Teaching notes for Genomics quiz for nursing educators v3.01

These notes are for educators using v3.01 of the Genomics quiz for online classrooms, created by NHS England's National Genomics Education.

Section: 'About DNA'

Question: In biology, what does DNA stand for?
Answer: **B**) Deoxyribonucleic acid

Question: What does the molecule 'DNA' do?
Answer: **A**) holds our genetic material AND **C**) passes on inherited traits

Question: In humans, where is DNA found?
Answer: **B**) In most of our cells

Question: Genetics is the study of all an individual's DNA
Answer: **False**

Section: 'Chromosomes'

Question: What is a chromosome?
Answer: **A**) Compact form of DNA

Question: How many chromosomes do most human cells contain?
Answer: **C**) 46

Section: ‘Genes vs genomes’

Question: What are genes?
Answer: **A**) Specific parts of DNA

Question: What is a genome (gee-nome)?
Answer: **B**) A cell’s entire genetic material

Question: How much of your genome is the same as everyone else’s?
Answer: **D**) 99.8%

Section: ‘Genomes to proteins’

Question: What does the ‘central dogma’ of biology explain?
Answer: **B**) How proteins code for genes

Question: Approximately how many protein-coding genes does the human genome have?
Answer: **B**) 20,000

Question: How much of your genome contains the instructions to make proteins?
Answer: **A**) 2%

Section: ‘Inheritance and variation’

Question: Which word describes passing down genetic information?
Answer: **A**) Inherited

Question: In medicine, what word is preferably used to indicate that a gene is different than expected?
Answer: **A**) Variant

Question: The size of a change in our genome is directly linked to the potential impact it has on our health.
Answer: **False**

Question: It is certain that two patients, with the same genomic variants, will present with the same symptoms.
Answer: **False**

Question: Which are genetically inherited conditions?
Answer: **A**) Cystic fibrosis AND **B**) Huntington disease

Question: Some people have a perfect genome.
Answer: **False**

Section: ‘Research and techniques’

Question: Genomic sequencing is:
Answer: **B**) reading a genome

Question: Why do people want to study the genome?
Answer: All four correct - **A**) Scientific research AND **B**) Health reasons AND **C**) To trace ancestry AND **D**) Lifestyle reasons

Question: The variation in our genome can tell us:
Answer: All four correct - **A**) if you <u>will</u> develop a condition AND **B**) if you <u>may</u> develop a condition AND **C**) how you may react to a drug AND **D**) your ancestry

Question: Now that we’ve ‘read’ the human genome, we know everything about it.
Answer: **False**

Section: 'Diagnostics'

Question: To investigate an individual's genome, we need a sample of their DNA. What biological samples will give us DNA?

Answer: Multiple correct answers including: **bile**, **blood** (though not mature red blood cells or platelets by themselves), **bone marrow**, **breast milk**, **hair roots** (though not hair fibres), **cerebral spinal fluid**, **faeces** (stool or poo), **saliva** (spit), **skin cells** (though not fingernails or toenails), **sputum** (phlegm), **tumour** cells, **urine** and any cells derived from taking **tissue samples** or **swab samples**. Tears are not expected to have DNA due as it has enzymes that act to break it down.

Question: Genomic tests are available through the NHS, only.

Answer: **False**

Section: 'Infections and genomics'

Question: Only humans have a genome.

Answer: **False**

Question: Genomics is used in infectious disease outbreaks.

Answer: **True**

Question: Antibiotic resistance comes from mutations in bacteria's DNA.

Answer: **True**

Question: In an outbreak, we sequence the pathogen's genome to:

Answer: **B**) identify the outbreak's source AND **C**) identify the drug to use AND **D**) identify the type of pathogen

Section: 'Cancer genomics'

Question: Cancer is a disease of the genome.

Answer: **True**

Question: A cancer cell's genome looks the same as a healthy cell's genome.

Answer: **False**

Question: Sequencing a tumour's genome tells us:

Answer: **B**) The type of cancer AND **C**) Suitable treatment options AND **D**) The stage the cancer is at

Section: 'Family history'

Question: The word 'familial' in familial disease means the disease:
Answer: **B**) is related to family

Question: In a clinical context, what is a family history?
Answer: **A**) Health details of an individual and their close relatives

Question: A patient is worried about an inherited condition. Do you:
Answer: **A**) draw a family history

Question: In a family history, which has the least clinical value?
Answer: **C**) Relatives' names

Question: Which clinical clues may hint at a genetic condition?
Answer: **A**) An unusual presentation, for instance multiple symptoms AND **B**) Young person with a condition that usually presents later in life AND **D**) A condition that 'runs' in families

Section: 'Results are far reaching'

Question: Results from a genetic test will have clinical implications for the patient, only.
Answer: **False**

Question: Angelina Jolie chose to have a double mastectomy based on a genetic diagnosis.
Answer: **True**

Question: A patient's genomic information should always be handled sensitively. How can sensitive data be protected?
Answer: Multiple correct answers including: **Firewalls** and **encryption**, **Storing data away from personal identifiers**, **Restricting access** and **monitoring access** to data, Robust **consent process** and others.

Section: 'Precision medicine'

Question: Which best defines the word 'pharmacogenomics'?
Answer: **D**) Using genomics to tailor drug treatment for individuals

Question: A patient's genomic information is the only factor considered for precision medicine.
Answer: **False**