

**BIOL 1050 GENERAL BIOLOGY I - Fall 2010**

**Instructor:** Dr. Marina M. Gerson

**Office:** N-272

**Office Hours:** Tues. 1-2, Wednesday 12-1, Thurs 1-2

**Contact Information:** mgerson@csustan.edu or (209) 664-6547 or in my office

**Website:** <http://science.csustan.edu/gerson/>

**About the instructor:** Dr. Gerson grew up in Southern California. She attended UC Santa Cruz for a degree in Environmental Studies and Biology. After college, she had a summer internship in S.F. Zoo's Insect Zoo and then worked as a technician in a cardiovascular development lab at UC San Francisco. After working for two years, she moved on to University of Texas at Arlington to earn her Ph.D. in Quantitative Biology. Her research interests center on the behavior and ecology of lizards, with a focus on desert lizards of the American west. She loves traveling and working in Latin America, SCUBA diving and snorkeling, and hiking.

**Texts & Materials:** All required and recommended materials are available in the campus bookstore. You may be able to find the same books for better prices by using online sources.

**1. *Biology***, 8th edition by Campbell and Reece, 2008, ISBN 978-0-8053-6844-4

- I selected this text as the primary book for this course because it is comprehensive, relatively easy to read, has excellent figures, and is a standard in the field. It also comes in a variety of formats.
- Text is available in several formats: Hardbound, paperback, Loose-leaf three-hole punched, and as an e-book.
- You will use this book in General Biology 2, as well, so you will get a good return on your investment.

**2. *A Bat Man in the Tropics*** by Fleming, 2003, ISBN 0-520-23606-8

- This is the memoir of a biologist who has had a long and successful career. I selected this book for several reasons: 1) it gives insight into the ways in which the field of biology changed over the course of the past forty-five years, 2) it provides an array of interesting facts about living things and the study of living things, and 3) it's pretty entertaining!
- You will participate in an online discussion board to share your thoughts about this book.
- One copy of this book is on reserve in the library. It is available at the circulation desk for up to 2 hours at a time.

**3. *Dictionary of Word Roots and Combining Forms*** by Borrer, 1988, ISBN 0874840538 (optional)

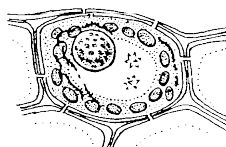
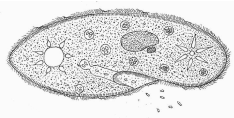
- This little book is optional, but it's really cheap.
- This book can help you learn to make sense of the language that biologists use. If you keep it handy, you will find it to be a valuable reference in this class and in others throughout your career. Making the language of biology your own is one of the biggest challenges you will face in this course.

**4. The iClicker is required** for this course.

- Using clickers in class helps to make lecture more interactive. It keeps you awake, allows you to earn participation points, and it helps me to gauge how well the class understands my presentation.
- Register your iClicker at [www.iclicker.com](http://www.iclicker.com) right away! Be sure to use your CSU Stanislaus ID number.
- You *can* purchase a used iClicker and re-register it under your own name.

**5. You will need to use the **Blackboard course site** for this class.**

- Go to <http://my.csustan.edu> and click on the "Blackboard" link on the left side of the page.
- Login and enter the Biology 1050-001 course site to find course content.
- There are many student computer labs available on campus; you do not need to own a computer.



## COURSE DESCRIPTION AND OBJECTIVES

### **Purpose of Course**

The purpose of the introductory series is twofold: (1) to introduce students to the breadth of the biological sciences and (2) to help beginning biology majors master the fundamental facts and theories needed for success in subsequent courses.

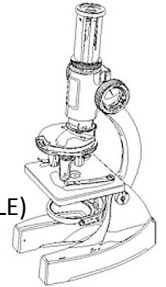
This course is the first in the two-course series and will focus on cellular and molecular biology, genetics, and microevolution.

Learning objectives and GE Goals will be met through a combination of Lecture (LE) & Lab (LA) experiences.

### **Learning Objectives**

Students will be able to describe, identify, and/or explain:

- The importance of membranes to cells. (LE, LA)
- The flow of information within cells, between cells, and between the environment and cells. (LE)
- The flow of energy within cells, between cells, and between the environment and cells. (LE, LA)
- The principles of homeostasis and processes that maintain cell functions. (LE, LA)
- The chemical principles of macromolecules and formation of cellular structure and with cellular functions. (LE)
- The relation between cell structure and function. (LE, LA)
- The dynamics of cellular reproduction in reference to the cell cycle, growth and apoptosis. (LE, LA)
- How the cell integrates into the hierarchical organization of living systems. (LE)
- The main ways cells acquire, transport, process, use, and transfer nutrients. (LE, LA)
- The molecular biology techniques used to understand the cell. (LE, LA)



Students will:

- Value the process of scientific inquiry as a means of understanding the natural world. (LE, LA)
- Develop an appreciation for biology and its relevance to broader societal issues. (LE, LA)
- Identify with and participate as a member of the scientific community. (LE, LA)
- Conduct themselves and their activities in a professional manner. (LE, LA)



### **General Education Goals**

1. To provide an overview of the principles, methodologies, and perspectives of biology. Concepts include: cell theory, evolution, genetics, biochemistry, and the nature of science. (LE, LA)
2. To development an understanding of fundamental concepts to allow effective oral and written communication on biological issues. Specifically, through laboratory reports and presentations students will demonstrate the ability to clearly communicate in a scientific format. (LE, LA)
3. To provide working background to analyze and critically evaluate biological issues and facilitate continuous inquiry and life-long learning in scientific and non-scientific settings. (LE, LA)
4. To provide the framework to understand, examine critically and use information from various reliable sources to answer future biological questions. (LE)
5. To understand the relationships between the fields of biology, chemistry, physics, geology, and other sciences with an emphasis on how these fields are interrelated. (LE)
6. To develop more informed views of the connections of biology with respect to current and future issues of ethical judgment and social responsibility. (LE, LA)

### **Course Requirements**

Prerequisite: Grade of A or B in high school biology, satisfactory score on biology qualifying examination, or BIOL 1010.

### **Assessment Methods, Grades, and Grading**

The most practical assessment measure for content-heavy courses is the objective exam. Most of your grade for the lecture portion of the course will be based on lecture exams. Participation points will be available daily in lecture, through participation with your iClicker. Questions will include pre-test quiz questions, comprehension questions, and summary/review questions. Thus, you have the opportunity to earn participation points through the entire class period. There will be opportunities to gain a few points of extra credit in lecture and lab. Lab points are added to lecture points to calculate your total grade in the course. I do not use a curve. This course is graded plus/minus, and there is a CR/NC (Credit/No Credit) option.

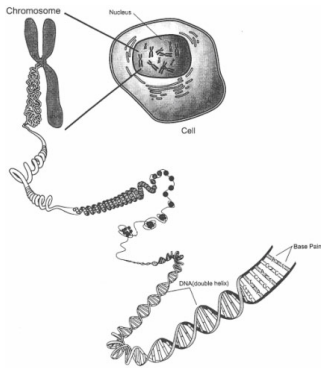
Any homework or extra credit assignment must be turned in on the day and time it is due. Under normal circumstances no extra credit will be accepted after the due date. Ten percent per day (counting weekends and holidays) will normally be subtracted from homework turned in late. No late homework assignment or extra credit assignment will be accepted after that graded assignment has been returned to the class. There are typically no make-up assignments in this course.

The last day to drop a class is September 20. The last day to apply for the CR/NC grading option is November 12. To change your grading option, fill out a yellow Add/Drop form: drop the course for credit and add the course for CR/NC. You will need my signature.

<u>Course Component</u>	<u>Possible Points</u>
Syllabus exercise	10
Exam 1	150
Exam 2	150
Exam 3	150
Group Presentation	75
Class Participation	90
Bat Man Discussion Board (3 x 25 pts.)	75
<u>Lab</u>	<u>300</u>
<b>TOTAL POINTS POSSIBLE</b>	<b>1000</b>

**I offer an optional comprehensive final exam.**

**If you choose to take the final, your grade on the final will replace your lowest test score, even if the final score is lower.**



<u>Point Range</u>	<u>Grade Earned</u>
930-1000	A
900-929	A-
870-899	B+
830-869	B
800-829	B-
770-799	C+
730-769	C
700-729	C-
670-699	D+
630-669	D
600-629	D-
<600	F

### ***Expectations of Students***

- **Engage the course material** through participation in class, reading the text, and thinking about biology outside of class.
- **Be respectful of others** by arriving on time, giving your attention to whoever is presenting, listening to the ideas of your classmates, turning off cell phones, and generally being polite. This also means no text-messaging (yes, the person at the front of the room *can* tell what you are doing) and no internet surfing (it's distracting to those sitting around you).
- **Observe lab safety** and cleanliness procedures. All lab materials must remain in lab at all times.
- Students are expected to **take exams** during the scheduled dates and times. If you have a legitimate excuse to miss a lecture exam, I need to know the reason, in writing, at least a week before the exam date. Arrangements for taking the exam at another time must be made at the time of the written request. If you have an emergency less than a week before an exam, you must let me know of the emergency prior to the exam time if possible. You must provide a valid, written excuse on or before the next class period after the exam date, in order to be able to take the exam at an alternate time. If the emergency lasts beyond the next class period after the exam, you must at least let me know about the situation, and you must bring a valid, written excuse as soon as you return to school. I will determine the appropriateness of taking the missed exam in this case.
- **Maintain your academic integrity.** *Your integrity is your most valuable asset as a student* and in your future career as an educated person. In line with this, it is the policy of the Department of Biological Sciences that anyone caught *cheating* or *plagiarizing* will receive a grade of F for the course. I reserve the right to request any student suspected of cheating to take a second, different exam on the material. Protect yourself by making your integrity obvious.

### ***Expectations of the Instructor***

- Same as those for students, in terms of engagement in the course, respect for participants, and observation of lab safety procedures. I do my best to protect your privacy and maintain an environment in which you can learn.
- Be **open to feedback** on the course and be flexible in order to make appropriate changes to meet student needs.
- Be **fair and consistent in assessment** of student learning.
- Be **available to students** outside of class time to answer questions and discuss class material.

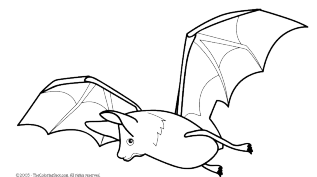
**Tentative Course Outline**

<b>Week</b>	<b>Lecture Topic(s)</b>	<b>Reading (Campbell &amp; Reece; Ted Fleming)</b>
Aug 23, 25, 27	Course Introduction Science and the Scientific Method; Chemistry of Life	1, 2
Aug 30, Sep 1, 3	Chemistry of life: Water, Carbon, Macromolecules	3*, 4*, 5*
<b>Sep 6</b> Sep 8, 10**	<b>Labor Day Holiday – no classes</b> The Cell: Tour of the Cell, Membrane Structure	-- 6*, 7*
Sep 13, 15, 17	Membrane Function The Cell: Metabolism Catch-up	7*, 8* <b>1-8</b>
<b>Sep 20</b> Sep 22, 24	<b>EXAM ONE &amp; Census Date/Last Day to Drop</b> The Cell: Cellular Respiration	<b>Ch 1-8, TF Preface-4</b> 9*
Sept 27, 29, Oct 1	The Cell: Photosynthesis	10*
Oct 4, 6**, 8	The Cell: Cell Communication, Cell Cycle and Mitosis	11*, 12*
Oct 11 <b>Oct 13</b> Oct 15	Genetics: Meiosis <b>Columbus Day Holiday – no classes</b> Genetics: Meiosis cont.	13* -- 13*
Oct 18, 20, 22	Genetics: Mendel	14*
Oct 25, 27, 29	Genetics: Chromosomal Basis of Inheritance Catch-up	15* 9-15
<b>Nov 1</b> Nov 3, 5	<b>EXAM TWO</b> Genetics: Molecular Basis of Inheritance	<b>Ch 9-15, TF 5-9</b> 16*
Nov 8, 10, 12	Genetics: Transcription & Translation	17*
Nov 15, 17, 19**	Genetic Expression Viruses	18* 19*
Nov 22**, 24	Genetics: Biotechnology, Genomic Evolution	20*, 21*
Nov 29, Dec 1, 3	Population Genetics and Microevolution: Evolution & Mechanisms Speciation	22*, 23*, 24*
Dec 6 <b>Dec 8</b>	Catch-up <b>EXAM THREE</b>	16-24 <b>Ch 16-24, TF 10-Epi</b>
<b>Wed Dec. 15</b>	<b>OPTIONAL COMPREHENSIVE FINAL EXAM 8:30-10:30 am</b>	<b>Ch 1-24</b>

\*Videos to view before covering this chapter in class. \*\*Group Presentation Date

**Special circumstances:**

I understand that unusual circumstances can temporarily alter your availability for our class. If you know ahead of time that you will have a conflict on an important day, please get in touch with me as soon as possible. If an unforeseen incident causes you to miss an exam or presentation, get in touch with me as soon as your circumstances allow.



If you are a student with a documented disability, please meet with me privately as soon as possible so we arrange the accommodations that will foster your success in this course.

## ***How you Earn your Grade in Lecture***

**As I complete grading for each assignment or exam, you will be able to check your score on Blackboard.**

### **Exams**

There will be three midterms and an optional comprehensive final. Midterms will consist of 50 questions to be answered on a Scantron (bring your Scantron and pencil). There will also be one page (front and back) of short answer/identify a picture from the text/label-a-process questions. Questions will cover material from lecture and the assigned reading. Scantron questions will be valued at 125 points on each exam and short answer at 50 points. If you commit to taking the comprehensive final, your grade on the final **will replace** your lowest exam score.

### *Tips for learning the material*

In my experience, many bright students are simply not challenged during high school. As a result, these smart and capable people haven't had the opportunity to develop the study skills needed for success in the university. Don't let my first exam catch you by surprise! This course is content-heavy, and you will **not be able to cram** with much success for my exams. **Make your study time a daily habit.**

- Skim the whole chapter before you come to class. Carefully read and interpret the figures and tables and carefully read each vocabulary term.
- Watch any assigned videos before coming to class. These will give you a preview of the day's material.
- Take notes in class based on what you hear. Do not spend the class period copying every word off my slides. These same words can be found in your text.
- After class review your notes. Go back and read the text book to fill in gaps in your understanding. **Some students have been very successful by copying out their notes onto flashcards for study.**
- After class, write 7-10 exam questions for the material. This will give you a study sheet for before the exam.
- When you study, don't fool yourself! When you page through the text book, everything will look familiar. This doesn't mean that you personally own the knowledge yourself. Make it yours! After each class day, without looking at your notes or the book, write down a list of the topics and subtopics covered. Write down key words and their definitions. Make your best sketch of the figures/illustrations presented. After this, open your text and see how well you did. The parts you missed entirely are the parts you need most to study, the parts you partially remembered also need some attention. The parts you know perfectly are part of your own knowledge set.

### **Participation**

*In class* – You will use your clicker to respond to in-class questions. This helps me gauge your level of comprehension and will help me with the pacing of the material. It also allows me to reward you for being dedicated in your lecture attendance. I know things come up, and you might miss a day or two of class; don't worry, it will be safe to miss seven days without penalty. You can earn 2 clicker points per day just for trying and 2.5 points per day for clicking the correct answers. Additionally, you can earn one bonus participation point for attendance on group presentation days.

**You must be present to earn participation points. Asking another student to click for you OR clicking for someone else is obviously cheating. Anyone using more than one clicker will receive an F for the course.**

**A Bat Man in the Tropics Discussion Board** – This is an easy way to earn nearly-guaranteed points!

Ted Fleming's memoir is a reflection on the life and development of a biological researcher, as times, people, and technologies change. Sometimes Ted focuses on scientific theory, but at other times he comments on the difficulties of balancing career and family or even on politics and relationships with colleagues. I feel that by reading this book, you'll gain a broader perspective on the study of biology and a better understanding of life in academics. "Personal development" is an important theme for me. One of my hopes for this semester is that you will see progress in your own personal development, both as an individual and as a scholar. I hope that reading about Ted Fleming's personal pathway will give you insight into your own possibilities, and I encourage you to connect his past with our present and future. Look for the funny parts of his story, or the surprising parts, or the parts where Ted is out of his element. Look for the parts you can relate to, and the parts you can't relate to at all. *We often learn the most when we are completely out of our element and feel most uncomfortable.*

So where do the points come from? The assigned chapters are due at each exam date. **For each of the three periods of time, make three unique, thoughtful postings** on the discussion board. **Your unique postings are due before the exam time.** Your post can comment on the reading or on another person's post. It must contain some substance, so it cannot simply be an affirmation of someone else's post. For example, you cannot just respond to another post with "I agree!" or "I disagree!" You should fully explain your position. **In general, posts should be at minimum of five sentences long.** **Don't forget our culture of respect for our classmates.** If you do disagree, please explain your opposing position politely. A copy of the book is on reserve in the library.

**Group Presentation** – Check on Blackboard for the Grading Rubrics for this project.

To foster your confidence in exploring, discussing and sharing scientific information, you will work in a group to prepare one **short, ten-minute** presentation. *Your main objective is to provide a memorable lesson that will help your classmates to master the material.* You will need to meet outside of class times to prepare your presentation.

**Group Structure:** Groups will consist of six students, hopefully from the same lab section. Dr. Gerson will facilitate group formation.

**Presentation Dates and Topics:** Four groups will present on different subtopics of the main theme on each presentation day. **Your individual evaluation of your group is due one class day after your presentation.**

Date	Theme	Group ID	Subtopic
September 10	A Tour of the Cell	A1	Prokaryotic Cells versus Eukaryotic Cells
		A2	A Tour of the Eukaryotic Cell:
		A3	A Tour of the Eukaryotic Cell:
		A4	Structure of the Cell Membrane
October 6	The Life and Times of a Normal Cell	B1	Overall Cell Cycle
		B2	Importance of Checkpoints in G1 and G2
		B3	Mitosis: Prophase, Metaphase, Anaphase
		B4	Mitosis: Telophase and Cytokinesis & how they differ in animals and plants
November 19	Living or Not: Viruses	C1	Types of Viruses: an Overview of Structure
		C2	The Bacteriophage Lysogenic Cycle
		C3	The Bacteriophage Lytic Cycle
		C4	Use in Biotechnology
November 22	Our Biotechnology Toolbox	D1	Restriction Enzymes
		D2	Polymerase Chain Reaction
		D3	Bacterial Transformations
		D4	Cloning: Dolly the Sheep

**Presentation Guidelines:**

- Your goal is to provide your classmates a valuable learning opportunity.
- The presentation can be **no more than ten minutes!** You will lose points if you go over time.
- Stick to your assigned subtopic and be aware of the other subtopics in your session (so you don't waste your time on someone else's project).
- Your group will need to decide on roles for each member and each member **must** take part in the preparation and/or presentation of your project. Some suggested roles are: group chairperson, secretary, textbook research, internet research, illustrations/graphics, presenter, videographer, audio-visual technician. Your assigned roles are due to me one week before your presentation.
- Your presentation can be creative! You are welcome to make use of any resources we have available, including laptop, internet, document camera (overhead projector), and any materials you wish to bring with you. You can provide a straightforward presentation of the information, or you can perform a skit, song, or puppet show, you can show a video or animation produced by your group, or you can use any other creative means you can think of to share information.
- Your classmates will be grading you according to the value they receive from your work, so bear in mind that content delivery is key.
- Be sure to practice! If you cannot complete your lesson in ten minutes, your score will suffer!

**When your group is not presenting:**

- Be attentive in support of your peers! This is a big class, and it can be intimidating to present to a large group!
- You earn one bonus participation point for attending class on group presentation days.
- You are responsible for judging the work of your peers. Your main criterion is: **how well did the presentation help me to learn the material?**

**TUTORING ON CAMPUS** – Free tutoring services are available to assist you in most disciplines, including in biology! Library 112; Phone (209) 667-3642; Web <http://www.csustan.edu/Tutoring>

**CAMPUS COUNSELING SERVICES** – Overwhelmed by the stress of juggling classes and your home life? Our campus offers excellent counseling services to help support you! MSR 210; Phone (209) 667-3381; Web <http://www.csustan.edu/Counseling/>

**Assigned Videos**

These videos are freely available on the internet. I hope they will provide you a different means of engaging the course material. You should view the videos for each class day before coming to class, in order to be best prepared for the day's topics. You can access these easily by clicking on the links in the External Links page on Blackboard.

<b>Chapter: 3</b>	<b>Topic: Properties of Water (4 minutes)</b> <a href="http://www.youtube.com/watch?v=4auXUSY9c54">http://www.youtube.com/watch?v=4auXUSY9c54</a>
<b>Chapter: 4</b>	<b>Topic: Carbon (3.5 minutes)</b> <a href="http://www.youtube.com/watch?v=noXKu7cn7hU">http://www.youtube.com/watch?v=noXKu7cn7hU</a>
<b>Chapter: 5</b>	<b>Topic: Biological Macromolecules (14 minutes)</b> <b>Carbohydrates:</b> <a href="http://www.youtube.com/watch?v=2A1RvoMvKQM">http://www.youtube.com/watch?v=2A1RvoMvKQM</a> <b>Proteins:</b> <a href="http://www.youtube.com/watch?v=6OFJXw-Pghs">http://www.youtube.com/watch?v=6OFJXw-Pghs</a> <b>Lipids:</b> <a href="http://www.youtube.com/watch?v=i1o4371M5Xo">http://www.youtube.com/watch?v=i1o4371M5Xo</a> <b>Nucleic Acids:</b> <a href="http://www.youtube.com/watch?v=Cb1Fh5M4jIO">http://www.youtube.com/watch?v=Cb1Fh5M4jIO</a>
<b>Chapter: 6</b>	<b>Topic: Metabolism: Enzymes and Chemical Reactions (5.5 minutes)</b> <b>Enzymes:</b> <a href="http://www.youtube.com/watch?v=PILzvT3spCQ">http://www.youtube.com/watch?v=PILzvT3spCQ</a> <a href="http://www.youtube.com/watch?v=N28uXHplmz0">http://www.youtube.com/watch?v=N28uXHplmz0</a> <a href="http://www.youtube.com/watch?v=rHDp4wJ1U0w">http://www.youtube.com/watch?v=rHDp4wJ1U0w</a>
<b>Chapter: 7</b>	<b>Topic: Tour of the Cell (10 minutes)</b> <a href="http://www.youtube.com/watch?v=Fzj6TRnXmps">http://www.youtube.com/watch?v=Fzj6TRnXmps</a> <b>Spend a few minutes playing with this interactive model:</b> <a href="http://www.cellsalive.com/cells/cell_model.htm">http://www.cellsalive.com/cells/cell_model.htm</a>
<b>Chapter: 8</b>	<b>Topic: Membrane Structure and Function (1.5 minutes)</b> <a href="http://www.youtube.com/watch?v=ULR79TiUj80">http://www.youtube.com/watch?v=ULR79TiUj80</a>
<b>Chapter: 9</b>	<b>Topic: Cellular Respiration (~60 minutes of videos)</b> <b>Quick Overview:</b> <a href="http://www.youtube.com/watch?v=AdtAu5JgOV0">http://www.youtube.com/watch?v=AdtAu5JgOV0</a> <b>Doc Fink Part 1: ATP</b> <a href="http://www.youtube.com/watch?v=WxQeKBHAdn8">http://www.youtube.com/watch?v=WxQeKBHAdn8</a> <b>Part 2: Electron Transport</b> <a href="http://www.youtube.com/watch?v=Gfo7df5tiKU">http://www.youtube.com/watch?v=Gfo7df5tiKU</a> <b>Part 3: Glycolysis</b> <a href="http://www.youtube.com/watch?v=6AhdTZ03Mvg">http://www.youtube.com/watch?v=6AhdTZ03Mvg</a> <b>Part 4: Glycolysis &amp; Fermentation</b> <a href="http://www.youtube.com/watch?v=Zc_rhzn3tPA">http://www.youtube.com/watch?v=Zc_rhzn3tPA</a> <b>Part 5: Krebs Cycle</b> <a href="http://www.youtube.com/watch?v=dCvfr4yJ8w">http://www.youtube.com/watch?v=dCvfr4yJ8w</a> <b>Part 6: Electron Transport</b> <a href="http://www.youtube.com/watch?v=7lka5yaqY7c">http://www.youtube.com/watch?v=7lka5yaqY7c</a> <b>Part 7: Oxidative Phosphorylation</b> <a href="http://www.youtube.com/watch?v=D68uKTG6H0o">http://www.youtube.com/watch?v=D68uKTG6H0o</a>
<b>Chapter: 10</b>	<b>Topic: Photosynthesis (12 minutes)</b> <b>Photosystems:</b> <a href="http://www.youtube.com/watch?v=3UfV060N27g">http://www.youtube.com/watch?v=3UfV060N27g</a> <b>Light Reactions:</b> <a href="http://www.youtube.com/watch?v=hj_WKgnL6MI">http://www.youtube.com/watch?v=hj_WKgnL6MI</a> <b>Calvin Cycle:</b> <a href="http://www.youtube.com/watch?v=mHU27qYJNU0">http://www.youtube.com/watch?v=mHU27qYJNU0</a>
<b>Chapter: 11</b>	<b>Topic: Cell Communication (8 minutes)</b> <a href="http://www.youtube.com/watch?v=tMMrTRnFdI4">http://www.youtube.com/watch?v=tMMrTRnFdI4</a> <a href="http://www.youtube.com/watch?v=NMeBZlbs2dU">http://www.youtube.com/watch?v=NMeBZlbs2dU</a> <a href="http://www.youtube.com/watch?v=U6uHotIXvPo">http://www.youtube.com/watch?v=U6uHotIXvPo</a>
<b>Chapter: 12</b>	<b>Topic: The Cell Cycle/ Mitosis (4.5 minutes)</b> <a href="http://www.youtube.com/watch?v=VIN7K1-9QB0">http://www.youtube.com/watch?v=VIN7K1-9QB0</a> <a href="http://www.youtube.com/watch?v=DD3IQknCEdc">http://www.youtube.com/watch?v=DD3IQknCEdc</a> <a href="http://www.youtube.com/watch?v=aDAw2Zg4Ige">http://www.youtube.com/watch?v=aDAw2Zg4Ige</a> <a href="http://www.youtube.com/watch?v=m73i1Zk8EA0">http://www.youtube.com/watch?v=m73i1Zk8EA0</a> <a href="http://www.youtube.com/watch?v=3kpR5RSJ7SA">http://www.youtube.com/watch?v=3kpR5RSJ7SA</a>
<b>Chapter: 13</b>	<b>Topic: Meiosis (2.5 minutes)</b> <a href="http://www.youtube.com/watch?v=MqaJqLL49a0">http://www.youtube.com/watch?v=MqaJqLL49a0</a>
<b>Chapter: 14</b>	<b>Topic: Mendelian Genetics and the Gene (19.5 minutes)</b> Go to the Virginia Commonwealth University site and watch the titles below: <a href="http://www.pubinfo.vcu.edu/secretsofthesequence/playlist_frame.asp">http://www.pubinfo.vcu.edu/secretsofthesequence/playlist_frame.asp</a> *All in the Family: Genetics and Family Health History (10 minutes) Perfect Pitch – The Musical Gene (9.5 minutes)
<b>Chapter: 15</b>	<b>Topic: Chromosomal Inheritance</b> Go to the Virginia Commonwealth University site and watch the titles below: <a href="http://www.pubinfo.vcu.edu/secretsofthesequence/playlist_frame.asp">http://www.pubinfo.vcu.edu/secretsofthesequence/playlist_frame.asp</a> On Down – Down Syndrome (9.5 minutes)



**Chapter: 16 Topic: Molecular Basis of Inheritance: DNA Replication (21.5 minutes)**

Go to the Virginia Commonwealth University site and watch the titles below:

[http://www.pubinfo.vcu.edu/secretsofthesequence/playlist\\_frame.asp](http://www.pubinfo.vcu.edu/secretsofthesequence/playlist_frame.asp)

The Secret of Life – The Discovery of DNA Structure (9.5 minutes)

What if? A World without Code – DNA (9 minutes)

**DNA Replication:** <http://www.youtube.com/watch?v=hfZ8o9D1tus>

<http://www.youtube.com/watch?v=teV62zrm2P0>

**Chapter: 17 Topic: From Gene to Protein: Transcription and Translation (15 minutes)**

**Overview:** [http://www.youtube.com/watch?v=XIG\\_KCAUWPI](http://www.youtube.com/watch?v=XIG_KCAUWPI)

<http://www.youtube.com/watch?v=983lhh20rGY>

<http://www.youtube.com/watch?v=NJxobgkPEAo>

**Transcription:** <http://www.youtube.com/watch?v=vJSmZ3DsntU>

**Translation:** <http://www.youtube.com/watch?v=B6O6uRb1D38>

<http://www.youtube.com/watch?v=5bLEdd-PSTQ>

**Chapter: 18 Gene Expression (6 minutes)**

[http://www.youtube.com/watch?v=OEWOZS\\_JTgk](http://www.youtube.com/watch?v=OEWOZS_JTgk)

<http://www.youtube.com/watch?v=ea35iuUT5C8>

**Chapter: 19 Topic: Viruses (57 minutes)**

Howard Hughes Medical Institute on “Microbe Hunters: Tracking Infectious Agents”

Scan down to the 1999 Holiday Lecture Series to find this title.

This is a GREAT video, so bear with the host through the introductions.

<http://www.hhmi.org/biointeractive/disease/lectures.html>

**Chapter: 20 Topic: Biotechnology (54 minutes)**

Go to the Virginia Commonwealth University site and watch the titles below:

[http://www.pubinfo.vcu.edu/secretsofthesequence/playlist\\_frame.asp](http://www.pubinfo.vcu.edu/secretsofthesequence/playlist_frame.asp)

A Green Light for Biology – Making the Invisible Visible (10 minutes)

A Link for the Missing – DNA Fingerprinting (7.5 minutes)

Got Silk? Biotech Applications (9 minutes)

Bioethics – Drawing the Line (12 minutes)

The Chosen Child – Screening Genetic Content (9.5 minutes)

The Cloning Conflict – Parkinson’s Disease (6 minutes)

**Chapter: 21-24 Topic: Evolution (10 minutes and 88 minutes)**

**Origin of multicellularity:** [http://www.youtube.com/watch?v=JVqxyYBuI\\_U](http://www.youtube.com/watch?v=JVqxyYBuI_U)

**VIEW: Fossils, Genes, and Mousetraps, by Kenneth Miller** <http://www.hhmi.org/biointeractive/evolution/lectures.html>

