

School of Biological Sciences Bioscience Olympiad Questions

First Tour

1. How do mammals and birds protect themselves from the bad weather?
2. In many species females live longer than males. What could be the biological meaning of this? Is the opposite situation possible? If "yes", then in which situations? If "no", then why?
3. Some animals and plants can detach certain organs or body parts. Why/how do they do it and why is it important for them to have this ability?
4. How can we identify the chromosome on which is located a specific gene?
5. In some cases, a change in DNA sequence can have an effect on the structure and function of a protein, but in other it does not. For each case explain why and give as many examples as you can.
6. Radio Belfast broadcasted an interview with a professor from Queen's Centre for Cancer Research and Cell Biology. Professor Nudge, who has a reputation for a lack of prudence with his publications, said, *"In our lab, we have found the origin of liver cancer! Those cells we usually call 'cancer cells' are in fact small, unicellular, colourless, parasitic flagellates which lost their flagella and do into amoeboid form when they enter the body. Then they colonise the human liver and become what we've always believed to be tumour cells! For this reason, I suggest that we increase sanitation standards for our drinking water as a preventative measure against cancer!"*. What facts from Prof Nudge's work could you check and how could you do it in order to determine the validity of his claim? In your answer consider carefully what information will be required.

Guidelines

Please send your answers as a Word document or PDF file. It must be submitted in Verdana or Arial Type Face size 10. There is no size limit, but please keep it appropriate. Answers should be clearly numbered and each answer has to be started from the new page. Pages in the document should be numerated. Figures and pictures can be attached as well or included into the document (however check the printing resolution of the images prior to sending).

Regarding teams: we are looking for mixed teams containing at least one GCSE student, one lower 6th/AS-level student and one upper 6th/A2 student. Schools have a free choice on the other team members (maximum team size is 5). One team per school.

You have to submit your answers before 26 September

All this info is available at: <http://www.qub.ac.uk/Olympiad>

Contact us: olympiad@qub.ac.uk