

Extracting DNA from an Onion*¹

Material:

1 small onion*	5 mL of dish washing detergent
2 g NaCl	20 mL ice-cold isopropanol  
45 mL water	1 coffee filter (no lab filter paper!)
1 knife	1 cutting board
2 small beakers (50 mL)	graduated cylinders (Messzylinder)
1 funnel	1 stand
1 stand ring for holding the funnel	1 blender with a suitable container
1 socket (Muffe)	3 containers of detergent, water, and salt
1 pipette for the isopropanol	1 laboratory scale

* Alternatively, bananas, apples, tomatoes, courgettes (=Zucchini) could be used.

Procedure:

1. Measure 5 mL of dish washing detergent and 45 mL of water with the graduated cylinder. Mix them with 2 g NaCl in a container and close the lid.
2. Rock the container back and forth until the salt is dissolved. The detergent should not foam too much!
3. Prepare the stand, funnel, socket and stand ring.
4. Cut the onion into small cubes and place it in a container.
5. Add the salt-detergent-water mixture into the container with the onion pieces. Use the mixer to homogenize the mixture. ATTENTION: Only mix for 5 seconds. Otherwise, you destroy the DNA!
6. Filter the mixture using the coffee filter. Collect the filtrate in a suitable beaker.
7. Pour 20 mL of the filtrate into another container (with lid) and add 20 mL ice-cold isopropanol. Two phases should be visible, the top phase containing isopropanol and the lower water phase containing DNA. Rock the container back and forth lightly.
8. At the border between the water and the alcohol phases the white DNA meshwork should become visible. The DNA can now be wound up and fished out with a glass rod.
9. Document the result of your experiment with photos for your lab report.
10. Give written reasons for the individual steps and interpret the results of the experiment. E.g., Why did we use washing detergent? Why did we filter the mixture? Why did the DNA precipitate (ausfallen)? Create a chart as a lab report. Left column = Pictures. Right column = Explanation/ Reasons

Wear gloves, goggles and open the windows!

¹ Translated from Schermaier, Andreas und Weisl, Herbert. *Bio@school8*.Veritas p.30