

An aid to filtering protoplasts – the Buchanan filter

Introduction

This filtration method has been developed in support of the SAPS (Science & Plants for Schools) protocol *Protoplast isolation*. See the SAPS website for further details :-

<http://www-saps.plantsci.cam.ac.uk/docs/protofusion.pdf>

Protoplasts are cells which have had their cell wall removed, usually by digestion with the enzymes cellulase and pectinase.

Digestion is usually carried out after incubation in an osmoticum (a solution of higher concentration than the cell contents which causes the cells to plasmolyse).

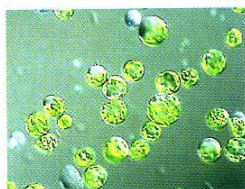


Figure 1 Plant protoplasts

This makes the cell walls easier to digest. Debris is filtered and/or centrifuged out of the suspension and the protoplasts are then centrifuged to form a pellet.

Protoplasts can be isolated from a range of plant tissues: leaves, stems, roots, flowers, anthers and even pollen.

Plant cell protoplasts are an important research tool, and, in school, present an interesting way of studying plant cell structure.

Buchanan filter

With this filter there is no need for the usual messy, untidy, waterproof sticky tape. 'Buchanan' comes from the name of our esteemed Technical Adviser - Ian Buchanan.

1. Cut the stem off a small plastic filter funnel (Fig. 2).

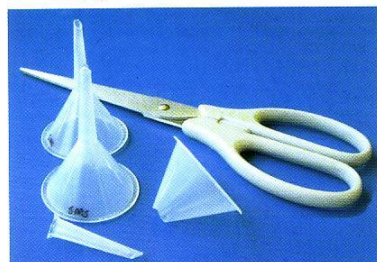


Figure 2 Equipment required

2. Use either a small glass or plastic filter funnel and a square of 60 µm mesh approx 60 mm square (Fig.3).

3. Push the 60 µm mesh square into the filter funnel (Fig.3).

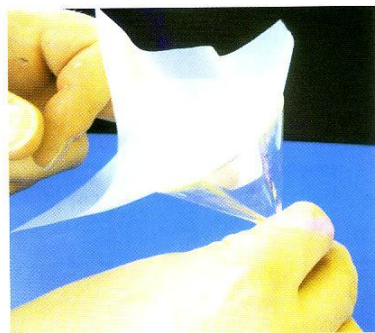


Figure 3 Placing the mesh square in a glass filter funnel. Push down.

4. Take the cut filter funnel and fit it on top of the mesh (Figs. 4 & 5).

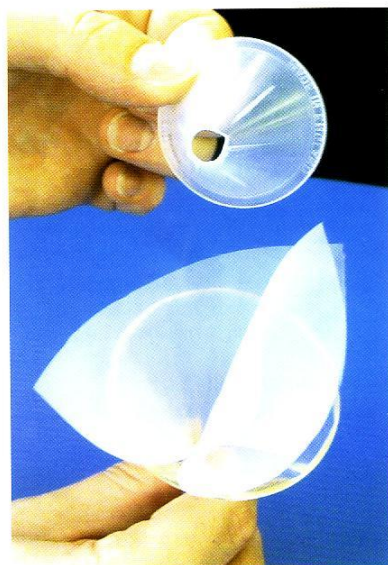


Figure 4 Cut plastic filter funnel inserted

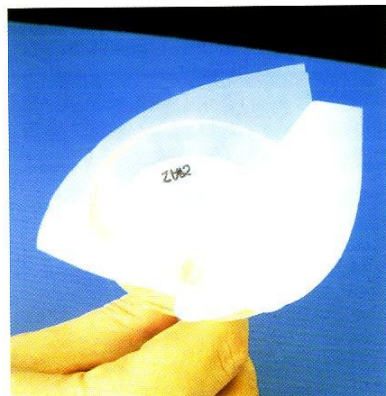


Figure 5 Cut filter funnel in place



Figure 6 Buchanan filter - ready for use



Figure 7 Protoplasts being filtered

Use of Prestige Medical Automatic Autoclaves for media sterilisation

It has been brought to our attention that the Griffin education catalogue 2005/2006 states that Prestige Medical autoclaves are not suitable for media sterilisation. The range of automatic Prestige Medical autoclaves offered by Griffin and other suppliers do, however, provide effective steam sterilisation for educational microbiological work. While the temperature used (126°C) may damage certain constituents in some types of media, the types of media generally used for microbiological work in schools will not be adversely affected. Similarly, for disposal there is a fixed sterilisation cycle but this should generally pose no significant problems for school based work. Prestige Medical autoclaves are easy and convenient to use for both sterilising most media and disposal of microbiological waste. We thus continue to recommend their use in schools for these purposes. The taller model with the extended body is particularly useful.