

Antibiotics, culturing microorganisms and new medicines

Why can antibiotics only treat bacterial infections?

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Triple only

What is an autoclave used for?

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How is an inoculating loop made sterile?

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Why keep petri dishes and culture vials covered?

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Core practical: what does a clear zone show?

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Core practical: why use a control disc soaked in sterile water?

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Equation for the cross-sectional area of a clear zone?

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Name the stages in developing a new medicine in order.

Sterilising growth medium and petri dishes using high-pressure steam.

They inhibit cell processes in the bacterium but not in the host. Viruses live inside host cells.

To stop unwanted microorganisms getting in and the culture escaping.

Heated in a flame until red hot, then cooled before use.

To show that the disc or water alone does not stop bacterial growth.

The substance (antiseptic, antibiotic or plant extract) killed bacteria or stopped them growing. A bigger zone means more effective.

Discovery, development, preclinical testing, clinical testing.

area = πr^2 , where r is half the diameter.

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What happens in preclinical and clinical testing?

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Higher tier

What are monoclonal antibodies?

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Higher tier

How are hybridoma cells made?

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Higher tier

Why are hybridoma cells useful?

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Triple only

Higher tier

Give three uses of monoclonal antibodies.

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Triple only

Higher tier

Advantage of monoclonal antibodies over drugs and radiotherapy for cancer?

Identical antibodies made from one type of cell that bind to one specific antigen.

Preclinical: tested on cells, tissues and live animals. Clinical: tested on people, first for safety and then for effectiveness.

They divide to form many cells and they produce the antibody as they divide.

A lymphocyte that makes the desired antibody (but does not divide) is fused with a tumour cell.

They target specific cells, so fewer healthy cells are damaged.

Pregnancy testing; diagnosis, including locating blood clots and cancer cells; treating diseases including cancer.