Cauliflower cloning

You can use simple tissue culture techniques in order to clone cauliflower plants. Small pieces of tissue called explants are taken from the parent plant and grown in agar jelly under sterile conditions.

Throughout this experiment you must carry out the work using sterile techniques. This means keeping all equipment and work surfaces sterile and keeping doors and windows shut.

- Use a swab to sterilise a white tile with ethanol.
- Remove a small piece of cauliflower and cut it into very small florets. These are the explants.
- Put about three explants into the disinfectant solution. Shake the bottle for 1 minute, then let it stand for 10 minutes.
- Sterilise your forceps by dipping the ends into ethanol and burning it off in the hottest part of a blue Bunsen flame. Repeat this procedure each time you use the forceps.

Take care: ethanol is highly flammable so keep the beaker of ethanol well away from the Bunsen flame.

- Using sterile forceps, transfer the explants into distilled water. After 1 minute, reflame your forceps and transfer the explants to the second bottle of distilled water for 1 minute.
- Flame your forceps, keeping hold of them. Remove the lid of the culture bottle and flame its neck.
- Pick up each of the explants in turn and drop them onto sterile agar using the sterile forceps. Replace the lid of the culture bottle quickly.
- Label your culture bottle with your name and date. Leave it on a warm windowsill. The explants should grow in 4–6 weeks.

You might choose to use all or some of these:

- cotton wool swab
- white tile
- scalpel
- watch glass
- forceps
- Bunsen and heat-proof mat
- sticky labels
- cauliflower (to share)
- McCartney bottle of disinfectant (10% sodium hypochlorite)
- sterile bottle of culture medium
- 1 small beaker of ethanol
- 2 McCartney bottles with sterile distilled water