

## CHAPTER 2

# GENETIC AND ENVIRONMENTAL FOUNDATIONS

### MULTIPLE CHOICE

- 1) Christine is 5'7" and has blue eyes. Such directly observable characteristics are called
- A) alleles.
  - B) phenotypes.
  - C) chromosomes.
  - D) genotypes.

Answer: B

Page Ref: 36

Skill: Apply

Objective: 2.1

- 2) A \_\_\_\_\_ is a complex blend of genetic information that determines the species and influences unique characteristics.
- A) genotype
  - B) karyotype
  - C) phenotype
  - D) chromosome

Answer: A

Page Ref: 36

Skill: Remember

Objective: 2.1

- 3) \_\_\_\_\_ are affected by each person's lifelong history of experiences.
- A) Cells
  - B) Chromosomes
  - C) Genotypes
  - D) Phenotypes

Answer: D

Page Ref: 36

Skill: Understand

Objective: 2.1

- 4) Each of us is made up of trillions of units called
- A) phenotypes.
  - B) chromosomes.
  - C) genotypes.
  - D) cells.

Answer: D

Page Ref: 36

Skill: Remember

Objective: 2.1

- 5) Generally, human \_\_\_\_\_ come in 23 matching pairs.
- A) chromosomes
  - B) phenotypes
  - C) cells
  - D) genotypes

Answer: A

Page Ref: 36

Skill: Remember

Objective: 2.1

- 6) The DNA molecule resembles a
- A) five-pointed star.
  - B) spider's web.
  - C) pair of triangles.
  - D) twisted ladder.

Answer: D

Page Ref: 36

Skill: Remember

Objective: 2.1

- 7) An estimated 20,000 to 25,000 \_\_\_\_\_ lie along the human chromosome.
- A) phenotypes
  - B) genes
  - C) karyotypes
  - D) gametes

Answer: B

Page Ref: 36

Skill: Remember

Objective: 2.1

- 8) Through a process called mitosis, DNA can
- A) split itself in thirds.
  - B) untwist itself.
  - C) duplicate itself.
  - D) divide itself in half.

Answer: C

Page Ref: 37

Skill: Understand

Objective: 2.1

- 9) Following mitosis,
- A) each new body cell contains unique genetic information.
  - B) cells divide in half to form the fertilized ovum.
  - C) each cell loses its cytoplasm.
  - D) each new body cell contains the same number of chromosomes.

Answer: D

Page Ref: 37

Skill: Understand

Objective: 2.1

- 10) The cytoplasm is the
- A) area surrounding the cell nucleus.
  - B) biological foundation on which our characteristics are built.
  - C) fertilized ovum.
  - D) control center of the cell.

Answer: A

*Page Ref: 37*

*Skill: Remember*

*Objective: 2.1*

- 11) \_\_\_\_\_ trigger chemical reactions throughout the body.
- A) Proteins
  - B) Genes
  - C) Chromosomes
  - D) Gametes

Answer: A

*Page Ref: 37*

*Skill: Remember*

*Objective: 2.1*

- 12) Which of the following is another term for sex cells?
- A) gametes
  - B) autosomes
  - C) alleles
  - D) phenotypes

Answer: A

*Page Ref: 37*

*Skill: Remember*

*Objective: 2.1*

- 13) A(n) \_\_\_\_\_ contains only 23 chromosomes, half as many as a regular body cell.
- A) autosome
  - B) gamete
  - C) allele
  - D) zygote

Answer: B

*Page Ref: 37*

*Skill: Remember*

*Objective: 2.1*

- 14) Meiosis
- A) doubles the number of chromosomes normally present in the body cells.
  - B) halves the number of chromosomes normally present in the body cells.
  - C) permits the chromosomes to copy themselves.
  - D) results in dizygotic twins.

Answer: B

*Page Ref: 37*

*Skill: Understand*

*Objective: 2.1*

- 15) When sperm and ovum unite at conception, a(n) \_\_\_\_\_ results.
- A) autosome
  - B) gamete
  - C) zygote
  - D) allele

Answer: C

Page Ref: 37

Skill: Remember

Objective: 2.1

- 16) The events that occur during \_\_\_\_\_ make the likelihood extremely low that nontwin siblings will be genetically identical.
- A) mitosis
  - B) meiosis
  - C) genomic imprinting
  - D) canalization

Answer: B

Page Ref: 37

Skill: Understand

Objective: 2.1

- 17) In the male,
- A) meiosis results in just one sperm cell.
  - B) the cells from which sperm arise are produced continuously throughout life.
  - C) sperm cells do not reach maturity until adolescence.
  - D) about 1 to 2 million sperm are produced when meiosis is complete.

Answer: B

Page Ref: 37

Skill: Understand

Objective: 2.1

- 18) A healthy man can father a child
- A) at any age after sexual maturity.
  - B) for about two decades.
  - C) for about three decades.
  - D) for about four decades.

Answer: A

Page Ref: 37

Skill: Understand

Objective: 2.1

- 19) The female
- A) can bear children for only about two decades.
  - B) is born with a bank of ova already present in her ovaries.
  - C) produces the cells from which ova arise continuously throughout life.
  - D) is born with just one ovum.

Answer: B

Page Ref: 37

Skill: Understand

Objective: 2.1

- 20) Taylor's twenty-third pair of chromosomes is XX. Taylor is
- A) male.
  - B) a fraternal twin.
  - C) female.
  - D) an identical twin.

Answer: C

Page Ref: 37

Skill: Apply

Objective: 2.1

- 21) The sex of a new organism is determined by whether
- A) the ovum is carrying an X chromosome or a Y chromosome.
  - B) the sperm fertilizes an X-bearing ovum or a Y-bearing ovum.
  - C) the X and Y chromosomes separate into sperm cells or ovum.
  - D) an X-bearing sperm or a Y-bearing sperm fertilizes the ovum.

Answer: D

Page Ref: 37

Skill: Understand

Objective: 2.1

- 22) Fraternal twins are created when
- A) two different ova are released and fertilized.
  - B) two ova are fertilized by the same sperm cell.
  - C) one ovum is fertilized by two different sperm cells.
  - D) a fertilized ovum divides into two clusters of cells.

Answer: A

Page Ref: 37

Skill: Understand

Objective: 2.1

- 23) Patsy and Terry are dizygotic twins. They
- A) will develop more rapidly than children of single births.
  - B) are no more alike than ordinary siblings.
  - C) have the exact same genetic makeup.
  - D) are more likely to look alike than ordinary siblings.

Answer: B

Page Ref: 37

Skill: Apply

Objective: 2.1

- 24) Identical twins are created when
- A) two different ova are released and fertilized.
  - B) two ova are fertilized by the same sperm cell.
  - C) a zygote that has started to duplicate separates into two clusters of cells that develop into two individuals.
  - D) one ovum is fertilized by two different sperm cells.

Answer: C

Page Ref: 38

Skill: Understand

Objective: 2.1

- 25) Candace and Cassidy, like all monozygotic twins,  
A) have the same genetic makeup.  
B) will develop more rapidly than children of single births.  
C) are no more alike than ordinary siblings.  
D) will be healthier than children of single births.

Answer: A

Page Ref: 38

Skill: Apply

Objective: 2.1

- 26) During their early years, children of single births often \_\_\_\_\_ than twins.  
A) develop more slowly  
B) are healthier  
C) are smarter  
D) are happier

Answer: B

Page Ref: 38

Skill: Understand

Objective: 2.1

- 27) In dominant–recessive inheritance, the one allele that does not affect the child’s characteristics is called  
A) dominant–recessive.  
B) dominant.  
C) a carrier.  
D) recessive.

Answer: D

Page Ref: 38

Skill: Remember

Objective: 2.2

- 28) Which of the following is a recessive characteristic?  
A) curly hair  
B) facial dimples  
C) red hair  
D) double-jointedness

Answer: C

Page Ref: 38

Skill: Remember

Objective: 2.2

- 29) Maya tested positive for PKU at birth and will \_\_\_\_\_ to have a normal lifespan.  
A) require hormone therapy  
B) have to be placed on a diet low in phenylalanine  
C) need regular injections of insulin  
D) require frequent blood transfusions

Answer: B

Page Ref: 39

Skill: Apply

Objective: 2.2

- 30) Sickle cell anemia
- A) occurs in full form when a child inherits two recessive genes.
  - B) can be treated during infancy if the child is placed on a diet that is low in phenylalanine.
  - C) affects more males than females.
  - D) is a heterozygous condition present in many Jews of European descent.

Answer: A

Page Ref: 39

Skill: Understand

Objective: 2.2

- 31) In cases of X-linked inheritance,
- A) males are more likely than females to be affected by the disorder.
  - B) females are more likely than males to be affected by the disorder.
  - C) children are more likely to inherit the disease from their mother than from their father.
  - D) children are more likely to inherit the disease from their father than from their mother.

Answer: A

Page Ref: 39

Skill: Understand

Objective: 2.2

- 32) Studies of sex differences show that
- A) worldwide, approximately 106 girls are born for every 100 boys.
  - B) the female infant is at a disadvantage compared to the male infant.
  - C) rates of miscarriage, infant death, and childhood death are higher among males than females.
  - D) rates of mental retardation, learning disabilities, and behavior disorders are higher among females than males.

Answer: C

Page Ref: 40

Skill: Remember

Objective: 2.2

- 33) In which of the following disorders does genomic imprinting operate on the sex chromosomes?
- A) fragile X syndrome
  - B) Huntington disease
  - C) sickle cell anemia
  - D) Marfan syndrome

Answer: A

Page Ref: 40

Skill: Understand

Objective: 2.2

- 34) \_\_\_\_\_ help(s) explain why fragile X syndrome is expressed only when it is passed from the mother to the child.
- A) Codominance
  - B) Genetic mutations
  - C) Genomic imprinting
  - D) X-linked inheritance

Answer: C

Page Ref: 40

Skill: Understand

Objective: 2.2

35) Gilles has had frequent and high exposure to radiation in his occupation for the past ten years. Gilles's offspring are at greater risk for \_\_\_\_\_ than children whose fathers were not exposed to radiation.

- A) cystic fibrosis
- B) childhood cancer
- C) PKU
- D) hemophilia

Answer: B

Page Ref: 40

Skill: Apply

Objective: 2.2

36) Somatic mutation

- A) typically occurs in sex cells.
- B) decreases with maternal age.
- C) shows that each of us does not have a single, permanent genotype.
- D) takes place in the cells that give rise to gametes.

Answer: C

Page Ref: 40

Skill: Understand

Objective: 2.2

37) Personality characteristics are most likely determined by \_\_\_\_\_ inheritance.

- A) X-linked
- B) polygenic
- C) dominant
- D) recessive

Answer: B

Page Ref: 40

Skill: Understand

Objective: 2.2

38) The twenty-first pair of chromosomes failed to separate during meiosis, so Aziz received three of these chromosomes rather than the normal two. Aziz has \_\_\_\_\_ syndrome.

- A) XYY
- B) Klinefelter
- C) Turner
- D) Down

Answer: D

Page Ref: 40

Skill: Apply

Objective: 2.3

39) Abnormalities of the sex chromosomes

- A) tend to cause mental retardation.
- B) often cause aggressive and antisocial behavior.
- C) typically lead to miscarriage.
- D) usually lead to fewer problems than abnormalities of the autosomes.

Answer: D

Page Ref: 41

Skill: Understand

Objective: 2.3



- 40) Research on sex chromosome disorders shows that
- A) verbal difficulties are common among females who are missing an X chromosome.
  - B) reading difficulties are common among both boys and girls who inherit an extra X chromosome.
  - C) males with XYY syndrome are more aggressive and antisocial than XY males.
  - D) most children with these disorders suffer from mental retardation.

Answer: B

Page Ref: 41

Skill: Understand

Objective: 2.3

- 41) The information gained from \_\_\_\_\_ may help parents decide whether to attempt to conceive, adopt, or choose from a variety of additional reproductive technologies.
- A) gene therapy
  - B) genetic counseling
  - C) prenatal diagnosis
  - D) amniocentesis

Answer: B

Page Ref: 41–42

Skill: Remember

Objective: 2.4

- 42) If a family history of mental retardation, psychological disorders, physical defects, or inherited diseases exists, a genetic counselor prepares a \_\_\_\_\_, which identifies affected relatives in a couple's family tree.
- A) pedigree
  - B) carrier detector
  - C) prenatal diagnosis
  - D) genetic diagnosis

Answer: A

Page Ref: 42

Skill: Remember

Objective: 2.4

- 43) Donor insemination
- A) is 40 to 50 percent successful.
  - B) involves giving a woman hormones that stimulate the ripening of several ova.
  - C) is commonly used to overcome male reproductive difficulties.
  - D) is used to treat women whose fallopian tubes are permanently damaged.

Answer: C

Page Ref: 42 Box: SOCIAL ISSUES: HEALTH: The Pros and Cons of Reproductive Technologies

Skill: Understand

Objective: 2.4

- 44) Which of the following statements about in vitro fertilization is true?
- A) About 10 percent of American babies are conceived through this technique.
  - B) It cannot be performed on women whose fallopian tubes have been damaged.
  - C) Doctors are required to keep records of the characteristics of sperm donors.
  - D) The success rate of in vitro fertilization declines steadily with age.

Answer: D

Page Ref: 42 Box: SOCIAL ISSUES: HEALTH: The Pros and Cons of Reproductive Technologies

Skill: Understand

Objective: 2.4

45) Surrogate motherhood

- A) is the least controversial form of medically assisted conception.
- B) usually involves the wealthy as contractors for infants and the less economically advantaged as surrogates.
- C) arrangements rarely proceed smoothly.
- D) is illegal in most U.S. states.

Answer: B

Page Ref: 43 Box: SOCIAL ISSUES: HEALTH: The Pros and Cons of Reproductive Technologies

Skill: Understand

Objective: 2.4

46) Hoda, an economically disadvantaged mother of four, is considering becoming a surrogate. Which of the following is one realistic concern that Hoda might have about surrogate motherhood?

- A) She worries that the couple may change their mind during the pregnancy.
- B) The success rate of surrogacy is only about 25 percent.
- C) About 50 percent of surrogate procedures result in multiple births.
- D) Surrogate motherhood has been banned in most U.S. states and the District of Columbia.

Answer: A

Page Ref: 43 Box: SOCIAL ISSUES: HEALTH: The Pros and Cons of Reproductive Technologies

Skill: Apply

Objective: 2.4

47) \_\_\_\_\_ can be routinely used to safely screen for abnormal fetal development.

- A) Amniocentesis
- B) Maternal blood analysis
- C) Ultrasound
- D) Fetoscopy

Answer: B

Page Ref: 43

Skill: Remember

Objective: 2.4

48) To inspect Jasmine's fetus for defects of the limbs and face, as well as to allow a sample of fetal blood to be obtained, permitting diagnosis of hemophilia and sickle cell anemia, her doctor should use

- A) amniocentesis.
- B) chorionic villus sampling.
- C) ultrafast magnetic resonance imaging.
- D) fetoscopy.

Answer: D

Page Ref: 44

Skill: Apply

Objective: 2.4

49) Gene therapy corrects genetic abnormalities by

- A) mapping the sequence of all human DNA base pairs.
- B) performing surgery to repair defects during the fetal period.
- C) delivering DNA carrying a functional gene to the cells.
- D) modifying gene-specified proteins involved in biological aging and disease.

Answer: C

Page Ref: 44

Skill: Understand

Objective: 2.4

- 50) Adopted children
- A) have trouble developing feelings of trust and love toward their adoptive parents.
  - B) tend to have more learning and emotional difficulties than other children.
  - C) are more like their adoptive parents than their biological parents in intelligence and personality.
  - D) fare less well than children who return to their biological mothers.

Answer: B

Page Ref: 45

Skill: Understand

Objective: 2.4

- 51) Most adopted children
- A) fare better if they are adopted after infancy.
  - B) begin to search for their birth parents during early adolescence.
  - C) have trouble developing feelings of trust and affection toward their adoptive parents.
  - D) become well-adjusted adults.

Answer: D

Page Ref: 45

Skill: Understand

Objective: 2.4

- 52) \_\_\_\_\_ is/are the longest-lasting context(s) for development.
- A) Friends
  - B) Neighbors
  - C) The school
  - D) The family

Answer: D

Page Ref: 45

Skill: Remember

Objective: 2.5

- 53) Jenna's mother tends to increase her use of punishment when Jenna becomes unruly and rebellious. This is an example of a(n) \_\_\_\_\_ influence between a parent and a child.
- A) unidirectional
  - B) direct
  - C) maladaptive
  - D) indirect

Answer: B

Page Ref: 46

Skill: Apply

Objective: 2.5

- 54) Amelia and Sam praise and stimulate their children, and they mutually support each other's parenting behaviors. Amelia and Sam engage in effective
- A) induction.
  - B) permissive parenting.
  - C) coparenting.
  - D) niche-picking.

Answer: C

Page Ref: 46

Skill: Apply

Objective: 2.5

55) Which of the following is an example of an indirect influence on a child's development?

- A) piano lessons
- B) an inspiring teacher
- C) harsh discipline
- D) parental conflict

Answer: D

Page Ref: 46

Skill: Understand

Objective: 2.5

56) Compared to high-SES parents, low-SES parents are more likely to

- A) use coercive discipline.
- B) reward their children for good behavior.
- C) ignore their child's misbehavior.
- D) engage in permissive child rearing.

Answer: A

Page Ref: 47

Skill: Understand

Objective: 2.5

57) Which of the following American children is the most likely to live in poverty?

- A) Geoff, a Caucasian American
- B) George, an African American
- C) Pia, a Hispanic American
- D) Pauline, a Native American

Answer: B

Page Ref: 47

Skill: Apply

Objective: 2.5

58) \_\_\_\_\_ are more likely than other children to suffer from persistent deficits in cognitive development and academic achievement.

- A) Immigrant children
- B) Children from single-parent families
- C) Children of poverty
- D) Adopted children

Answer: C

Page Ref: 48

Skill: Understand

Objective: 2.5

59) In several studies, affluent teenagers were \_\_\_\_\_ likely than low-SES youths to \_\_\_\_\_.

- A) less; engage in alcohol and drug use
- B) more; report high levels of anxiety and depression
- C) less; self-medicate
- D) more; have physically and emotionally available parents

Answer: B

Page Ref: 48

Skill: Understand

Objective: 2.5

- 60) As a group, wealthy parents
- A) make fewer demands on their children than their less well-off counterparts.
  - B) are nearly as physically and emotionally unavailable to their youngsters as parents coping with serious financial strain.
  - C) value their children's character more than their accomplishments.
  - D) engage in parenting that promotes favorable development.

Answer: B

Page Ref: 48

Skill: Understand

Objective: 2.5

- 61) Community resources have \_\_\_\_\_ impact on the development of young people in economically disadvantaged neighborhoods compared with those in well-to-do neighborhoods.
- A) no measurable
  - B) a similar
  - C) a lesser
  - D) a greater

Answer: D

Page Ref: 48

Skill: Remember

Objective: 2.5

- 62) Neighborhood programs that provide enrichment activities
- A) have little impact in low-income areas.
  - B) are unlikely to reach the neediest children and youth.
  - C) predict favorable development only in middle- to high-income areas.
  - D) improve social skills but have little impact on academic achievement.

Answer: B

Page Ref: 48–49

Skill: Understand

Objective: 2.5

- 63) Mr. and Mrs. Parsons feel that an important factor in promoting their children's academic success is frequent contact between teachers and parents. The Parsons would most likely find this offering in a(n)
- A) urban neighborhood.
  - B) large urban area.
  - C) mid-sized city.
  - D) small town.

Answer: D

Page Ref: 49

Skill: Apply

Objective: 2.5

- 64) Compared to those in large urban areas, adults in small towns are \_\_\_\_\_ likely to \_\_\_\_\_.
- A) less; have contact with their children's teachers
  - B) less; occupy positions of leadership
  - C) more; participate in civic groups
  - D) more; visit museums on a regular basis

Answer: C

Page Ref: 49

Skill: Understand

Objective: 2.5

- 65) Compared to older adults in large cities, older adults in small towns are \_\_\_\_\_ likely to \_\_\_\_\_.
- A) more; move into planned housing for elders
  - B) less; develop warm relationships with nonrelatives
  - C) less; feel safe and secure
  - D) more; remain actively involved in the community

Answer: D

Page Ref: 49

Skill: Understand

Objective: 2.5

- 66) Which of the following beliefs has emerged as a central American value?
- A) It takes a village to raise a child.
  - B) The care and rearing of children is the duty of the parents, and only the parents.
  - C) When young adults decide to have children, their parents, employers, and communities should provide support for them.
  - D) As a society, we are responsible for taking care of each other.

Answer: B

Page Ref: 50

Skill: Understand

Objective: 2.5

- 67) In \_\_\_\_\_, people hold different beliefs and customs from those held by the larger culture.
- A) macrosystems
  - B) microsystems
  - C) subcultures
  - D) collectivist societies

Answer: C

Page Ref: 50

Skill: Remember

Objective: 2.5

- 68) In collectivist societies, people
- A) think of themselves as separate entities.
  - B) define themselves as part of a group.
  - C) are largely concerned with their own personal needs.
  - D) stress individual goals over group goals.

Answer: B

Page Ref: 50

Skill: Understand

Objective: 2.5

- 69) In \_\_\_\_\_ societies, people think of themselves as separate entities and are largely concerned with their own needs.
- A) collectivist
  - B) interdependent
  - C) individualistic
  - D) tribal

Answer: C

Page Ref: 50

Skill: Remember

Objective: 2.5

70) When reports indicate that many children are not achieving well in school, the state government grants more tax money to school districts. This is an example of a(n) \_\_\_\_\_ policy.

- A) individualistic
- B) collectivist
- C) public
- D) socialistic

Answer: C

Page Ref: 50

Skill: Understand

Objective: 2.5

71) Relative to other industrialized nations, U.S. policies for \_\_\_\_\_ and \_\_\_\_\_ have been especially slow to emerge.

- A) children; working adults
- B) working adults; older adults
- C) families; working adults
- D) children; older adults

Answer: D

Page Ref: 50

Skill: Understand

Objective: 2.5

72) Which of the following countries has the higher childhood poverty rate?

- A) Poland
- B) Germany
- C) the United States
- D) Czech Republic

Answer: C

Page Ref: 51

Skill: Remember

Objective: 2.5

73) The United States

- A) has a higher infant death rate than Canada and Spain.
- B) provides national standards and funding for child care.
- C) spends more public funds on education than Sweden.
- D) now has a universal, publicly funded health-care system.

Answer: A

Page Ref: 51

Skill: Remember

Objective: 2.5

74) Which of the following countries has the higher teenage birth rate?

- A) Czech Republic
- B) Slovakia
- C) Hungary
- D) the United States

Answer: D

Page Ref: 51

Skill: Remember

Objective: 2.5

- 75) Which of the following statements about child care in the United States is true?
- A) The United States ranks first in the industrialized world in public funding for child care.
  - B) The United States has been slow to move toward national standards and funding for child care.
  - C) Affordable child care is available for most families across the United States.
  - D) Although affordable child care is in short supply, nearly all programs are high quality.

Answer: B

Page Ref: 51

Skill: Understand

Objective: 2.5

- 76) Attempts to help children and youths have been difficult to realize in the United States because
- A) such government policies have failed in other Western countries.
  - B) cultural values of self-reliance and privacy have made government hesitant to become involved in family matters.
  - C) social programs are rarely cost-effective.
  - D) the United States already ranks at the top on key measures of children's health and well-being.

Answer: B

Page Ref: 51

Skill: Understand

Objective: 2.5

- 77) Which of the following statements about public policies for older adults in the United States is true?
- A) During the 1960s, U.S. federal spending on programs for older adults was greatly expanded.
  - B) Social security and Medicare consume about half of the federal budget for older adults.
  - C) All Americans over age 65 are guaranteed a minimum income greater than the poverty level.
  - D) Social Security benefits are usually enough to serve as the sole source of retirement income.

Answer: A

Page Ref: 51

Skill: Understand

Objective: 2.5

- 78) Area Agencies on Aging
- A) meet the needs of 96 percent of U.S. older adults.
  - B) provide health insurance for older Americans.
  - C) offer communal and home-delivered meals, and a wide range of other social services.
  - D) do not provide self-care education or elder abuse prevention services.

Answer: C

Page Ref: 51

Skill: Understand

Objective: 2.5

- 79) The Children's Defense Fund
- A) provides free legal services to low-income families of children with disabilities.
  - B) is a nonprofit organization dedicated to helping children in poverty in non-industrialized nations.
  - C) releases *The Policy Book* every two years, providing an in-depth compilation of policies for children.
  - D) engages in public education, legal action, drafting of legislation, congressional testimony, and community organizing.

Answer: D

Page Ref: 52

Skill: Remember

Objective: 2.5



80) \_\_\_\_\_ is a field devoted to uncovering the contributions of nature and nurture to the diversity in human traits and abilities.

- A) Epigenesis
- B) Behavioral genetics
- C) Environmental genetics
- D) Child development

Answer: B

Page Ref: 53

Skill: Remember

Objective: 2.6

81) Which of the following statements about behavioral genetics is true?

- A) Genetic markers explain nearly all of the variation in human behavior.
- B) Scientists have determined that heredity plays a larger role than the environment in human development.
- C) A growing number of researchers regard the question of how much heredity and environment contribute to differences among people as unanswerable.
- D) Researchers use heritability estimates to infer the role of the environment in complex human characteristics.

Answer: C

Page Ref: 53

Skill: Understand

Objective: 2.6

82) \_\_\_\_\_ measure(s) the extent to which individual differences in complex traits in a specific population are due to genetic factors.

- A) Correlation coefficients
- B) Heritability estimates
- C) Epigenesis
- D) Niche-picking

Answer: B

Page Ref: 53

Skill: Remember

Objective: 2.6

83) Dr. Albright wants to determine if people who are genetically more alike are also more similar in intelligence. Dr.

Albright should use a(n)

- A) experimental design.
- B) structured observation.
- C) case study.
- D) kinship study.

Answer: D

Page Ref: 53

Skill: Apply

Objective: 2.6

84) Which of the following is a true finding of kinship studies?

- A) Heritability of personality increases over the lifespan.
- B) Genetic factors are important in personality.
- C) Heritability of intelligence does not increase over the lifespan.
- D) Differences in genetic makeup explain about one-quarter of the variation in intelligence.

Answer: B

Page Ref: 53

Skill: Understand

Objective: 2.6

85) Heritability estimates

- A) are highly accurate.
- B) are likely to exaggerate the role of the environment.
- C) are likely to exaggerate the role of heredity.
- D) cannot be used to study personality.

Answer: C

Page Ref: 53

Skill: Understand

Objective: 2.6

86) Heritability estimates are controversial because they

- A) can easily be misapplied.
- B) fail to account for genetic contributions to human traits.
- C) are primarily used to study adopted children.
- D) are likely to exaggerate the role of the environment on human traits.

Answer: A

Page Ref: 53

Skill: Understand

Objective: 2.6

87) According to the concept of gene–environment interaction,

- A) people respond similarly to the same qualities of the environment.
- B) people have unique, genetically influenced reactions to particular experiences.
- C) people with different gene–environment combinations never respond similarly.
- D) heredity restricts the development of some characteristics to just one or a few outcomes.

Answer: B

Page Ref: 54

Skill: Understand

Objective: 2.6

88) When Harry, Ron, and Hermione are all exposed to an environment with a moderate level of stimulation,

- A) they will all experience the same increase in intelligence.
- B) they will all obtain an average intelligence score.
- C) they will each respond differently to the same environment.
- D) Hermione will outperform Harry and Ron on intelligence measures.

Answer: C

Page Ref: 54

Skill: Understand

Objective: 2.6

89) Recently, researchers have made strides in identifying gene–environment interactions in \_\_\_\_\_ development.

- A) personality
- B) cognitive
- C) motor
- D) social

Answer: A

Page Ref: 55

Skill: Remember

Objective: 2.6

- 90) According to the concept of \_\_\_\_\_, our genes influence the environments to which we are exposed.
- A) canalization
  - B) gene–environment correlation
  - C) heritability estimation
  - D) natural selection

Answer: B  
 Page Ref: 55  
 Skill: Understand  
 Objective: 2.6

- 91) Bart and Nadia are gymnasts. Their son, 4-year-old Dylan, participates in children’s gymnastics. This is an example of
- A) range of reaction.
  - B) an evocative correlation.
  - C) an active correlation.
  - D) a passive correlation.

Answer: D  
 Page Ref: 55  
 Skill: Apply  
 Objective: 2.6

- 92) Vernon is an active, friendly baby. He receives more social stimulation from his parents than Vivian, who is a passive, quiet infant. This is an example of a(n) \_\_\_\_\_ gene–environment correlation.

- A) active
- B) evocative
- C) dynamic
- D) passive

Answer: B  
 Page Ref: 55  
 Skill: Apply  
 Objective: 2.6

- 93) Active gene–environment correlation
- A) becomes common at older ages.
  - B) is not within the child’s control.
  - C) is influenced by the parents’ own heredity.
  - D) involves adult responses to the child’s temperament.

Answer: A  
 Page Ref: 55  
 Skill: Understand  
 Objective: 2.6

- 94) An intellectually gifted child’s choice to participate in chess club is an example of

- A) a subculture.
- B) reaction range.
- C) niche-picking.
- D) epigenesis.

Answer: C  
 Page Ref: 55  
 Skill: Apply  
 Objective: 2.6

- 95) Emma, an athletically inclined child, tries out for the soccer team, although her parents have never played on a sports team. This is an example of
- A) a passive gene–environment correlation.
  - B) niche-picking.
  - C) an evocative gene–environment correlation.
  - D) epigenesis.

Answer: B

Page Ref: 55

Skill: Apply

Objective: 2.6

- 96) Which age group is likely to do more niche-picking?
- A) elementary school children
  - B) preschoolers
  - C) infants
  - D) adolescents

Answer: D

Page Ref: 55

Skill: Understand

Objective: 2.6

- 97) The concept of \_\_\_\_\_ helps explain why pairs of identical twins reared apart during childhood and later reunited may find that they have similar hobbies, food preferences, and vocations.
- A) passive gene–environment correlation
  - B) gene therapy
  - C) evocative gene–environment correlation
  - D) niche-picking

Answer: D

Page Ref: 55

Skill: Understand

Objective: 2.6

- 98) Parents and other caring adults can \_\_\_\_\_ gene–environment correlations by providing children with positive experiences that modify the expression of heredity, yielding favorable outcomes.
- A) uncouple unfavorable
  - B) promote passive
  - C) promote evocative
  - D) create active

Answer: A

Page Ref: 56

Skill: Understand

Objective: 2.6

- 99) According to the epigenetic framework,
- A) differences in genetic makeup influence individuals' responses to the environment.
  - B) heredity restricts the development of some characteristics to just one or a few outcomes.
  - C) genes affect behavior and experiences, and behavior and experiences affect genetic expression.
  - D) individuals actively choose environments that complement their heredity.

Answer: C

Page Ref: 56

Skill: Understand

Objective: 2.6

- 100) Which of the following concepts places the most emphasis on bidirectional exchanges between heredity and the environment?
- A) range of reaction
  - B) passive gene–environment correlation
  - C) epigenesis
  - D) niche-picking

Answer: C

Page Ref: 56

Skill: Understand

Objective: 2.6

- 101) According to the concept of epigenesis,
- A) development results from ongoing, bidirectional exchanges between heredity and the environment.
  - B) heredity restricts the development of some behaviors.
  - C) heredity determines individual responsiveness to varying environments.
  - D) gene–environment correlation is entirely driven by genetics.

Answer: A

Page Ref: 56

Skill: Understand

Objective: 2.6

- 102) Animal evidence suggests that one reason for an inconsistency in results from studies regarding the risk of attention-deficit hyperactivity disorder (ADHD) in individuals who are homozygous for a chromosome-5 gene (DD) may be that
- A) there are no environmental influences associated with ADHD.
  - B) environmental influences associated with ADHD modify the gene’s activity.
  - C) the gene has no role in the occurrence of ADHD symptoms.
  - D) the DD genotype is only present in about 10 percent of the population.

Answer: B

Page Ref: 57 Box: *BIOLOGY AND ENVIRONMENT: A Case of Epigenesis: Smoking During Pregnancy Alters Gene Expression*

Skill: Understand

Objective: 2.6

- 103) By itself, the DD genotype is
- A) related to impulsivity.
  - B) related to overactivity.
  - C) unrelated to impulsivity or overactivity.
  - D) related to oppositional behavior.

Answer: C

Page Ref: 57 Box: *BIOLOGY AND ENVIRONMENT: A Case of Epigenesis: Smoking During Pregnancy Alters Gene Expression*

Skill: Understand

Objective: 2.6

- 104) Development is best understood as
- A) an unsolvable puzzle.
  - B) environmentally determined.
  - C) genetically determined.
  - D) a series of complex exchanges between nature and nurture.

Answer: D

Page Ref: 56

Skill: Understand

Objective: 2.6

## ESSAY

105) Describe dominant–recessive inheritance. Provide at least three examples each of dominant and recessive characteristics.

Answer: Except for the XY pair in males, all chromosomes come in matching pairs. Two forms of each gene occur at the same place on the chromosomes, one inherited from the mother and one from the father. Each form of a gene is called an allele. If the alleles from both parents are alike, the child is homozygous and will display the inherited trait. If the alleles differ, then the child is heterozygous, and relationships between the alleles determine the phenotype. In many heterozygous pairings, dominant–recessive inheritance occurs: Only one allele affects the child’s characteristics. It is called dominant; the second allele, which has no effect, is called recessive. Using hair color as an example: The allele for dark hair is dominant (we can represent it with a capital *D*), whereas the one for blond hair is recessive (symbolized by a lowercase *b*). A child who inherits a homozygous pair of dominant alleles (*DD*) and a child who inherits a heterozygous pair (*Db*) will both be dark-haired, even though their genotypes differ. Blond hair can result only from having two recessive alleles (*bb*). Still, heterozygous individuals with just one recessive allele (*Db*) can pass that trait to their children. Therefore, they are called carriers of the trait. Some dominant characteristics are: dark hair, curly hair, facial dimples, farsightedness, and double-jointedness. Some recessive characteristics are: straight hair, red hair, nearsightedness, blond hair, and type O blood.

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106) Describe Down syndrome, and explain how it occurs. What are some of the consequences of Down syndrome?.

Answer: Down syndrome is the most common chromosomal disorder, occurring in 1 out of every 770 live births. In 95 percent of cases, it results from a failure of the twenty-first pair of chromosomes to separate during meiosis, so the new individual receives three of these chromosomes rather than the normal two. In other, less frequent forms, an extra broken piece of a twenty-first chromosome is attached to another chromosome (called translocation pattern). Or an error occurs during the early stages of mitosis, causing some but not all body cells to have the defective chromosomal makeup (called mosaic pattern). Because the mosaic type involves less genetic material, symptoms may be less extreme.

The consequences of Down syndrome include mental retardation, memory and speech problems, limited vocabulary, and slow motor development. Affected individuals also have distinct physical features—a short, stocky build, a flattened face, a protruding tongue, almond-shaped eyes, and (in 50 percent of cases) an unusual crease running across the palm of the hand. In addition, infants with Down syndrome are often born with eye cataracts, hearing loss, and heart and intestinal defects. Because of medical advances, many individuals with Down syndrome survive into their fifties and a few into their sixties to eighties. However, more than half of affected individuals who live past age 40 show symptoms of Alzheimer’s disease, the most common form of dementia. Genes on chromosome 21 are linked to this disorder.

*Page Ref: 40–41*

- 107) How do contemporary researchers view the family? Describe direct and indirect influences on the family, and provide examples of each.

Answer: Contemporary researchers view the family as a network of interdependent relationships. Bidirectional influences exist in which the behaviors of each family member affect those of others. These influences operate both directly and indirectly. Kind, patient communication evokes cooperative, harmonious responses, whereas harshness and impatience engender angry, resistive behavior. Each of these reactions, in turn, forges a new link in the interactive chain. In the first instance, a positive message tends to follow; in the second, a negative or avoidant one is likely. When parents are firm but warm, children tend to comply with their requests. And when children cooperate, their parents are likely to be warm and gentle in the future. In contrast, children whose parents discipline harshly and impatiently are likely to refuse and rebel. And because children's misbehavior is stressful, parents may increase their use of punishment, leading to more unruliness by the child. Furthermore, third parties indirectly influence the family. Interaction between any two family members is affected by others present in the setting. Third parties can serve as supports for or barriers to development. For example, when a marital relationship is warm and considerate, mothers and fathers are more likely to engage in effective coparenting. Effective coparenting, in turn, fosters a positive marital relationship. In contrast, parents whose marriage is tense and hostile often interfere with one another's child-rearing efforts, are less responsive to children's needs, and are more likely to criticize, express anger, and punish. Children chronically exposed to angry, unresolved parental conflict have serious emotional problems resulting from disputed emotional security. These problems can further disrupt parents' marital relationship.

*Page Ref: 46*

- 108) Compare and contrast collectivist and individualistic societies.

Answer: In collectivist societies, people define themselves as part of a group and stress group goals over individual goals. Collectivist societies value an interdependent self, which stresses social harmony, obligations and responsibility to others, and collaborative endeavors. In contrast, in individualistic societies, people think of themselves as separate entities and are largely concerned with their own personal needs. Individualistic societies value an independent self, which emphasizes personal exploration, discovery, achievement, and individual choice in relationships. Although individualism tends to increase as cultures become more complex, cross-national differences remain. The United States is strongly individualistic, whereas most Western European countries lean toward collectivism. Collectivist versus individualistic values have a powerful impact on a nation's approach to protecting the well-being of children, families, and aging citizens.

*Page Ref: 50*

- 109) Describe the epigenetic framework.

Answer: Accumulating evidence reveals that the relationship between heredity and environment is not a one-way street, from genes to environment to behavior. Rather, it is bidirectional: Genes affect people's behavior and experiences, but their experiences and behavior also affect gene expression. Researchers call this view of the relationship between heredity and environment the epigenetic framework. Epigenesis means development resulting from ongoing, bidirectional exchanges between heredity and all levels of the environment. To illustrate, providing a baby with a healthy diet increases brain growth, leading to new connections between nerve cells, which transform gene expression. This opens the door to new gene-environment exchanges—for example, advanced exploration of objects and interaction with caregivers, which further enhance brain growth and gene expression. These ongoing, bidirectional influences foster cognitive and social development. In contrast, harmful environments can negatively affect gene expression. At times, the impact is so profound that later experiences can do little to change characteristics (such as intelligence and personality) that originally were flexible. The concept of epigenesis reminds us that development is best understood as a series of complex exchanges between nature and nurture. Although people cannot be changed in any way we might desire, environments can modify genetic influences. The success of any attempt to improve development depends on the characteristics we want to change, the genetic makeup of the individual, and the type and timing of our intervention.

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