Summer Examinations 2015

SLS200115N

MODULE TITLE    Genes and Genomics
LEVEL           Five
TIME ALLOWED    Two hours

Instructions to students:

• Please enter your student number not your name on all answer booklets.
• Answer two out of five questions.
• All questions are equally weighted.
• Begin each answer in a separate booklet; label each booklet clearly with the number of the question you are answering.
• Neither books nor notes may be taken into the examination.
• You may not remove this examination paper from the examination room. For all purposes the examination paper remains the property of The University of Northampton.

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ANSWER TWO OF THE FOLLOWING QUESTIONS:

1. Discuss possible ways in which variation within the human genome can influence exercise phenotypes.

2. Discuss the concept of genetic association and describe in detail how this concept has been investigated to further our understanding of disease processes.

3. Discuss how genetic variation and environmental factors might influence blood pressure.

4. A genetic variant with two alleles (A and a) and three possible genotypes (AA, Aa and aa) has been identified in a hypothetical human gene called gene X. A friendly scientist has informed you that people who carry the aa genotype are suspected of producing approximately half as much mRNA for protein X as people who have the Aa and AA genotypes. Discuss how you would conduct an experiment to confirm whether or not the aa genotype does indeed lead to a reduction in the expression of mRNA for gene X compared to the other genotypes. In giving your answer assume that you have full access to any laboratory facilities along with access to human subjects and/or human tissue.

5. Discuss ways in which transgenic technology can be used to enhance our understanding of disease processes.

END OF PAPER

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