ULT freezers are expensive items of equipment to maintain, run and replace. To ensure that costs remain low and the contents remain safe follow the guidance below.

Allocate a freezer manager and report any issues with the freezer to that person as soon as possible
Allocating a freezer manager means problems with the freezer are managed efficiently and freezers are less likely to fall into disrepair.

Use a clear inventory system to reduce open door time
Opening freezer doors introduces moisture into the freezer, which then causes frost build-up in the unit. If the unit becomes too frosted it can be difficult to remove samples and close the door. Eventually the seals will become iced and damaged and the unit will struggle to remain at temperature. This can put samples at risk, and replacement of seals can be expensive (over £700 in some cases).

Label samples with an expiry date
ULT freezers add considerable operational costs to a department, and each additional freezer is competing for valuable space. By maintaining a clear exit policy and clearing out unused and unnecessary samples, the need for additional units is reduced.

Clear ice away regularly
Clear away any ice build-up with a soft cloth, dustpan and brush or rubber mallet. Avoid using sharp tools and be cautious to avoid damaging the rubber seals and gaskets. As frost builds up on the evaporator coils, the heat transfer rate in the freezer cabinet is decreased due to the insulating effects of ice. This means the compressor has to work harder and longer to maintain cool temperatures, wasting more energy. Removing the ice regularly can also extend freezer life.

Use box racking
Using solid boxes rather that wire mesh containers helps retain cold air in the unit when the door is opened, helping to maintain a more constant temperature for samples. This practice will also require less metal in the racking, making it more affordable.
**Clean filters regularly**
The filter removes hot air from the freezer and allows it to ‘breathe’. Dirty filters mean the compressor has to work harder, which increases energy consumption and cost to the department, and the risk of early failure. This not only increases maintenance costs but also puts samples at risk when the freezer does fail.

**ULT freezers should only be kept in dedicated freezer rooms**
Additional heat from freezers increases the ventilation and cooling loads in a room. Where building systems are able to cope with additional load this increases the running costs, and where systems cannot cope the environment becomes uncomfortable for building users. Freezers that operate in warm environments work harder which increases running costs and the risk of failure - and therefore risk to samples.

**Keep back-up freezers at -60 degrees Celsius**
A freezer at -60 degrees may take 1-2 hours to cool down to minus 70 degrees Celsius. Keep space in the unit occupied using boxes or spare racking, then swap in samples as and when required. This will reduce frosting and the energy consumption of the back-up freezer. In the event of a freezer failure, racking will help hold the internal temperature for longer. Do not open the door until prepared to load samples into the back-up freezer.

**Unless specifically required freezers should be set at -70 degrees Celsius**
Only chill samples to the temperature that is absolutely needed. In the majority of cases, samples can be safely stored at -70°C rather than -80°C. By increasing the set temperature from -80°C to -70°C energy consumption can be reduced by 28% and preserve the compressors.

**Be clutter free; do not stack boxes against or on top of the units**
Blocking vents and storing items around the units can increase the risk of unit failure by increasing the work load on the compressor.

**Replace old freezers to reduce running and maintenance costs**
A freezer replacement subsidy is available from the Environmental Sustainability team. To find out more click [here](#). An old and inefficient freezer can cost >£1,000 per annum in electricity, compared to <£300 for a Eppendorf Cryocube F570h.

**Replace damaged seals as soon as possible**
A damaged seal allows air into the unit which raises its temperature, and this means the unit has to work harder to retain a stable temperature. It is likely to become frosted and then ice up, and as the compressor is forced to work harder the unit will be prone to early failure.