# CBL Biology: Life Science Option

**BSCS Green Version 10th edition**
***Biology An Ecological Approach***
**Lesson Plan Quarter 2, Week 5, Day 1**

## Outcomes for Today

Standards Focus: 2abde

### PREPARE

**1.** Background knowledge necessary for today's reading.

In simple words, this lesson gets down to the basic biological principle that only one sperm can fertilize an egg. You may want to do a little pre-assessment of student knowledge at this point to determine some basic understanding and assumptions. For example, ask the question, "If a female human has sex with several males in rapid succession, will the resulting new child be a combination of the various sperm donors?" Ask if this is possible. Why or why not. Another question might be, "Under what conditions can a virgin become pregnant?" Such discussion can increase interest (if this needs to be done) and set the stage for re-teaching according to the biological facts.

**2.** Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

**sperm** **semen** **enzyme** **ovum** **embryo**

•Show, say, explain, expand, explode or buzz about the word briefly.
•Show, say and define the word quickly and add to the word wall.

### READ

**3.** Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

•Mention the setting and main ideas.
•Point to concept chart as you quickly review it.
Reproduction in living things is either sexual or asexual.
Gametes are reproductive cells necessary for sexual reproduction.
Male and female sex cells unite and combine (first forming the one-celled zygote) in the reproductive process to produce an embryo that grows into a new organism.

 

Hormones (chemical messengers) control human sexual function and drive.
In humans, the female egg is "available" for fertilization for a limited time only once a month.

## 4. Read directions for investigation/activity.

## 5. Read text. Ch 6, "Continuity Through Reproduction", Section 6.8, pp. 166-167

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

| Setting | Characters | Pages |
|---|---|---|
| human female uterus | semen<br>sperm<br>ova | 166 |

# RESPOND

## 6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important concepts and post these on the billboard.

Students might mention:

In humans, the sperm has only one route towards fertilization and that is through the female vagina.
Sexual intercourse is the typical method for sperm introduction into the female.
Sperm can live for up to 48 hours under the right conditions such as in the female reproductive tract.
Only one sperm can unite and fertilize an egg. However, it takes many sperm (attempting to fertilize the egg and releasing an enzyme) to break down the barrier around the egg.

## 7. Post information on the billboard. Add new information to ongoing class projects on the wall.

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

# EXPLORE

## 8. Explore today's investigation with inquiry activities.

## **9.** Explore today's simulation with inquiry activities.

## **10.** Collect data and post.

**One possible activity:**

**Oh to Be Female!**

There are several possibilities for activities. Begin by reviewing the human female cycle.
Refer to Transparency 14 as you review the human female cycle with students.
This would be a good time (depending on the nature of the class) for a little sharing.

Another activity could be designed to produce empathy for the pregnant female condition. Several possibilities:

Invite a third trimester very pregnant guest speaker. Have her talk about what it is like to be pregnant. This can be a powerful sharing.

Another activity is to develop a sense of empathy by simulating pregnancy (especially powerful for the males). Visit this website to see an example of the "empathy belly":

http://www.empathybelly.org/home.html

There is a possibility that the local Planned Parenthood could refer you to a resource for loaning of materials. Here is one in another state. Go to the local Planned Parenthood.

http://www.ppct.org/education/resources/empathybelly.shtml

An article on the day dad was pregnant:

http://www.parenting.com/parenting/pregnancy/article/0,19840,733950,00.html

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

**Key Questions**

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐evaluate and ☐inference questions every day.

How many sperms can fertilize an egg? Why is this possible?

What is the purpose of the enzyme released by the sperm cells during the fertilization process?
What is the difference between semen and sperm?

**Key Paragraph**
Before fertilization can take place, sperm cells must enter the body through the vagina. This usually occurs during sexual intercourse. As the male becomes sexually excited, the penis fills with blood and becomes rigid. The sperm cells begin to move through a series of ducts into the penis. After further stimulation, the male reproductive system responds by expelling three to four milliliters of semen.

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading

"Oh it must be *that time of the month*." Or "Oh that explains her attitude, it's *that time of the month!*"

How many times do we hear people (mostly male) make this statement with regard to a female?

Let's suppose you (the student) are a highly educated and paid attorney. Write a legal brief in defense of female moods based on hormones. Use scientific evidence to back your case.

### 12. Close with a short summary.

Extend the reading to the students' lives or to the world.

 

# CBL Biology: Life Science Option

**BSCS Green Version 10th edition**
***Biology An Ecological Approach***
**Lesson Plan Quarter 2, Week 5, Day 2**

## Outcomes for Today

Standards Focus: 2d 4d 7b

## PREPARE

### 1. Background knowledge necessary for today's reading.

It can be a difficult concept for students to understand the first stages of development. They generally have a pretty good understanding about fertilization; they "get" pregnancy, but those first few weeks from zygote to small fetus can be an elusive concept. Once again, do a little pre-assessment discussion. You could simply have them draw (from what they know) those first several weeks after fertilization. This will help with the prior knowledge starting point.

### 2. Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

**differentiation** **morphology** **embryo** **blastula** **gastrula**

•Show, say, explain, expand, explode or buzz about the word briefly.
•Show, say and define the word quickly and add to the word wall.

## READ

### 3. Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

•Mention the setting and main ideas.
•Point to concept chart as you quickly review it.
Reproduction is necessary for the survival of the species.
In sexual reproduction, the new organism is a combination of genetic material from both parents.
The fertilized egg is a single cell (zygote).
Development begins after the zygote begins to grow and divide.

**4.** Read directions for investigation/activity.

**5.** Read text. Ch 7, "Continuity Through Development", Sections 7.1 & 7.2, pp. 170-174

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

| Setting | Characters | Pages |
|---|---|---|
| developing blastula<br>developing gastrula | dividing cells 2-4-8-16, etc.<br>cell layers (ectoderm, mesoderm, endoderm) | 172<br>173 |

## RESPOND

**6.** Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important concepts and post these on the billboard.

Students might mention:

As the developing new organism grows, the cells begin to change in looks and function.
There is no growth in the size of the developing new organism (animals) during the first stages of development.
The cells begin to develop first into a blastula (a hollow ball-like structure).
The next stage is a gastrula where some of the different cells begin to move into specialized areas.
As the organism grows, the developing cells begin to take on different appearances and functions. This is called specialization.

**7.** Post information on the billboard. Add new information to ongoing class projects on the wall.

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

## EXPLORE

**8.** Explore today's investigation with inquiry activities.

**9.** Explore today's simulation with inquiry activities.

## **10.** Collect data and post.

**One possible activity:**

**Human Embryo Development**
There are several good websites that show human development. These could be accessed now to build interest for the next several lesson plans.

This is a site that shows human embryo development in still frame stages:

http://visembryo.com/baby/index.html

This one has a "plug in" that shows the development of a human embryo as a time lapse event. It includes some teacher study guides and reference materials for students.

http://www.pbs.org/wgbh/nova/odyssey/clips/movhum.html

You will probably need to utilize these resources with some sort of projection hardware in order to have a discussion with students.

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

**Key Questions**

When is development "triggered"?
Describe the first stages of cell division in a developing embryo.
Draw a blastula and a gastrula and label important parts such as the cell layers.
What is differentiation? Give some examples.
What are the three layers of a developing embryo and what will each layer eventually turn into?

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐evaluate and ☐inference questions every day.

**Key Paragraph**
At the moment of fertilization, when the haploid (*n*) set of chromosomes in the sperm nucleus joins with the haploid (*n*) set in the ovum nucleus, the diploid *(2n*) number of chromosomes is restored. The zygote that results is ready to begin development, a series of events that converts a single cell into a fully formed individual. Embryonic development is the result of three basic processes: cell division, cell movement, and cell differentiation.

## EXTEND

**11.** Prompt every student to write a short product tied to today's reading

**Strange Encounter**
Suppose you (the student) are walking through the forest and you come across an extraterrestrial such the famous E.T. This alien actually speaks your language and it asks you the following question: "Yo, earthling, how did you come to be?" The alien wants this description in writing and you are the first human it has encountered. Write a short paragraph addressing the alien's question.

**12.** Close with a short summary.

Extend the reading to the students' lives or to the world.

 

# CBL Biology: Life Science Option

**BSCS Green Version 10th edition**
***Biology An Ecological Approach***
**Lesson Plan Quarter 2, Week 5, Day 3**

## Outcomes for Today

Standards Focus: 2d 4d 7b

### PREPARE

**1.** Background knowledge necessary for today's reading.

Chemistry and chemical reactions are essential to understanding how hormones in a developing organism are responsible for the development of the many different organs and systems in the organism. This might be a good time to visit cause and effect relationships to assist students toward a basic understanding of complex chemical systems as well as physiology. Review some basic cause and effect relationships regarding hormones and chemicals that students could relate to. For example, the relationships between the various steroid hormones are all too well known and could be used as a starting place for discussion.

**2.** Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

**retina** **cornea** **regulatory molecules** **hormones** **tadpole**

•Show, say, explain, expand, explode or buzz about the word briefly.
•Show, say and define the word quickly and add to the word wall.

### READ

**3.** Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

•Mention the setting and main ideas.
•Point to concept chart as you quickly review it.

Fertilization is a key stage in the development of a new organism as two sex cells unite to form the zygote.
After fertilization, the single-celled zygote divides into two cells. They divide into four new cells, and so the process continues.
As the cells continue to divide, they form a blastula (small "hollow ball" stage) and then a gastrula.

The individual cells begin to differentiate into groups of cells having a specific function in the developing organism.

## 4. Read directions for investigation/activity.

## 5. Read text. Ch 7, "Continuity Through Development", Sections 7.3 & 7.4, pp. 175-177

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

| Setting | Characters | Pages |
|---|---|---|
| developing eyeball | lens, cornea, retina | 175 |
| all living organisms | Inducing cell, responding cell | 175 |
| developing embryo | neural tube | 176 |

# RESPOND

## 6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important concepts and post these on the billboard.

Students might mention:

Cells in developing plants or animals begin to change because of hormones.
Chemicals called regulators (regulatory molecules) influence the development of cells.
Conditions in the surrounding environment can have a big effect on the development of an organism.
This environment can be part of the organism. In other words the environment inside the blastula is an example.
All developing new organisms need water to grow in.
Unlike humans, many animals release their sperm in large quantities over the eggs. This usually takes place in water.
If the new organism is not in water, there must be a shell to keep the new developing creature from drying out.

## 7. Post information on the billboard. Add new information to ongoing class projects on the wall.

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

 

## EXPLORE

**8.** Explore today's investigation with inquiry activities.

**9.** Explore today's simulation with inquiry activities.

**10.** Collect data and post.

**One possible activity:**

**Stages of Embryonic Development**
Refer to the Student Study Guide, Activity 7.1 pp. 61-62. This is a good activity utilizing illustrations to show embryonic development. Make copies of these pages, if needed, and distribute to the students. Discuss the fact that many embryos are very similar at first and, with time, differentiate into specific species. Post completed student work.

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

**Key Questions**

What is a regulatory molecule?
Sketch the stages of development from fertilization through the gastrula. Please label appropriately.
Give an example of external development in animals.
What is the difference between frog eggs and lizard eggs? Why is this so?
Give an example of external fertilization.

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐evaluate and ☐inference questions every day.

**Key Paragraph**
How can one tissue or cell type influence the differentiation of other cells? Chemical signals, in the form of regulatory molecules, appear to be responsible. A cell transmits a chemical signal to a second cell, activating the genes that cause the second cell to differentiate (change) into a specialized cell type.

 

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading

**The Incredible Hulk's Hormones**
All students are familiar with the created character of The Incredible Hulk. Just in case you are not aware, go to:

http://en.wikipedia.org/wiki/Hulk_(comics)

Have students write a short paragraph explaining how hormones were responsible for the Hulk. Have them back up their argument with facts from this lesson.

### 12. Close with a short summary.

Extend the reading to the students' lives or to the world.

 

# CBL Biology: Life Science Option

**BSCS Green Version 10th edition**
***Biology An Ecological Approach***
**Lesson Plan Quarter 2, Week 5, Day 4**

## Outcomes for Today

Standards Focus: 2d 4d 7b

### PREPARE

**1.** Background knowledge necessary for today's reading.

This lesson is about the biology of human pregnancy. It is important to utilize this opportunity to talk about the health implications of pregnancy upon both the mother and the developing fetus. Again, a little discussion to assess student understanding of such terms as amniocentesis, crack babies, and fetal alcohol syndrome could be a powerful introduction to this lesson. More often than not, students have direct knowledge of family or friends who have experienced complications of pregnancy. Obviously, this is not a time to proselytize. As always, stick to the standards.

**2.** Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

**placenta** **umbilical cord** **amniocentesis** **fetus** **trimester**

•Show, say, explain, expand, explode or buzz about the word briefly.
•Show, say and define the word quickly and add to the word wall.

### READ

**3.** Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

•Mention the setting and main ideas.
•Point to concept chart as you quickly review it.

Once fertilized, animal embryos undergo a series of events in which the fertilized egg (zygote) divides over and over again, becomes more complex, and begins to differentiate into various specialized cell groups.

Developing organisms grow either in their parent's body (internal) or in an egg enclosure (external).

If the external growing organism is not immersed in water (like frog eggs) it will develop within a protective capsule to keep the young organism from drying out.

**4.** Read directions for investigation/activity.

**5.** Read text. Ch 7, "Continuity Through Development", Sections 7.5 & 7.6, pp. 177-182

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

| Setting | Characters | Pages |
|---|---|---|
| human uterus | fetus, placenta, umbilical cord | 177 |

## RESPOND

**6.** Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

•Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.

•Decide on the 3-5 most important concepts and post these on the billboard.

Students might mention:

The human embryo must attach to the wall of the uterus in order to begin to grow.

The placenta is the organ that gathers the nutrients and disposes of waste for the fetus.

The umbilical cord carries materials between the placenta and the baby.

The mother's blood and the baby's blood do not mix.

In order to check on the health of the baby, a needle is inserted through the mother's uterus into the water sack. The fluid is removed and analyzed. This is called amniocentesis.

The three equal time periods in a woman's pregnancy are called trimesters.

Most development occurs during the first trimester while most growth occurs during the third trimester.

**7.** Post information on the billboard. Add new information to ongoing class projects on the wall.

•New concept information can be added to the billboard.

•An answer can be added to a question from the KWL Chart.

•New information can be added to ongoing charts and investigations.

## EXPLORE

**8.** Explore today's investigation with inquiry activities.

**9.** Explore today's simulation with inquiry activities.

**10.** Collect data and post.

**One possible activity:**

**Listen to the Heartbeat**
If you can find a willing pregnant participant, arrange a classroom visit for her. With a fetal heart monitor, you can visibly show students the sound of life within. In addition, you might be able to obtain some sonogram (ultrasound) prints. Students could calculate the heart rate of the fetus as well as engage in a discussion with the soon-to-be mother. Interest would be high, and there are numerous possibilities with such an activity. As always, they are dependent upon the maturity of the group, the effectiveness of the teacher, and the emotional maturity of the mother.

This is a good site to learn more about ultrasound:
http://en.wikipedia.org/wiki/Ultrasound

**What are stem cells?**
There is always interest in this area. If you have time, talk a little about this. This is a good web site to gather some information:

http://www.mos.org/cst-archive/article/1472/

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

**Key Questions**
What happens to the human embryo if it fails to attach to the wall of the uterus?
What is the purpose of the umbilical cord?
What might happen to the fetus if the umbilical cord became damaged or kinked?
Draw a diagram of the amniocentesis process.
There are three trimesters in a complete normal human pregnancy. Describe briefly the development of the fetus during each one.
What is fetal alcohol syndrome and what are the effects?

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐ evaluate and ☐inference questions every day.

**Key Paragraph**
Often amniotic fluid contains cells that are cast off from the embryo during its growth. Physicians who wish to test the embryo for biochemical or chromosomal abnormalities without touching the embryo use these cells. A sample of the amniotic fluid is removed, the cells are grown in the laboratory, and the chromosomes from these cells can be examined. This process, called amniocentesis, is used to test for chromosome abnormalities and metabolic disorders. Amniocentesis can also be used to determine the sex of the fetus.

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading

Would you want to know the sex of your unborn child or would you prefer to be surprised? Write a paragraph and outline your reasons. Remember, knowing would require amniocentesis and this process is not without risk to the mother.

### 12. Close with a short summary.

Extend the reading to the students' lives or to the world.

# CBL Biology: Life Science Option

**BSCS Green Version 10th edition**
***Biology An Ecological Approach***
**Lesson Plan Quarter 2, Week 5, Day 5**

## Outcomes for Today

Standards Focus: 2d 4d 7b

## PREPARE

### 1. Background knowledge necessary for today's reading.

This lesson is all about the infamous "C-word." Cancer impacts every person sooner or later, either personally or through associations with friends and relatives. This might be a good time to talk about the social implications of this disease as well as do a little probing for student understanding and prior knowledge. For example, most students can tell you many of the facts, like cigarette smoking can lead to lung cancer. Take some time to enter into the adolescent mindset here. Often your students will have very diverse views about such things as disease, "my time on earth," and so on. Once you have engaged in some level of dialogue, return to the biological facts as they are known today.

### 2. Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

**DNA** **aging** **tumor** **metastasis** **oncogenes**

•Show, say, explain, expand, explode or buzz about the word briefly.
•Show, say and define the word quickly and add to the word wall.

## READ

### 3. Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

•Mention the setting and main ideas.
•Point to concept chart as you quickly review it.

Up to this point in the chapter, the focus has been on early development of an organism.

The process begins with a zygote (fertilized egg) which then begins to divide, eventually forming the "hollow ball" stage (blastula).

Next, the cells begin to specialize and migrate forming three distinct layers in the gastrula.

Embryonic animals grow and develop internally (inside their parent) or externally (in an egg).
Human fetal growth takes place in the woman's uterus as the young human is nourished through the placenta and umbilical cord which connects to the placenta.

## 4. Read directions for investigation/activity.

## 5. Read text. Ch 7, "Continuity Through Development" Sections 7.7 & 7.8 pp. 182-185

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

| Setting | Characters | Pages |
|---|---|---|
| normal developing cells<br>cancerous cells | tumor suppressor genes<br><br>oncogenes | 184<br>183 |

# RESPOND

## 6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

•Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.

•Decide on the 3-5 most important concepts and post these on the billboard.

Students might mention:

Growth and development in organisms is programmed through their genetic DNA composition.
Growth and development occurs throughout the life of the organism; however, after an organism reaches maturity, most growth is just to replace cells that have died.
Nervous system cells (brain, nerves, etc.) are not replaced once the organism reaches maturity, however; they are long-lived.
Cancer is a condition in which normal cell growth changes and cells continue to grow and do not stop dividing.
Cancer cells often do not recognize neighboring cells and invade other parts of the body as they grow. This growth mass is known as a cancerous tumor.
Cancer cells from the tumor can sometimes move to other parts of the body and the cancer spreads. This is known as metastasis.
The genes that control normal growth are altered in cancer cells.

 

**7.** Post information on the billboard. Add new information to ongoing class projects on the wall.

•New concept information can be added to the billboard.
•An answer can be added to a question from the KWL Chart.
•New information can be added to ongoing charts and investigations.

## EXPLORE

**8.** Explore today's investigation with inquiry activities.

### Lab Activity Investigation 7.1

If you have the time and resources, consider doing Investigation 7.1 (pages 186-191 in the text). This is a rather involved activity, so study the teacher's edition carefully.

**9.** Explore today's simulation with inquiry activities.

**10.** Collect data and post.

**One possible activity:**

**Cancer Patients and Survivors**

It is time to see cancer first hand again. If you have not done so as related to previous lessons, you may want to invite a cancer survivor to speak to the class. The American Cancer Society can assist. This organization has many resources, depending on the size of the community, and is definitely worth an inquiry. You may have personal connections with cancer survivors or people undergoing treatment. Personal stories are very powerful. This can be a good time to build class culture on the "human side" of the study of oncology (cancer medicine).

**Further Research**

For a good introduction, visit this site maintained by the National Cancer Institute:
http://www.cancer.gov/cancerinfo/wyntk/overview#3

This site actually has time lapse video footage of cancer growth:
http://www.pbs.org/wgbh/nova/cancer/cells.html

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

**Key Questions**

In your own words, describe cancer.
Make a diagram of the factors involved in the development of cancer.

What is a tumor?
Describe metastasis and give examples.
What is meant by this statement?: "Whether you get cancer or not is written in the genes."

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐evaluate and ☐inference questions every day.

**Key Paragraph**
Just as organisms have certain life spans, so do the cells that make up the organisms. On rare occasions, however, the genetic controls over normal cell division are altered. Cells with altered growth controls, cancer cells, increase in number because they do not stop dividing.

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading

Ask students if they have personal experience with anyone who has cancer. Next have them craft a letter to a young cancer patient who is currently battling the disease.

This is a good resource:
http://www.rmhc.com/rmhc/index.html

The key word here is empathy, not sympathy.

### 12. Close with a short summary.

Extend the reading to the students' lives or to the world.

 