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:

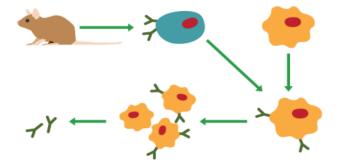
| Mineral Ion | Needed for | Symptoms of deficiency | |
|-------------|------------|------------------------|--|
| Nitrate | | | |
| Magnesium | | | |

- 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

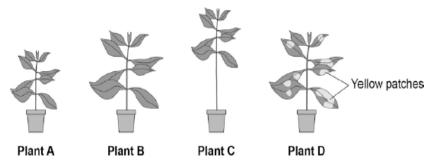


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2. A gardener sees patches of rot on his rose bushes. Describe two ways he could find out which disease his plants are infected with.

| 3. Describe the ways plants defend themselves from disease: |
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| a) physically |
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| b) chemically |
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| |
| c) mechanically |
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| 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