

Part I. Question 1 to 10, please choose the answer closest to the underlined word or phrase. Question 11 to 15, please choose the answer that best completes the sentence. One Answer Only. 2 points.

1. Some of the **potential** dangers to cows treated with synthetic bovine growth hormone were brought into light through the effort of some scientist.
(A) related (B) possible (C) certain (D) obvious
2. As more U.S workers spend their days at keyboards, hand injuries and lawsuits are **multiplying**.
(A) increasing (B) minimizing (C) boundary-crossing (D) profit-making
3. There are several **bodies** that match volunteers with voluntary groups, including the National Volunteering Centre.
(A) organizations (B) remains (C) people (D) motivations
4. Piaget believed that we go through four stages in understanding the world. Each of the stages is age-related and consists of **distinct** ways of thinking.
(A) new (B) simple (C) different (D) exact
5. Some people think that spoken language is **transient** but writing tends to last because of its physical medium (characters on some surface).
(A) unimportant (B) temporary (C) interesting (D) clear
6. But what most prevents women from reaching the boardroom, say bosses and headhunters, is lack of **hands-on** experience of a firm's core business.
(A) significant (B) available (C) tested (D) practical
7. Manufactured in the **tranquil** New England town of Concord, New Hampshire, the famous Concord Coach came to symbolize the Wild West.
(A) peaceful (B) bustling (C) industrial (D) tiny
8. With oil prices shooting up, the demand for big cars is **dwindling**. Now compact cars are on great demand.
(A) depressing (B) surpassing (C) decreasing (D) swirling
9. All of this she conferred on me without ever **setting foot in** the kitchen of her house.
(A) leaving (B) dressing (C) entering (D) preparing
10. In choosing your career, you should follow your heart, but you also need to be **rational**.
(A) making decisions based on intelligent thinking (B) making decisions using strong emotion of feeling
(C) making decisions because of relationships (D) making decision because of profits
11. _____ abolishing death penalty is a global trend, the public is so polarized over the issue that it requires more discussion.
(A) Because (B) Whereas (C) Although (D) In addition to
12. Women now often work areas _____ medicine, business management and higher education, which would not have been possible 100 years ago.
(A) regardless of (B) in virtue of (C) due to (D) such as
13. Both the National Cancer Institute and the World Health Organization say there isn't evidence to support the assertion that cell phones are a _____ threat.
(A) health public (B) healthy public (C) public-health (D) publically health
14. _____ on barren slopes can help prevent erosion.
(A) Planting trees (B) For trees to be planted (C) In order to plant trees (D) Trees are planted
15. Almost four in five people around the world believe that _____, a poll for the BBC World Service suggests.
(A) access the Internet is a fundamental right (B) that access to the Internet is a fundamental right
(C) fundamental right accessing the Internet is (D) the fundamental right is access the Internet

II. Question 16 to 25, please choose the best answer to fill each of the numbered blanks in the passages. 2 points each.

People communicate in many different ways and yawning is one important means of 16 communication. It gives many different 17 to people and everyone yawns. Some birds, reptiles, fish and most mammals also yawn. However, the reason why we do it is still a mystery. There is also very little research available on yawning as for most people, it is not a problematic 18. Here are a few things that are known about yawns: 1.) The 19 duration of a yawn is about six seconds; 2.) in humans, the 20 yawn happens about eleven weeks after conception; 3.) Yawns become contagious to people between the first and second years of life.

16. (A) audio (B) friendly (C) non-verbal (D) scenario
 17. (A) messages (B) funs (C) challenges (D) experiments
 18. (A) resistance (B) repeat (C) reflex (D) rejection
 19. (A) critical (B) analytical (C) terminal (D) average
 20. (A) most difficult (B) earliest (C) most fundamental (D) experiential

Culture shock can be an excellent lesson 21 human differences. The reason culture shock occurs is that we are not prepared for these differences. 22 the way we are taught in our culture, we are all ethnocentric. This term comes from the Greek root ethnos, 23 a people or group. Thus, it refers to 24 our outlook or world view is centered on our own way of life. Ethnocentrism is the belief that one's own patterns of behavior are the best: the most natural, beautiful, right, or important. Therefore, other people, 25 that they live differently, live by standards that are inhuman, irrational, unnatural, or wrong.

21. (A) on relative values and understanding (B) in relative values and in understanding
 (C) about relating values and on understanding (D) by means of relative values and understanding
 22. (A) Because of (B) Because (C) In the event of (D) In spite of
 23. (A) it means (B) it is meaning (C) meaning (D) by meaning
 24. (A) that the fact (B) the fact that (C) the fact (D) the fact that is
 25. (A) to the extend (B) by and large (C) more or less (D) drawing a line

III. Reading Comprehension. In this part, you will read several passages. Each one is followed by a number of questions. Question 26 to 40, you should choose the ONE best answer to each question. 2 points each.

Dariusz Leszczynski, a research professor at Finland's Radiation and Nuclear Safety Authority in Helsinki, has done studies indicating that radio frequency radiation may create a stress reaction in the cells that line blood vessels, leading to a dangerous breach in the blood-brain barrier. "Mobile-phone radiation may be able to indirectly hurt cells, perhaps by interfering with their ability to repair normal DNA damage," he says. "Given the scientific uncertainty, it's premature to say the use of cell phones is safe."

If radio frequency radiation increases the chances of developing brain cancer, it should show up in long-term studies of cell-phone users. But many epidemiological studies have found no clear connection, including a 2007 Danish Cancer Society study of 421,000 cell-phone users, which led many in the media to conclude that mobiles are harmless. To date, "peer-reviewed scientific evidence has overwhelmingly indicated that wireless

devices do not pose a risk," says John Walls, a spokesman for CTIA, a global wireless association.

26. According to Prof. Dariusz Leszczynski,
- (A) whether or not the use of cell phones is safe is still uncertain.
 - (B) it is proved that cell phone would impair normal DNA.
 - (C) Using cell phones will block blood vessels.
 - (D) The research on cell phones is not reliable.
27. The passage following these two passages might be about
- (A) the autobiography of Dariusz Leszczynski.
 - (B) problems with many of these studies.
 - (C) the development of brain cancer.
 - (D) peer review of cell phones.

While fats have lately acquired a bad image, one should not forget how essential they are. Fats provide the body's best means of storing energy, a far more efficient energy sources than either carbohydrates or proteins. They act as insulation against cold, as cushioning for the internal organs, and as lubricants. Without fats, energy would have no way to utilize fat-soluble vitamins. Furthermore, some fats contain fatty acids that contain necessary growth factors and help with the digestion of other food.

An important consideration of fat intake is the ratio of saturated fats to unsaturated fats. Saturated fats, which are derived from dairy products, animal fats, and tropical oils, increase amount of cholesterol in the blood. Cholesterol may lead to coronary heart disease by building up in the arteries of the heart. However, unsaturated fats, derived from vegetable oils, tend to lower serum cholesterol if taken in a proportion twice that of saturated fats.

The consumption of a variety of fats is necessary, but the intake of too much fat may lead to a variety of health problems. Excessive intake of fats, like all nutritional excesses, is to be avoided.

28. Comparing with carbohydrates or proteins, fats
- (A) store food more efficiently.
 - (B) deserve their bad image.
 - (C) consume more oils.
 - (D) provide more fluids.
- Which of the followings is the main idea of
29. The main idea of the third paragraph is that
- (A) people are eating less and less fat today.
 - (B) fats should be eliminated.
 - (C) excessive consumption of fats may be dangerous to one's health.
 - (D) fats taken in the proper proportion may reduce serum cholesterol.
30. With which of the following is the whole passage primarily concerned?
- (A) The role of fats in human health
 - (B) The dangers of cholesterol
 - (C) The benefits of fats in the diet
 - (D) The importance of good nutrition

Gender Equity

(1) In the past decade, increasing attention has been paid to the issue of gender equity in the science, technology, engineering, and mathematics (STEM) fields. Research publications, including the American Association of University Women Educational Foundation's Tech Savvy (2000) and Women at Work (2003), have documented the troubling shortage of girls and women preparing to work in these fields. In response to this "**shrinking pipeline**" of girls and women in STEM, a wide array of programs and strategies has been promoted and funded by governmental and nongovernmental organizations.

(2) The AAUW Educational Foundation and the National Science Foundation are among the top supporters of gender equity projects in the STEM fields. In the last decade alone, these two foundations have

invested nearly \$90 million to fund more than 400 projects specifically aimed at increasing the participation of girls and women in STEM fields. This body of projects presented a unique opportunity to explore the nature of gender equity intervention projects in STEM. Until now, no comparable survey of gender equity intervention projects in STEM has been done.

(3) The research for this report, led by Yasmin Kafai and a team of researchers at the University of California, Los Angeles, was guided by several overarching questions: What types of projects have been funded within and across the various STEM disciplines? Are there areas where we have concentrated our efforts, and areas we have overlooked? What patterns emerge among the project types and disciplines?

(4) The findings document impressive efforts in preparing girls and women for science, technology, engineering, and mathematics studies and careers and demonstrate a rich and diverse body of gender equity intervention projects within all STEM disciplines. About two-thirds of the projects involved extracurricular informal learning activities such as museum visits and field trips. Equally important were mentoring activities in many forms, ranging from traditional one-to-one to large-scale online versions, and professional development activities, such as course taking and network building, that were successfully integrated into projects.

(5) At the same time, the findings reveal some troubling trends. Many projects focused predominantly on career advice without providing access to necessary skill and content development. A majority of projects occurred outside the school curriculum. While such extracurricular projects can be effective and valuable, the overall lack of integration into the school curriculum suggests that gender equity remains on the margins of teaching and learning in the STEM fields. Finally, an absence of data on participant demographics and a lack of project evaluation make it difficult to determine who is being served and if and how project outcomes are being measured.

31. What does the phrase "shrinking pipeline" in paragraph refer to?

- (A) the shortage of oil supply (B) the shortage of labor supply
(C) the shortage of training programs (D) an issue that is getting smaller

32. Which of the sentences below best express the essential information in the highlighted sentence in the passage 2? (Incorrect choices change the meaning in important ways or leave out essential information.)

- (A) These projects allowed us to study the differences between men and women employed in STEM jobs.
(B) We were able to intervene when women STEM workers were being treated unfairly.
(C) Studying these projects helped to create more gender equity intervention projects.
(D) STEM jobs were able to be studied by exploring nature.

33. In paragraph 3, "Are there areas where we have concentrated our efforts, and areas we have overlooked?"

In this sentence, "we" refers to

- (A) the author and his/her coworkers. (B) people involved in creating gender equity projects.
(C) people in the STEM disciplines. (D) Yasmin Kafai and his team.

34. According to paragraph 4, what is one positive finding of this research?

- (A) the STEM field is rich and diverse (B) many projects involved mentoring opportunities
(C) girls and women are being prepared for STEM jobs (D) the quality of the questions asked

35. According to paragraph 5, what is one negative trend discovered through this research?

- (A) access to unnecessary content (B) extracurricular projects were common
(C) evaluation of the projects was too specific (D) focus on career advice

Chili peppers are decidedly an international phenomenon, spicing up regional dishes from Thailand to North Africa. In Thailand Confidential, this week's Globalist Bookshelf selection, Jerry Hopkins gives insight

to the culture and history surrounding this fiery fruit (yes, technically a fruit) and highlights how it may be one of the world's best medical miracles.

In Thailand — where restaurants rate their dishes by placing one, two, three, and sometimes four little red chilis on the menu next to the dishes' names to alert diners — I am tolerated. Barely.

A longtime friend, who is a Thai chef, used to bring home food purchased at street stalls and as she placed this on the table, she would point to one container and say, "Mine," then to another, saying, "Yours." As if to say, "Poor dear."

Thailand is not the birthplace of the Capsicum, or chili pepper; it only acts as if it is. In fact, the chili was imported, along with much else in the national diet. However, in Thailand the **per capital consumption** of the small, fiery fruit is surely as high if not higher than it is anywhere else. And it is in the use of unprocessed, fresh, ripe chilis where Thailand rings all the loudest bells.

The truth is that chili is an international phenomenon. There is a bimonthly magazine published in the United States, Chili Pepper (there is no agreement on the spelling), and a wide variety of products is available, including pepper-shaped wind chimes, bells, and strings of Christmas tree lights. There is even a Hot Sauce Club of America; members receive two new hot sauces and a newsletter every month. There is even a popular American rock and roll band that calls itself the Red Hot Chili Peppers. Yes, the band is hot.

36. From these passages, we learn that the author

- (A) enjoys chili peppers everywhere.
- (B) does not really like chili peppers.
- (C) likes to have chili peppers to go with some certain kind of food.
- (D) like to go to restaurant famous for chili peppers.

37. The best title for these passages is

- (A) Thailand and Chili peppers. (B) Chili Peppers and Spicy Dishes.
- (C) Different Tastes all over the World. (D) Chili Peppers and Globalization.

38. Based on the passages, which of the following is NOT TRUE?

- (A) That Thailand uses unprocessed, fresh, ripe chili peppers has started the popularity of chili peppers.
- (B) Thailand exports a lot of chili peppers.
- (C) Chili peppers are a kind of fruit.
- (D) Thai food is normally quite spicy.

39. What does **per capital consumption** mean?

- (A) amount consumed per person within a specific population.
- (B) capital population and its consumption.
- (C) capital with that the government provides each person for food consumption.
- (D) capital that each person can get for their daily food consumption.

40. What is the main idea of the last paragraph?

- (A) Chili peppers are very popular in the United States.
- (B) The use of chili peppers in the United States is being influenced by Thailand.
- (C) Chili peppers are made into different toys.
- (D) Chilli peppers have made a rock band very hot.

IV. Essay. 20 points.

Please write a **well-structured** essay on **how you can prepare yourself for living in a diverse and more global society** in 150 to 200 words discussing your opinions.

高雄醫學大學 99 學年度 士班 招生考試 命題系所: 生物科技學系碩士班
(共 8 頁) 考試科目: 生物科技(含生物化學)

單選題(每題 2 分) 請務必用答案卡作答

1. Which of the following is a noncovalent interaction?
 - a. hydrophobic effect
 - b. ionic interactions
 - c. Van der Waals interactions
 - d. b and c
 - e. all of the above
2. If the equilibrium constant for the reaction $A \rightarrow B$ is 0.5 and the initial concentration of A is 25 mM and of B is 12.5 mM, then the reaction
 - a. will proceed in the direction it is written, producing a net increase in the concentration of B.
 - b. will produce energy, which can be used to drive ATP synthesis.
 - c. will proceed in the reverse direction, producing a net increase in the concentration of A.
 - d. is at equilibrium.
3. In a biochemical reaction in which $\Delta H < 0$ and $\Delta S > 0$,
 - a. the reaction is spontaneous.
 - b. the reaction is endothermic.
 - c. the reaction is endergonic.
 - d. ΔG is positive.
4. For an enzyme-catalyzed reaction, doubling the concentration of enzyme will
 - a. double the V_{max} .
 - b. halve the V_{max} .
 - c. double the K_m .
 - d. halve the K_m .
5. Which of the following modification marks a protein for degradation in proteasomes?
 - a. phosphorylation
 - b. ubiquitinylation
 - c. acetylation
 - d. glycosylation
 - e. all of the above
6. Which of the following is defined as the tertiary structure of a protein?
 - a. the primary amino acid sequence
 - b. structural domains such as a DNA binding domain
 - c. folded structures such as an α helix
 - d. structural features such as a turn
7. Which of the following methods can separate proteins based on their mass?
 - a. centrifugation

- b. ion exchange chromatography
 - c. SDS polyacrylamide gel electrophoresis
 - d. a and c
 - e. all of the above
8. Starting with 1 mCi (milliCurie) of a phosphorus-32-labeled compound, how long would it take until only 0.125 mCi remains?
- a. 14.3 days
 - b. 28.6 days
 - c. 42.9 days
 - d. 57.2 days
9. The base in the wobble position of a codon
- a. is the 5' (first) base.
 - b. is the 3' (third) base.
 - c. is the second base.
 - d. often contains adenine.
10. Which of the following is not required for both DNA replication and RNA transcription?
- a. DNA
 - b. primers
 - c. RNA
 - d. proteins
11. Crossing of a homozygous wild type with a mutant that is heterozygous for a dominant mutation will result in F₁ progeny of which
- a. all show the mutant phenotype.
 - b. half show the wild-type phenotype and half show the mutant phenotype.
 - c. three-fourths show the wild-type phenotype and one-fourth show the mutant phenotype.
 - d. all show the wild-type phenotype.
12. In the large-scale production of a particular human protein in *E. coli* cells, the cDNA corresponding to the protein was modified so that the expressed protein would have six histidine residues at the C-terminus. The purpose of this modification was
- a. to facilitate transfer of the cDNA into the *E. coli* cells.
 - b. to provide a promoter for the transcription of the cDNA in *E. coli*.
 - c. to facilitate purification of the expressed protein through binding to an affinity column containing chelated nickel atoms.
 - d. to prevent degradation of the expressed protein by *E. coli* proteases.
13. What method may be used to functionally inactivate a gene without altering DNA sequence?
- a. gene knockout
 - b. RNA interference
 - c. DNA methylation
 - d. b and c

- e. all of the above
14. In eukaryotes, tandemly repeated genes encode
- rRNAs.
 - cytoskeletal proteins.
 - β -globin.
 - all of the above
15. DNA that is transcriptionally active
- is more susceptible to DNase I digestion.
 - is tightly packed into a solenoid arrangement.
 - contains unacetylated histones.
 - is more condensed than nontranscribed DNA.
16. Which of the following pairs of proteins are considered to be paralogous?
- yeast α -tubulin and yeast β -tubulin
 - yeast α -tubulin and worm α -tubulin
 - fly β -tubulin and human β -tubulin
 - worm β -tubulin and human α -tubulin
17. Which of the following evidence is indicative of the presence of a gene in an unknown DNA sequence?
- alignment to a partial cDNA sequence
 - sequence similarity to genes of other organisms
 - sequences identical to exon and intron junctions
 - all of the above
18. All the following statements are true about a nucleosome **except**
- It contains an octamer core of histones
 - It is about 10 nm in diameter
 - It is the “string” of the “beads-on-a-string” appearance
 - It contains approximately 150 base pairs of DNA
19. Operator constitutive mutants of the lac operon would
- express the lac repressor constitutively.
 - block the binding of RNA polymerase to the promoter.
 - express β -galactosidase constitutively.
 - prevent the inducer from binding to the repressor.
20. Which of the following is not used in the electrophoretic mobility shift assay (EMSA)?
- a radiolabeled DNA fragment
 - a polyacrylamide gel
 - a DNA binding protein
 - DNase I
21. Which of the followings can be used to detect protein-protein interactions?
- primer extension

- b. DNaseI footprinting
 - c. chromatin immunoprecipitation
 - d. mobility shift (or EMSA)
 - e. yeast two-hybrid system
22. MicroRNAs play a key role in which of the followings?
- a. translational repression
 - b. viral RNA degradation
 - c. RNA editing
 - d. transcription initiation
23. Indicate the order in which the following steps normally occur in the production of a mature mRNA.
- a. initiation of transcription, splicing, addition of 5' cap, addition of poly(A) tail, transport to cytoplasm
 - b. initiation of transcription, addition of 5' cap, splicing, addition of poly(A) tail, transport to cytoplasm
 - c. initiation of transcription, addition of poly(A) tail, addition of 5' cap, splicing, transport to cytoplasm
 - d. initiation of transcription, addition of 5' cap, addition of poly(A) tail, splicing, transport to cytoplasm
24. Sex lethal protein in *Drosophila* can best be described as a(n)
- a. splicing regulatory factor.
 - b. RNA editing factor.
 - c. transcription factor.
 - d. all of the above
25. A ribozyme is an RNA sequence
- a. that requires Na^+ as a cofactor to function.
 - b. that can be found in group II self-splicing intron.
 - c. with catalytic ability to cleave DNA.
 - d. that has a much better catalytic activity than protein enzyme.
26. To visualize cells by immunofluorescence microscopy, the cells must be
- a. placed in a vacuum.
 - b. living.
 - c. sectioned.
 - d. permeabilized.
27. What factors necessary for growth of animal cells in culture are provided by serum?
- a. amino acids
 - b. precursors of DNA synthesis
 - c. growth factors
 - d. vitamins

28. Phospholipids with short or unsaturated fatty acyl chains
- decrease membrane fluidity.
 - increase membrane fluidity.
 - cause biomembranes to become thicker.
 - allow hydrophilic molecules to diffuse across the lipid bilayer.
29. The major site of lipid synthesis in eukaryotic cells is the
- nucleus.
 - endoplasmic reticulum (ER).
 - peroxisome.
 - mitochondria.
30. The major ATP-powered pump responsible for maintaining ion gradients across the plasma membrane of mammalian cells is
- the calmodulin-activated plasma membrane Ca^{2+} ATPase.
 - the sarcoplasmic reticulum Ca^{2+} ATPase.
 - the vacuolar F-class proton pump.
 - the plasma-membrane Na^+/K^+ ATPase.
31. When computing the osmotic pressure that must be placed across the membrane to stop the flow of water, what is the glucose osmotic equivalent of 1 M CaCl_2 ?
- 1 M
 - 2 M
 - 3 M
 - 4 M
32. Electron transport from NADH and FADH_2 to O_2 occurs in the
- mitochondrial matrix.
 - cytosol.
 - mitochondrial inner membrane.
 - mitochondrial outer membrane.
33. Proteins that do not fold properly in the ER lumen are degraded in the cytosol by
- the etiosome.
 - the microsome.
 - the proteasome.
 - the ribosome.
34. Which type of RNA participates in nuclear export of mRNA?
- snRNA
 - hnRNA
 - tRNA
 - rRNA
35. Protein sequences for targeting to mitochondria or chloroplasts are located at
- the C-terminus of the precursor protein.

- b. amino acid position 173 in most mitochondrial and chloroplast proteins.
 - c. the N-terminus of the precursor protein.
 - d. b or c
36. Lipoproteins are effective in transporting lipid molecules in an aqueous environment because their shells are
- a. hydrophobic.
 - b. glycosidic.
 - c. amphipathic.
 - d. a and b
37. Which of the following is not a common intracellular second messenger?
- a. inositol 1,4,5-trisphosphate (IP₃)
 - b. 1,2 diacylglycerol (DAG)
 - c. adenosine triphosphate (ATP)
 - d. 3'-5' cyclic guanine monophosphate (cGMP)
38. cGMP phosphodiesterase catalyzes the conversion of
- a. cAMP to cGMP.
 - b. cGMP to 5'-GMP.
 - c. GTP to cGMP.
 - d. cGMP to GDP.
39. Which of the following mechanisms can terminate the intracellular signaling pathway once the concentration of the external signal decreases?
- a. degradation of the second messenger
 - b. desensitization of receptors
 - c. deactivation of a signal transduction protein
 - d. a and b
 - e. all of the above
40. Binding of hormone to a receptor tyrosine kinase causes all of the following except
- a. dimerization of the receptor.
 - b. autophosphorylation of the receptor.
 - c. activation of Ras through an interaction with GRB2 and Sos.
 - d. hydrolysis of GTP bound to Ras.
41. Which of the following are enzyme pairs that catalyze opposite reactions?
- a. MEK and MAP kinase
 - b. NF- κ B and I- κ B
 - c. PI-3 kinase and PTEN phosphatase
 - d. JAK kinases and STATs
 - e. none of the above
42. All of the following statements about actin assembly are correct except
- a. ATP-actin can assemble into filaments.

- b. Actin subunits can treadmill through an actin filament.
 - c. Actin assembly can produce force for movement.
 - d. Actin (-) ends assemble more rapidly than actin (+) ends.
43. Which of the following conditions does **not** favor microtubule assembly?
- a. temperature raised from 4°C to 37°C
 - b. binding of taxol to β -tubulin
 - c. formation of GTP cap at the plus end
 - d. polymerization rate > GTP hydrolysis rate
44. Which of the followings regarding microtubule-organizing center (MTOC) is **true**?
- a. it contains a single centriole located normally right beside the nucleus during non-dividing stage
 - b. α -tubulin is associated with several other proteins to form the α -tubulin ring complex (α -TuRC) that functions in nucleating microtubule assembly
 - c. basal body is structurally and functionally similar to MTOC in flagella
 - d. The (+) ends of microtubules point toward MTOC
45. During which stage of the cell cycle is the chromosome content of a mammalian liver cell 1n?
- a. G₁
 - b. S
 - c. G₂
 - d. M
 - e. none of the above
46. Which of the following lists the events of skeletal muscle development in the correct order?
- a. differentiation, proliferation and/or migration, determination
 - b. determination, differentiation, proliferation and/or migration
 - c. proliferation and/or migration, determination, differentiation
 - d. determination, proliferation and/or migration, differentiation
 - e. differentiation, determination, proliferation and/or migration
47. In human embryos, the gene for insulin-like growth factor 2 is active on the copy of chromosome 11 that came from the father but inactive on the chromosome that came from the mother. This is an example of
- a. induction.
 - b. imprinting.
 - c. differentiation.
 - e. dosage compensation.
48. Flies that develop with legs on their head instead of antennae are an example of the results of
- a. maternal effect mutations.
 - b. gap gene mutations.
 - c. pair-rule mutations.
 - d. Hox gene mutations.
49. Monoclonal antibodies are produced by fusing mouse spleen cells with

- a. primary B cells.
- b. immature B cells.
- c. HGPRT-deficient myeloma cells.
- d. T cells.

50. Hereditary cancers typically possess loss-of-heterozygosity in

- a. proto-oncogenes.
- b. tumor-suppressor genes.
- c. both a and b
- d. neither a nor b