PROTEOMICS WITH DR GEORG KUSTATSCHER

TALKING POINTS

KNOWLEDGE

1. What is the proteome?
2. How many genes are there in human cells?

COMPREHENSION

3. What is the difference between DNA and mRNA?
4. Explain the processes of transcription and translation.
5. Why are proteins of interest to cancer researchers?

APPLICATION

6. Mass spectrometry can be used to analyse molecules which are present in very small amounts. Can you think of other research areas where this would be useful?
7. What are some of the advantages of using machine learning to analyse large datasets? Can you think of other research areas where this could be applied?

ANALYSIS

8. What was the problem with analysing the function of individual proteins in isolation? How can analysing many proteins at the same time improve our understanding of their function?

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

Create a mind-map of all the key information in this article. What are the different stages in producing proteins from DNA? What methods does Georg use to investigate proteins? How will Georg determine how cells regulate protein levels? Compare and contrast your mind-map with your peers'. Did you all select the same information? Discuss why you did or did not include certain information.

Imagine you are a proteomics researcher. Write a letter to your funding organisation persuading them to support your research. You will need to explain what the challenges are in proteomics, what new ideas or methods will be needed to address them and what the benefits of your research will be for society.

MORE RESOURCES

Neil Kelleher has a great TEDx talk about one of the big projects in proteomics:

www.youtube.com/watch?v=hHJxMnq51KU

The Wellcome Centre for Cell Biology at the University of Edinburgh runs events such as lab visits for secondary school students:

public-engage.bio.ed.ac.uk/engage-us