Monoclonal antibodies & plant disease and defence

Reading pages 53-55

<u>Knowledge</u>

- 1. Which type of cell produces antibodies?
- 2. Why is it necessary to use a tumour cell in the production of monoclonal antibodies?
- 3. What is the cell that is produced from the fusion of a lymphocyte and a tumour cell called?
- 4. What do antibodies bind to?
- 5. Complete the table to show what the minerals are needed for in plants:

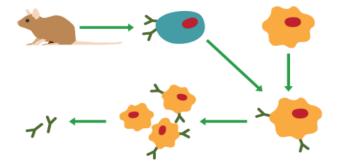
Mineral Ion	Needed for	Symptoms of deficiency	
Nitrate			
Magnesium			

- 6. What acts as a protective layer around the outside of most plant leaves and stems?
- 7. What are cell walls made from?

Application

1. Describe how monoclonal antibodies can be produced for a particular antigen. Use the diagram to help.

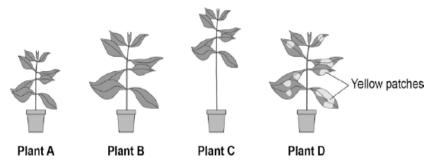
Include these terms: hybridoma, tumour, lymphocyte, antigen, antibodies, clone



2. A gardener sees patches of rot on his rose bushes. Describe two ways he could find out which disease his plants are infected with.

3. Describe the ways plants defend themselves from disease:
a) physically
b) chemically
c) mechanically
4. Cancer cells produce unique proteins on their cell surface. Explain how a monoclonal antibody could be used to deliver a chemical that will damage these cancerous cells.
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5. The diagram below shows four plants. The plants were grown in four different growing conditions:



- sunny area, with nitrate and magnesium added to the soil
- sunny area, with magnesium but **no** nitrate added to the soil
- sunny area, with nitrate but **no** magnesium added to the soil
- dark area, with nitrate and magnesium added to the soil.

Write the letter of the plant next to the conditions they were grown in