidly or as efficiently as seasonal strains of the flu," he said.

This last fact led to some concerns about delays in the availability of vaccine against H1N1.

"St. Louis was one of the testing centers for the new vaccine and safety concerns slowed minimal," H1N1 2009 monovalent vaccine was FDA approved for children over 6 months and adults for this fall after clinical trials demonstrated that one dose for persons 10 years and older, and two doses for children under 10 years were well tolerated and induced immune responses that are expected to be predictive," Robert Bialik, M.D., director of Saint Louis University's Center for Vaccine Development, said.

"Vaccine may become available in some parts of the country as early as next week. Our students continue to see in special populations including pregnant women.
New York Times highlights virology course at UMSL
Apr 10, 2010 by Kylie Shafferetter

Because Marc Spingola requires his virology students to read The New York Times, he enjoys a free subscription at home. Is that his motivation? No, Is it a nice perk for a guy who loves his morning paper? You bet.

Spingola’s students must find virus related stories from any form of media – with two being from print – and write a SCO word paper about it. Because of this, The New York Times College Readership Program sends the paper to UMSL at a reduced price and sends him complimentary copies as well.

“I want them to peruse a newspaper,” said Spingola, assistant teaching professor of biology at UMSL, who is an established New York Times fan. “There is an extra benefit you get from looking through a newspaper. You come across other articles you’d never find from an Internet search.”

For his efforts, Spingola’s virology course is highlighted on the Times’ Website.

“I’m proud,” he said. “I feel like I’ve gotten some recognition. I felt to do something other than lecture them to death.”

http://tinyurl.com/y27yops
http://www.umsl.edu/~biology/faculty/spingola.html

Tags: biology, Marc Spingola, media

This entry was posted on Friday, April 16th, 2010 at 2:30 pm and is filed under Department of Biology, UMSL Highlights. You can follow any responses to this entry through the RSS 2.0 feed. Both comments and pings are currently closed.
Spingola in The New York Times College Website

Direct links:

http://www.nytmktng.wsites.net/incollege/

http://www.nytmktng.wsites.net/incollege/?page=faculty&sub=strategies&category=4
Evaluation of Tutoring Outcomes for the Tutor TA Program in Genetics and Cell Biology

**GENETICS F2010**

<table>
<thead>
<tr>
<th>GRADE</th>
<th>TIMES ATTENDED</th>
<th>TOTAL</th>
</tr>
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<tr>
<td>B+</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>C+</td>
<td>4</td>
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<tr>
<td>S</td>
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<td>F</td>
<td>25</td>
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</tbody>
</table>

- 0 VISITS
- 1 VISIT
- 2 VISITS
- 3 VISITS
- 4 VISITS
- 5 VISITS
- 6 VISITS
- 7 VISITS
- 8 VISITS
- 9 VISITS
- 10 VISITS OR MORE

Last column is 10 visits or more
Summary: The students who most frequently attended help sessions (tutoring) were students who earned grades of A or B for the class, especially for Genetics. The students least likely to attend were students earning grades of F (which also includes excused grades). While the purpose of the tutoring program was to reduce drops and failures, there was no significant difference between the drop/fail rates with help sessions to semesters without help sessions.
To whom it may concern,

I have studied biology at the University of Missouri in St. Louis for the past three years and Dr. Marc Spingola has been highly involved in the pathway to my success both as a student and professional. Dr. Spingola has been my academic advisor the entire duration of time at the University of Missouri in St. Louis (UMSL) and I have also been enrolled in a range of his 2000 through 4000 level courses. He has offered nothing less than the best teaching and advice to myself and all his other students and I can honestly say that his skills have guided me on a personal level that have played an integral role in my academic and professional development. Dr. Spingola has a unique ability to instill very fine details of learning into his students. I can easily recall multiple classes taken at UMSL in the last three years and only a few professors are able to carve themselves a remarkable image into my memory. Dr. Spingola stands out as one of these professors for multiple reasons and it is because of this I would highly recommend him for this award.

Dr. Spingola utilizes excellent teaching methods that incorporate a large degree of discussion-based learning. This method allows for the students to actively discuss problems and then collectively determine a solution, a very effective method of learning. Other instances Dr. Spingola would allow for group discussion followed by group presentation, all within the same class period. Again, this method of teaching is the foundation for active learning. His teaching goes way beyond the traditional PowerPoint slide presentation. He brings so much more to a lecture than just the PowerPoint slides, he brings the environment for learning. Dr. Spingola has a passion for what he does at UMSL. This is clearly evident from my perspective as a student.

Sometimes a situation may appear when a test requires rescheduling in order to remain true to the syllabus. This event can be handled a number of ways, but Dr. Spingola would ask the students for their opinion on possible solutions. A fair and understanding way to handle such an event. A flexible schedule allows for emphasis of important points with in a lecture as well as adequate time for questions and discussion, all of which are beneficial. Dr. Spingola writes a test that accurately reflects the students’ ability to fully understand important topics. A student who attends class regularly, as recommended by Dr. Spingola, prepares for class and stays actively involved in the classroom discussion would agree that Dr. Spingola is fair in his testing strategies.

Dr. Spingola is more than a professor. He is a mentor. His caring attitude and determination to promote effective learning strategies have played a huge role in my life the last three years. I must say that his advising has propelled me beyond what I thought was possible. He is a great professor, advisor, mentor and individual. I fully recommend Dr. Spingola for this award.

Sincerely,

Kevin P. Stuckey

Senior, Undergraduate Biology Major
University of Missouri- St. Louis
1 University Blvd. St. Louis, Missouri
618-406-3527
October 21, 2011

The Promotion and Tenure Committee of the
Department of Biology at the
University of Missouri-St. Louis

Dear Sirs,

Dr. Spingola was my advisor and my professor for four classes over the two year period. I was enrolled as a full time student at UMSL. I took Genetics and the Genetics Lab in the fall of 2009, with Dr. Spingola as the in-class instructor in the lab. I took Cell Biology the last semester it was offered as a brick-and-mortar lecture course in the fall of 2010, and I took Virology in the spring of this year. My overall impression of Dr. Spingola is that he is a reliable professional with high expectations for his students. Dr. Spingola encourages students to engage in academic discussions outside of class, and designs his classes to incorporate problem solving by applying academic rigor of the UMSL Biology program and I highly recommend Dr. Spingola for promotion to Associate Teaching Professor.

In class, Dr. Spingola was always prepared with immensely thorough and detailed Power Point presentations that outlined exactly what students were expected to learn. His main method of introducing information is lecture, which he was obviously not particularly fond of doing, but in Genetics and Cell Biology, this is required. When I took Cell Biology, Dr. Spingola had essentially completed the transition of the class to an online format and I found it unnecessary to even bother going to class because his power point slides were so thorough. I was able to cover the material on my own time, and with hard work, I got an A in the class.

I found it common for students to misinterpret Dr. Spingola’s attitude in Genetics and Cell Biology as disinterested and bored, and at test time, unfair. I feel that Dr. Spingola purposely maintains a distance from his students in these classes because of the sheer numbers of students in the classes. Additionally, lower classmen are notoriously whiny, come to class and tests unprepared, and it was obvious Dr. Spingola does not suffer this laziness well. Additionally, I appreciated Dr. Spingola’s dedication to keeping the class on a level playing field, by working hard to discourage and prevent students from cheating. In this, he certainly does his due diligence.

As a teacher, Dr. Spingola never once pretended to be more than he is, and never promised more than he could deliver. At the beginning of every semester Dr. Spingola spelled out the study requirements for his courses and pointed out the various resources students have available to them through the Career Center and the Center for Student Success. I quickly
learned that Dr. Spingola did not see that being my buddy or my personal mentor was under the purview of his job. If I wanted to speak with Dr. Spingola about anything, it would have to be class related or about science.

I also think that because Dr. Spingola is younger and, I assume, unmarried, he must work hard to distance himself from students to avoid speculation about improper student-teacher relationships. Though I never once witnessed any improper behavior to invite any such speculation, more than any other professor in my entire decade-spanning college career, rumors and discussion about Dr. Spingola’s sexual orientation and dating status were of great interest to students. While I think this is often natural and mostly harmless behavior among students- I would think that for Dr. Spingola this has to be somewhat exasperating.

The Virology course offered students an entirely different experience from those of Genetics and Cell Biology. Dr. Spingola is aware of his lackluster presentation skills and at the beginning of every class would open up the floor for discussion on any news topics related to viruses or vaccines. It was my impression that these discussions were allowed because unlike Cell Biology and Genetics, the class was small and consisted of mostly well-vetted upperclassmen and graduate students. Virology is not part of the core requirements for Biology, and the students were attending class, in part, because they were interested in learning the subject matter. I enjoyed having scholarly discussions with my classmates about science. I gained respect for students who came to class and were able to apply what they had learned and clearly articulate their viewpoints. I found that I was compelled to work harder at learning the material, and I made sure that I was fully prepared when contributing to class discussions.

Besides classroom discussions about Virology in the news, Dr. Spingola also required students to write short papers analyzing and discussing newspaper articles covering news about viruses or vaccines. To fulfill the required number of papers, I had to sit down and comb through several newspapers daily—a task that I would not have otherwise done. Students were also required to contribute information regarding viruses found on the internet to an online class wiki. I found the wiki and newspaper projects fascinating. I learned more about viruses, vaccines, agricultural policy, and scientific controversy than I could have ever imagined. The scope of cutting edge drugs, science technology, and the myriad of research methods and approaches covered by the wiki far exceeded those covered by the textbook.

Another opportunity for earning points in all of Dr. Spingola’s classes was by attending the Science in the News seminars, held in the Millennium student center. This was an open forum attended by professors and students where students could participate in scholarly discussions about science and social policy. Students were able to sit at the table with their professors as peers. I feel that these opportunities are far too few and rare for students, especially at UMSL. It is these types of learning opportunities where students learn how capable they are, that their ideas are valued—or where they learn how much they have yet to learn and grow in order to be competent science professionals. Dr. Spingola also encouraged students to attend other talks being given by touring scholars and scientists. These events were engaging and instructive in a way that memorization and regurgitation simply cannot replicate.

My experience with Dr. Spingola as an advisor was that he made what could have been an annoyingly dense and bureaucratic process quite simple and painless. Dr. Spingola has a definite understanding of the requirements for graduation and is able to quickly help students
map out a plan based on their progress. I heard horror stories from other students who had other advisors, and I was always thankful that I had Dr. Spingola. Additionally, I often heard these exact sentiments relayed by other students who had him as an advisor.

Dr. Spingola was a positive factor in my education at UMSL. I purposefully took classes instructed by him because I felt I understood him and his methods. I felt his tests were tough but fair, and I always felt appropriately challenged. Dr. Spingola was predictable and reliable and I could always count on him doing his job. I know that not all students have the same appreciative view of him, but those students are usually not holding up their own end of the academic bargain. It is very important for educational institutions to have high standards for students. In today’s increasingly competitive climate full of wishy-washy for-profit institutions, it seems that many institutions cater to students in order to maintain levels of enrollment and revenue, or to ensure endowments. I hope that UMSL never falls into this trap, and that the Biology department continues to teach students in a manner that challenging, and germane to the study of science. I believe that Dr. Spingola fulfills his role well, and is an integral part of the teaching staff that makes UMSL an excellent school for students to study Biology.

Sincerely,

Roxanne Oesch
Class of 2011
September 14, 2011

Dear Promotion and Tenure Committee of the Department of Biology at the University of Missouri-St. Louis, I am both honored and privileged to write this evaluation letter in full support of Dr. Marc Spingola, Assistant Teaching Professor, for promotion to Associate Teaching Professor. I was enrolled in Cell Biology in fall of 2009 and in Virology in spring of 2010, both taught by Dr. Spingola. I am currently a second year medical student at Kansas City University of Medicine and Bioscience.

Although I have not had contact with Dr. Spingola since I graduated in spring of 2010 with a B.S. in Biology, his teachings have left a lasting impression on me, and proven to be in-valueable as I progress with my studies. As a medical student, I use the knowledge that he taught me on a daily bases. I have found that his teachings of the inner workings of the biological cell and his understanding of both viruses and prions to be equivalent to the teachings of my current medical professors. A great example of this occurred recently when my current professor discussed the many different types of vaccine developmental processes currently utilized, as well as the history behind the development of the polio vaccine. Dr. Spingola’s knowledge and teachings on this subject proved to be very helpful as he covered it in more details than my current studies allowed and gave me a working knowledge on the subject.

Reflecting back on my classes with Dr. Spingola, there was times when both I and my fellow students were frustrated with the amount of knowledge he expected us to master. He was one of the most difficult examiners I have ever had because he required the short answer form. This type of testing is not only demanding on the student, but also on the professor who must grade each paper by hand. However, with the demands of my current school, I look back at his technique of evaluation with admiration and appreciation. His process of teaching has helped me with long term retention of subjects that has proven vital in my role as a future medical practitioner. I have come to realize that his efforts in urging students to achieve their maximum educational abilities have served me well in my current endeavors both in and out of the classroom setting.

Besides Dr. Spingola demonstrating a true mastery of the subjects he taught, as well as encouraging students to excel, he also conducted himself in a manner, both in and out of the classroom, which exemplifies what it means to be both a professor of science and a mentor. In the classroom setting, I do not recall him ever being late to class. His classes were always well organized, using well written power-point slides, many of which I still refer back to in my current studies. He set the tone from day one that his classroom was a place of learning. A great example of this is how he had students bring in current newspaper articles that discussed the subject of virology at the beginning of each class. This method opened up the classroom for a
discussion of current events in the field of virology and expanded our understanding of the subject's importance. In addition, I have witnessed him handle disruptive students, as well as the less academically inclined individuals with common courtesy and respect, even though the same may not have been afforded him. Outside of the classroom setting, I have had conversations with personal subject where he took an active interest to my personal goals and thoughts, and demonstrated a willingness to share information about his own personal experiences.

Of the many biology teachers that had at the University of Missouri-St. Louis, Dr. Spingola ranks at the top with his peers. I am truly grateful that I had him as my professor, and would highly recommend him to any future students who are striving to enter the field of biology and medicine.

Please feel free to share this letter with whomever you feel may benefit. If you need more information or have any questions or concerns, please feel free to contact me.

Sincerely,

Michael P. Cooper

314-495-1434
11/4/2011
Letter on behalf of Dr. Spingola

Dr. Spingola was one of the finest professors that I had at UMSL. Frankly, I didn’t expect an online course to be very rigorous, but Dr. Spingola’s Cell Biology class turned out to be one of the most difficult and rewarding courses I took that semester. I am grateful to Dr. Spingola because he is both a hard worker and efficient organizer. Because we were taking a class online, Dr. Spingola required that each student post three substantial comments or questions a week. Cell biology had a large enrollment so this translated into quite a bit of reading and grading. Even better, Dr. Spingola would regularly post his own encouragements and critiques of our written work. As a student, I never felt as if I were doing all the work alone or cutoff from an intellectual community. Dr. Spingola did a marvelous job of ensuring that our class operated with a vibrant give and take of question, digression, explanation, and new questioning. Students were encouraged to be genuinely curious which in turn fostered an academic discipline enforced not just by the teacher, but by the student body. Our class functioned as a college class should, and this was due to the structure Dr. Spingola gave it. Dr. Spingola was also an excellent instructor. His teaching videos were exhaustive and complemented our readings well. Dr. Spingola is a challenging professor who brings out the best in his students. His standards for achievement are high, but because of his teaching ability students don’t hesitate to rise to the occasion. I recently took the MCAT and was able to score a 13 on the biological science section. This was due in no small part to the strong foundation I received in Dr. Spingola’s class. I believe that he is an invaluable asset to the UMSL community and will continue to be so for years to come.

John Patrick Murray
November 1, 2011

Dr. Patty Parker
Department of Biology
223 Research Building
UMSL

Dear Patty:

I have observed the teaching of Dr. Marc Spingola, Assistant Teaching Professor in the Department of Biology, in two of his upper level undergraduate biology courses, 3622 Cell Biology and 4602 Molecular Biology. Both courses have more than 30 enrollees.

In both courses I found him to employ current best practices of pedagogy. He clearly expressed, both orally and in written form the agenda for the class period, reviewed past assignments and gave future homework at the beginning of the class period.

Before class time he gave students an on-line quiz to establish a base-line of understanding and asked them to submit on paper questions they may have over the material so that he could address them in class.

He gave a 25 to 35 minute presentation using nicely prepared PowerPoint visuals punctuating his narrative with thought questions directed to individuals and content questions with full class responses using "clickers" to check for understanding.

Marc continued instruction using individual and/or small group work on a class problem. He proceeded around the room asking leading questions and soliciting comments and questions. He did not answer questions directly but asked guiding questions in response, usually with mention of a reference site.

In his lectures and explanations he used pragmatic examples that modeled research strategies. He also would give results of historical experiments related to the subject matter for the students to interpret. "What would you conclude from the data?" He would ask for the student to defend their choices or comments.
Marc interacts with ease with his students and they seem to enjoy his contemporary approach to content adding to the discussion with relevant, current news stories.

Marc practices excellent pedagogical skills and has an outstanding content knowledge base. It is without hesitation that I recommend Marc for promotion to associate teaching professor.

Sincerely,

Charles R. Granger
Professor of Biology and Education

CRG:nkd
22 November 2011

To Whom It May Concern:

I observed Marc Spingola teaching on 17 October 2011. Dr. Spingola was teaching this class, Biol4842 Immunology, for the first time (and was attending my first class in Immunology as well).

Marc lectured for an hour, and then broke the students into 4 or 5 groups to conduct a forensic analysis of disease symptoms. I was very impressed by Marc’s teaching techniques. His powerpoint slides were clear and not cluttered. He asked questions throughout his lecture, referring to previous lecture material and previous exams.

I arrived after the first half hour had gone by, but I was able to jump without misunderstanding. He is clearly in command of the material, and I would say, seemed very well organized and poised, given that this was the first time for him to teach this course. I learned a lot. I especially liked his forensic disease exercise. I think I could use this same technique in my graduate courses. He gave them a number of disease symptoms, responses of the immune systems, and background genetics. He let the students draw on any sources they could muster, including the internet via phones, and discuss among themselves about the possibilities. It felt very much like observing a medical team in action. I could see how this exercise could be very infectious (sorry for the pun): the students were on the edge of their seats trying to come up with the answer in the allotted time. The challenge for the students was not only to use information gained in this course but in all courses coming into this one.

Sincerely,

Robert J. Marquis
Professor and
Scientific Director, Whitney R. Harris World Ecology Center