Review Test Submission: Genetics and Medicine Exam

E2F21

User	[redacted]
Course	2109_INTRODUCTION TO BIOLOGY [2109_BIOL_1010_04]
Test	Genetics and Medicine Exam
Started	10/25/21 9:55 AM
Submitted	10/25/21 10:48 AM
Status	Completed
Attempt Score	75 out of 100 points
Time Elapsed	52 minutes out of 1 hour and 15 minutes
Results Displayed	All Answers, Submitted Answers, Correct Answers, Feedback, Incorrectly Answered Questions

Question 1

0 out of 1 points

Proto-oncogenes can be "transformed" into oncogenes by elimination of their start signals for translation.

Selected Answer: ✗ True

Answers: True

✓ False

Question 2

2 out of 2 points

COVID-19

Selected Answer: ✓ has resulted in a pandemic

Answers: requires RNA based vaccines because it is an RNA virus

all of the answers are true

is involved in a pathway that causes cells to divide

✓ has resulted in a pandemic

Question 3

1 out of 1 points

When a somatic cell divides into two daughter cells that have the same number of

chromosomes we call this process meiosis.

Selected Answer: ✓ False

Answers: True

✓ False

Question 4

0 out of 1 points

The angiogenesis inhibitor helps reduce the growth of cancer cells by inhibiting the expression of oncogenes.

Selected Answer: ✗ True

Answers: True

✓ False

Question 5

2 out of 2 points

Breast Cancer:

Selected Answer: ✓ is often associated with specific mutations in genes

Answers: all of the answers are true

✓ is often associated with specific mutations in genes

has the highest incidence in women under 40

accounts for over 90% of cancer diagnoses

Question 6

2 out of 2 points

The term "pluripotent" is defined as cells that:

Selected Answer: ✓ can develop into almost any tissue type

Answers: ✓ can develop into almost any tissue type

can develop a variety of different cancers

contain both oncogenes and tumor suppressing genes

can undergo meiosis but not mitosis

Question 7

2 out of 2 points

A disabled form of H.I.V. re-engineered to carry cancer fighting genes and mixed with a patients T-cells is a type of:

Selected Answer: ✓ Immunotherapy

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Answers:
- Signal transduction inhibitor therapy
- Hormone therapy
- Chemotherapy
- ✓ Immunotherapy

Question 8

2 out of 2 points

Jimmy Smith's **parents** have **normal** hearing. However, Jimmy has an inherited allele for deafness. Deafness is a **recessive** trait that is associated with an abnormal **allele d**. The allele at this locus, associated with normal hearing is **D**. Jimmy's parents could have which of the following genotypes?

Selected Answer: ✓ Dd and Dd

Answers:
- ✓ Dd and Dd
- dd and dd
- Dd and DD
- DD and dd

Question 9

0 out of 2 points

Colorblindness is more common in males than in females because:

Selected Answer: ✗ the allele for colorblindness is located on the Y chromosome

Answers:
- ✓ the allele for colorblindness is located on the X chromosome
- the allele for colorblindness is located on the Y chromosome
- males who are colorblind have two copies of the allele for colorblindness
- fathers pass the allele for colorblindness to their sons only

Question 10

2 out of 2 points

Infectious diseases that can be specifically transmitted from other vertebrate animals to humans are called:

Selected Answer: ✓ zoonoses

Answers:
- pandemic diseases

zoonoses

re-immerging diseases

vector borne diseases

Question 11

0 out of 2 points

Autosomal disorders **cannot** be caused by:

Selected Answer: dominant allele disorders

Answers:
all of the answers are true
x-linked disorders
recessive allele disorders
dominant allele disorders

Question 12

1 out of 1 points

Biomarker discovery can lead to prognostic tools for doctors.

Selected Answer: True

Answers:
True
False

Question 13

0 out of 2 points

Vitamin D-resistant rickets is an X-linked dominant bone disorder. A man with this form of rickets marries a normal woman. What is the percent likelihood that the couple's son is expected to have vitamin D-resistant rickets?

Selected Answer: 50%

Answers:
100%
0%
25%
75%
50%

Question 14

2 out of 2 points

CRISPR is capable of:

Selected Answer: all of the answers are true

Answers:
- acting as a defense system in bacterial cells
- editing genes in living cells
- silencing genes in living cells
- all of the answers are true

Question 15

2 out of 2 points

The field of Pharmacogenomics is used to:

Selected Answer: identify how our genes affect the way our bodies respond to medications

Answers:
- all of the answers are true
- develop effective generic drugs based on the human genome project
- develop drugs from the genomes of bacteria
- identify how our genes affect the way our bodies respond to medications

Question 16

2 out of 2 points

If lactose is passively imported into a bacterial cell this will result in

Selected Answer: expression of the lactose operon by inactivating the lac repressor molecule

Answers:
- a switch in metabolism in the cell from use of sugars to another source
- prohibiting the expression of the lactose operon
- expression of the lactose operon by inactivating the lac repressor molecule
- overall decreasing the expression of genes in the cell related to sugar metabolism

Question 17

0 out of 2 points

In automated DNA sequencing based on the Sanger method which is/are **True**?

Selected Answer: every reaction tube includes all four dideoxyNTPs (ddNTPS)

Answers:
- DNA polymerase is needed for elongation
- the reaction is terminated when dNTPs run out
- every reaction tube includes all four dideoxyNTPs (ddNTPS)
- all of the answers are true

Question 18

1 out of 1 points

The 3-D conformation of DNA and RNA is quite similar because they both are composed of a sugar, phosphate group and nitrogenous base.

Selected Answer: False

Answers:
- True
- False

Question 19

2 out of 2 points

CRISPR / CAS 9 causes a

Selected Answer: double stranded break in the DNA to be edited

Answers:
- single stranded break in the DNA to be edited
- methylation of the DNA being edited
- break in the RNA to be edited
- double stranded break in the DNA to be edited

Question 20

2 out of 2 points

X-linked inheritance patterns:

Selected Answer: have genes that segregate based on X-chromosome segregation

Answers:
- all of the answers are true
- have genes that segregate based on X-chromosome segregation
- are only observable in females
- have genes on X and Y chromosomes

Question 21

0 out of 2 points

Does nondisjunction during meiosis result in the production of gametes with normal chromosome numbers?

Selected Answer: No, all gametes will have abnormal chromosome numbers

Answers: None of the answers are true

No, all gametes will have abnormal chromosome numbers

Yes, all gametes will still have normal chromosome numbers

Yes, but only if nondisjunction occurs in meiosis I

Question 22

1 out of 1 points

"RNAi" is a mechanism for combating virus infections in plants.

Selected Answer: True

Answers: True

False

Question 23

2 out of 2 points

What does the Sanger sequencing method take advantage of?

Selected Answer: nucleotides missing a hydroxyl on the 3' end

Answers: nucleotides missing a hydroxyl on the 3' end

nucleotides missing a sugar phosphate backbone

nucleotides missing a base

nucleotides missing a phosphate on the 5' end

Question 24

0 out of 2 points

In the context of prokaryotic gene expression, which of the following is the most appropriate definition of an operator?

Selected Answer: a DNA-binding protein that regulates gene expression

Answers:

a non-coding, regulatory DNA sequence that is bound by a repressor protein

a cluster of genes that are regulated by a single promoter

a non-coding, regulatory DNA sequence that is bound by RNA polymerase

a DNA-binding protein that regulates gene expression

Question 25

2 out of 2 points

The advances in personalized medicine correlate with advances in technology including:

Selected Answer: all of the answers are true

Answers:

bioinformatics and data mining approaches for diagnosis and testing

all of the answers are true

ability to engineer stem cell therapies using the body's own cells

approaches to obtain genome data rapidly and inexpensively

Question 26

1 out of 1 points

Based on recent studies, certain cancer cells can be destroyed by supplying them with amino acids that harbor nanoparticles that are toxic to them.

Selected Answer: True

Answers: True

False

Question 27

1 out of 1 points

DNA is always synthesized in the 5' to 3' direction.

Selected Answer: True

Answers: True

False

Question 28

2 out of 2 points

. A mouse that has the **genotype** AaMMzz will have the same **phenotype** as a mouse with the genotype:

Selected Answer: AAMmzz

Answers: aammzz

AaMmZz

AAmmzz

✓ AAMmzz

Question 29

2 out of 2 points

In the Supreme Court Case Association for *Molecular Pathology v. Myriad Genetics* it was found that:

Selected Answer: ✓ Human genes are found in nature and unpatentable

Answers: Human genes are unpatentable unless they are isolated

Human genes are patentable when mutated for cancer research

Human genes are patentable if they are in certain regions of the genome

✓ Human genes are found in nature and unpatentable

Question 30

1 out of 1 points

A small RNA that serves as a "gopher" to bring amino acids from the cytoplasm to the ribosome during translation is called gRNA.

Selected Answer: ✓ False

Answers: True

✓ False

Question 31

1 out of 1 points

An **epigenetic** change in gene expression can be an inherited change that does not involve any change in the nucleotide sequence of the gene.

Selected Answer: ✓ True

Answers: ✓ True

False

Question 32

2 out of 2 points

If one strand of DNA is CGGATC, the corresponding DNA strand would be:

Selected Answer: GCCTAG

Answers: GCCAUG

TAACGT

CGGATC

GCCATG

GCCTAG

Question 33

2 out of 2 points

Induced Pluripotent Stem cells:

Selected Answer: can be derived from adult skin cells by switching on just a few genes

Answers: can be derived from adult skin cells by switching on just a few genes

were ultimately discovered to develop into only two or three different human cell types

are a major step forward in the quest to use stem cells in fighting or curing a range of human diseases, but still require *in vitro* embryonic cells from different tissues

can cause cancer and were quickly abandoned after their discovery

can only be derived from bone marrow

Question 34

2 out of 2 points

What is 80% of the non-coding DNA transcribed to?

Selected Answer: RNA

Answers: Epigenomes

RNA

Phenotypes

Proteins

Question 35

2 out of 2 points

A major discovery concerning the human genome announced by the ENCODE Project was:

Selected Answer: most of the DNA bases in the human genome do not code for proteins but instead code for thousands of small RNA molecules that regulate gene activity

Answers:
most of the DNA bases in the human genome do not code for proteins but instead code for thousands of small RNA molecules that regulate gene activity

epigenetic changes in DNA structure and function have little to do with the regulation of cell function and development

the human genome is actually made of 30,000 not 20,000 protein coding genes

DNA variants linked to major human diseases all lie within the 20,000 or so human genes that code for proteins

Question 36

2 out of 2 points

Which statement about stem cells is **false**?

Selected Answer: they need to be derived from embryos

Answers:
all of the answers are true

they can differentiate into multiple cell types

they are capable of dividing to renew themselves

they need to be derived from embryos

Question 37

1 out of 1 points

Introns can serve as export signals of mRNA from the nucleus to the cytoplasm where introns are then spliced out before the mRNA is translated.

Selected Answer: False

Answers:
True

False

Question 38

1 out of 1 points

The Cancer Genome Atlas project lead to the realization that there is one type of cancer per type of tumor.

Selected Answer: False
Answers: True
False

Question 39 2 out of 2 points

Prostate cancer is treated with hormone therapy by

Selected Answer: reducing production of testosterone

Answers:
silencing estrogen
enhancing androgen production
removing the hormone producing organs
reducing production of testosterone

Question 40 2 out of 2 points

Within one chromosome during mitosis, what is the relationship between the sequence of bases in DNA of one sister chromatid compared to another?

Selected Answer: the sequences are identical

Answers:
the sequences are unrelated
the sequence in one chromatid is complementary to the sequence in the other
the sequences are identical, but uracil replaces thymine in one sister chromatid
the sequences are identical

Question 41 2 out of 2 points

The enzyme that binds two segments of DNA together, including binding Okazaki fragments during DNA replication is:

Selected Answer: ligase

Answers:
polymerase
ligase
replicase

helicase

Question 42 2 out of 2 points

What are SNPs?

Selected Answer: Single Nucleotide Polymorphisms

Answers:
- Similar Nucleotide Positions
- Synthesized Non-coding Proteins
- Single Nucleotide Polymorphisms
- Enzymes that have the ability to cut or SNiP DNA

Question 43 0 out of 2 points

Which of the following is **false** regarding the lac operon in *E. coli*?

Selected Answer: the lac operon messenger RNA carries information for synthesis of several proteins

Answers:
- the lac operon messenger RNA carries information for synthesis of several proteins
- the enzyme β-galactosidase is produced in large quantities when the lac repressor is not bound to the operator
- the operator is the binding site for the lac repressor
- the operon is switched off in the presence of lactose in the growth medium

Question 44 0 out of 1 points

The field of Synthetic Biology focusses on replicating biological systems that exist in the natural world.

Selected Answer: True

Answers:
- True
- False

Question 45 0 out of 2 points

These genes normally function to prevent uncontrolled cell division, but when mutated they lose this regulatory function and can promote cell proliferation that allows tumors to grow:

Selected Answer: oncogenes

Answers:
- Hox cancer genes
- oncogenes
- tumor suppressing genes
- epithelial growth factor genes

Question 46

0 out of 2 points

Which of the following is **FALSE** about cancer:

Selected Answer: cancer can be treated using a variety of different chemotherapies

Answers:
- most cancers are caused by 2-8 sequential alterations over a number of years
- cancer can be treated using a variety of different chemotherapies
- more than 30 genes are known whose mutations drive cancer
- cancer genes function through one or two signaling pathways

Question 47

2 out of 2 points

The surprise from the Human Genome Project was that:

Selected Answer: protein-encoding genes make up <2% of our genome

Answers:
- genetic mapping was considered the better approach to use even though it was slow
- protein-encoding genes make up <2% of our genome
- protein-encoding genes make up >80% of our genome
- a genome shotgun approach with Sanger sequencing was not effective because of inaccuracies

Question 48

0 out of 2 points

BRCA1 and BRCA2 are genes:

Selected Answer: all of the answers are correct

Answers:
- essential to controlled cell division
- all of the answers are correct
- that if mutated will cause cancer
- all of the answers are false
- normally expressed only in breast cells

Question 49

2 out of 2 points

In eukaryotes, DNA packaging seems to affect gene expression primarily by:

Selected Answer: controlling access to DNA

Answers:
- protecting DNA from mutations
- controlling access to DNA
- enhancing the recombination of genes
- positioning related genes near each other

Question 50

2 out of 2 points

Which statement about viruses is **TRUE**?

Selected Answer: all viruses are surrounded by a capsid

Answers:
- only RNA viruses that are single stranded cause disease
- DNA viruses have higher rates of mutation than RNA viruses
- all viruses are surrounded by a capsid
- DNA viruses are always double stranded

Question 51

1 out of 1 points

Emerging infectious diseases are no longer a growing health concern due to vaccines and advanced medical technologies.

Selected Answer: False

Answers:
- True
- False

Question 52

2 out of 2 points

Pseudogenes are:

Selected Answer: inactivated, nonfunctional gene copies

Answers: inactivated, nonfunctional gene copies

genes that code for a variety of proteins in the bacterium *Pseudomonas*

activated, functional gene copies

genes that lacks introns

Question 53

2 out of 2 points

A person with a disorder resulting from trisomy of chromosome 21 has:

Selected Answer: 45 autosomes and 2 sex chromosomes

Answers: 45 autosomes and 2 sex chromosomes

43 autosomes and 1 sex chromosome

45 autosomes and 1 sex chromosomes

44 autosomes and 2 sex chromosomes

Question 54

2 out of 2 points

'RNAi' stands for which of the following?

Selected Answer: RNA interference

Answers: RNA insertion

RNA intron

RNA inducer

RNA interference

Question 55

0 out of 2 points

Clinomics aims to:

Selected Answer: develop cost effective pills for clinical use

Answers:

examine genomic data from all eukaryotes

develop more clinics for specified diseases

develop cost effective pills for clinical use

analyze data to guide health care decisions

Question 56

2 out of 2 points

A gene that is altered on the 14 th chromosome is found in 50% of the offspring after an affected father and an unaffected mother successfully breed. This type of inheritance can be described as:

Selected Answer: Autosomal, dominant

Answers:

X-linked, dominant

X linked, recessive

Autosomal, recessive

Autosomal, dominant

Question 57

2 out of 2 points

Which of the following statements is **TRUE**?

Selected Answer: hox genes control the normal development of an animal

Answers:

hox genes found in different animals are very different from each other

hox genes can help control small pox

hox genes control the normal development of an animal

mutations do not occur in hox genes

Monday, November 8, 2021 1:11:13 AM EST

← OK