

Isolation of DNA from Onions

Method

YOU WILL NEED:

- 10ml washing-up liquid (the watery type is the best)
- 3g table salt
- 100ml water
- 1 medium-sized onion
- chopping board
- vegetable knife
- 2 jam jars
- 500ml bowl of ice
- blender
- coffee filter (pores of normal filter paper are too small to allow the DNA through)
- 10ml methylated spirits (kept in freezer overnight and in ice until used)
- hair dryer
- funnel
- paper clip/ thin piece of wire

1: Mix the salt, washing-up liquid and water in one of the jars and stir well to dissolve the salt. The washing-up liquid breaks down cell membranes, releasing DNA from each nucleus.

2: Peel and chop the onion up finely on the chopping board and add it to the salty washing-up liquid solution.

3: Place the jar in a large container of boiled water that has been set aside to cool for about 30 minutes. Leave the jar in the water for 15 minutes.

4: Cool the mixture by standing the jar in the bowl of ice for a few minutes.

5: Blend or grind the mixture for no more than 5 seconds. The blender helps to break open the onion cells but if done for too long it will damage the DNA.

6: Filter the blended mixture through a coffee filter, into another jar using the funnel. This separates the cell wall material from the DNA and proteins, which are now in solution.

7: Very carefully, holding the jar at a slant, trickle an equal amount of ice-cold methylated spirits slowly down the side of the jar into the surface of the onion extract, to form a layer on top of the extract. Leave the jar for a few minutes without disturbing it.

8: The DNA separates from the solution and floats up into the methylated spirits as a film of threads.

9: Gently scoop out the DNA with a wire - this is easier if you first bend the end of the wire into a loop.

10: Carefully dry, but do not cook, the DNA with a hair dryer.

Adapted from Rasmussen, A. and Matheson, R. (1990). *Sourcebook of Biotechnology Activities*, National Association of Biology Teachers, North Carolina Biotechnology Centre (USA)