Human Genetics 13th edition Lewis Test Bank

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Human Genetics 13th Edition by Lewis CH01

ANSWERS ARE LOCATED IN THE SECOND PART OF THIS DOCUMENT

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

1) Genetics is the study of

1) _____

A) inherited traits.
B) how organisms reproduce.
C) how life originated.
D) how the environment causes disease.

Question Details
Section : 01.01
Bloom's : 01. Remember
Topic : Genes and genomes
Learning Outcome : 01.01 Explain what genetics is and what it is not.
Gradable : automatic
Accessibility : Keyboard Navigation

2) In which choice are the entries listed from smallest to largest?

2) _____

A) DNA building block - gene - chromosome - genome
B) DNA building block - RNA building block - protein
C) Gene - cell - DNA - genome
D) Chromosome - genome - cell - DNA building block

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Genes and genomes
Topic : Levels of genetics
Learning Outcome : 01.04 List the levels of genetics.
Gradable : automatic
Accessibility : Keyboard Navigation

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3) The complete genetic material of an organism is its

3) _____

A) genome.
B) chromosome.
C) phenotype.
D) genotype.

Question Details
Section : 01.01
Bloom's : 02. Understand
Topic : Genes and genomes
Learning Outcome : 01.02 Distinguish between gene, exome, and genome.
Gradable : automatic
Accessibility : Keyboard Navigation

4) The number of sets of our genome in most of our cells is _____.

4) _____

A) 1
B) 2
C) 3
D) 4

Question Details
Section : 01.01
Bloom's : 01. Remember
Topic : Genes and genomes
Learning Outcome : 01.02 Distinguish between gene, exome, and genome.
Gradable : automatic
Accessibility : Keyboard Navigation

5) An estimated _____ DNA base pairs comprise the human genome.

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5) _____

A) 32,000
B) 320,000
C) 3.2 million
D) 3.2 billion

Question Details
Section : 01.01
Bloom's : 01. Remember
Topic : Genes and genomes
Learning Outcome : 01.02 Distinguish between gene, exome, and genome.
Gradable : automatic
Accessibility : Keyboard Navigation

6) The field of _____ addresses concerns arising from the use of new genetic technologies, including tests, treatments, privacy, and discrimination.

6) _____

A) metaethics
B) bioethics
C) biotechnology
D) genetics

Question Details
Section : 01.01
Bloom's : 01. Remember
Topic : Genes and genomes
Topic : Bioethics
Learning Outcome : 01.03 Define bioethics.
Gradable : automatic
Accessibility : Keyboard Navigation

7) Variants of a gene are called

7) _____

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A) genotypes.
B) phenotypes.
C) alleles.
D) single nucleotide polymorphisms.

Question Details
Section : 01.02
Bloom's : 01. Remember
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.07 State the basis of genetic diversity.

8) Humans have _____ pairs of chromosomes.

8) _____

A) 23
B) 38
C) 46
D) 32

Question Details
Section : 01.02
Bloom's : 01. Remember
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.08 Explain the relationship between DNA and chromosomes.

9) A change in a gene's DNA sequence is a

9) _____

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A) genotype.
B) nucleotide.
C) mutation.
D) genome.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Learning Outcome : 01.06 Explain how a mutation can cause a disease.
Gradable : automatic
Accessibility : Keyboard Navigation

10) In general, RNA molecules

10) _____

A) comprise the chromosomes.
B) serve as messengers to allow the information in DNA to be used to construct proteins.
C) entwine with DNA molecules to encode proteins.
D) form double helices that encode DNA sequences.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Learning Outcome : 01.05 Explain how DNA is maintained and how it provides the information to constru
Gradable : automatic
Accessibility : Keyboard Navigation

11) A genotype refers to

11) _____

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A) the alleles present in an individual.
B) expression patterns of certain genes.
C) the environmental components of a trait.
D) the number of chromosomes that a person has.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.07 State the basis of genetic diversity.

12) A chart that displays paired chromosomes in order of size is a

12) _____

A) phenotype.
B) genotype.
C) karyotype.
D) genome.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.08 Explain the relationship between DNA and chromosomes.

13) A human cell has

13) _____

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A) 22 pairs of sex chromosomes and one pair of autosomes.
B) 22 pairs of autosomes and one pair of sex chromosomes.
C) 23 pairs of autosomes.
D) 23 pairs of autosomes and a pair of Y chromosomes.

Question Details
Section : 01.02
Bloom's : 01. Remember
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.08 Explain the relationship between DNA and chromosomes.

14) The Y chromosome

14) _____

A) forms the somatic cells.
B) is a sex chromosome.
C) contains discontinuous DNA sequence.
D) is present in all humans.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.08 Explain the relationship between DNA and chromosomes.

15) Polydactyly is considered a Mendelian trait because

15) _____

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A) it is caused by linked genes.
B) it is caused by a single gene.
C) it is caused due to environmental factors.
D) it affects the stem cells.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.09 Distinguish between Mendelian and complex traits.

16) Which of the following traits is considered Mendelian?

16) _____

A) A trait which is caused by linked genes
B) A trait which is caused by a single gene
C) A trait which is caused by environmental factors
D) A trait which is multifactorial

Question Details
Section : 01.02
Bloom's : 01. Remember
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.09 Distinguish between Mendelian and complex traits.

17) One way to study the human genome is to

17) _____

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A) determine the twisting patterns of the two sides of the double helix.
B) determine the sequence of sugars and phosphates.
C) determine the DNA sequence.
D) conduct a phenotype-wide association study.

Question Details
Section : 01.01
Bloom's : 02. Understand
Topic : Genes and genomes
Learning Outcome : 01.02 Distinguish between gene, exome, and genome.
Gradable : automatic
Accessibility : Keyboard Navigation

18) During transcription, the sequence of one strand of a DNA molecule is copied into a related molecule, known as a

18) _____

A) gene.
B) messenger RNA.
C) protein.
D) genome.

Question Details
Section : 01.02
Bloom's : 01. Remember
Topic : Levels of genetics
Learning Outcome : 01.05 Explain how DNA is maintained and how it provides the information to constru
Gradable : automatic
Accessibility : Keyboard Navigation

19) A human body has about _____ cells.

19) _____

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A) 3.2 billion
B) 20,600
C) 30 trillion
D) 10 to 100 million

Question Details
Section : 01.02
Bloom's : 01. Remember
Topic : Levels of genetics
Learning Outcome : 01.04 List the levels of genetics.
Gradable : automatic
Accessibility : Keyboard Navigation

20) Cells differentiate by

20) _____

A) expressing different subsets of genes.
B) expressing the entire genome, then silencing some genes.
C) activating all of the DNA that encodes protein.
D) becoming stem cells.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Learning Outcome : 01.04 List the levels of genetics.
Gradable : automatic
Accessibility : Keyboard Navigation

21) The difference between phenotype and genotype is that

21) _____

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A) phenotype refers to the genetic instructions and genotype to their expression.
B) genotype refers to the genetic instructions and phenotype to their expression.
C) the phenotype is RNA and the genotype is DNA.
D) the phenotype is DNA and the genotype is RNA.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Learning Outcome : 01.04 List the levels of genetics.
Gradable : automatic
Accessibility : Keyboard Navigation

22) Shawn's mother and Heather's mother are sisters. Shawn and Heather have _____ of their genes in common.

22) _____

A) 1/2
B) 1/4
C) 1/8
D) 1/16

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Learning Outcome : 01.04 List the levels of genetics.
Gradable : automatic
Accessibility : Keyboard Navigation

23) A gene pool consists of all the alleles in a(n)

23) _____

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A) population.
B) individual.
C) family.
D) neighborhood.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.10 Explain how genetics underlies evolution.

24) A trait or disorder that is complex is

24) _____

A) present in more than one family member.
B) found only in one part of the world.
C) caused by one or more genes and environmental influences.
D) caused by a single gene, with no environmental input.

Question Details
Section : 01.02
Bloom's : 02. Understand
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.09 Distinguish between Mendelian and complex traits.

25) Body weight must be a complex trait because

25) _____

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A) it is obviously inherited.
B) it responds to lifestyle changes.
C) it is within a certain range.
D) it is inherited to an extent, but can be altered by diet and/or exercise.

Question Details
Section : 01.02
Bloom's : 03. Apply
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.09 Distinguish between Mendelian and complex traits.

26) Identifying individual drug reactions based on genetics is a growing field called

26) _____

A) genome editing.
B) pharmacogenetics.
C) metagenomics.
D) applied pharmacology.

Question Details
Section : 01.03
Bloom's : 02. Understand
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.11 List some practical uses of DNA information.

27) A piece of fabric left at a crime scene has hairs on it. What technique would best be used on these hairs to implicate an apprehended suspect?

27) _____

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A) Pharmacogenetics
B) Pedigree analysis
C) DNA profiling
D) Metagenomics

Question Details
Section : 01.03
Bloom's : 03. Apply
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.11 List some practical uses of DNA information.

28) Nacho suffers from terrible migraine headaches. He enters a clinical trial to test whether certain single nucleotide polymorphisms (SNPs), or small changes in his DNA, are associated with response to one drug but not another. This is an approach called

28) _____

A) metagenomics.
B) pharmacogenetics.
C) genome editing.
D) applied pharmacology.

Question Details
Section : 01.03
Bloom's : 04. Analyze
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.11 List some practical uses of DNA information.

29) DNA profiling has been used to

29) _____

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A) identify victims of terrorist attacks and natural disasters.
B) cure metabolic diseases caused by mutations in single genes.
C) treat male infertility.
D) predict how children will do in school.

Question Details
Section : 01.03
Bloom's : 01. Remember
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.11 List some practical uses of DNA information.

30) DNA profiling is helpful in

30) _____

A) curing cancer.
B) analyzing food.
C) treating male infertility.
D) preventing male pattern baldness.

Question Details
Section : 01.03
Bloom's : 01. Remember
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.11 List some practical uses of DNA information.

31) What is the name of the field that is revealing and describing much of the invisible living world by sequencing all of the DNA in a particular habitat?

31) _____

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A) Stem cell science
B) Bioethics
C) Metagenomics
D) Biochemistry

Question Details
Section : 01.04
Bloom's : 01. Remember
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.13 Explain how investigating genomes extends beyond interest in ourselves.

32) Sequencing all the DNA in the fluid that leaks from the bottom of a garbage can is an example of

32) _____

A) stem cell science.
B) gene expression profiling.
C) metagenomics.
D) DNA profiling.

Question Details
Section : 01.04
Bloom's : 02. Understand
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.13 Explain how investigating genomes extends beyond interest in ourselves.

33) How do researchers in the metagenomics sector operate?

33) _____

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A) They study Mendelian traits in children.
B) They link diseases by shared gene expression.
C) They detect mutations in the protein encoding part of an individual's genome by using powerful algorithms.
D) They collect and sequence DNA, then consult databases of known genomes to imagine what the organisms to which the DNA belongs might be like.

Question Details
Section : 01.04
Bloom's : 02. Understand
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.13 Explain how investigating genomes extends beyond interest in ourselves.

34) Select the example of genetics.

34) _____

A) Studying how various members of a royal family are related
B) Studying the shape and size of dinosaur fossils
C) Studying how a disease gene is transmitted within a royal family
D) Studying how the different organelles in a cell work

Question Details
Section : 01.01
Bloom's : 03. Apply
Topic : Genes and genomes
Learning Outcome : 01.01 Explain what genetics is and what it is not.
Gradable : automatic
Accessibility : Keyboard Navigation

35) A group of scientists meet to discuss the legal implications of genome editing in humans. This is an example of

35) _____

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A) genealogy.
B) bioethics.
C) metagenomics.
D) DNA profiling.

Question Details
Section : 01.01
Bloom's : 03. Apply
Topic : Bioethics
Learning Outcome : 01.03 Define bioethics.
Gradable : automatic
Accessibility : Keyboard Navigation

36) Sickle-cell anemia results from a beta-globin protein containing the amino acid valine in the place of the amino acid glutamic acid. This is an example of a _____ causing a disease.

36) _____

A) microbiome
B) gene pool
C) complex trait
D) mutation

Question Details
Section : 01.02
Bloom's : 03. Apply
Topic : Levels of genetics
Learning Outcome : 01.06 Explain how a mutation can cause a disease.
Gradable : automatic
Accessibility : Keyboard Navigation

37) What is the exome?

37) _____

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A) Sequences in between protein-encoding genes
B) Protein-encoding genes
C) All the DNA in a genome
D) All of the proteins in a cell

Question Details
Section : 01.02
Bloom's : 01. Remember
Topic : Levels of genetics
Learning Outcome : 01.02 Distinguish between gene, exome, and genome.
Gradable : automatic
Accessibility : Keyboard Navigation

38) Based on your knowledge of genetics and evolution, to which listed organism are humans most closely related at the genome level?

38) _____

A) Dogs
B) Bacteria
C) Slugs
D) Roses

Question Details
Section : 01.02
Bloom's : 04. Analyze
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.10 Explain how genetics underlies evolution.

39) Select the example of traditional breeding.

39) _____

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A) Mating dogs with other dogs based on traits such as size, fur color, and temperament
B) Placing human genes into bacteria for production of drugs
C) Placing genes into wheat to aid in disease resistance
D) Adding genes to tomatoes to help them taste better

Question Details
Section : 01.03
Bloom's : 03. Apply
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.12 Distinguish between traditional breeding and genetically modifying organisms

40) The CRISPR-Cas9 system is a tool to perform

40) _____

A) exome sequencing.
B) DNA profiling.
C) pharmacogenetics.
D) genome editing.

Question Details
Section : 01.03
Bloom's : 01. Remember
Topic : DNA testing in history, forensics, and health care
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.12 Distinguish between traditional breeding and genetically modifying organisms

41) What type of disease would not be identified by exome sequencing?

41) _____

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A) A disorder caused by a deletion of a large part of a gene
B) A disorder that is caused by a mutation in a non-coding region of DNA found far away from the gene it affects
C) A disorder caused by a mutation that causes one amino acid to be switched for another amino acid
D) A disorder caused by a mutation that causes amino acids to be added to a protein

Question Details
Section : 01.02
Section : 01.03
Bloom's : 04. Analyze
Topic : Levels of genetics
Topic : DNA testing in history, forensics, and health care
Learning Outcome : 01.02 Distinguish between gene, exome, and genome.
Gradable : automatic
Accessibility : Keyboard Navigation
Learning Outcome : 01.11 List some practical uses of DNA information.

42) What is sequenced in exome sequencing?

42) _____

A) The entire genome
B) The parts of the genome that encode proteins
C) The parts of the DNA that are mutated
D) The parts of the genome that do not encode proteins

Question Details
Section : 01.03
Bloom's : 01. Remember
Topic : DNA testing in history, forensics, and health care
Learning Outcome : 01.02 Distinguish between gene, exome, and genome.
Gradable : automatic
Accessibility : Keyboard Navigation

43) Approximately how many genes comprise the human exome?

43) _____

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A) 20 million
B) 200,000
C) 2,000
D) 20,000

Question Details
Section : 01.02
Bloom's : 01. Remember
Topic : Levels of genetics
Learning Outcome : 01.02 Distinguish between gene, exome, and genome.
Gradable : automatic
Accessibility : Keyboard Navigation

44) What type of genetic information is represented by the following sequence?
5'-AUCCAGGCAUGG-3'

44) _____

A) DNA
B) RNA
C) Protein
D) Chromosome

Question Details
Section : 01.02
Bloom's : 03. Apply
Topic : Levels of genetics
Learning Outcome : 01.02 Distinguish between gene, exome, and genome.
Learning Outcome : 01.04 List the levels of genetics.
Gradable : automatic
Accessibility : Keyboard Navigation
Activity Type : New

45) Some human disorders are caused by the presence of an entire extra chromosome. In these cases, instead of having 2 of a certain chromosome in each cell, the individual may have 3 of that chromosome in each cell. What genetic test would be most useful in determining if an individual has extra copies of a chromosome?

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45) _____

A) Karyotyping
B) Exome sequencing
C) Genome sequencing
D) DNA profiling

Question Details
Section : 01.02
Bloom's : 03. Apply
Topic : Levels of genetics
Gradable : automatic
Accessibility : Keyboard Navigation
Activity Type : New
Learning Outcome : 01.08 Explain the relationship between DNA and chromosomes.

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Human Genetics 13th Edition by Lewis CH01

Answer Key

Test name: CH01

1) A
2) A
3) A
4) B
5) D
6) B
7) C
8) A
9) C
10) B
11) A
12) C
13) B
14) B
15) B
16) B
17) C
18) B
19) C
20) A
21) B
22) C
23) A
24) C
25) D

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Complex traits are determined by one or more genes and environmental factors. A person's weight has a genetic component, but also depends on their food intake and activity level, making it a complex trait.

26) B
27) C
In DNA profiling, molecular techniques, statistics, and computer analysis are combined to compare DNA sequences between individuals. Therefore, it is the ideal approach to use to link hair found at a crime scene to an apprehended subject.

28) B
Pharmacogenetics is a strategy in which DNA information from an individual is used to choose drugs that are most likely to work and least likely to have side effects in that individual. Such a strategy is described here.

29) A
30) B
31) C
32) C
33) D
34) C
Genealogy considers the relationship between people, but not their traits, and would be used to study how various members of a royal family are related. This is not an example of genetics. Studying organelles and dinosaur fossils are also not examples of genetic studies. In contrast, studying how a disease gene is transmitted within a royal family is an example of genetics. Genetics involves looking at inherited traits and their transmission.

35) B

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The field of bioethics studies concerns that arise from the use of new genetic technologies, such as gene editing. Discussing gene editing in humans would be an example of bioethics.

36) D
A change in an amino acid in a protein usually results from a change, or a mutation in the DNA. In this example, a mutation is causing the disease.

37) B
38) A
In general, the more similar DNA sequences are between two organisms, the more recently they diverged from a shared ancestor, and the more closely they are related. Among the choices listed, dogs are the only mammals, and are therefore most likely to be most closely related to humans at the genome level.

39) A
In gene modification, a gene or genome is modified in a way that does not occur in nature. In contrast, traditional breeding doesn't result in organisms that are considered to be "genetically modified" because traits are selected within a species. In the examples given, mating dogs is the example of traditional breeding because you are selecting traits within a species.

40) D
41) B

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What is an exome? The exome is the portion of the genome that encodes proteins. Therefore, exome sequencing only sequences parts of the chromosomes that are made into proteins. These regions are the genes. Exome sequencing would not be able to detect a mutation in a non-coding region of DNA found far away from the gene it affects, because this region is not part of the gene.

42) B
43) D
44) B
The letters A, T, C, G, and U represent nitrogenous bases, which are found in DNA and RNA. Because U is present instead of T, we can tell that this molecule is RNA.

45) A
In a karyotype, all of the chromosomes in a cell are lined up according to size. In a karyotype, it would be very clear if extra chromosomes were present in a cell. The other techniques are used to determine what DNA sequences are present in a cell or specimen, rather than the number of copies of that sequence.

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