Examination Period 3: 2017/18

SLS200118N

Module Title       Genes and Genomics  
Level              Five                  
Time Allowed       Two hours and thirty minutes

Instructions to students:
- Enter your student number not your name on all answer books.
- Answer two out of five questions.
- All questions are equally weighted.
- Begin each question in a separate answer book; label each answer book clearly with the number of the question you are answering.
- Neither books nor notes may be taken into the examination.
- Students are not permitted to 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 out of five questions.

1. Alternative splicing contributes significantly to proteomic diversity in humans. Using examples, explore how other RNA processing steps also contribute to human biological complexity.

2. Discuss genetic and environmental factors that might influence lung function.

3. Discuss how you would conduct an experiment to establish whether or not a genetic polymorphism within a gene’s promoter sequence results in a change in mRNA expression. In giving your answer assume that you have access to any laboratory facilities along with access to human subjects and/or human tissue. You should also include details of how you might quantify any changes in expression that you observe.

4. Discuss the evidence that suggests that elite athletes are, at least in part, a product of their genes.

5. Discuss three ways in which a single altered DNA base (such as a single nucleotide polymorphism) within the coding or regulatory sequence of a gene could alter the function, or effectiveness, of the gene’s protein product. In constructing your answer you should attempt to give examples from the scientific literature.

End of Paper